

Landscape of Neolithic Axes

Report on fieldwork in 2022 at Llanfairfechan



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Report No. 1698

Event PRN 46532

Prepared for: Cadw

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Cover photograph: Pupils from Ysgol Capel Ulo head towards Dinas

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Landscape of Neolithic Axes: fieldwork in 2022 at Llanfairfechan (G2495)

Report 1698

Event PRN 46532

Summary

Cadw grant aided Gwynedd Archaeological Trust to run the volunteer fieldwork element of the Landscape of Neolithic Axes Project for 2022-23, under the Carneddau Landscape Partnership Scheme. The work focused on sites to the east and west of Dinas, Llanfairfechan (PRN 4720 and PRN 81634). The fieldwork took place between 4th and 8th July and between 20th September and 4th October 2022, and the work was undertaken by volunteers under the supervision of Gwynedd Archaeological Trust and Snowdonia National Park Authority staff.

Test pitting was carried to further investigate PRN 4720, known as the Maes y Bryn site, in a high ffridd to the east of Dinas. Sixteen test pits were dug, and axe debris was found in them all. Several flint flakes and a flake of crystal quartz were recovered. Two test pits also contained scrapers made on Group VII stone. The presence of scrapers and flint flakes confirms the suggestion from previous work that this is a settlement site, not just an axe-production site.

Work also continued on Ty'n y Llwyfan Farm, at the foot of Dinas (PRN 81634), and was extended into a lower field (PRN 100575). Thirty-two test pits and small trenches were dug in these two fields. These enhanced the understanding of distribution of axe-working across the area, confirming a concentration of activity on the northern end of the upper lynchet that runs across the field. The finds suggest that roughouts were produced on the source screes and then removed a short distance away for finishing. The test pits in the lower field showed that a lower level of activity was present much further away from the screes. It is possible that there may have been occupation in this area, as a tiny sherd of Early Neolithic pottery was found. An extensive deposit of stone and axe debris (PRN 100569) was found incorporated into the edge of the upper lynchet, suggesting intensive axe-making activity in this area, and possibly indicating that the lynchet is of Neolithic origin.

Crynodeb

Dan Gynllun Partneriaeth Tirwedd y Carneddau, derbyniodd Ymddiriedolaeth Archaeolegol Gwynedd gymorth grant gan Cadw er mwyn cynnal elfen gwaith maes gwirfoddolwyr Prosiect Tirwedd Bwyell Neolithig 2022-23. Ffocysodd y gwaith ar safleoedd i'r dwyrain a'r gorllewin o Dinas, Llanfairfechan (PRN 4720 a PRN 81634). Cynhaliwyd y gwaith maes rhwng Gorffennaf 4ydd a'r 8fed a rhwng Medi 20fed a Hydref 4ydd 2022, ac ymgwymerwyd â'r gwaith gan wirfoddolwyr oedd dan arolygaeth staff Ymddiriedolaeth Archaeolegol Gwynedd ac Awdurdod Parc Cenedlaethol Eryri.

Cynhaliwyd cloddio prawfer mwyn ymchwilio ymhellach PRN 4720, a adnabyddir fel safle Maes y Bryn sydd ar ffridd uchel i'r dwyrain o Dinas. Cloddiwyd un-deg-chwech o dyllau prawf, a daethpwyd o hyd i falurion bwyell ymhob un ohonynt. Cafwyd hyd i nifer o naddion fflint yn ogystal a naddyn cwarts crisial. Roedd dau dwll prawf hefyd yn cynnwys ysgrafelli wedi eu ffurfio o garreg Grŵp VII. Mae presenoldeb ysgrafelli a naddion fflint yn cadarnhau'r awgrym a gafwyd o waith cynharach mai safle anheddu sydd yma, nid safle cynhyrchu bwyell yn unig.

Parhaodd y gwaith ar Fferm Ty'n y Llwyfan, wrth droed Dinas (PRN 81634) hefyd, ac fe'i hymestynwyd i gae islaw (PRN 100575). Cloddiwyd tri-deg-dau o dyllau prawf a ffosydd bychain yn y ddau gae hwn. Mireiniodd rhain ein dealltwriaeth o ddosbarthiad gweithio bwyell ar draws yr ardal, gan gadarnhau bod crynodiad gweithgarwch ymhen gogleddol y linsied uchaf sy'n rhedeg ar draws y cae. Mae'r darganfyddiadau'n awgrymu bod brasffurfiau'n cael eu cynhyrchu ar y sgrïau ffynonellol ac yna'n cael eu cludo ychydig bellter i ffwrdd i'w cwblhau. Dangosodd y tyllau prawf a gloddiwyd yn y cae isaf fod lefel is o weithgarwch yn bresennol cryn bellter oddi wrth y sgrïau. Mae'n bosib y bu anheddu yn yr ardal hon, gan y cafwyd hyd i delchyn bychan iawn o grochenwaith Neolithig Cynnar. Daethpwyd o hyd i ddyddodion helaeth o garreg a malurion bwyell (PRN 100569) wedi ymglyfuno ag ymyl y linsied uchaf, sy'n awgrymu gweithgarwch sylweddol cynhyrchu bwyell yn yr ardal hon, ac efallai'n awgrymu bod y linsied o darddiad Neolithig.

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) (Plate 1). 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, 1921, 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 around 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.



Plate 1. Pike O'Stickle in Great Langdale, one of the main sources of stone for axeheads was on the face of the crag and the scree below consists largely of axe debris (photo by Jane Kenney)

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.

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 grinding and polishing. The roughly knapped pre-form for an axe is known as a “roughout” (Plate 2). 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 be present in very large numbers on an undisturbed site.

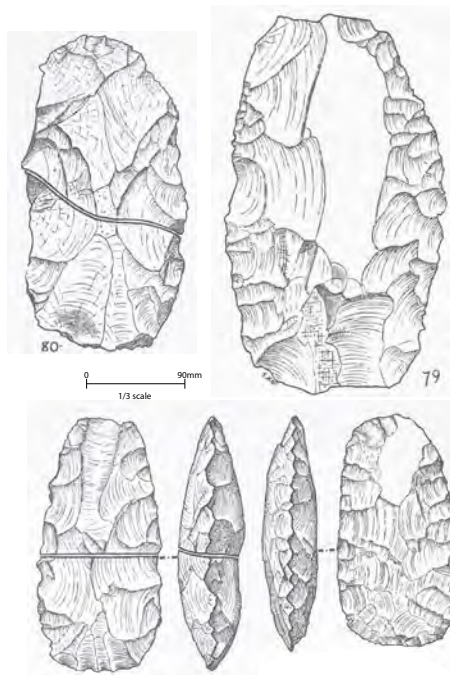


Plate 2. Examples of roughouts from Graig Lwyd excavated by Samuel Hazzledine Warren (Warren 1922, Figs 7, 8 and 10)

Plate 3. Aerial photograph of Graig Lwyd (the crag in the foreground) partially cut away by Graig Lwyd Quarry (copyright Royal Commission on the Ancient and Historical Monuments of Wales)



It has been known since 1919 that Neolithic stone axes were produced near a rock outcrop known as Y Graig Lwyd above Penmaenmawr (Plate 3). The first axe roughouts were recognised by Samuel Hazzledine Warren and he subsequently undertook excavations in the early 1920s (Warren 1919, 1921, 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) (Plate 4).

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 narrow axe or pick of Graig



Plate 4. Excavation of Neolithic quarry on summit of Graig Lwyd (Department of Continuing Education, Bangor University, photograph by John Llywelyn Williams)

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 (PRN 4720).

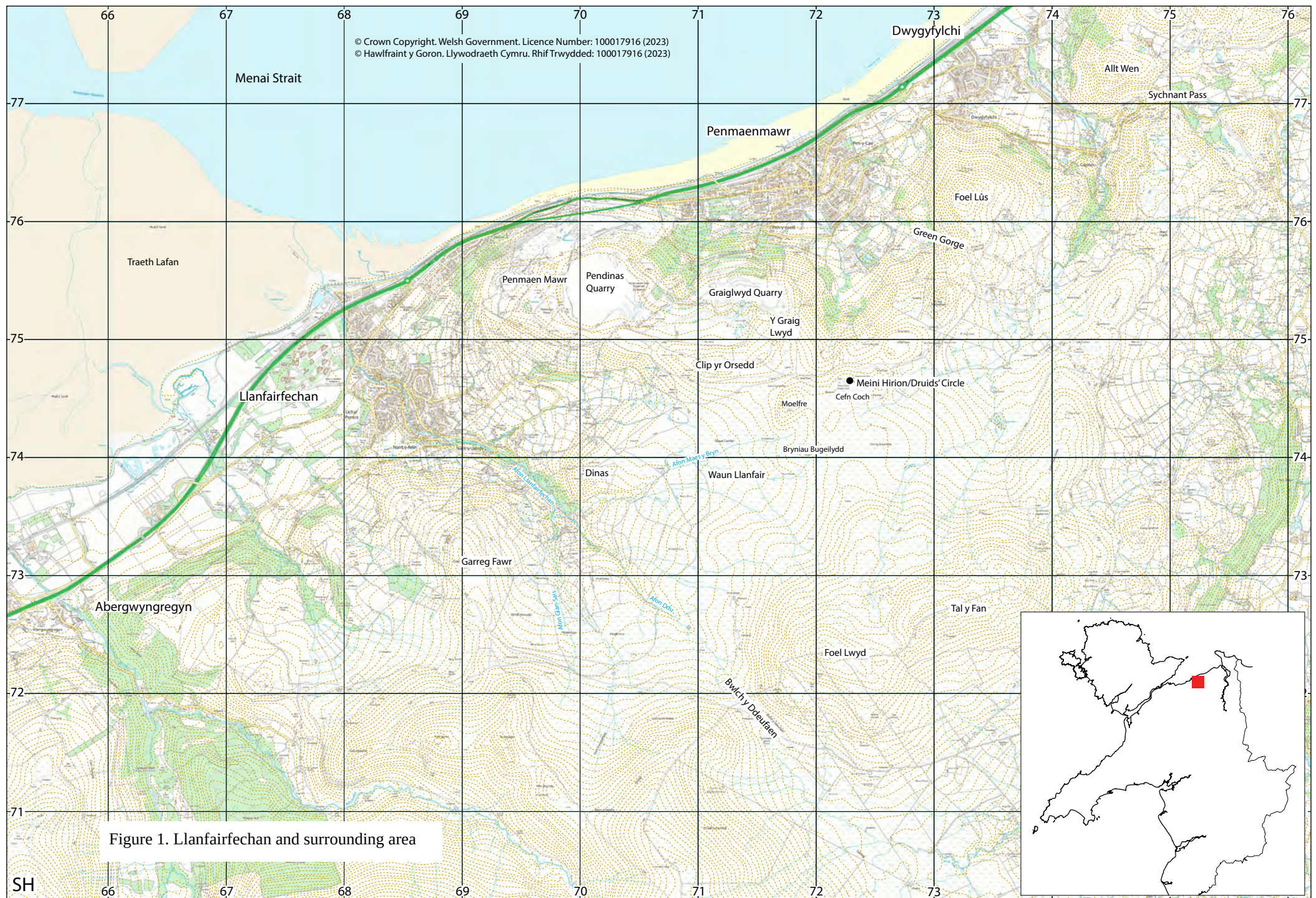
Since the 1990s Mr David T. Jones of Llanfairfechan collected axe roughouts and explored axe-working sites around Llanfairfechan. Mr Jones' collection and knowledge of axe-working sites was recorded in 2017 (Kenney 2017). Mr Jones identified three main axe-working sites: one the screes below the western 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 on Ty'n y Llwyfan Farm. 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).

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.

Work commenced in 2021, when a more extensive season of work was undertaken to investigate the Ty'n y Llwyfan site. This included test pitting to investigate the extent of the working and a small evaluation trench to establish the nature and preservation of working floors within the undisturbed natural screes. Test pitting was also carried out on the possible settlement site discovered in 1961 (PRN 4720). This site is referred to as Maes y Bryn and the test pitting provided evidence of axe making but also evidence to support the interpretation of this as a settlement site (Kenney and Smith 2022).

The work reported on in the current report aimed to expand on the previous work, obtaining further information about the extent and nature of the sites investigated. In 2022 the project was focused on 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.



1.4. Geology and topography around Llanfairfechan

While axe-working sites can be found around both Penmaenmawr and Llanfairfechan the current work focuses 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 scree 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 Meini Hirion (Druids' Circle) stone circle, 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 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 2022 fieldwork was to further explore the extent of the axe-working area at the foot of Dinas (Figure 2). The test pitting in 2019 and 2021 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 extent of the working was evaluated by test pits further down the hill slope than in previous years, and the nature of the terraces across the site were further investigated. The previous work had identified specific areas that were worth additional study so a 2m by 2m trench was dug to locate a spread of charcoal identified in test pit 16. Test pit 37 revealed a dense area of *in situ* axe debris and further small trenches were excavated in this area.

In addition, there was further investigation of the Maes y Bryn site, to the east of Dinas was to be investigated (Figure 2). In 2021 test pitting located the site and confirmed axe working here. Widely spaced test pits were to be used to explore the extent of the site and obtain further artefacts that could reveal the function of the site.

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.

The test pits measured 1m square, although some small trenches were also utilised as described below. The test pits 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, using a sieve with a 1cm mesh, and any artefacts found were retained (Plate 5). 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 on simplified context sheets, using a booklet produced specifically for this project. 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 test 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 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 survey quality Trimble Global Positioning

Figure 2. The location of work carried out in 2022 (see appendix I for a list of sites shown on this figure)

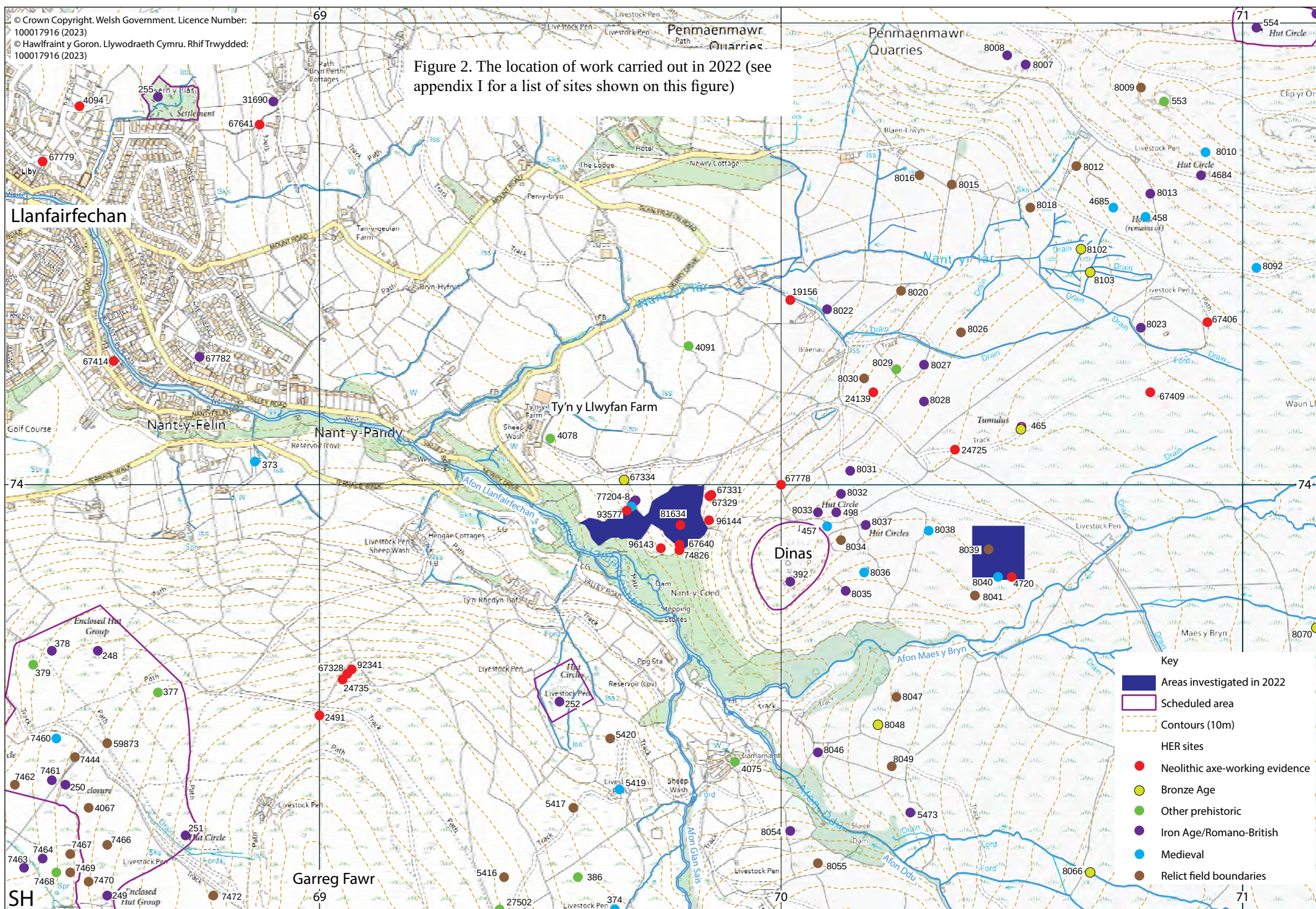




Plate 5. A volunteer sieving soil from a test pit

Plate 6. Volunteers digging at Ty'n y Llwyfan



Plate 7. Volunteers digging at Maes y Bryn under the supervision of Mike Lynes of GAT

System (GPS).

The excavation and recording of the test pits were carried out by volunteers under the supervision and guidance of GAT and SNPA archaeologists (Plates 6 and 7).

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 4th and 8th July 2022. In 2021 test pitting located the find scatter discovered in 1961, but the aim in 2022 was to explore the extent of this site. To do this test pits were located 20m apart in a grid to the north and west of the test pits dug in 2021. The position of the test pits was laid out using GPS equipment to create a fairly accurate grid, but some test pits had to be moved from their ideal location due to the presence of boulders and one marker got removed and replaced by eye. The grid therefore ended up less than perfect but still provided coverage of an area of about 85m by 65m. One test pit (TP56) revealed a different layer to those appearing in the other test pits as well as special finds. In this case an extra test pit (TP66) was added off the grid about 7m from TP56 to provide a comparison to TP56 and determine if the layer in that test pit continued.

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. This work was carried out between 20th September and 4th October 2022.

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.

The test pits were positioned to cover areas not investigated by the previous two seasons of work in this field, including the face of the main scarp across the middle of the field, the southern corner and western side of the field. The test pits were located in relation to the topography rather than on a regular grid. Small trenches were used to examine features previously found in test pitting, as described above. A watching brief on a water pipe trench had located some axe debris in the field west and downhill of the field previously investigated. Several test pits were located in this new field to test for axe working here. The locations of these test pits was again defined largely by topography but also by the need to avoid services in this field. A gas pipe runs across the field and there were two routes dug for a water pipe (the first route was abandoned due to the presence of archaeology). Apart from avoiding any risk of damaging the services the aim was to avoid digging test pits through the disturbed ground of trench backfill.

Some test pits were located in an area known to be rich in axe-debris to ensure that the school children could be guaranteed to find flakes. As the children could only dig in fairly shallow pits several test pits were opened in the same area. One of these (TP 88) was later completed down to the natural deposits by adult volunteers but the others were not fully excavated. These are test pits 86, 87, 94, 97 and 98. Results for these therefore only refer to the upper layers.

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. A methodical search of molehills north of the test pits was made to locate axe flakes. All flakes that were found were collected and their position located with the Trimble GPS. Any flakes found in molehills within the test pitting area were also collected and recorded. This indicated the presence of axe debris well beyond the area investigated by test pitting.

Small trenches

In the Ty'n y Llwyfan site previous work had indicated two areas worth further investigation and small trenches, part-way between test pits and evaluation trenches were used for this further investigation. One small trench (TP 73) measured 2m by 2m and was positioned to investigate an area of charcoal found in test pit 16. This trench was excavated in the same as the test pits, but excavation stopped when undisturbed natural scree was reached. This trench was recorded in plan by photogrammetry, where overlapping photographs and targets accurately surveyed in by GPS are combined in the Agisoft Metashape program to produce a geolocated and accurately scaled orthomosaic. This orthomosaic was printed out and annotated on site and used to draw up the final plan of

the trench. Two sections of the trench were drawn. Trench 75 measured 3m by 2m and was positioned over test pit 37 to investigate the dense deposit of stone and axe debris located in that test pit (Plate 8). In this case the main aim was to expose the surface of this deposit to determine its extent. The surface of the stone layer was recorded using photogrammetry. Axe debris present in the surface of this deposit was collected and the location of each piece marked on the orthomosaic. Part of the deposit was removed along the western side of the trench to expose a line of larger stones, which were then also recorded in plan by photogrammetry. A sondage was dug against the northern side of the trench to obtain a section through the deposits and reveal more information about how they had built up. This section was drawn at a scale of 1:10. As the limits of the stone deposit were not fully seen within trench 75 two trenches measuring 1m by 2m were dug to the north and south of trench 75. These trenches (TP 85 and 89) were excavated down to the surface of the stone deposit which was recorded in plan by photogrammetry, but no finds were recovered from this deposit in these trenches. In trenches 75, 85 and 89 axe debris was recovered from the topsoil and ploughsoil by sieving in the same way as the test pits, and all layers in the sondage dug through the stone deposit in trench 75 were sieved for axe debris and all material collected. In all these small trenches photography was used for recording the excavations and descriptions of the deposits were made.

As with the test pits excavation and recording was carried out by volunteers under the supervision and guidance of GAT and SNPA archaeologists.



Plate 8. Jeff Marples digging Trench 75

2.3. Post-excavation work

Volunteers undertook the cleaning and cataloguing all the finds (Plate 9). Finds were washed, dried weighed and counted. Finds were catalogued on a spreadsheet. 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 2022 fieldwork and includes an assessment of the lithic collection by George Smith.



Plate 9. Volunteers Barbara Marshall and Louise Ingham washing axe debris



Plate 10. Break time at Maes y Bryn with the tent provided by the Carneddau LPS

Plate 11. Members of the Boots on the Ground organisation at Maes y Bryn with project staff



Plate 12. Work experience students being supervised 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 (Plate 10).

Eighty-two 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. Volunteers included members of Boots on the Ground Cymru, which supports veterans (Plate 11) and staff of Snowdonia National Park Authority on an additional training day funded by the Authority.

Six students from local secondary schools came on a work placement for the whole week of the Maes y Bryn fieldwork (Plate 12), and some also returned to work at Ty'n y Llwyfan.

Sixty-three local primary school pupils from Ysgol Pencae, Penmaenmawr and Ysgol Capel Ulo, Dwygyfylchi engaged with the project, taking part in test-pitting sessions on 27th to 30th September 2022. Prior to the fieldwork Dan Amor gave a presentation at the school, along with a question-and-answer session (Plate 13). 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



Plate 13. Dan Amor giving an in-school session prior to the children visiting the site

The site visits were divided into seven sessions across four 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 (Plate 14). A re-cap, along with a further question-and-answer session, was held at the school. The work was further extended with an in-school finds recording exercise; pupils learnt to draw and record genuine flakes from the Neolithic axe-making. The school programme was funded by the National Lottery Heritage Fund through the Carneddau Landscape Partnership Scheme.



Plate 14. Pupils from Ysgol Capel Ulo busy test pitting



Plate 15. YAC members enjoying drawing flakes

Plate 16. An example of the flake drawing exercise

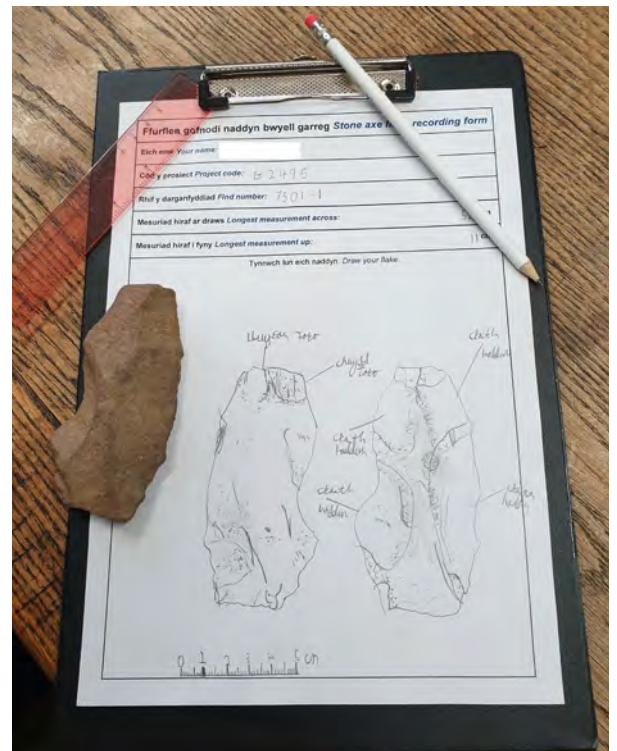


Plate 17. Ysgol Capel Ulo pupils enjoying learning about Neolithic axes



A Young Archaeologists' Club (YAC) family session was also organised on 1st October 2022, attended by 15 YAC members and their families. 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.

An additional YAC session and two further in-class school sessions were organised during December 2022 and January 2023, with a focus on the post-excavation process. YAC members and learners measured then drew genuine axe flakes, learning how to identify striking platforms, bulbs of percussion and flake scars. This was funded by CLPS (Plates 15 and 16).

The school programme and YAC session prompted a large volume of positive feedback from children and adults alike (Plate 17).

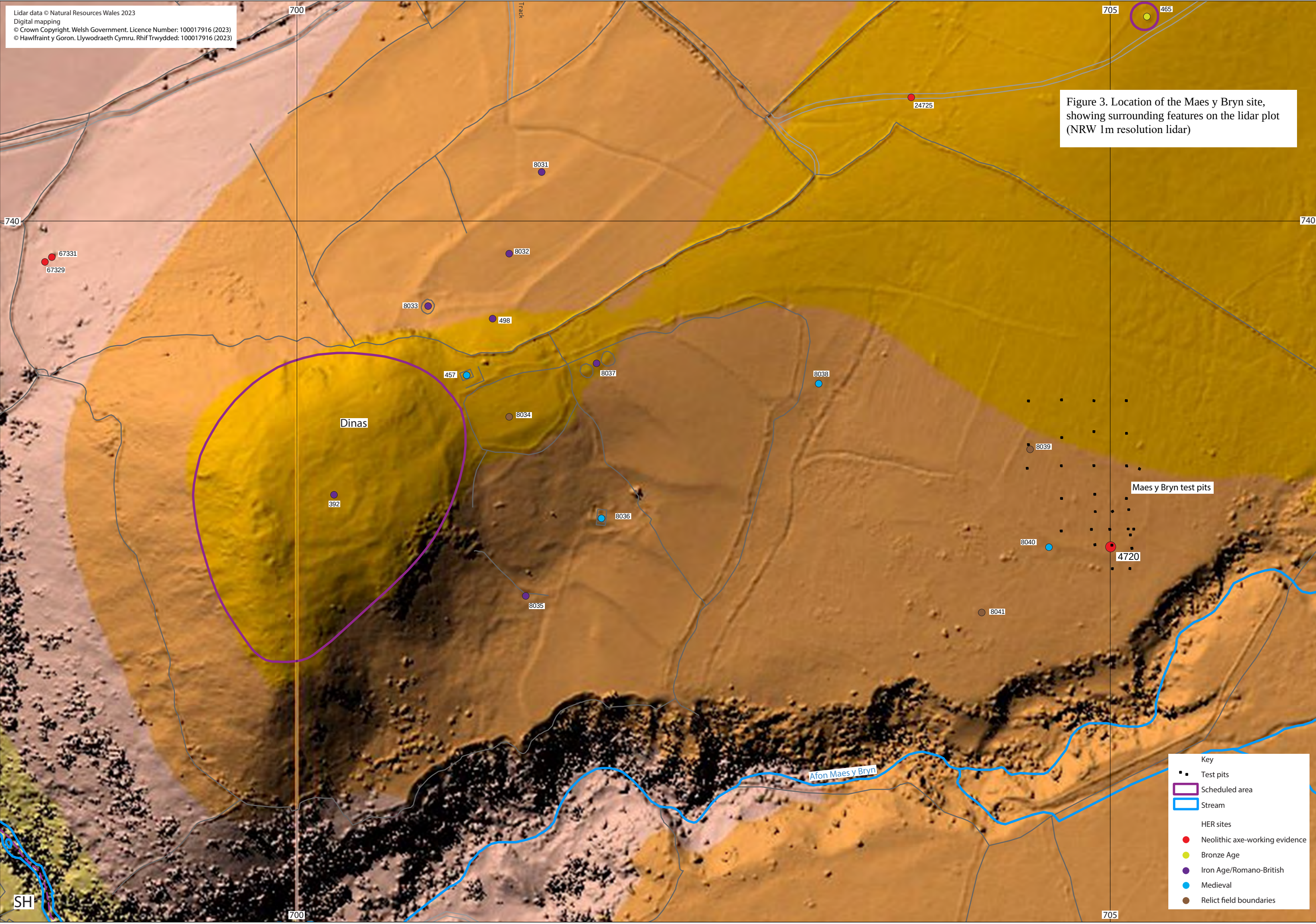
Volunteers undertook the daunting task of cleaning and cataloguing all the finds. This responsible task involved the use of an Excel spreadsheet and the sorting of finds into an organised system, giving them a good experience of the nature of post-excavation archaeological work.

Talks on the project were given at a Carneddau Partnership Roadshow in Penmaenmawr (23/06/2022), the Plas y Brenin National Outdoor Centre, Capel Curig (14/12/2022), online to the Merseyside Archaeological Society (19/01/2023) and to Friends of GAT (01/02/2023).

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 RCAHMS 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 2023
Digital mapping
© Crown Copyright. Welsh Government. Licence Number: 100017916 (2023)
© Hawlfraint y Goron. Llywodraeth Cymru. Rhif Trwydded: 100017916 (2023)

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

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, including a scraper. 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) (Plate 18).

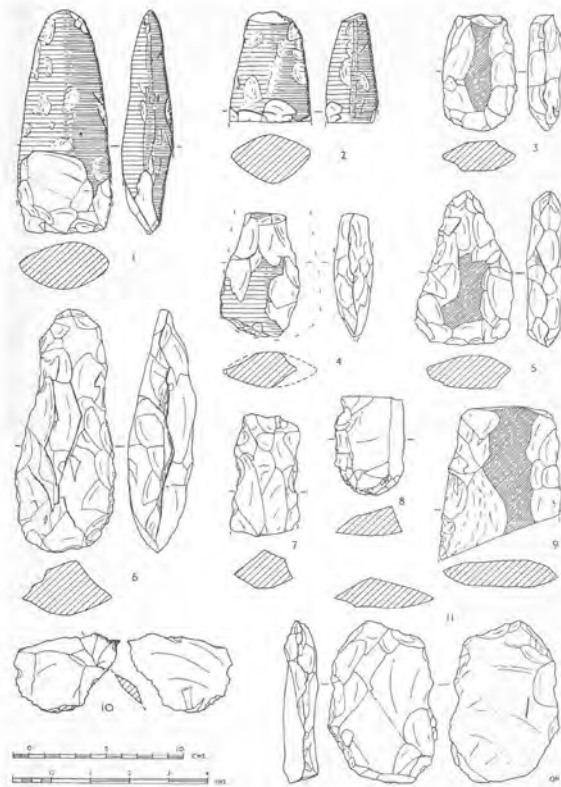


Plate 18. Finds from Maes y Bryn in 1961 (Davies 1961, Fig 1)

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 under grass, and it is hard to believe that it was ploughed so 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.

In 2021 14 test pits were dug taking the rough central reference for the site given by Davies as a starting point (SH 705738). These succeeded in locating the artefact scatter, but finds from molehills and Davies’ description indicated that it was much larger than the area investigated in 2021. The aim in 2022 was to investigate a larger area to try and determine limits to the scatter and to identify any variation across the area.

Please note that while the name of Maes y Bryn has been used for this site, this is for convenience 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. However, Maes y Bryn correctly refers to the ffridd on the south-eastern side of Afon Maes y Bryn (see Kenney and Smith 2022, 17).

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 19). 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

Figure 4. 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

Lidar data copyright Snowdonia National Park Authority

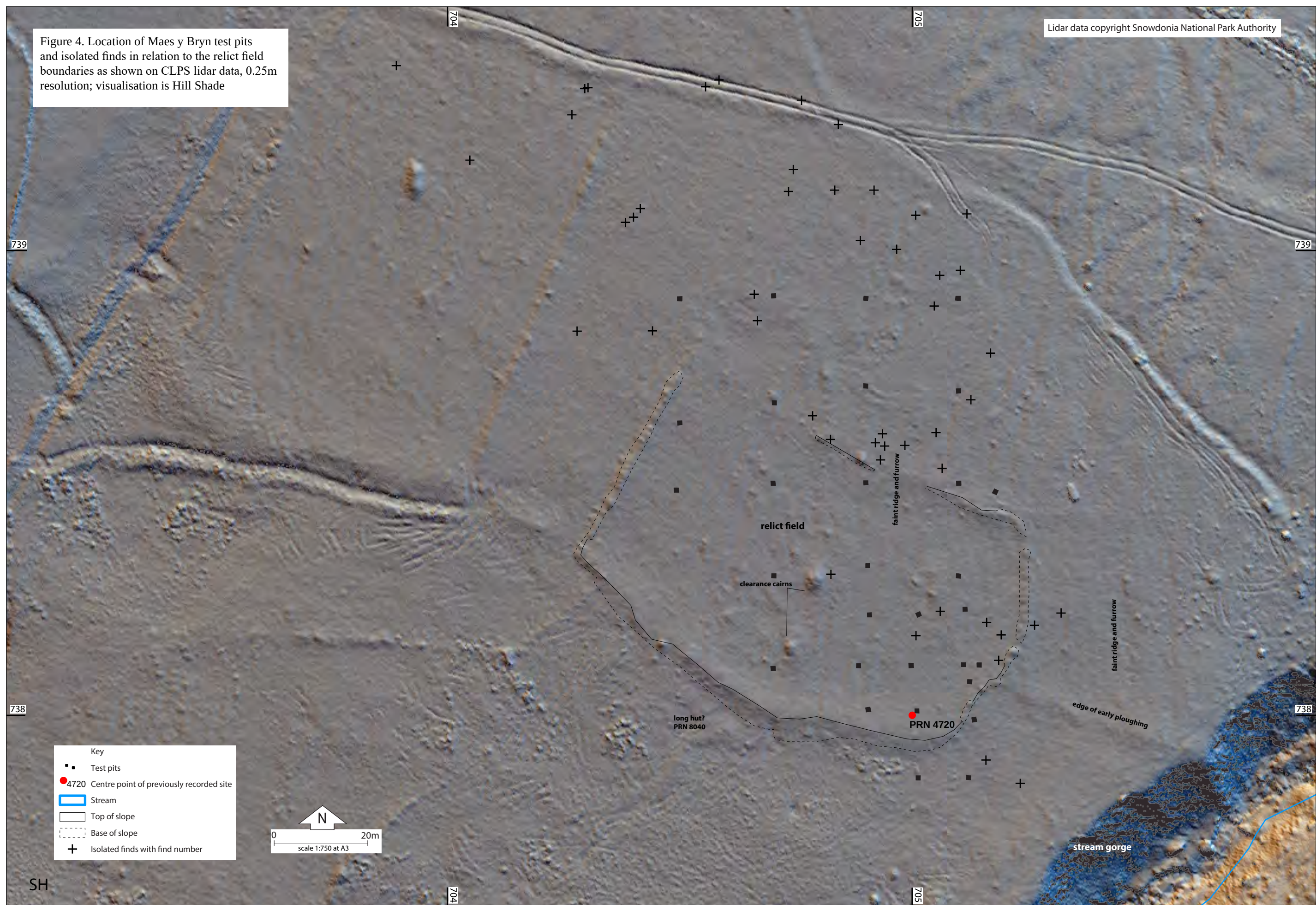




Plate 19. Location of the Maes y Bryn site to the east of Dinas, arrow points to site (photograph by David Longley)

the lidar¹ (light detection and ranging) plot (Figure 4). The lidar data used in this figure is part of a high-resolution 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.

Test pits

Test pits were laid out in a grid 20m apart extending out from the area investigated in 2021, covering most of the relict field and extending further upslope to the north (Figure 5). The area now investigated measures about 85m by 65m and 16 test pits were dug in addition to the 14 dug in 2021.

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 (Plate 20). TP57 contained a boulder (Figure 6), which was just concealed under the turf (Plate 21), but in general test pits were positioned to avoid boulders. In the test pits dug in 2022 (TP55 to 70) this natural subsoil was between 0.20m and 0.36m below the ground surface, so the ploughsoil was thin across the area (Figure 7) (Plate 22). The only exception was TP56, in which the natural subsoil was 0.45m below the surface. This had a different depositional history to the other test pits and will be discussed separately below.

In all the test pits there was a dark or mid grey-brown silty loam, with a varying amount of stone that was well mixed and represented a ploughed soil layer under the topsoil. In some test pits this layer could be divided into

¹ The casing of “lidar” follows Deering and Stoker 2014.

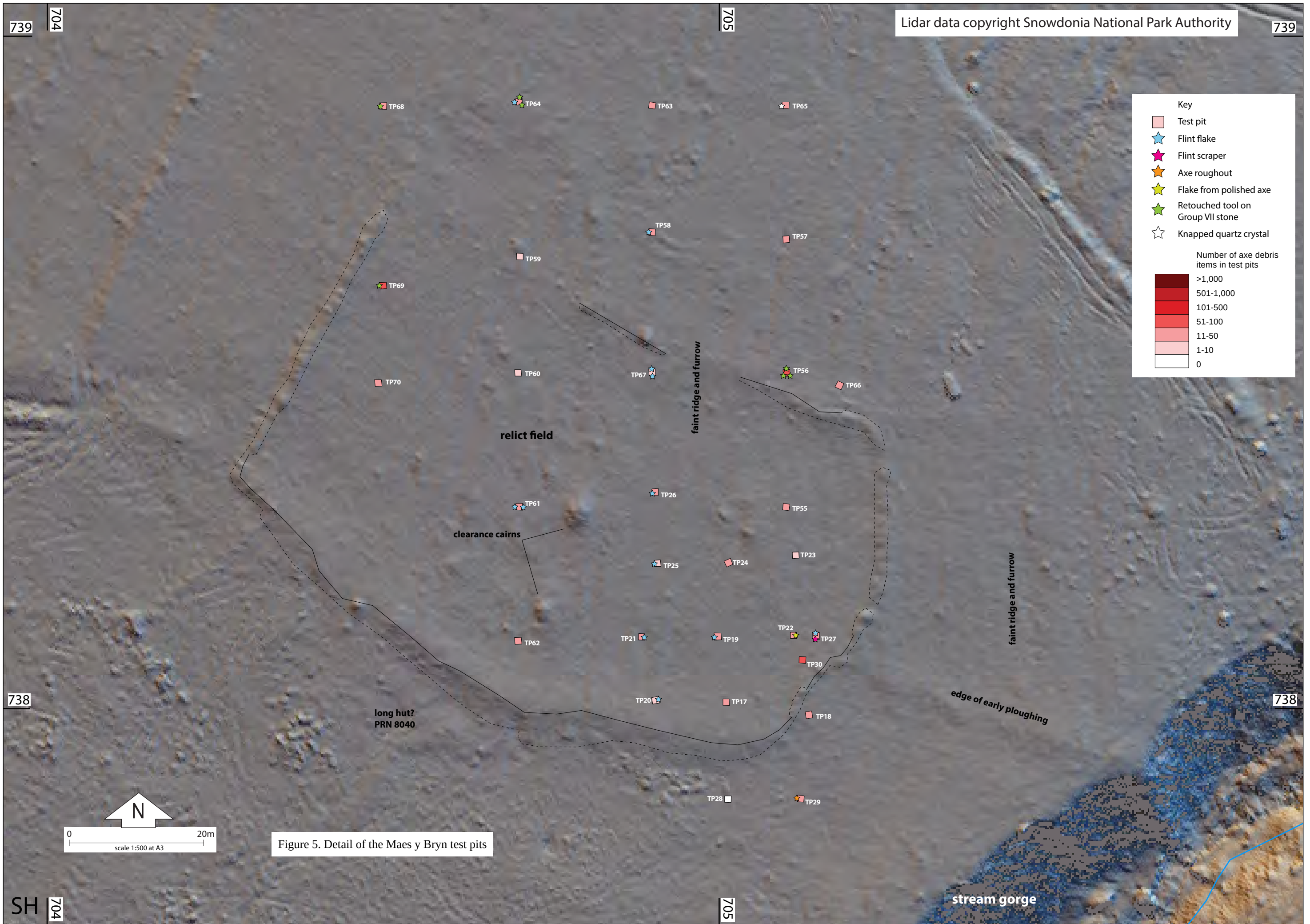




Plate 20. TP60 from the west. A typical test pit with ploughsoil containing occasional stones and yellow-brown clay in the base



Plate 21. TP57 from the south, showing boulder



Plate 22. West facing section of TP65, one of the shallowest test pits



Plate 23. TP55 from the south, showing irregular hollow fully excavated

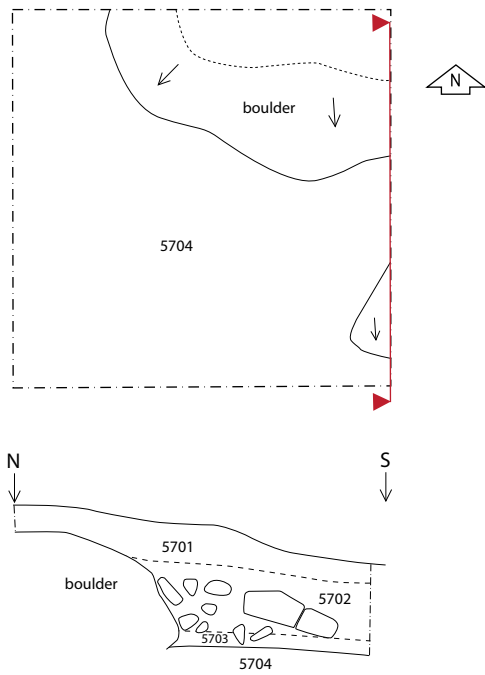


Figure 6. Plan of TP57, showing boulder and west facing section

0 1m

Figure 7. West facing section of TP63, showing typical soil profile and depth

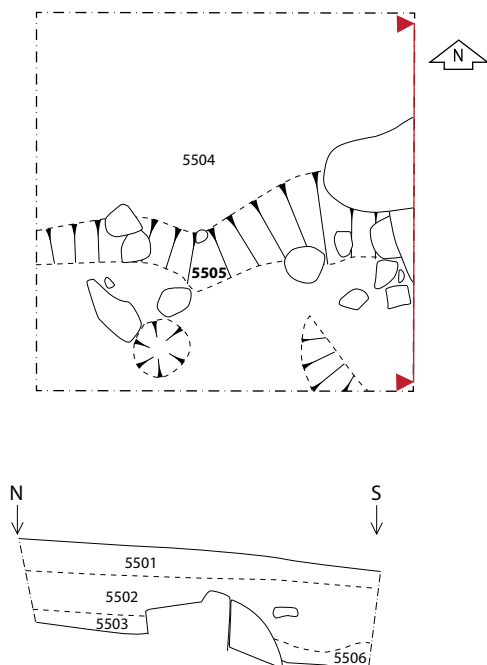
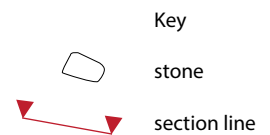
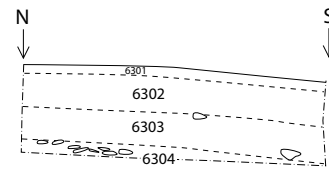
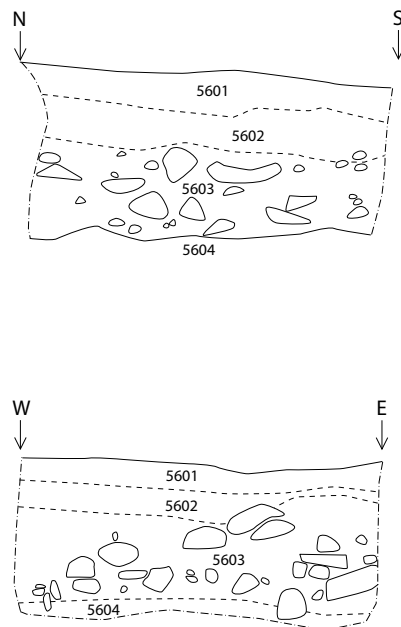


Figure 8. Plan of TP55, showing irregular hollow [5505], with west facing section

0 1m

Figure 9. West and south facing sections of TP56 with grey silt layer 5603



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. However, where the ploughsoil was thin only an interface layer where the ploughsoil mixed with the natural was present and there was no lower ploughsoil, as more recent ploughing had disturbed any relict soil layers.

In TP55 a dark grey-brown silt with occasional small stones and lenses of charcoal (5506) was seen in the southern part of the trench. On excavation this proved to be about 0.10m thick and filled an irregular linear hollow with undulating sides and base [5505] (Figure 8, Plate 23). The irregular character of this with hollows in the base of the cut suggested that this was the result of burrowing or root action. TP64 had a 0.18m wide straight linear cut [6405] running north-north-east to south-south-west across the test pit base (Plate 24). This was 0.06m deep and filled by a yellow-brown silty loam (6406), essentially the same as the lower ploughsoil under which it was sealed. This appeared to be a plough scar and indicates the depth of the ploughing as this was about 0.26m below the ground surface.

In TP56, under a thin ploughsoil was a grey clayey silt (5603) with about 35% stones up to 0.3m long (Figure 9, Plate 25). The layer was 0.26m deep and was greyer in colour and less mixed in appearance than layers in the other test pits. The density of larger stones was also higher than elsewhere. This test pit was located just uphill from the remains of the northern bank defining the relict field. The stony bank had probably protected the area of the test pit from more than superficial ploughing and layer 5603 was probably undisturbed. The stone in this layer may have originated from the field bank, but the stone from the bank would be more likely to have fallen downhill and the stone in the test pit did not slope towards the bank. It is therefore possible that there was another origin for the stone. To investigate whether this layer continued behind the bank TP66 was dug about 7m east of TP56. However, TP66 was only 0.29m deep, did not contain the grey silty layer and was fairly stone-free. TP56 therefore appears to have detected a restricted area of undisturbed deposits, that do not continue all along the back of the bank. This grey silt deposit (5603) is probably of some significance because, as well as containing axe-flakes, it produced three scrapers made on flakes of microdiorite (Plate 26).

All the test pits produced some axe-working debris but some had very few pieces. There seemed to be little material in the area of TPs 59, 60 and 67, but more further west, north and east. There were few complete flakes, suggesting breakage due to trampling. There was a high proportion of smaller flakes, which had probably been produced using a soft hammer and were indicative of thinning and shaping bifacial objects, such as axeheads. The characteristics of the larger flakes suggested that they had been produced using a stone hammer. There were no large primary flakes and the roughouts must have been created elsewhere and brought to this site for finishing. Two cobbles of quartzite and a piece of sandstone are suggested as possible hammerstones, though only the sandstone had a possible working facet.

Flint flakes and a flint thumbnail scraper were found in 2021 and 7 more flint and chert flakes were recovered in 2022 (Figure 10). These were all waste pieces from beach pebble flint. The flint pieces from TP 61 and 67 support the concentration of activity in the south-eastern corner of the area investigated, but finds from TP58, and especially TP64, suggest there may be another focus of activity further up the hill slope. TP64 produced a scraper on a flake of microdiorite, as well as the three scrapers from TP56 (Figure 10). SF5606 is an end scraper, SF5607 and SF6405 are combined end and side scrapers and SF5604 is a combined end scraper and edge retouched knife. Piercers made on microdiorite flakes were found in TP64 and TP69 (SF6407 and SF6902) and a retouched chopping tool (SF6803), made on a thick flake came from TP68. The three scrapers from TP56 suggest a focus of settlement activity near that test pit but the distribution of the other retouched pieces reinforces the impression of an increase in activity in the north-western part of the area investigated. 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. However, their quality and apparent lack of use could indicate that the scrapers were being made on this site for use elsewhere (Smith, current report, section 4).

The find of a piece of probably crystal quartz in TP65 (SF6504) also supports activity higher up the hill slope (Figure 10). The use of crystal quartz in North Wales appears generally to be restricted to the Early Neolithic (Kenney 2009, Kenney *et al* 2020), though some crystal quartz was also used on a Mesolithic site on Bardsey Island (Ynys Enlli) (Edmonds *et al* 2009). Smith (current report, section 4) suggests that the scrapers are of a Later Neolithic date, while the scalar flint pieces are likely to be Early Neolithic, and it is likely that this area was used for occupation at different times.

No dug features 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. The most likely place to find undamaged cut features and undisturbed deposits would appear to be near TP56, and this location would be worth while exploring with a larger excavation trench. However, a piece of burnt clay found in TP64 could have been part of an oven or hearth structure.



Plate 24. TP64 from the south, showing probable plough scar

Plate 25. TP56 from the south showing layer 5603



Plate 26. Microdiorite scraper and flake in situ as found in TP56

Molehill finds

Axe flakes were recovered from molehills within the area investigated by the test pits but also further north and north-west up the hill slope. This indicates that the edge of the artefact scatter has not been reached by the test pits on these sides. A more extensive molehill survey might clarify the full extent of the artefact scatter, though this does rely on an even spread of molehills, which is often not the case. These flakes were generally small flakes from secondary working of roughouts. There were no primary flakes from initial shaping of scree, so they fit with the flakes collected from the test pits.

Summary of finds

Pieces of white quartz were collected in 2021 but all appeared to be natural, unworked stone. White quartz was therefore not collected in 2022 unless there was any suggestion of a piece being worked.

Test Pit	Type of object	No of items	Total weight of items (g)
55	Axe debris	25	208
56	Axe debris	53	1292
	Scraper on microdiorite	3	436
	Rounded pebble/hammerstone?	1	1010
57	Axe debris	26	429
	Burnt stone	2	468
	Quartz	1	6
	Incised pebble??	1	215
58	Axe debris	37	316
	Flint flake	1	2
	Burnt stone	1	57
59	Axe debris	8	542
	Quartz	1	124
60	Axe debris	3	27
	Burnt stone	1	210
61	Axe debris	32	350
	Flint flakes	3	12
62	Axe debris	27	585
63	Axe debris	37	180
64	Axe debris	48	306
	Flint flake	1	2
	Scraper and piercer on microdiorite	2	56
	Rounded pebble/hammerstone?	1	679
	Burnt clay	1	57
65	Axe debris	38	436
	Crystal quartz	1	1
66	Axe debris	30	290
67	Axe debris	9	20
	Flint/chert flakes	2	1
68	Axe debris	48	971
69	Axe debris	63	296
70	Axe debris	20	89
Molehills	Axe debris	46	864



SF5604



SF5607



SF6405



SF5606

0 40mm
scale 1:2

Figure 10. Finds from the Maes y Bryn test pits (SF5804, 6104, 6105 and 6404 are flint, SF6504 is crystal quartz, and the rest are Group VII stone, upper finds scale 1:2, lower finds scale 1:1)



SF6407



SF5804



SF6104



SF6504

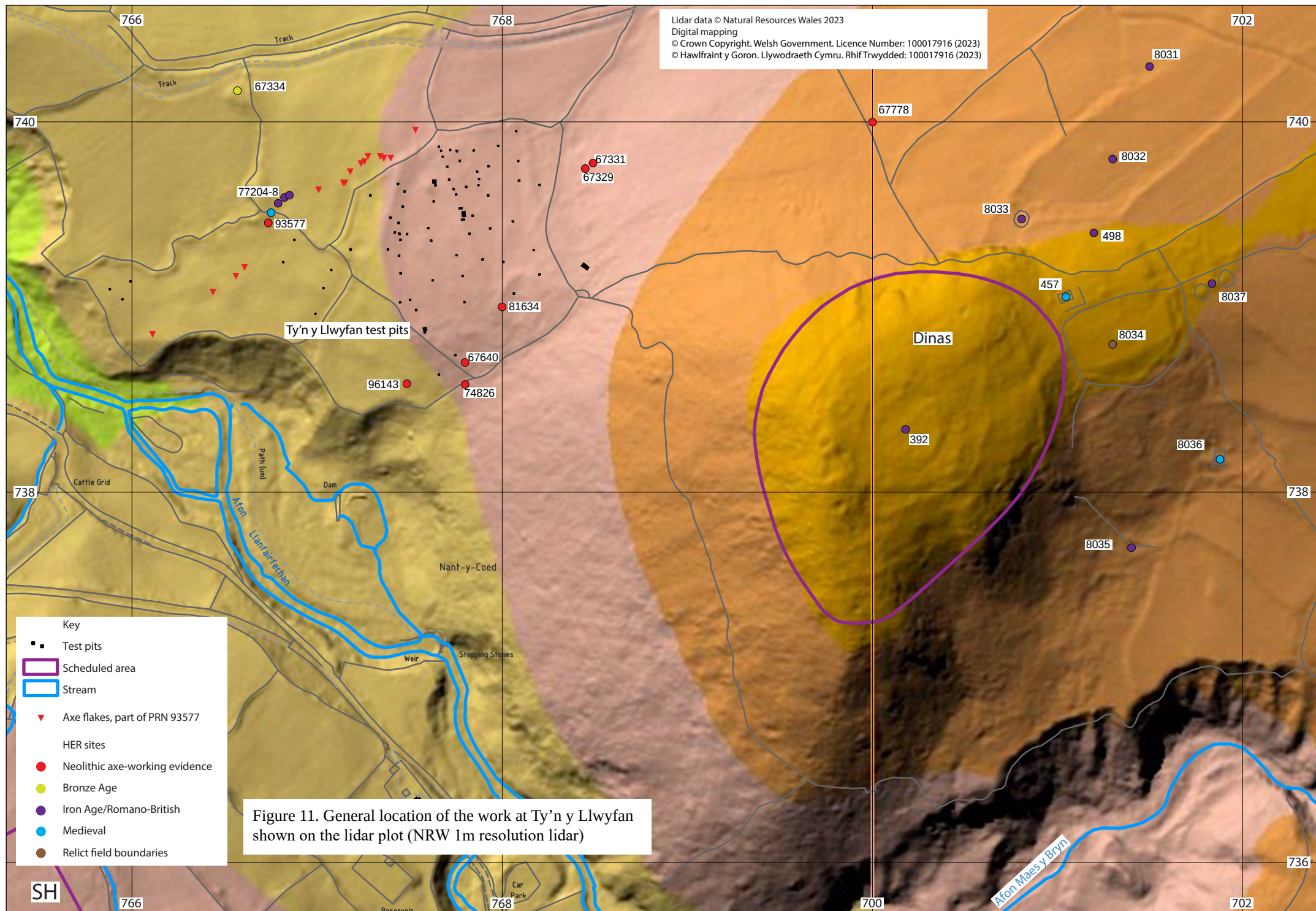
0 20mm
scale 1:1



SF6404



SF6105.1



3.2. Ty'n y Llwyfan

Topography

Much of the southern, eastern, and western sides of Dinas are covered in natural scree 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 main field investigated lies just on this boundary between scree and glacial till (Figures 11 and 12). 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 this field but most of the field is beyond the scree (Figure 12). In 2022 investigation continued into a field further west, down the slope. This lower field slopes fairly steeply down from east to west and it runs along the northern side of the deep gorge carved by the Afon Llanfairfechan (Figures 11 and 12).

The lower part of the main field slopes steeply but running across it are two lynchets forming narrow terraces (Figure 13). The upper lynchet (PRN 100566) runs nearly north-north-west to south-south-east, but slopes up hill. The lower, northern part of this terrace is about 19m wide, but the southern part of the terrace is only about 7m wide. However, it ranges in height from about 1.5m at the northern end and 3.5m at the southern end, so the narrower part of the terrace is the higher. The lower lynchet (previously referred to as the Middle Terrace) (PRN 100567) curves around the hill slope and is fairly flat and level. This is up to about 11m wide. The height of the lower lynchet is harder to determine as it merges with the hill slope, but in places it appears to be about 6m high. These lynchets have been created by soil movement as a result of ploughing, but it is also probable that the faces of the lynchets were revetted with stone.

Along the eastern, upper side of the field is an irregular scarp formed by the underlying scree, though the scree does seem to extend a little west of this. Running almost north from the scarp, down the hill slope, is a low stony bank (PRN 100565) (Plate 27), nearly parallel to the upper lynchet. This bank ends near a curving, heavily denuded stone wall that forms a small enclosure in the north-eastern corner of the field (PRN 100564) (Plate 28). The condition of this enclosure wall suggests considerable antiquity, but it does seem to be related to the upstanding field walls and the lidar does not show it continuing under these walls. Probably this indicates that instead of the enclosure being later than it looks the field walls are actually much earlier and have been reused, possibly even since the Iron Age. The curving, irregular lines of the field walls support this.



Plate 27. Stony bank (PRN 100565) along northern side of Ty'n y Llwyfan field, from the south-west



Plate 28. Enclosure (PRN 100564) in the corner of Ty'n y Llwyfan field, from the south-west

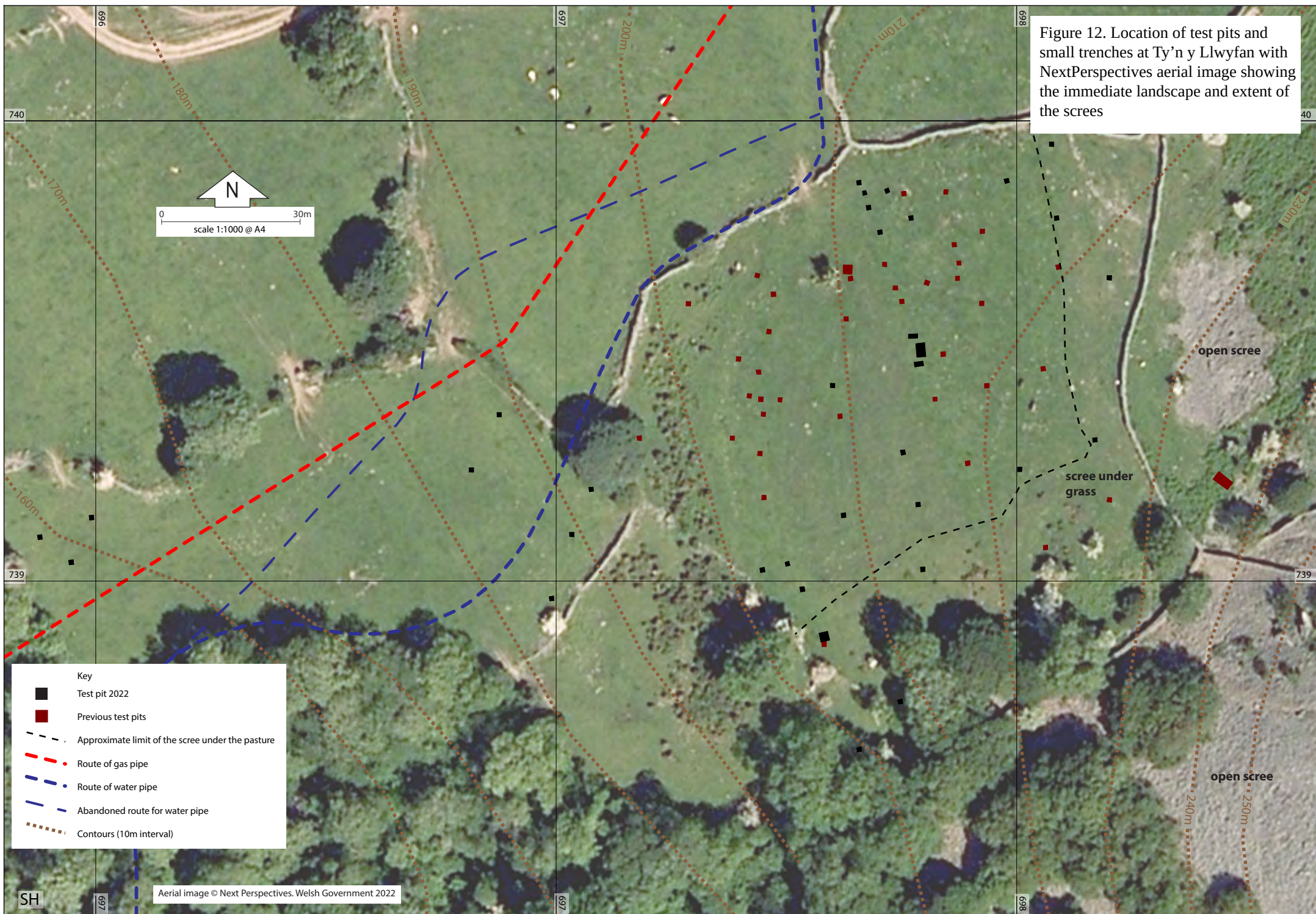
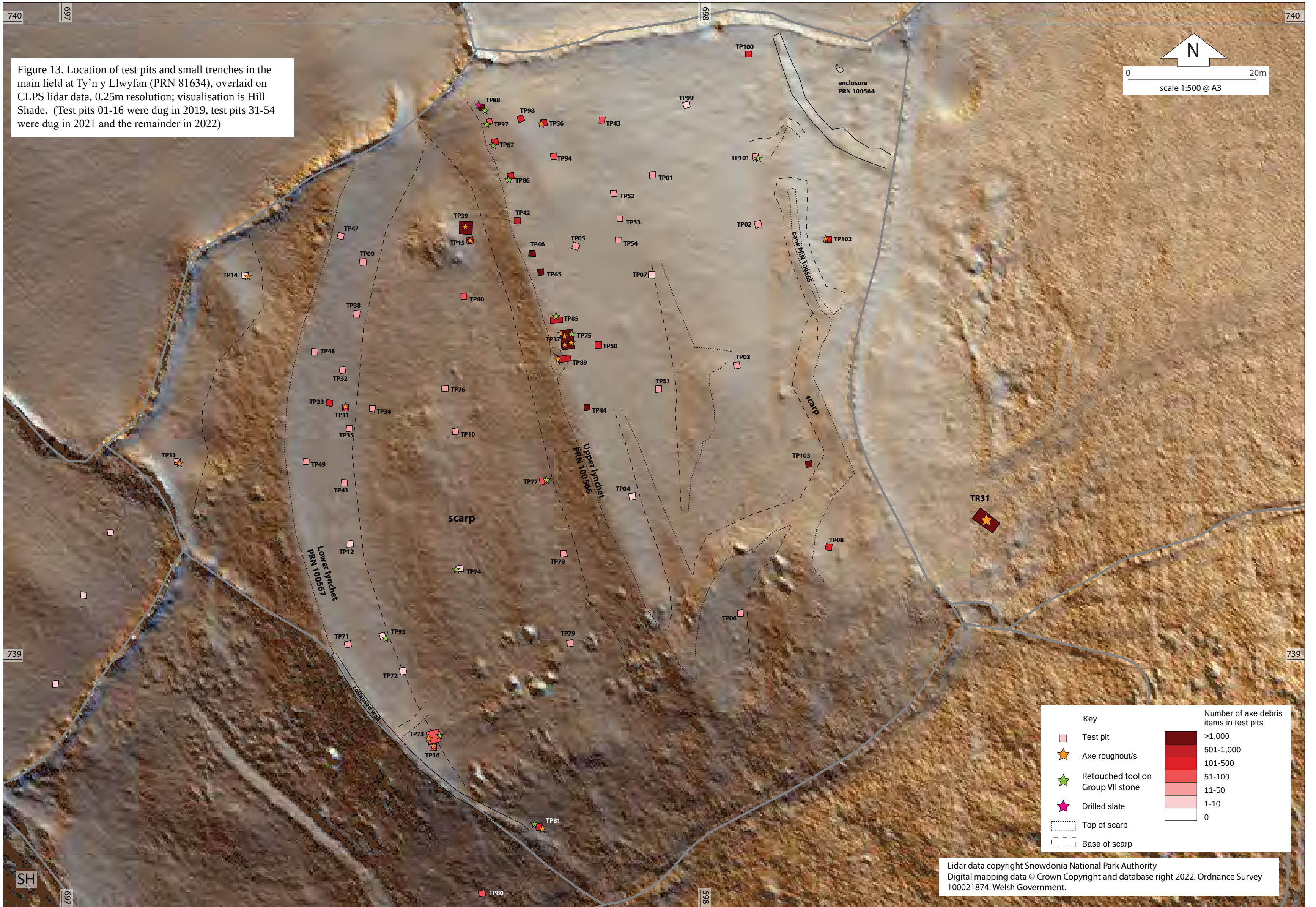


Figure 13. Location of test pits and small trenches in the main field at Ty'n y Llwyfan (PRN 81634), overlaid on CLPS lidar data, 0.25m resolution; visualisation is Hill Shade. (Test pits 01-16 were dug in 2019, test pits 31-54 were dug in 2021 and the remainder in 2022)



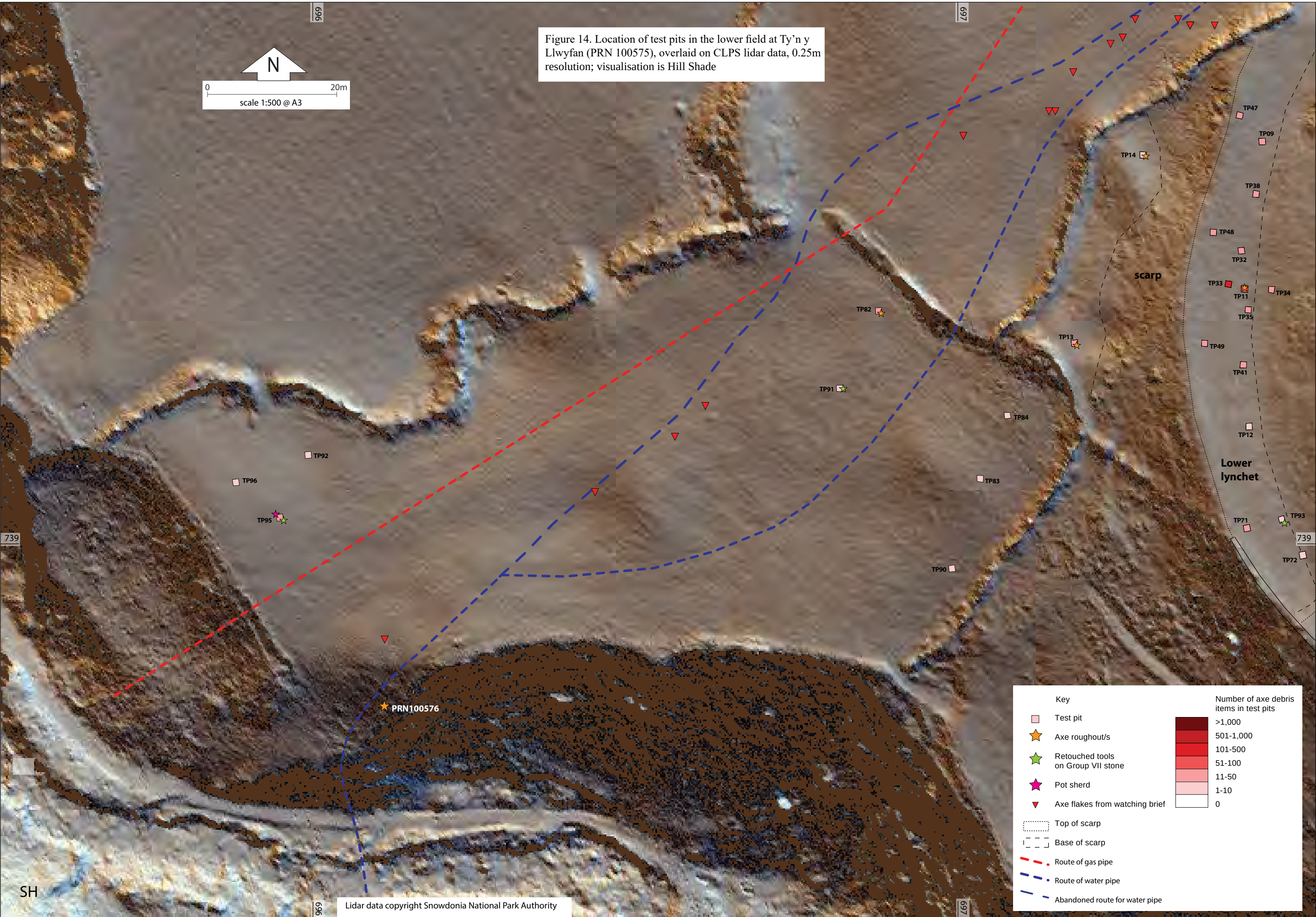


Figure 14. Location of test pits in the lower field at Ty'n y Llwyfan (PRN 100575), overlaid on CLPS lidar data, 0.25m resolution; visualisation is Hill Shade

Key

Test pit

Axe roughout/s

Retouched tools on Group VII stone

Pot sherd

Axe flakes from watching brief

Top of scarp

Base of scarp

Route of gas pipe

Route of water pipe

Abandoned route for water pipe

Number of axe debris items in test pits

>1,000

501-1,000

101-500

51-100

11-50

1-10

0

Lidar data copyright Snowdonia National Park Authority

These traces of ploughed lynchets and enclosures show that although this is a steep field it was fairly heavily used for agriculture in the past and this will have influenced the distribution of axe debris found. The latest ploughing of the field occurred in the 1970s and included ploughing the entire field, including the steep scarps (Gareth Wyn Jones, pers. com.), so none of the field has been free of ploughing, apart from the south-eastern side and the eastern margin including and beyond the low bank. Along the south-eastern side of the field there is exposed scree or scree under a thin layer of soil, and it is covered with oak trees of considerable age.

The test pitting in 2019 and 2021 demonstrated that the narrow terraces are lynchets and in 2022 some of the test pits were located to further investigate these structures and explore their impact on the distribution of axe debris.

The lower field also slopes steeply down from east to west (Plate 29). It has no evidence of ancient fields running through it, though it has obviously been ploughed, probably more intensively so than the main field. There are two natural shelves in the slope (Figure 14) and the field becomes more level towards the lower, western end. This field runs along the northern side of the steep gorge formed by the Afon Llanfairfechan. Access to this gorge would have been very difficult from this field in most places but in its lower corner the slope is much less steep, providing what is almost a natural ramp down to the river. A high-pressure gas pipeline runs across the field. In 2018 a mains water pipe was replaced and laid along a new route. The route across this field was monitored by Aeon Archaeology (Dean and Cooke 2019) and some Roman period features were found near the gateway, so the route was abandoned and another route created running round the edge of the field, in which the pipe was laid. The test pitting in this field had to avoid these three service routes to avoid any possible damage to the pipes and to avoid digging through already disturbed ground. During the watching brief some pieces of axe debris were found along the abandoned water pipe route (Figure 11), which indicated that this field would be worth investigation.



Plate 29. Test pitting in the lower field (CLPS)

Test pits in the main field (PRN 81634, centred on SH 698 739)

Sixteen test pits were dug across the main field in 2019 and 23 test pits in 2021. Twenty-one 1m square test pits and one 2m by 2m pit were dug in this field in 2022. There were also three small trenches but they are described and discussed separately below. The test pits were located to expand the information gained from the previous work (Figure 13).

The scree

Several test pits were dug to locate the edge of the scree and to investigate the nature of the scree and the type of working within it. Along the eastern side of the field test pits TP99 to 103 were dug near the presumed edge of the scree. These were all shallow, except TP100, with about 0.15m of turf and topsoil but little or no ploughsoil. TP102 had turf directly over the scree (Plate 30) and clearly no ploughing had occurred along the rocky edge of the field beyond the low bank. TP100 had up to 0.4m of ploughsoil, a mid-brown gravelly silty loam with c.30%



Plate 30. TP102 from the west, showing natural scree immediately below the turf

Plate 31. TP100 from the west showing scree under a depth of ploughsoil



Plate 32. Scree in TP101 from north



Plate 33. Scree in TP80, from the south



Plate 34. South facing section of TP80, showing depth of scree



Plate 35. West facing section of TP81, showing depth of scree



Plate 36. Roughout (SF8103) in situ in TP81, from the south

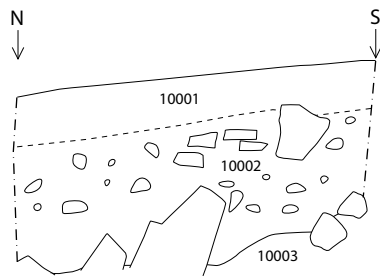


Figure 15. West facing section of TP100, showing ploughsoil (10002) over scree (10003)

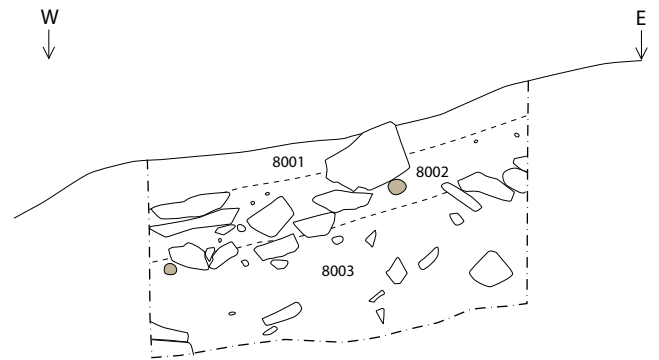


Figure 16. South facing section of TP80, showing scree (8002) with glacial clay (8003) below



Figure 17. North facing section of TP88, showing colluvium (8803) and the original slope of the glacial clay (8805)

0 1m

Key

-  stone
-  modern root
-  axe debris

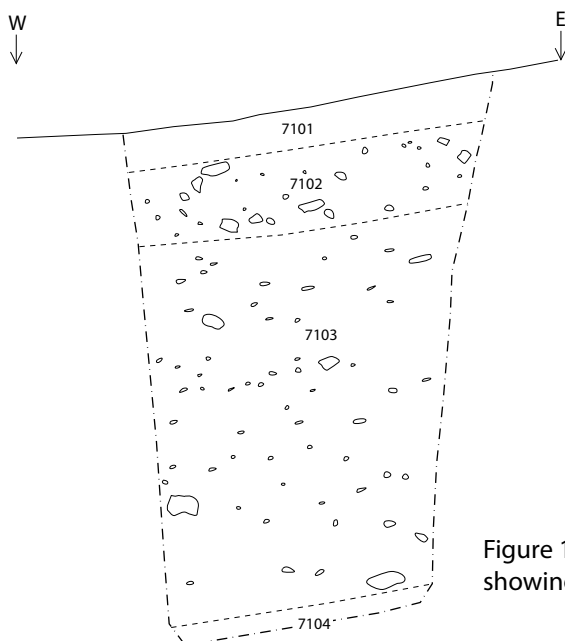


Figure 18. South facing section of TP71, showing depth of lower lynchet deposits

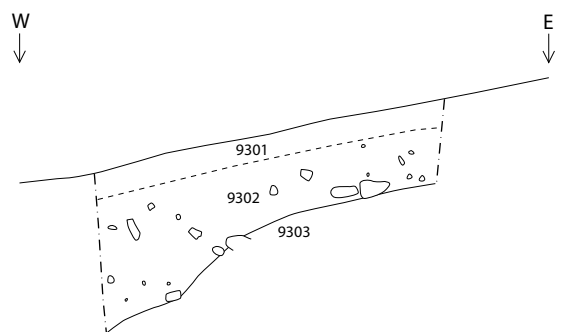


Figure 19. South facing section of TP93, showing shallow deposits on uphill side of lower lynchet

stones up to 0.2m long, overlying the scree (Plate 31). The field slopes down towards its northern boundary and ploughsoil has clearly moved downslope and built up against that northern boundary, completely burying the scree in this area. No scree was seen in TP99 and TP103, but test pits TP100, 101 (Plate 32) and 102 had natural scree between 0.15m and 0.40m below the ground surface (Figure 15). TP02 dug in 2019 also had no scree, so TP 100 and 101 must have been on the very edge of the scree deposit. While there were very few pieces of axe debris in TP99, there was a considerable number in TP100, 101 and 103, and a large quantity in TP102, which was only dug to a depth of 0.35m before being abandoned as the quantity of scree made its excavation too difficult in the time available. TP102 revealed axe working directly on the scree, and include large pieces from primary working, which was probably largely undisturbed. The other test pits probably contained material deriving from the working on the scree.

Test Pits TP80 and 81 investigated the scree under the trees on the south-eastern side of the field. Here the ground slopes very steeply but there are slight terraces within the slope. Most of these could be natural but TP81 was on the edge of a shelf that had been used as a field boundary. Scree was reached in TP80 0.27m below the surface (Plate 33) but it was directly under the turf in TP81. In TP80 the scree formed a layer 0.25m thick and overlay the glacial clay (Plate 34, Figure 16). In TP81 the scree layer was about 0.3m deep, with a loose colluvial layer below it before glacial clay was reached (Plate 35). The scree layer, at least at these locations, is therefore relatively thin. This was also seen in TP08, dug in 2019, where the scree was only 0.1m thick over glacial clay. A great depth of scree is therefore not expected towards the edges of the area of scree. Both TP80 and 81 produced a considerable quantity of flakes, many very large, and clearly primary flaking was taking place here. TP81 also produced a roughout (Plate 36). Numerous roughouts are visible in the open screes under the trees all down the south-eastern side of the field and around TP08. This area has been rapidly inspected but the precise locations of roughouts have not yet been recorded.

Lynchets

The upper lynchet or upper terrace has been investigated in previous seasons, which has shown that deposits on the uphill side of the terrace are generally fairly shallow (TP51, 52, 53 and 54 were 0.3m deep down to the natural glacial clay) and the downhill edge is very deep (TP 42, 44, 45 and 46 had depths between 0.72m and 1.05m). The difference in depth is due to a build-up of relict soil layers that are colluvial deposits moved downslope through the action of ploughing, and at the lowest levels possibly through natural processes. Large quantities of axe debris were recovered from the downhill test pits and very little from the uphill ones.

Test pits 86, 87, 94, 97 and 98 were dug to allow the school children and YAC members to carry out excavations and they were not dug to full depth. However, they confirm the density of axe debris at the northern end of the upper lynchet, and not just at the edge of the lynchet. TP88 was dug to a full depth of 0.9m and had a lower ploughsoil or colluvium layer 0.52m thick under the more recent ploughsoil (Plate 37, Figure 17). This layer (8803) was a mid-yellow-brown clayey silt with c.20% small stones and gravel and occasional flecks of charcoal. The whole test pit was particularly rich in axe debris but layer 8803 had a high concentration of small flakes suggestive of fine working. This layer also produced a small piece of slate with two unfinished drill holes on one side and one unfinished drill hole on the other (SF8805, Figure 20). While this is very difficult to date its presence low down in the test pit in association with quantities of axe debris means that it could be of a Neolithic date.

The lower lynchet (Middle Terrace) has also been extensively investigated with just some additional test pitting at the southern end in 2022. TP47, TP48 and TP49 were located on the terrace edge were between 0.71m and over 0.86m deep, while test pits TP32, TP34, TP35, and TP38, located at the uphill side of the terrace, had depths between 0.30m and 0.36m. Colluvial deposits and ancient ploughsoil having built up to create the terrace, which is fairly level and clearly repeatedly ploughed.

Test pit TP71 on the outer edge of the southern end of the terrace confirmed the depth of the deposits. This test pit was dug down 1.35m before the glacial clay was reached (Plate 38, Figure 18). It had 0.12m of turf and topsoil, 0.30m of ploughsoil, described as dark brown silt with c.50% small stones, and 0.90m of a mid-yellow-brown silt with c.50% small stones, which formed the lower ploughsoil or colluvium. In comparison, TP93 located on the uphill side of the terrace exactly opposite TP71, was 0.54m deep on the western side but included part of the natural hillslope sloping quite steeply down (Figure 19). TP72 in a similar position a little further south was 0.32m deep (Plate 39).

The lynchet narrows at its southern end towards a pointed corner. Just before this corner is a scarp running perpendicularly across the terrace. This scarp is about 0.3m high and fairly well-defined (Figure 20). It seems to form a small headland where most ploughing along the terrace stopped. The remains of a collapsed field wall run along the edge of the terrace at this point and can just be seen continuing under the trees to the south-east. This wall is part of a boundary that ascends the slope from the north-west, but it is possible that where it runs along the edge of the terrace it incorporates some of the original terrace revetment. However, there are no stones visible along the rest of the terrace, so it is not confirmed that this was revetted.



Plate 37. TP88 showing its location on the edge of the upper lynchet



Plate 38. South facing section of TP71, showing depth of deposits



Plate 39. TP72 from the west

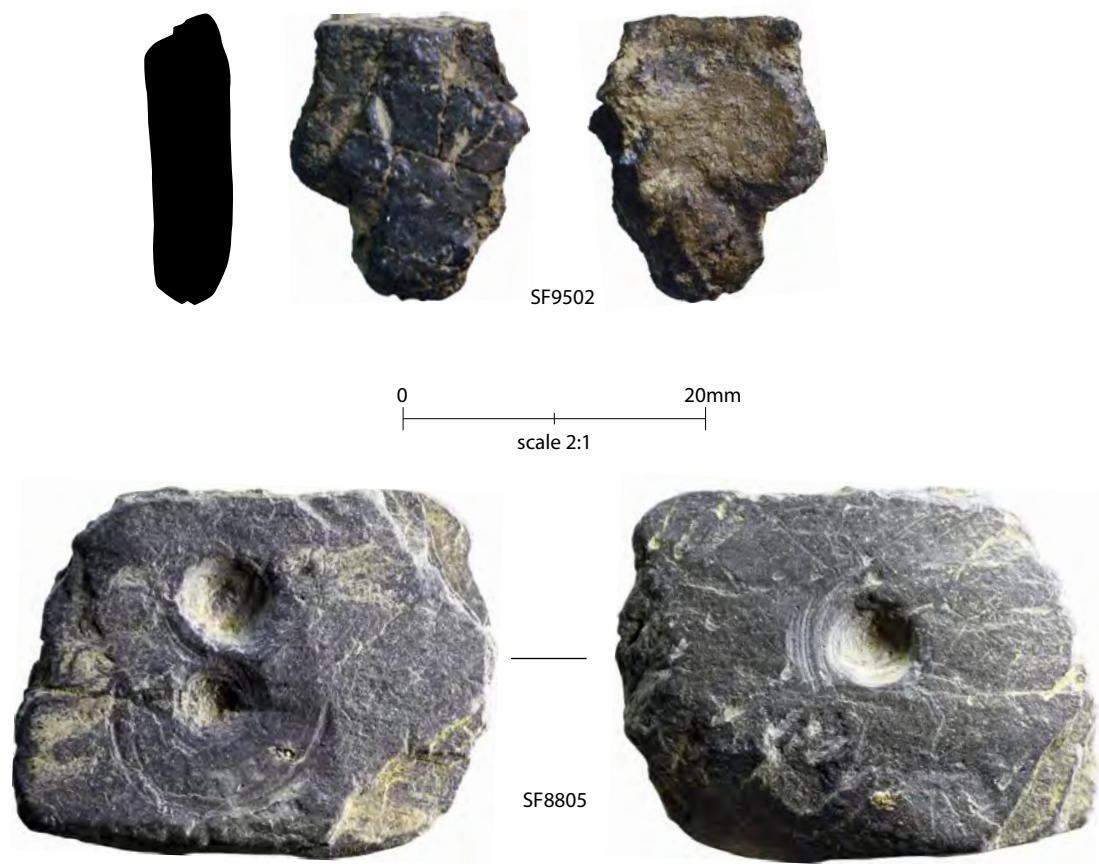


Figure 20. Pot sherd and drilled shale object from Ty'n y Llwyfan

While none of the test pits on the lower lynchet were as productive as those on the upper lynchet, the northern part of the lower lynchet did produce a general scatter of axe debris. There appeared to be a concentration of activity around TP33 and TP11, including a roughout from TP11. In contrast the test pits on the southern end of the lynchet produced little axe debris and there seems to have been no axe production activity over much of this part of the field.

In the pointed corner forming the southern end of the terrace TP16 was dug in 2019 and revealed a charcoal-rich deposit, as well as producing a roughout. To investigate the significance of the charcoal-rich deposit a 2m by 2m test pit (TP73) was excavated immediately adjacent to TP16 (Figure 21). This was excavated in the same way as the other test pits, but it was planned in detail by photogrammetry. TP73 was up to 0.57m deep and the natural scree was exposed in the base of the test pit (Plate 40, Figure 22). The scree (7304) was composed of large angular stones up to 0.6m long, large sub-rounded stones and smaller cobbles in a matrix of yellow-brown silty sand. The scree was not removed to discover its depth. Over this was 0.26m of ploughsoil or colluvial deposits described as orange-brown sandy silt. The upper part of this (7302) had fewer stones, while the lower part (7303) had about 50% stones, as it mixed with the upper part of the scree. The turf and topsoil was 0.10m deep. This shows that the screes extend at least this far into the field but there has been some ploughing or at least soil build-up over the screes. Unlike the test pits a little to the north there were some pieces of axe debris from this test pit, including a roughout, indicative of axe-working on the screes.

In the south-western corner of the test pit was a small pit [7307]. About a quarter of the pit was seen in the trench, and this appeared to be sub-oval in



Plate 40. TP73 showing natural scree (7304) and part of a pit [7307] in the top left corner

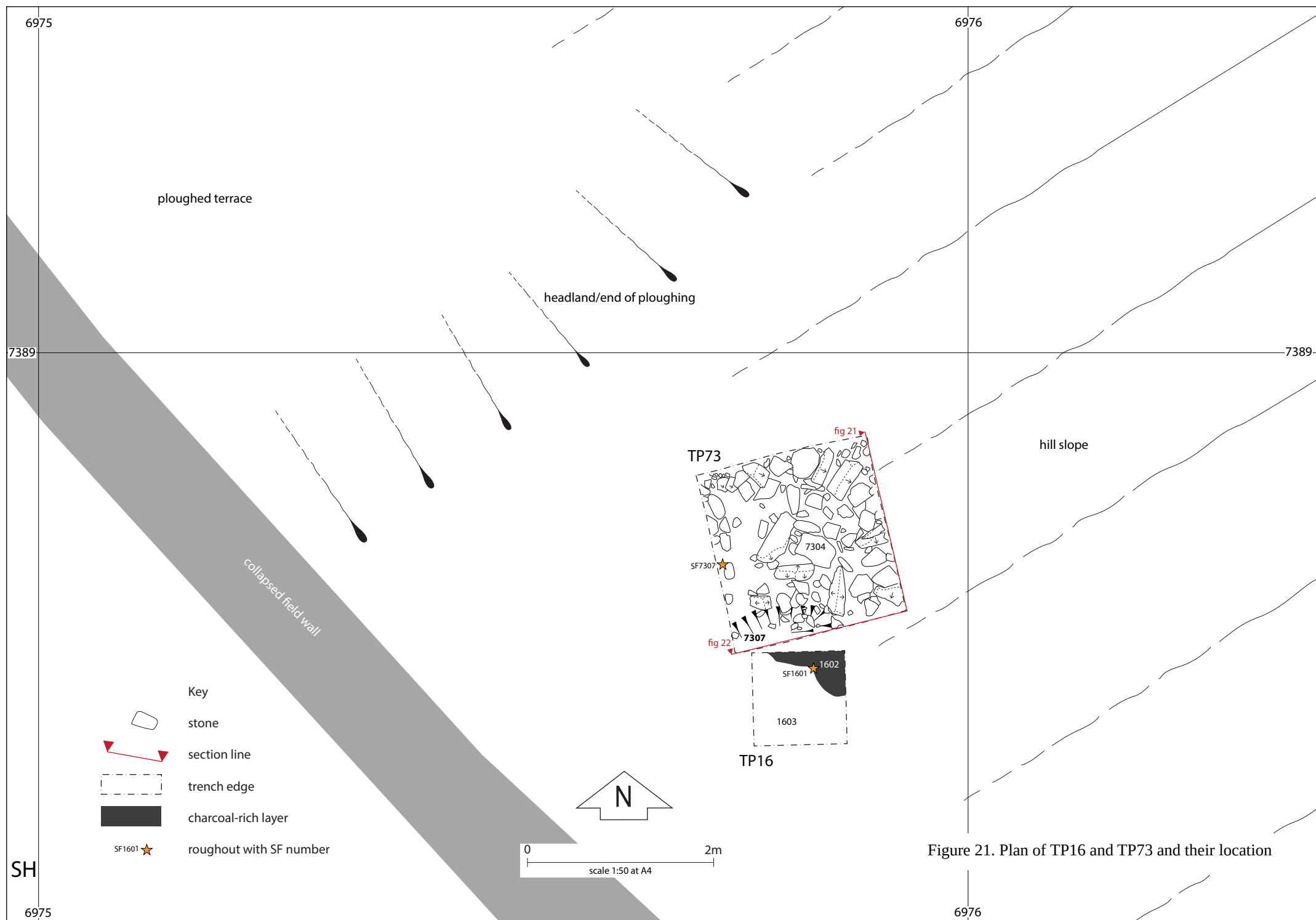


Figure 21. Plan of TP16 and TP73 and their location

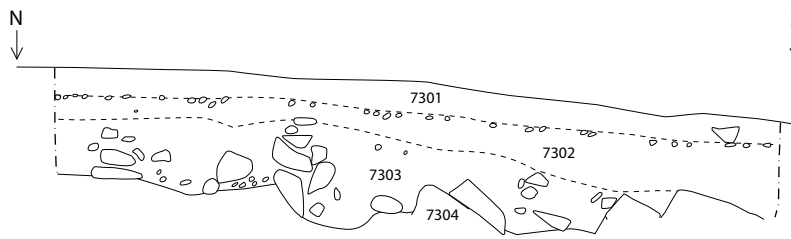


Figure 21. West facing section of TP73, showing ploughsoil (7302/7303) over scree (7304)

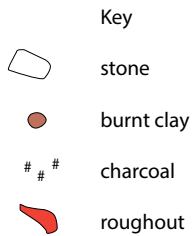


Figure 22. North facing section of TP73, showing pit [7307]

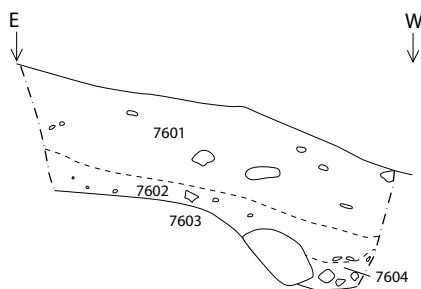
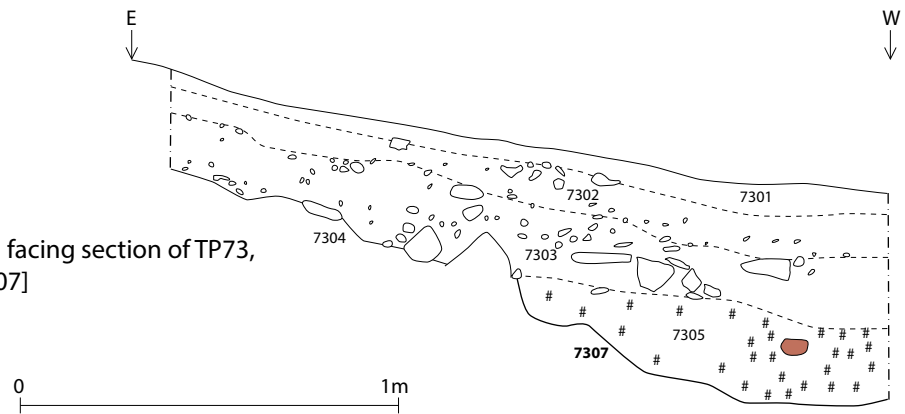


Figure 23. North facing section of TP76, showing the slope of the central scarp

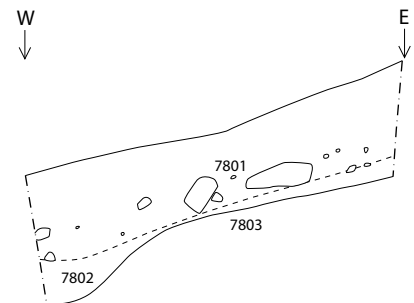


Figure 24. South facing section of TP78, showing the slope of the central scarp

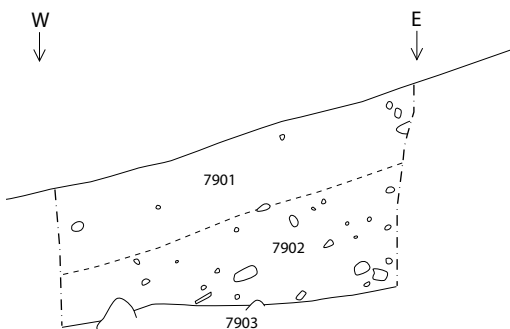


Figure 25. South facing section of TP79, showing the slope of the central scarp

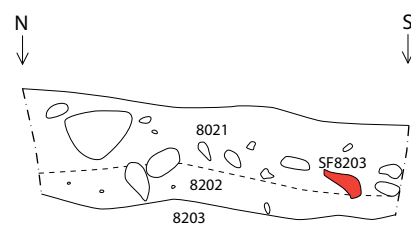


Figure 26. West facing section of TP82, with roughout SF8203 *in situ*

plan with fairly steep north side, more gradually sloping east side and rounded base. The visible part of the pit measured 1.15m by 0.40m and it was 0.30m deep (Plate 41, Figure 23). Pit 7307 cut through the scree, explaining some irregularity in its sides, and it was filled by a very dark brown crumbly silt with patches of charcoal and flecks of charcoal (7305). Deposit 7305 contained slag and burnt clay, including pieces of furnace lining, and was sealed under the ploughsoil. The slag shows that this feature was not Neolithic, but it appears to be a pit containing waste from metal smelting. There was no evidence of intact furnace lining around the pit, so it appears that this was waste dumped in the pit from a furnace elsewhere, rather than being a furnace itself. However, the furnace was presumably close by. This is an isolated location for a furnace if it is medieval or later in date, but might be more explicable if it is Iron Age. The Iron Age hillfort on the top of Dinas is not directly accessible from here but this was probably the edge of the Iron Age field system around Dinas and there are roundhouse settlements located within that field system. Radiocarbon dates and analysis of the charred plant remains and the slag would help understand the date and nature of this activity. Pit [7307] has been allocated PRN 100568.



Plate 41. Pit 7307 in the corner of TP73, from the north

Central scarp

The steep central scarp running across the field between the upper and lower lynchets is up to about 10m high and up to about 40m wide. A small shelf in the slope had been investigated by TP15 and by a larger test pit TP39. These showed that ploughsoil had moved down the slope and collected here until it was up to 0.55m deep. Within this were large quantities of axe debris, probably originating from further up the slope. There were also some sherds of medieval pottery suggesting that at least some of the ploughing was done in the medieval period. Apart from this location only two test pits had previously been dug on this slope; TP10 (0.2m deep) and TP40 (0.40m deep). Both contained some axe debris with TP40 having most.

Within the general slope there are two rather rounded, sloping terraces, much less clearly defined than the lynchets, but most clearly seen towards the southern part of the field. These appear to be natural features rather than remains of fields, but might have been locations chosen for working axes, so test pits were located here to investigate whether these had been used or had collected material. Test pits TP74, 76, 77, 78 and 79 were between 0.23m and 0.52m deep, with TP74 being the shallowest (Plates 42, 43 and 44, Figures 24 to 26). They had between 0.15m and 0.32m of ploughsoil, generally a grey-brown clayey silt with a variable quantity of stones. Below this in TP77 was a soft yellow-brown silty clay with some stones, which appeared to be an erosion deposit filling irregularities in the glacial clay and probably of entirely natural origin. TP74 and TP76 had patches of darker material that were probably from root disturbance, and it is likely that gorse had grown on this slope at various periods, as it still does on the southern end of the slope (Plate 45).

The evidence suggests that this slope and the slight terraces on it are natural, though there has been shallow ploughing over the scarp. A small number of axe flakes were recovered from these test pits but these had probably moved down the slope from higher up and there was no axe working taking place on this slope.



Plate 42. TP76 from the west with stony natural

Plate 43. West facing section of TP77, with the upper lynchet behind



Plate 44. TP78 from the west

Plate 45. Dark patch in TP74, probably root disturbance



Trenches 75, 85 and 89 (PRN 100569, centred on SH 69779 73950)

In 2021 TP37 revealed layers of densely packed stone including natural scree and large quantities of axe debris under just 0.2m of topsoil and ploughsoil. The stone deposit was at least 0.77m deep but was not bottomed in the test pit. To investigate the extent and nature of this deposit small trenches were dug in 2022. Trench 75 was positioned over TP37 and measured 2m by 3m, and trenches 85 and 89 were positioned to the north and south of this to try to locate the limits of the deposit (Figure 28).

In trench 75, under 0.09m of turf and topsoil was 0.16m of ploughsoil (7502); a red-brown silty loam with some small stones and many flakes. In the north-east corner of the trench under 7502 was a 0.10m thick patch of reddish-brown silty loam with numerous flecks of charcoal, which extended up to 0.3m into the trench. This was probably the result of bioturbation, possibly under an area of scrub burning. Beneath this was another 0.10m of ploughsoil (7503), similar to that above but more orange in colour and stonier. This lay directly on the dense layer of stone (Plate 46). This stone deposit (generally 7504 but numbered 7506 where it was investigated in a sondage next to the northern baulk) was composed of at least 80% stones and axe debris in a brown silty loam matrix. The stones were densely packed and up to 0.20m long. A high proportion of the deposit was axe flakes and other axe debris, including a roughout (SF75124). This deposit was recorded in plan and axe debris on the surface of the deposit was lifted and individually numbered and marked on the plan (Figure 29). Most of the flakes on the surface of 7504/7506 lay horizontally, but many of those throughout the deposit also lay fairly level or slightly sloping. Flakes and other debris were distributed throughout the deposit with no obvious layers purely of flakes.

In the western part of the trench 7504 overlapped a rough line of larger stones. Some of 7504 had probably slumped downslope and a thin layer of it covered larger stones along this side of the trench. Deposit 7504 was removed in this area to expose deposit 7508, sub-rounded and sub-angular stones up to 0.45m long with a dark brown silty loam matrix (Plate 47). These stones were generally unworked, though there were some flakes between them. In a sondage dug along the northern side of the trench, 7508 could be seen more clearly. Some of the larger stones seemed to have been stacked against each other, sloping down from west to east, with medium sized stones packed around them (Figure 28, inset). A very large stone just projected through the grass at the southern end of the trench, and although initially it appeared that there was a line of larger stones here when more fully revealed it appeared that the larger stones had been dumped to form a linear deposit. The smaller stones (7504/7506) had built up against these.

In the north-eastern corner of the trench a limit could be seen to the stones 7504/7506 with a less stony deposit (7507) lying beyond. This was an orange-brown silty loam with occasional small stones and some flakes, but much fewer stones and flakes than 7504/7506. However, in section the difference between 7506 and 7507 was very difficult to determine (Plate 48). A very diffuse interface could be defined where the quantity of stone became less (Figure 28 (inset)), but it appears most likely that 7504/6 and 7507 were actually part of the same deposit that had become sorted as it moved down slope with more stones settling out in the western part and towards the top of the deposit.



Plate 46. Trench 75 from the east, showing stone deposit 7504. The square hole is TP37 dug in 2021

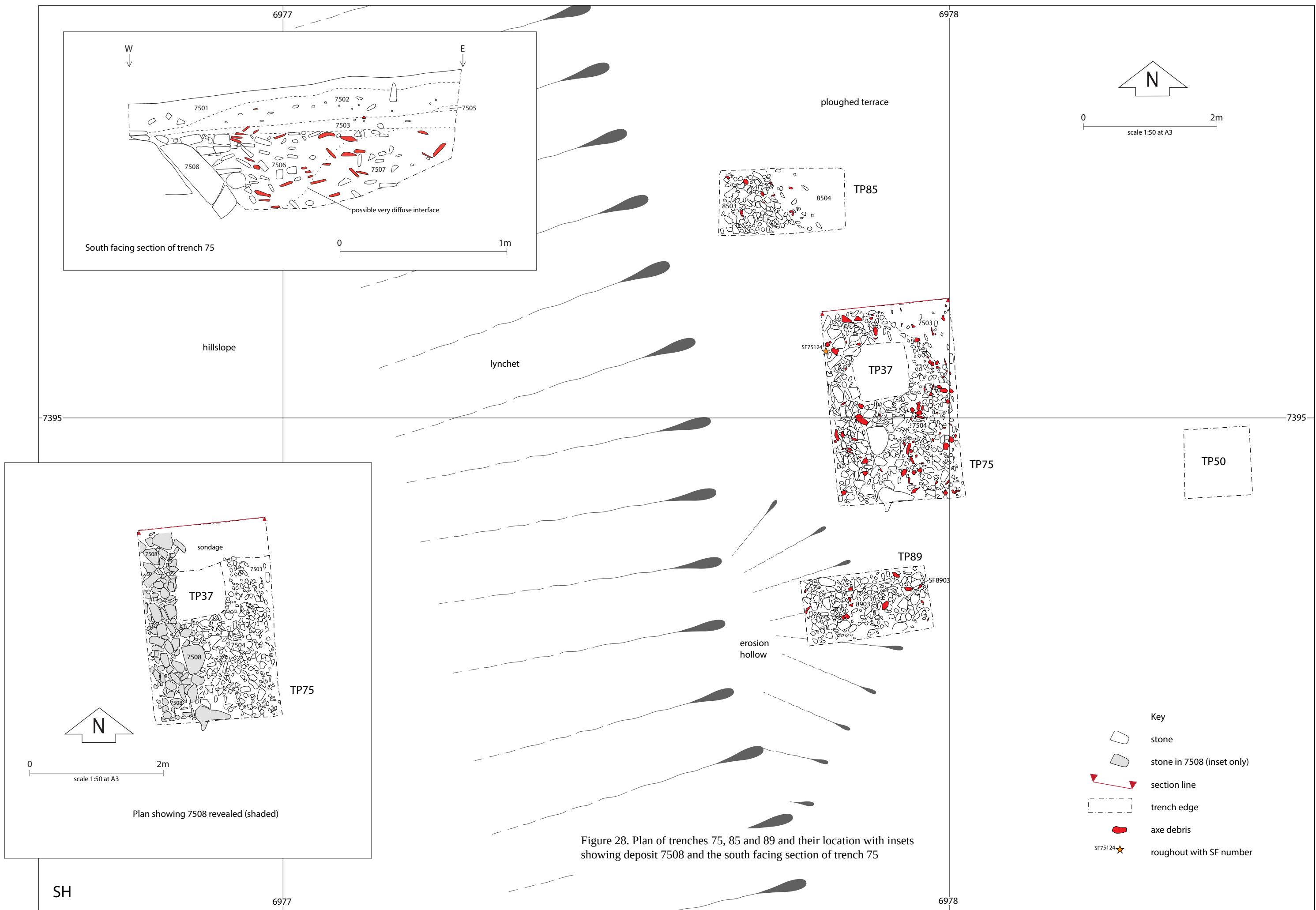


Figure 28. Plan of trenches 75, 85 and 89 and their location with insets showing deposit 7508 and the south facing section of trench 75



Plate 47. Trench 75 from the south, showing larger stones 7508 exposed in the western part of the trench



Plate 48. South facing section of trench 75



Plate 49. Trench 85 from the east showing stone deposit 8503 and largely stone-free deposit 8504



Plate 50. Trench 89 from the west, showing stone deposit 8903

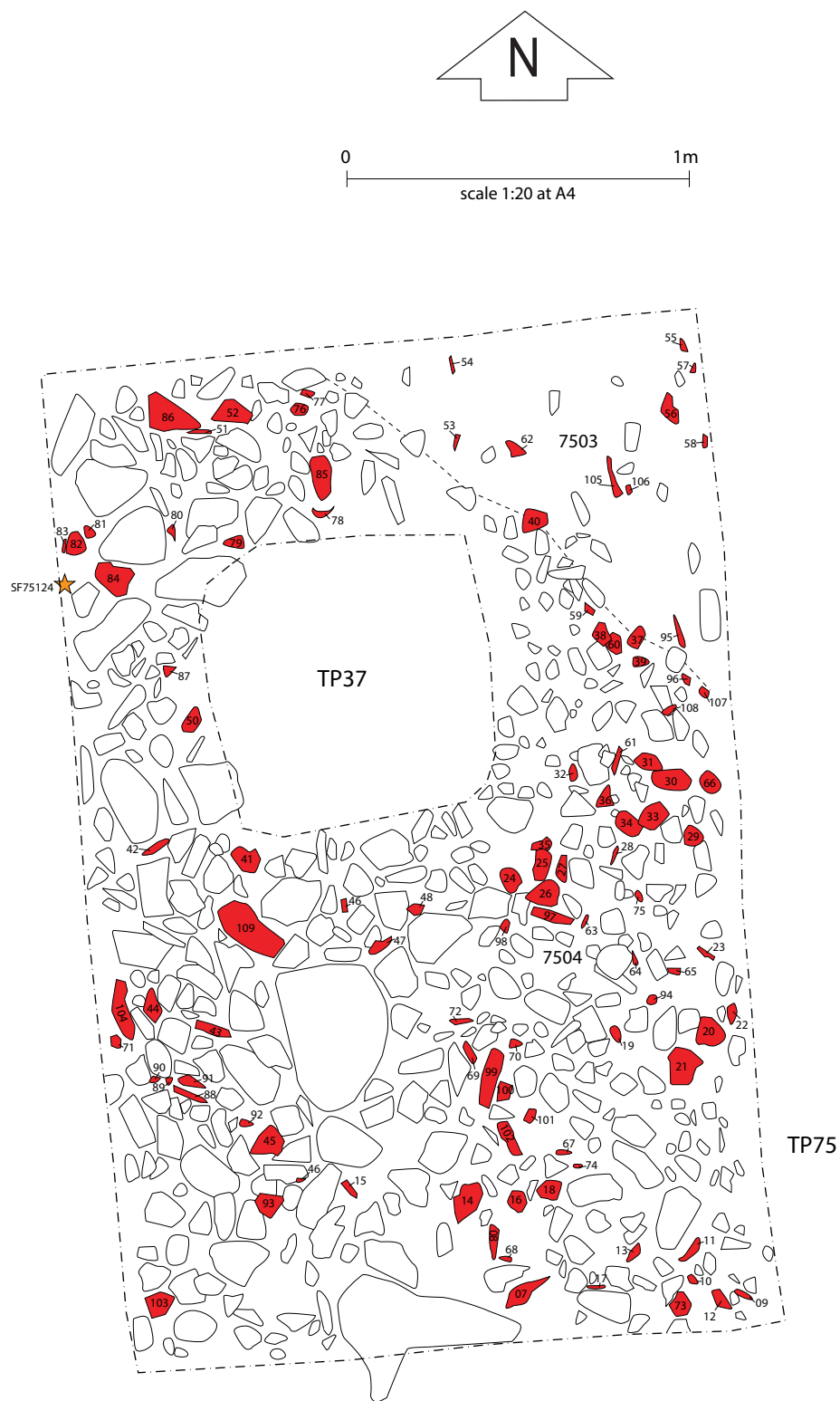


Figure 29. Plan of trench 75 with axe debris collected from the surface of 7504 numbered



Plate 51. TP83 from the west



Plate 52. TP84 from the south



Plate 53. TP90 from the west

Plate 54. West section of TP95, showing the deepest soil depth in this area



Trench 85 showed that the stone deposit continued north, here recorded as 8503, but its north-eastern limit could also be seen with the less stony deposit (8504) beyond (Plate 49). This was a mid-orange-brown gritty loam with c.25% small stones. Flakes and other worked pieces seen in the surface of 8503 and 8504 were recorded on plan but no finds were recovered. The stone deposit was seen in trench 89 about 0.3m below the ground surface (Plate 50). Here it was recorded as 8903, and again flakes visible in the surface were recorded but not lifted, except for a roughout (SF8903).

The stone deposit therefore seems to run roughly along the edge of the upper lynchet, but its north-east limit is not exactly parallel to the lynchet edge and it could extend some distance from the edge of the lynchet to the south. However, no trace of this deposit was seen in TP50, so it cannot have extended that far. A hollow in the top edge of the lynchet was not related to the underlying deposits and seems to have been a superficial erosion hollow.

Test pits in the lower field (PRN 100575, centred on SH 696 739)

In 2018 an archaeological watching brief by Aeon Archaeology on the renewal of a water pipeline found axe flakes just below the bottom boundary of the main field and a few scattered south-west towards the cliff above the Afon Llanfairfechan (Dean and Cooke 2019). Twenty-seven flakes (PRN 93577) were found along the route of the pipeline (Figures 11 and 14). These finds showed that axe debris could be found down to the edge of the wooded gorge in which the Afon Llanfairfechan flows and that the lower field was worth investigation.

Eight test pits were dug in this field (TP 82, 83, 84, 90, 91, 92, 95, and 96). They were between 0.20m and 0.42m deep (Plates 51, 52, 53, and 54, Figure 27). The shallowest were TP90 and 91 and the deepest TP95. This suggests thinner soil deposits on the steeper slopes and soil deposition in the lower part of the field. However, TP92 and TP96 in the lower part of the field were only 0.31m and 0.29m deep respectively, so it seems that there was only soil build-up in undulations in the glacial clays, rather than generally deeper soils in the lower part of the field. All had about 0.10m to 0.15m of turf and topsoil over ploughsoil that was a dark grey-brown silty loam with varying amounts of stones. The glacial clay in this field was a pale yellow-brown sandy clay with medium and large stones.

The numbers of pieces of axe debris from these test pits was low but constant, suggesting that some working had been taking place in this field but that the precise location was not identified. This is supported not only by the flakes recovered in the water main watching brief but the discovery of two roughouts from this field. One roughout was found in TP82 and the other (SF10053, PRN 100576, see Figure 30) was found on the ground surface in the southern corner of the field. This must have been disturbed by the water pipe trench and left on the surface. It is notable that this roughout is at the start of the natural ramp leading into the river gorge, and it might be this area that needs to be searched for an activity focus.

Perhaps the most important find from this area came from TP95. This is a tiny sherd of Early Neolithic pottery. It was from the ploughsoil and is eroded and has obviously moved from its original position, but it does indicate Neolithic domestic activity somewhere in the area. This tiny artefact supports the suggestion that this sheltered field close to water may have been a settlement location, but much more work would be necessary to confirm where settlement occurred and how extensive it was.

Finds

Primary, secondary and tertiary flakes were all present, but there were very primary flakes and the tertiary flakes were the most numerous. This is partly due to the latter being the thinnest and therefore easiest to break, so multiplying the count of number of items. The high rate of breakage suggests considerable trampling over the working areas, though disturbance by ploughing might also cause breakages. The number of tertiary flakes does indicate that final working was taking place in the area, especially on the upper lynchet, where the proportion of tertiary flakes was highest. The larger secondary flakes and the primary flakes (over 100mm) were mainly found in test pits on the screes, e.g. TP 80, TP81 and TP102. The latter test pit was not fully excavated, so the proportions are not easily comparable to other test pits. It is notable that TP75 also contained a significant number of larger secondary flakes and the primary flakes. As a large amount of material came from this trench and only a sample was studied, the proportion of these flakes may be higher. However, there were also a large number of tertiary flakes. There is perhaps a suggestion of more mixed working in this area than elsewhere with both primary and tertiary working occurring in the same location. It may be significant that the breakage rate of the flakes was lower than elsewhere suggesting less trampling or less disturbance by ploughing.

The number of flakes from the Lower Field was much less than from most of the higher test pits and generally these were only smaller flakes, but TP90 produced only larger flakes. The slightly higher number of flakes in TP95, in association with a retouched flake and a piece of Neolithic pottery suggests a focus of activity near this location.



SF7307



SF7503.1



SF75124



SF75133

0 100mm
scale 1:2 at A3

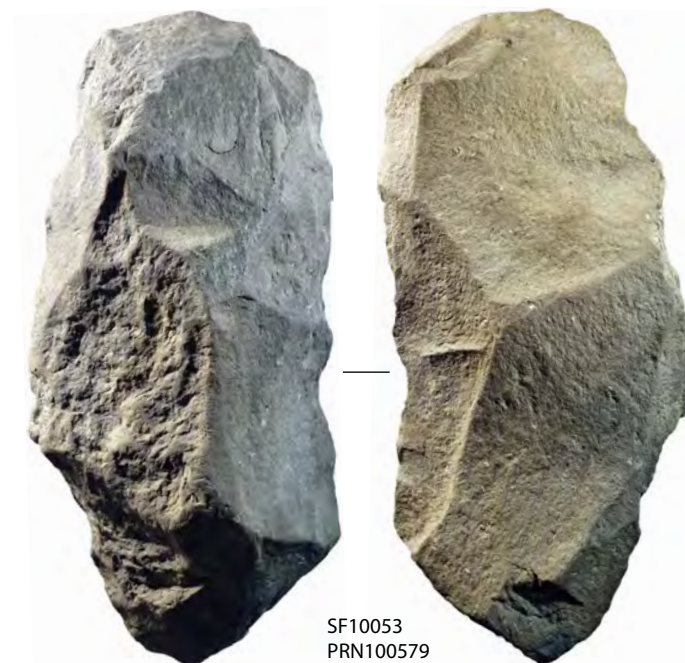
Figure 30. Roughouts from Ty'n y Llwyfan



SF8103



SF8203



SF10053
PRN100579



SF10202

With the exception of the TP75 area roughouts were rare in test pits away from screes. At the northern end of the Upper Lynchet only TP36 produced a roughout, despite the quantity of working taking place here. This suggests that roughouts were generally created on the screes, and resulting in failed roughouts only being discarded here, with successful roughouts were taken a little further away to be finished off. The presence of several roughouts in TP75 and associated trenches supports the idea that both primary and tertiary working was taking place here. However, occasionally a roughout was discarded at some distance from the screes as shown by the two roughouts from the Lower Field. The roughouts are all made on either scree blocks or large flakes from scree blocks, but there is some variation in their form, with one being an adze form and one being very broad.

Occasional retouched pieces have been noticed previously but in the material collected in 2022 23 flakes with secondary retouch have been identified. It is likely that a more thorough inspection of the whole assemblage will reveal more retouched pieces. Most of those found have casual retouch, but three pieces were certainly tools; two large edge-retouched knives (SF7588 and included in SF7303) and a denticulate scraper (included in SF7401). There were no carefully produced objects like the convex scrapers found at Maes y Bryn, but this does suggest that other tasks, possibly domestic ones, were being carried out as well as the axe-making.

Few items of other materials were found but one is possibly of some significance. This is a small thin natural fragment of slate (SF8805), which has been shallowly drilled, probably by a flint point, once on one side and twice on the other (Figure 20). These drill holes are not in line, and if the aim was to drill a hole through the piece, the attempt failed. The size of the piece could have made a bead, if further worked, as found on several Mesolithic sites. This was found at some depth in TP88, in association with axe-making flakes, but the deposit is mixed and has probably moved due to ploughing, so it cannot be proved that this item was Neolithic in date.

A large piece of white quartz (SF75134) was found in TP75. This appeared to be a large, roughly rounded pebble of quartz that had been broken in half deliberately, possibly to make a tool. The function and significance of this piece is uncertain but another, very similar, was found on Garreg Fawr (SF10061, see section 8 below).

Summary of finds

Pieces of white quartz were collected in 2021 but all appeared to be natural, unworked stone. White quartz was therefore not collected in 2022 unless there was any suggestion of a piece being worked. See Figure 30 for examples of the roughouts found.

Test Pit	Type of object	No of items	Total weight of items (g)	Notes
71	Axe debris	22	266	
72	Axe debris	8	168	
73	Axe debris	60	2920	
	Slag and furnace lining	32	672	
	Quartz	6	162	
	Flint flake	1	3	
74	Axe debris	6	205	
75	Axe debris	3404	97332	
	Rounded pebble/ hammerstone?	1	1114	
	Furnace lining	1	4	
	Possible quartz tool	1	304	
	Possible tool on microdiorite	1	998	
76	Axe debris	11	715	
77	Axe debris	61	2460	
78	Axe debris	11	2648	
79	Axe debris	15	701	
80	Axe debris	58	6305	
81	Axe debris	125	7094	
82	Axe debris	19	854	
83	Axe debris	9	298	
84	Axe debris	4	74	
85	Axe debris	1015	10451	
86	Axe debris	154	1768	Test pit not fully excavated
	Quartz pieces	3	39	
	Retouched microdiorite flake	1	28	
87	Axe debris	297	3715	Test pit not fully excavated
	Quartz pieces	3	25	
88	Axe debris	1194	15792	
	Drilled slate piece	1	7	
	Fossil	1	30	
	Quartz pieces	2	92	
	Burnt stone	2	144	
89	Axe debris	724	16407	
90	Axe debris	1	9	

Test Pit	Type of object	No of items	Total weight of items (g)	Notes
91	Axe debris	2	86	
	Other stones, probably natural	4	37	
92	Axe debris	9	425	
93	Axe debris	3	218	
94	Axe debris	91	948	Test pit not fully excavated
	Quartz piece	1	9	
95	Axe debris	21	553	
	Early Neolithic pot sherd	1	1	
96	Axe debris	2	11	
97	Axe debris	91	1731	Test pit not fully excavated
98	Axe debris	210	1901	Test pit not fully excavated
99	Axe debris	5	91	
100	Axe debris	260	4549	
101	Axe debris	43	834	
102	Axe debris	186	15786	Test pit not fully excavated
103	Axe debris	79	3616	
Unstratified/ molehills	Axe debris	7	1413	

Soil samples/charcoal

Test pit	Context	Quantity	Material
75	7505	1 bucket	Bulk soil sample
71	7103	1 bag	Small soil sample possibly for soil analysis
71	7104	1 bag	Small soil sample possibly for soil analysis
73	7305	3 buckets	Bulk soil sample with furnace waste

4. LITHIC FINDS ASSESSMENT REPORT

By George Smith

4.1. Maes y Bryn

Introduction

16 trial pits were excavated in 2002, pit numbers 55 – 70 and all the finds from these pits were studied. These were mainly of Group VII (Graig Lwyd) type stone but included a few piece of other material and all these are summarised in Table 1.

Table 1 All finds from Maes y Bryn test pits 55 - 70, 2022

Material type	No.
Group VII stone flakes/fragments	439
Group VII stone worked pieces	7
Group VII stone burnt fragments	9
Flint or chert flakes/fragments	7
Quartzite	3
Dolerite?	3
Sandstone	1
Slate	1
Vein quartz	2
Crystal quartz	1
Fired clay	1

Group VII stone

Waste pieces

Table 2 Waste pieces from Maes y Bryn test pits 55 - 70

Test Pit	Group VII stone worked piece	Group VII stone flake/frag Total	Group VII stone flake/frag by size class		
			0-50mm	51-100mm	>100mm
55		16	14	12	1
56	4	50	44	5	2
57		26	24		
58		36	32	4	1
59		8	5	2	
60		2	2		
61		28	25	3	
62		25	21	4	
63		36	35	1	
64	2	43	41	2	
65		32	26	6	
66		21	20	1	
67		9	9		
68	1	46	46	11	
69	1	44	44	2	
70		17	17		
Total		439	392	43	4

The waste pieces included relatively few complete flakes, showing that there was a high breakage rate, due to trampling. All the pieces were classified according to maximum length and as can be seen the great majority were under 50mm in length. It was noticeable that the larger flakes tended to be thicker, to have plain platforms and prominent bulbs. The smaller flakes were thinner and more likely to have prepared platforms and shallow bulbs. It seems likely therefore that stone hammers were used for initial flaking and soft hammers for more delicate shaping. A substantial proportion of these smaller flakes were thin, curved in their length and twisting, indicating thinning and shaping of bifacial objects.

Worked pieces

Although axe working was indicated by the waste pieces, larger pieces of raw material were almost absent, suggesting that axe roughouts were created elsewhere and then brought here for finishing. Likewise, no roughouts were found in these pits although one was found in 2021. Further to the south.

The few worked pieces that were found were retouched flake tools. The most significant were four very neatly worked convex scrapers, three from pit 56 and one from pit 64. One was an end scraper. Two were combined end and side scrapers and one was a combined end scraper and edge retouched knife. The largest retouched tool, from pit 68, was a thick, flat scree fragment of which one edge had been bifacially flaked to produce a strong sharp edge, probably as chopping tool. One piece, from pit 69 was a piercer, produced by edge retouching a flake to a narrow point and a piece from pit 64 was probably a fragment of a broken piercer. One other piece was a possibly casually retouched flake with an area of continuous fine unifacial removals along one sharp edge. Unfortunately, the degree of weathering makes it impossible to confidently identify finer retouch, even less so wear signs.

Flint and chert

These were all waste pieces, from pits 58, 61, 64 and 67. They consisted of one small pebble fragment, three small scalar pieces, probably from anvil-struck pebbles. There were also two small flakes of flint and one of black chert that had probably been punch-struck from small blade cores. These pieces were of varied colours and qualities and most likely all derived from local fluvio-glacial pebbles, rather than imported material.

Other materials

Two heavy cobbles of quartzite and one piece of sandstone were possible hammer-stones. The sandstone piece having a possible working facet, although badly weathered. Two pebbles of quartzite and one of slate had some surface scratch marks and so were possibly utilised in some way, although the marks might be natural from glacial tumbling.

A few fragments of probable coarse dolerite were burnt pieces and suggest some kind of burnt stone activity. There were two angular fragments of vein quartz, one of a size that might suggest that it was deliberately broken from a larger piece and then brought to the site. One very small piece of crystal quartz might also have been worked, as it can produce sharp flakes, but there is no other evidence that such working was taking place. The last material, from pit 64 is an irregular broken fragment of a fired clay object, of a coarse vesicular fabric, well-fired to a bright red. It is potentially part of an oven or hearth structure.

Discussion

The Group VII stone waste pieces were continuously scattered amongst all the pits, see Table 2. However, there are clear concentrations from the pits on the north and east sides and it is the pits 56, 64, 68 and 69 in these areas that also produced the worked pieces. Pits 56 and 64 also produced possible hammer stones and 64, the fired clay object and the chopping tool. The extensive spread of Group VII waste material indicates a fairly widespread use of this area for stone working but the presence of retouched tools show that more was taking place than just axe production. Some sort of settlement activity seems likely but the quality of the scraping tools and their apparent lack of use suggests manufacture for export. The size and quality of the scrapers suggests a Later Neolithic date. On the other hand the few scalar flints and use of only local material suggest an Early Neolithic date, so perhaps the few flint and chert pieces belong with a separate phase of activity, which in terms of their occurrence on site was concentrated to the southern part of the area, in the area investigated in 2021.

4.2. Ty'n y Llwyfan

Introduction

Two fields were investigated in 2022, one was on the western edge of the scree slopes of the Dinas hill and had previously been investigated by several test pits in 2019 and 2021. The work in 2022 was more extensive and included investigation of an additional field lower down the slope, including a relatively level area immediately above the ravine containing a small river. The previous work identified a general spread of stone debitage from axe manufacture as well as 11 stone axe roughouts. The amount of waste material was relatively well distributed although with some very clear concentrations and this was confirmed in 2022. 32 test pits were excavated in 2022, Nos 71 – 103 and the finds from these are summarised in Table 1. Three of these pits produced large numbers of objects and only a sample of these were studied for this assessment, to characterise the material, although the overall numbers and weights were recorded as part of the finds processing work.

Table 3 Totals of finds studied from Ty'n y Llwyfan, Test pits 71-103

Group VII stone flakes/fragments	4430
Group VII stone retouched pieces	18
Group VII stone axe roughout/fragment	7
Slate, awl-drilled trial piece?	1
Flint pebble	1 (natural)
Quartzite	2 (natural)
Shale (utilised?)	2
Vein quartz	4
Crystal quartz	1
Pumice fragment	1
Iron slag	2

Group VII stone

Waste pieces

It is immediately apparent that the axe-working debris is very widespread and although declining further from Dinas, the source of the raw material, the actual limits of such working have not been reached. By far the greatest concentration of activity is on the upper terrace. Although mainly regarded as a probable Medieval plough lynchet terrace it appears that it must have previously been some sort of a natural terrace or platform that was a suitable place for stone axe manufacture. The test pits on the scree fringe slope, 99-103, produced far fewer pieces. Though the small excavation excavated within the lower part of the scree in 2021 (Pit 31, Figure 13), produced a very large amount of worked material. It seems that although the worked material is very widespread, there were certain areas that were used more preferentially. This was especially so for the upper terrace, which was clearly a specialised area of perhaps repeated working with other areas used only occasionally.

Test pit no.	Group VII stone axe roughout	Group VII stone retouched piece	Group VII stone flake/frag total	Group VII stone flake/frag size class				Utilised? pebble	Slate Awl-drilled piece
				0-50mm	51-100mm	101-150mm	>150mm		
Scree fringe slope									
99	-	-	5	4	1	-	-	-	-
100	-	-	248	201	46	1	-	-	-
101	-	1	33	29	3	1	-	-	-
102	1	3	179	47	107	25	-	-	-
103			74	43	28	3	-	-	-
Upper terrace									
75	2	2	944	828	98	17	1	-	-
85	-	3	922	840	82	-	-	1	-
86	-	1	130	116	14	-	-	-	-
87	-	1	268	251	13	4	-	-	-
88	-	2	408	344	63	1	-	-	1
89	2	-	466	393	69	4	-	-	-
94	-	-	84	74	9	1	-	-	-
97	-	1	88	75	11	2	-	-	-
98	-	-	186	172	12	2	-	-	-
Intermediate slopes									
74	-	2	5	3	2	-	-	-	-
76	-	-	7	5	2	-	-	-	-
77	-	2	52	36	13	3	-	-	
78	-	-	11	7	3	-	1	-	-
79	-	-	7	4	2	1	-	1	-
Middle terrace									
71	-	-	14	13	1	-	-	-	-
72	-	-	6	4	2	-	-	-	-
73	1	1	48	33	15	-	-	-	-
80	-	-	67	44	4	16	3	-	-
81	1	1	117	72	39	6	-	-	-
93	-	1	2	1	1	-	-	-	-
Lower slopes									
82	1	-	14	12	2	-	-	-	-
83	-	-	6	4	2	-	-	-	-
84	-	-	2	1	1	-	-	-	-
90	-	-	5	-	-	4	1	-	-
91	-	1	3	3	-	-	-	-	-
Lower field terrace									
92	-	-	7	3	4	-	-	-	-
95	-	1	20	16	4	-	-	-	-
96	-	-	2	2	-	-	-	-	-
Total	8	23	4430	3679	654	91	6	1	1

Table 4 Ty'n y Llwyfan test pit lithic finds summary. Only a sample of each of Pits 75, 88 and 89 was studied because of the large number of objects present.

The Group VII stone waste material was recorded in classes according to maximum dimensions. This was an attempt to see whether the size of material declined with distance from the source, i.e., the scree slopes of Dinas. There were relatively few complete flakes, especially of smaller tertiary flakes, which were also generally thinner, indicating a high degree of trampling. Larger, secondary or primary flakes were also thicker and so less likely to be broken by trampling. There are several factors involved, therefore.

Table 5 Comparison of Group VII debitage size classes across the investigated are in 2022

	<i>Total number</i>	Percentage of debitage			
		<i>1-50mm</i>	<i>51-100mm</i>	<i>101-150mm</i>	<i>>150mm</i>
Scree Pit 31	839	72	23	4	-
Scree fringe	539	60	34	6	-
Upper terrace	3496	88	11	1	<1
Intermediate slopes	82	67	27	5	1
Middle terrace	254	66	24	9	1
Lower field slopes	30	67	17	13	3
Lower field bottom terrace	29	72	28	-	-
Overall	4430	83	15	2	<1

Table 5 shows the summarised results of the size classes together with the results for Trial Trench 31, from 2021, from within the lower scree. There is a clear difference between the size classes of the upper terrace and all the material from lower down the slope, notably the higher proportion of smaller material. It is likely this is partly because on the upper terrace all stages of axe production were taking place from roughing out to final shaping. However, as mentioned the finishing flakes are thinner and more prone to trampling damage, resulting in a higher breakage rate and so more small pieces. In comparison, the higher percentage of larger pieces in Trial pit 31 can be seen as an emphasis on more primary working, than finishing. However, only a sample of the material from this pit was studied in 2021.

Table 6 Sample of Group VII material from Pit 75, Contest 7504

Type	0-50mm	51-100mm	101-150mm
Flake	4	21	3
Flake fragment	6	8	3
Irregular frag	1	1	5
Core trimming flake	-	-	4
Axe rough-out	-	-	1
Edge retouched knife	-	-	1

One box of 59 pieces of waste material from pit 75 on the upper terrace, which had been individually recorded, was studied in slightly more detail to see what understanding could be derived from further analysis. Of course, there is no way of telling if that was a representative sample, but these pieces were from a lower layer in the excavated material, which could be expected to be better preserved. This proved to be the case (Table 6). It included a mix of primary, secondary and tertiary flakes and breakage rate was quite low. The largest number were of complete flakes of medium size, with relatively few small or broken flakes. There was also one rough-out fragment and one unusual retouched piece. The rough-out was a large, thick block partly bifacially worked then broken and rejected. The retouched piece was a large, flat ovate shaped plaque with invasive unifacial flaking producing a sharp edge, perhaps large edge retouched knife. There were no signs of use so perhaps it was a kind of practise piece. It was significant that on closer study, most of the waste flakes were twisting in shape, indicating axe-thinning. The larger flakes were thicker and with pronounced impact bulbs, while smaller flakes often had slight residual bulbs.

Axe roughouts (Figure 30)

Relatively few axe roughouts or fragments of broken roughouts were found, considering the large number of waste pieces (Table 7). This indicates that the working was fairly competent and successful. All the roughouts were made using scree blocks as raw material either primarily or on large flakes struck from scree blocks. The latter could be very large, thick, flat flakes or very large, thick flakes similar to a core trimming flake with a dorsal ridge from two previous removals. That gave a central thicker area that could become the body of an axe.

Table 7 Summary of Group VII axe roughouts found in 2022

Test pit no.	Description	Recorded find no.
0	Surface find near water pipe trench. Complete axe roughout with D-shaped cross-section, suggesting that it might have been intended to be an adze not an axe	10053
73	Axe roughout, broken reject	7307
75	Very large elongated scree block, partly worked, axe rough-out reject. Very weathered.	7503
75	Large, thick, scree block partly bifacially worked. Axe roughout broken reject	75103
81	Axe roughout made on a large, thick flake. Probably unworkable reject	8103
82	Short, broad scree piece with some working. Rejected due to poor material	8203
89	Axe roughout reject	8902
89	Axe roughout. Broken reject. Unusual broad form. Made on a flat scree slab	8904
102	Axe roughout reject	10202

Notably, the occurrence of roughouts was not closely related to the intensity of working, as demonstrated by the numbers of waste pieces (Table 4). As suggested for the excavations at Maes y Bryn, initial roughouts could have been taken away from the primary production site for further finishing. The finds show some variability in form from away from the typical axe, with one of adze form and one exceptionally broad.

Other worked pieces

The 2022 work produced 23 flakes of Group VII material that showed evidence of being secondarily worked (Table 8). It was not possible to identify deliberate minor edge retouch with any certainty because of the amount of weathering, which meant also that any wear signs would have been eradicated. Most showed only causally retouch and this could be recognised by its regularity, which seemed to distinguish it from trample damage. Three pieces were undoubtedly tools, two large edge retouched knives and a denticulate scraper. The distribution of the retouched or possibly retouched pieces is as extensive as the general spread of material across the fields and more occur where the largest amounts of waste material occur (Table 4). This is interesting as indicating that the axe working area was not entirely specialised. It might be expected that tools other than axes, perhaps for more domestic activities and associated with settlement would be concentrated away from the axe working. There were no carefully produced objects like the three convex scrapers found at Maes-y-Bryn.

A few possible retouched pieces were found in 2021 but the discovery of more convincing such retouched pieces in 2022 suggest that more pieces might have been overlooked from the 2019 and 2021 work. Future study needs to take that into account.

Table 8 Summary of possible Group VII retouched pieces (*rp* = retouched piece fragment)

Type	Trial pit no.	Description	RF no.
retouched piece	73	Large flake. Edge-retouched knife	7303
retouched piece	74	Denticulate scraper	7401
retouched piece?	74	Denticulate scraper?	7401
retouched piece?	75	Possible casually retouched piece, medium	7502
retouched piece?	75	Large flat ovate with unifacial, invasive flaking. Edge-retouched knife.	7588
retouched piece?	77	Possible casually retouched piece, large	7702
retouched piece?	77	Possible casually retouched piece, large	7702
retouched piece?	81	Possible edge-retouched knife	8104
retouched piece?	85	Possible casually retouched piece, small	8502
retouched piece?	85	Possible casually retouched piece, medium	8502
retouched piece?	85	Possible casually retouched piece, medium	8502
retouched piece fragment?	86	A thick medium flake fragment with a chance convex tip and one edge of which may have some deliberate retouch to produce a sharp slightly convex edge. Possibly just damage but too weathered to be certain	8603
retouched piece?	87	Denticulate scraper?	8701
retouched piece?	88	Possible casually retouched piece, medium	8801
retouched piece?	88	Possible casually retouched piece small	8802
retouched piece?	91	Large flake with possible casual edge retouch. Edge-retouched knife?	9101
retouched piece?	93	Possible edge-retouched knife	9301
retouched piece?	95	Possible casually retouched piece, large	9501
retouched piece?	97	Possible casually retouched piece, medium	9701
retouched piece?	101	Possible casually retouched piece, small	10101
retouched piece?	102	Possible casually retouched piece, medium	10203
retouched piece?	102	Possible casually retouched piece, medium	10203
retouched piece?	102	Possible casually retouched piece, large	10203

4.3. Conclusion

Maes y Bryn

The work in 2022 was a valuable extension to the previous work, in the identification of convincing settlement type activity and the possibility of more than one period of such activity. Hopefully, that might be better understood if radiocarbon dating can be carried out.

Ty'n y Llwyfan

The work in 2022 has extended the known area of activity related to the area of activity associated with Group VII stone raw material. It has also provided new insights into the way that material was exploited and used.

The concentration of activity along the upper terrace is exceptional and the depth of the axe-working deposits is considerable. This provides the possibility of finding material for radiocarbon dating and of quantities of *in situ* debitage that are less eroded and the product of localised working. That means that analysis of the products might show quite closely the techniques of axe manufacture and even allow re-fitting of pieces from single sequences of work. That needs to be accompanied by experimental work that would allow better interpretation of the knapping processes.

The continued lack of evidence for hammer-stones despite the evidence for their use in flaking is curious. Surface collection from further fieldwork could show, perhaps that hammer-stone use was confined to primary exploitation of the raw material, not its secondary working. The artefacts from the Hazzledine Warren excavations (Warren 1921 and 1922) need to be studied along with those from the Langdale work, which did produce hammer-stones (Bradley and Suthren 1990).

5. OTHER FINDS FROM TY’N Y LLWYFAN

5.1. Pottery

A single very small sherd of pottery was recovered from TP95 (Figure 20). This was inspected by Frances Lynch who provides the following description and comment:-

SF 9502, Context 9502.

Size 17 x 14 x 5mm, weight 1g.

The outer surface is definitely burnished and the inner surface is smoothed and matt. The dark brown clay contains occasional small angular stone grit. There are some very slight scratches, perhaps from small finger-nails on the outer surface, but they might be accidental. This is almost certainly Early Neolithic Irish Sea Ware because of the clear signs of burnishing.

5.2. Furnace Lining and Slag

About 570g of partially vitrified furnace lining and slag was recovered from feature 7307 in TP73, with a few pieces from contexts 7302 and 7303 above. Many of the pieces responded strongly to a magnet, showing they had a high iron content. Tiny fragments from the soil washed from the slag also responded to a magnet and some may be hammer scale. This material therefore seems to be from working iron, probably smelting but possibly also smithing.

6. DISCUSSION

6.1. Maes y Bryn

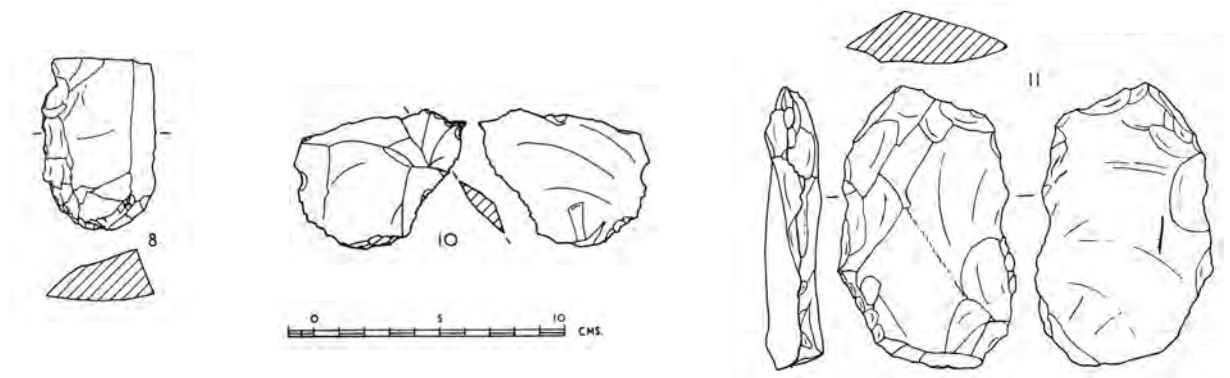
The discovery of flint flakes scattered widely suggests general activity over a wide area, though some have probably moved down slope due to ploughing, perhaps indicating the focus of settlement within the higher part of the area investigated. In 1961 Davies found three flint pieces on his first visit to the site, and a borer, a knife and two waste flakes on a subsequent visit (Davies 1961, 4, 5). The only retouched piece found in the current project was the thumbnail scarper found in TP27 in 2021, but further work here would certainly produce more tools. Davies’ finds suggest a range of tasks taking place on the site.

The microdiorite scrapers seem likely to be better indicators of foci of settlement activity. Scrapers are an artefact type that are generally assumed to have been used for tasks that take place on settlement sites. A concentration of scrapers is highly suggestive of settlement. The deposits in TP56 appeared undisturbed and the scrapers were found amongst stones within the undisturbed deposit. These scrapers therefore are unlikely to have been moved by ploughing and suggest Neolithic settlement activity close by. The presence of a scraper and a piercer with a flint flake in TP64 suggests that this is close to another focus of settlement. The deposits here were mixed by ploughing and it is possible the artefacts have moved but the fact that they are close together suggests that they have not been dispersed far from their original location.

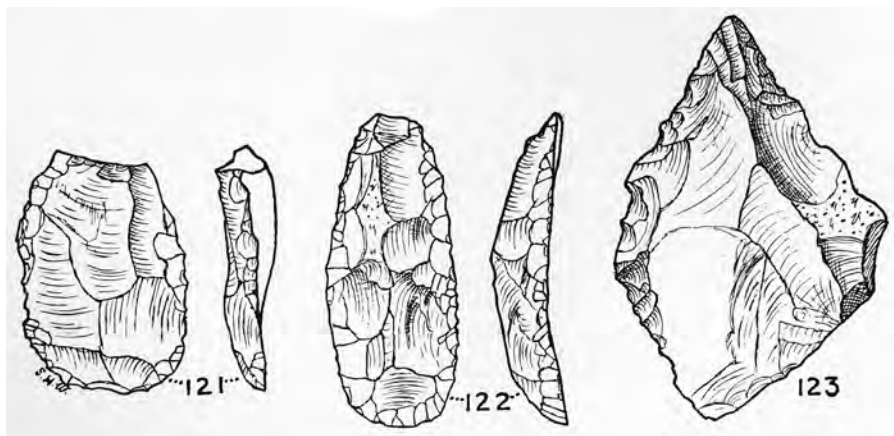
In 1961 Davies found one scraper made on a microdiorite flake on his first visit to the site (shown on Figure 31), and an unspecified number of scrapers on a subsequent visit (Davies 1961, 3, 5). The scraper that he has had drawn is made on a thick flake, similar to SF5604. These tools are clearly a feature of this site, which is perhaps not unexpected as there is plenty of suitable material available. It is notable that the scarpers are larger than most of the flakes found, suggesting that they are made on flakes produced at the source rather than from flakes lying around the site. The scrapers are therefore a specific tool type that stone from the source was selected to produce. Their fine quality and lack of use may indicate that they were a tool type made mainly for export elsewhere.

Not much notice has been taken of scrapers made on the microdiorite but Samuel Hazzledine Warren reported finding “a few scrapers”, apparently on this stone, from the top of the Gwddwg Glas (Green Gorge) above Penmaenmawr (PRN 67408), a considerable distance from Graig Lwyd (Warren 1922, 2).

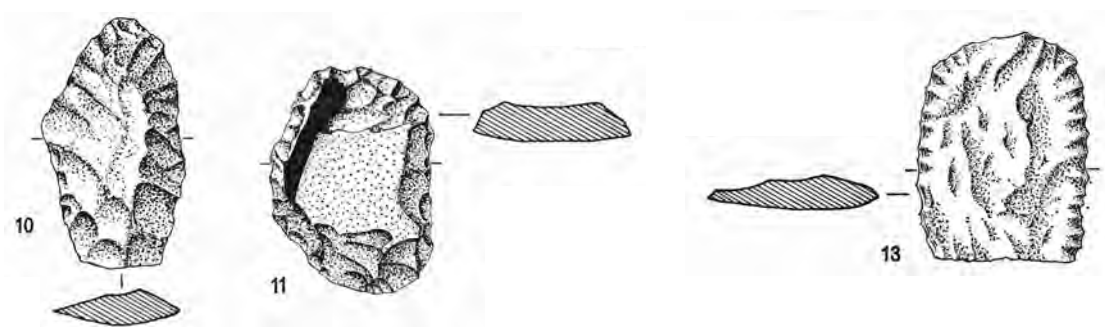
As well as the scraper Davies (1961, 3) found microdiorite flakes worked into a borer and what he describes as a chopping tool. He also mentions pieces of microdiorite, listed under hammerstones, but described as being more like cores. These appear not to have been roughouts but cores for the production of flakes, which were presumably either used for cutting as they were or were retouched into tools. This suggests that further retouched tools made on the microdiorite might be expected in this area. Despite excavating tons of material at Graig Lwyd Hazzledine Warren found nothing that he could call a core (though there are some objects in the National Museum catalogue that are described as such) and was clear that the stone was not being used to produce flakes that could be worked into tools. However, he does mention finding “a single example of the circular disc, flaked on both sides, a few side choppers, some scrapers and trimmed flakes (all made on the same Graig Lwyd rock) but not a single arrow-point”



Finds from Maes y Bryn made in 1961 by Davies (Davies 1961, Fig. 1). No. 8 - scraper, No. 10 - borer, No. 11 - chopper, all on Group VII stone



Scrapers (No. 121 and 122) and a trimmed point (borer), all on Group VII stone, from Graig Lwyd (Warren 1922, Fig. 14). Scale 1/3.



Scrapers on Group VII stone (No. 11 and 13), from Bryn yr Hen Bobl (Lynch 1969, Fig. 59). No. 10 is scraper-like tool made on another fine igneous rock (Williams and Kenney 2009). Scale 1/2.

Figure 31. Scrapers made on Group VII stone from Maes y Bryn, Graig Lwyd and Bryn y Hen Bobl

(Warren 1922, 26). Warren kept the best of the scrapers for his own collection (Williams 1998, 26), but the rest are presumably in one of the museums that he sent material to (Cardiff, Manchester, the British Museum and Oxford). Eight are in the collection of the National Museum Wales, Cardiff (accession numbers 21.79/131, 21.79/132, 21.79/156, 21.79/172, 21.79/173, 21.79/175, 21.79/176 and 21.79/277), along with four stone knives made on the same stone (accession numbers 21.79/E, 21.79/150, 21.79/278 and 21.79/279) (<https://museum.wales/collections/online/>). Warren describes two of the scrapers and an unusual trimmed pointed flake (Warren 1922, 27, 28) (see Figure 31). Scraper number 122 is the “best scraper” that Warren retained for his own collection. HGO Kendall found scrapers when excavating Warren’s site E at the top of Graig Lwyd. He says that “A dozen or more distinct scrapers – more or less “horse-shoe” – and some flakes used as hide scrapers were found,” but he provides no illustrations (Kendall 1927, 146).

Away from the stone sources tools other than axes on Group VII stone are even rarer. In the list of Graig Lwyd finds from across Britain compiled by Glen (1935, 202-203, 218) he includes a scraper made from a Graig Lwyd axe found on the Great Orme. There are two crude scrapers from under the tomb of Bryn yr Hen Bobl, Anglesey (Lynch 1991, fig 29, p108; Lynch 1969, fig 59, 166). These were loosely associated with axe-working debris all on Graig Lwyd stone indicating the production of axe roughouts, but were two of six flakes knapped from the same partly polished object (Williams and Kenney 2009). The use of this stone to produce scrapers is clearly rare away from the source rock and is possibly specifically connected with the production of axeheads, but scrapers would seem to be a relatively common tool close to the source rock.

The finds from molehills indicate that the find scatter extends beyond the area investigated 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 its domestic character, but its extents are not yet determined. The presence of undisturbed deposits protected by, and possibly under, the northern bank of the relict field (around TP56) provides a target for future work to locate in situ deposits and features.

6.2. Ty’n y Llwyfan

It is now clear that there is a concentration of axe-making activity in the northern part of the main field, while much of the southern part of the field has little activity, until the screes along the southern and eastern edge are reached. Axe flakes and a roughout from TP11 and TP33 may indicate that the lower lynchet disturbed another, smaller focus of activity. The material forming the northern concentration may have moved downhill due to ploughing from a site close to the edge of the screes. That would indicate a very large amount of soil movement but the depth of the upper lynchet does suggest that. This raises a question about the origin of the axe material found in TP 15 and TP39. This cannot have moved downhill due to ploughing, as the material from further uphill was trapped by the lynchet boundary. This material may be largely *in situ*, just disturbed by later, probably medieval ploughing (due to the medieval pottery in the ploughsoil). Alternatively it might have moved downhill before the lynchet was created and built-up on the natural shelf in the hill slope.

The stone deposit (7504, 8503 and 8903) appears to be integral to the structure of the upper lynchet. The top of this deposit defines the height of the lynchet and the larger stones along the western side seem to almost revet the lynchet and form the face of the lynchet. There is no evidence that this was a pre-existing heap of stone that the soil forming the lynchet built up against as the stone seems to be incorporated as part of the deposits forming the lynchet and not underlying them. It is not yet clear how far the stone deposit extends, but clearly most of the lynchet does not have this material as most of the test pits along the edge of the lynchet contained only soil. The stone deposit was not necessary for the creation of the lynchet.

It is possible that this material moved downslope from a location probably not far above and became sorted through the movement. The stones do appear to be roughly sorted by size, with the larger stones (7508) settling on the downhill, western side, and the smaller stones collecting behind them. Further uphill there are less and less stones, so that 7507 is largely stone-free soil. The way that the stone and flakes merge with the ploughsoil suggests that the stone deposit built-up as the lynchet was formed. The depth of the stone deposit as seen in TP37 shows that it is as deep as the lynchet is high and it must be an integral part of that feature. The stone deposit does not act as a general revetment to the lynchet as most of the lynchet edge does not have this stone.

The movement of soil downslope due to ploughing is similar process to what seems to have occurred further north, where axe debris has been spread downslope collecting against the lynchet boundary, though in this case the axe debris was not accompanied by other stones. Debris seems to have moved from east to west but also from south-east to north-west, following the hill slope in both cases. The generally small size of flakes from this area suggest that this material did not just erode off the scree where initial working was taking place and flakes are generally larger. The presence of numerous very small flakes from this area, which were rare elsewhere, despite following the same methodology, suggests roughouts were finished off in this area prior to them being taken away for polishing.

In the case of the TP75 area it is possible that Iron Age ploughing repeatedly crossed a deposit of stone and axe debris, successively disturbing it and sending stone moving downhill, until the original deposit was entirely eroded away and all the material had collected on the edge of the lynchet. This interpretation implies that none

of the material is *in situ* and that *in situ* Neolithic deposits are extremely unlikely in this field beyond the areas of scree. However, it is not clear that this process would have created such a dense concentration of stone throughout the whole depth of the lynchet. The possibility must be raised that stone and axe debris was repeatedly deposited in this location while the lynchet was building up during the Neolithic period. This might explain the rather natural appearance of the lower ploughsoils in test pits along the edge of the upper lynchet and the thorough distribution of axe debris through this deposit in TP88. In this interpretation layer 8803 in TP88 might be interpreted as Neolithic ploughsoil and the intensive axe-making activity in this area might be seen as having taken place on the surface of a ploughed field. The date of origin of the lower lynchet must also be questioned as it is similar to the upper lynchet and the lower layers forming the lynchet are also rather natural in appearance and therefore possibly also early.

If the build-up of the lynchets can be considered to be Neolithic that makes the date of the drilled slate piece more likely to be Neolithic. Drilling a small piece of stone like this is suggestive of making a spindle whorl, though it would have made a very small spindle whorl. Normally these are shaped to be circular to aid their spin, and this example shows no sign of being shaped, but it is obviously not finished. The drill holes are not opposed so there is little evidence that there was a deliberate attempt to form a hole right through the stone. Perhaps it was a practice piece for drilling for a spindle whorl or a failed bead. This piece cannot be certainly dated. Stone spindle whorls in North Wales tend to be of Iron Age or Roman date and no certainly Neolithic example is known. However, at Graig Lwyd on Warren's site E Kendall found "One spindle whorl – perhaps Neolithic, judging from its hour-glass shaped orifice," but he provides no illustrations (Kendall 1927, 146).

The possibility that two well-defined lynchets up to 3.5m high were entirely produced in the Neolithic period is a contentious suggestion that would need much more secure evidence than is currently available. If true it would change the understanding of the extent and permanence of Neolithic agriculture and the degree to which it altered the environment. Further investigation of the lynchets by sondages across the full width of the lynchets, particularly also through the stone deposit and possibly OSL dating of the sediments would seem to be a high priority for future investigations. However, it is beyond the scope of the current project.

7. WORK BY DAVID THORPE AT FFRIDD TAN Y GRAIG (PRN 67330)

Inspired by the current work, David Thorpe carried out walk-over surveys of an area on Ffridd Tan y Graig, Llanfairfechan starting in the winter of 2021/2022. Mr Thorpe's investigations are on-going and he has extended his surveys to Dinas, Garreg Fawr and Graig Lwyd. His methodology is to locate roughouts and hammerstones/rounded clasts using a hand-held GPS and to photograph the artefacts *in situ*. He collects good examples or unusual pieces, but leaves most in place.

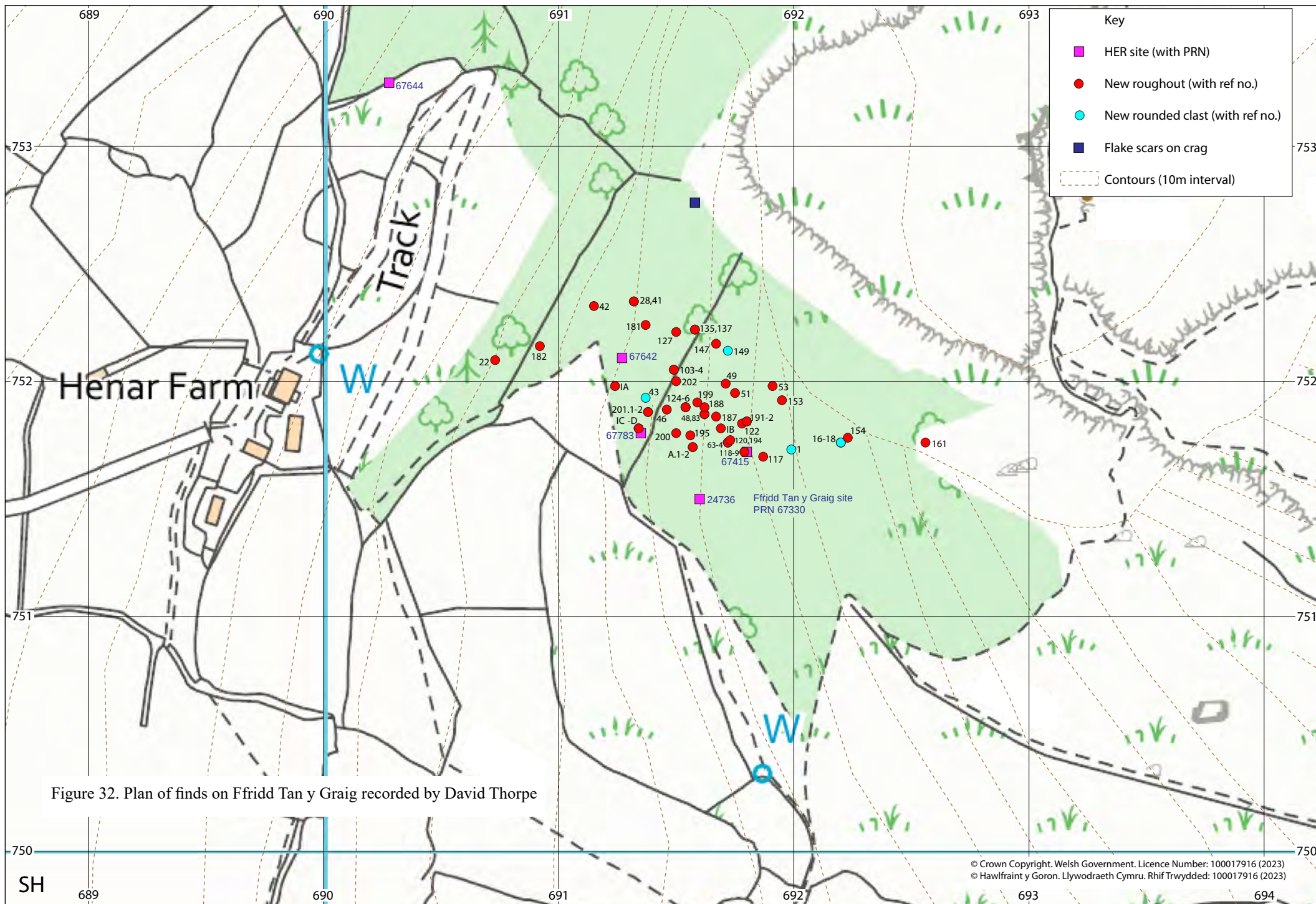
The area which David Thorpe has surveyed most extensively is Ffridd Tan y Graig, on the western end of Penmaenmawr Mountain (Plate 55). This is an extensive area of scree identified as an axe working area (PRN 67330). Mr Thorpe has identified roughouts over a larger area than previously recorded (Figure 32). His collection provides a valuable sample of roughouts from this site, which was a stone source of comparable importance to Dinas.

He has 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. He was informed that they could be found in the bedrock in the quarry, and that the quarrymen often threw them down over the cliffs. These rounded clasts can be found in all the natural screes that are sources of Group VII stone, and they appear to be rounded due to onion-skin weathering rather than water erosion. They are all of the same very hard stone, though they can appear more or less fine grained and weathering varies their colour. Analysis of these rounded clasts would be valuable to identify the stone and determine if they have been brought to the sites or are inherent in this type of bedrock.

The weathering of the surface means that convincing wear from use as hammerstones is difficult to find, but Mark Edmonds of York University, an expert on the Langdale Valley stone source, was convinced that some of the facets on these clasts could have resulted from use as hammerstones. Whatever their origin the presence of these, often hand-sized stones, in locations where scree is being worked into roughouts strongly suggest that they would have been used as hammerstones. Mr Thorpe has frequently found them in close association with roughouts.



Plate 55. View of Ffridd Tan y Graig with scree and crags above



Roughouts and finds in Llanfairfechan area

By David Thorpe

Roughouts and finds in Llanfairfechan area

Since January 2022 we have been finding a variety of material around Llanfairfechan looking at several of the late David Jones's sites and other areas following the fine grained microdiorite/ augite granophyre outcrops at Ffridd Tan y Graig, Dinas, Garreg Fawr and Graig Lwyd. We are keeping to CROW access land and/ or footpaths.

We are finding and recording axe roughouts, flakes, percussion scarred screes, potential core material and outcrops but also rounded clasts/ cobbles found in angular scree/ debitage fields as these seem to be out of place geologically and might be hammer stones used in breaking down cores and scree into usable flakes.

Cobbles/ hammers

Most cobbles/ hammers appear to be too large to be for fine knapping (10cm+) and so far all (roughly 150) have correlated with old, weathered scree with flakes and apparently ancient, weathered, patinated worked material. Clasts are well rounded in contrast to the angular diorite scree, some are perfectly round but many have dimples, broken or damaged faces. **Note** – percussion dimples might well have been lost to weathering in 5000+ years. Even a date mark carved in 1910 of local diorite have eroded worn surfaces, this igneous rock appears to develop a white patina and erode where exposed. Only a subset are represented in this document.

These sites also have Victorian age sett working debris with some setts and dark unoxidized flakes with no lichen cover and so far no cobbles. These sett debris areas would be worth recording too. I assume cobbles were for winning flakes suitable for fine knapping to axe shape before grinding. The cobbles/ hammers are generally well-worn, rounded and have oxidised and lichen covered surfaces– similar to ancient the flakes they are found with. Petrology of cobbles – the exact rock type needs further study. These clasts are often coarser grained and of different colour to the surrounding angular scree and appear like fluvial water rounded cobbles. No glacial tills, raised beach or fluvial material has been found above Ffridd Tan y Graig so far. Some igneous material can break down into round clasts by onion skin weathering (Campbell and Roberts 2022) but no deposits of such clasts have been found on the igneous plug above Ffridd Tan y Graig. Fine grained rocks are difficult to identify in hand and thin sectioning would be useful. Some cobbles appear to be sandstone but many look like a coarser diorite. The Ffridd Tan y Graig area is particularly rich in cobbles and all rock material here is generally unweathered compared to other sites. I assume this is down to protection from frost weathering by the woodland canopy.

Roughouts

Roughouts are usually generally axe-shaped but often look too thick, so presumably discarded. David Jones assumed these to be thrown away during manufacture (see number 28, 48 and 73) as grinding takes a long time whereas knapping is very rapid. Some may just have been stored on site as there is no obvious fault (171) others are thin and might be adzes (see number 63, 64, IA and IB) rather than axes (Thorpe, I. 2022). Some material found on site is either really large or of odd shape, (ID, IC, 125,179) these might be other tools (number 76 and 125).

Trial with flakes shows that knapping roughouts is surprisingly straight forward and can take 10-15 minutes. Grinding even small roughouts to final polished axes takes many hours. I have used both hammer stones and antler to knap this rock. Both work well; clasts 10cm wide from Ffridd Tan y Graig work very well.

Notes on recording

This is best carried out in the winter or early spring prior to nettle and ground flora growth and before the tree canopy closes and prevents GPS signal. Good roughouts have been found in bracken covered ffridd too. Most material is associated with outcrops of very fine-grained glassy (chilled margin) diorite/ granophyre. This has scree/ debitage fields that make high pitch tone under foot. The good material is glassy, high in silica (50%+ according to Durham 2003) and shows clear conchoidal fracture when struck. Some roughouts and indeed potential cores were found on the open ffridd away from outcrops suggesting human transport.

See **Appendix IV** for table of artefacts and sites.

Record of collected finds

The artefacts collected by David Thorpe were brought into GAT to be recorded for the Portable Antiquities Scheme (PAS). Basic recording was done recording size, weight and basic description. Photographs were taken of the artefacts and roughouts were allocated PRNs. The artefacts are listed below and shown in **Figures 33 to 35**.

Site	DT ref no.	PRN	Length (mm)	Breadth (mm)	Thickness (mm)	Weight (g)	Description	Easting	Northing
Dinas	73	100408	200	97	55	1047	Roughout, roughly shaped with flaking along the edges on both sides. Faults running through the stone, so it would have been unlikely to have been successful.	269776	373849
Dinas	76	100409	185	113	38	685	A piece with a large flake scar on one side and some fine retouch. It has broken during working.	269836	373891
Dinas	79	100410	180	136	68	1613	Very thick flake with invasive scars on dorsal surface. Some of the scars are patinated but several are much less patinated. The lack of patina suggests that these scars are Neolithic but they are from neatly knapped, invasive flakes so it is hard to think when else they might have been made.	269783	373858
Dinas	72A	n/a	102	102	58	983	Broken rounded clast, resembling a river cobble. The stone is coarser grained than many of the rounded clasts and there are thin veins of quartz running through it, but on close inspection it is probably the same stone as the other rounded clasts. Broken so interior of stone can be seen. No evidence of working.	269776	373849
Ffridd Tan y Graig	1	n/a	122	93	77	1222	Rounded clast with some onion-skin weathering and no trace of use.	269199	375171
Ffridd Tan y Graig	16	n/a	108	102	86	1456	Rounded clast with some onion-skin weathering and two scars on one end but not consistent with use as a hammer.	269220	375174
Ffridd Tan y Graig	28	100405	190	85	50	805	Roughout with quite a good shape though roughly knapped. No fine work.	269132	375234
Ffridd Tan y Graig	42	100406	153	67	26	270	Thin natural piece with one long flake scar on each side.	269115	375232
Ffridd Tan y Graig	48	100407	180	82	50	1003	Roughout with a well-formed blade but otherwise quite crude flaking on both sides along the edges.	269162	375186
Ffridd Tan y Graig	83	n/a	200	116	100	4737	Elongated rounded clast with onion-skin weathering. There are some facets at one end and damage on one side, but these look likely to be natural. Very heavy.	269162	375186

Site	DT ref no.	PRN	Length (mm)	Breadth (mm)	Thickness (mm)	Weight (g)	Description	Easting	Northing
Ffridd Tan y Graig	103	100411	200	101	46	1394	Block that has been roughly shaped on the edges on both sides and has some fine nibbling in places.	269149	375205
Ffridd Tan y Graig	104	n/a	96	91	64	983	Rounded clast. Rather greyer and coarser than most but probably the same material as most of the rounded clasts.	269149	375205
Ffridd Tan y Graig	120	n/a	81	79	72	734	Rounded clast. Small with extensive onion-skin weathering.	269172	375174
Ffridd Tan y Graig	124	100412	215	119	59	1858	Roughout with flaking along the edges on both sides.	269154	375189
Ffridd Tan y Graig	187	100414	180	126	48	1659	Good shaped piece of scree with one large flake from one side and a flake at the end on the other. Broken across, apparently due to a mis-hit.	269167	375185
Ffridd Tan y Graig	188	100415	160	104	52	1071	Broken roughout with initial shaping along the edges.	269162	375189
Ffridd Tan y Graig	192	100416	210	89	41	1290	Piece of flat, parallel sided scree with rough shaping of edges on both sides. Broken during working.	269180	375183
Ffridd Tan y Graig	199	100417	360	96	39	1496	Long narrow flake, much less patinated than most of the Neolithic material. Long flake taken off the edge leaving a wavy edge to the piece. Some invasive knapping. On dorsal side there is some fine 'chittering' along the edge, some of which may be due to a fault in the stone, but much is genuine. Not as dark as Victorian working and so different to set-making flakes that this seems likely to be Neolithic despite the patina.	269159	375191
Ffridd Tan y Graig	A-2	n/a	148	146	45	1022	Large flake, big enough to be a roughout. Occasional flake scars on dorsal side.	269157	375172
Garreg Fawr	179	100413	190	150	65	2272	Piece of scree with flakes from both sides. Odd pockmarks on lower face possibly due to frost shattering.	268874	373263
Garreg Fawr	180-1	100418	101	98	25	232	Large flake with good bulb of percussion and platform. Scree surface on dorsal face with a flake scar removed when the flake was knapped.	268881	373273
Garreg Fawr	180-2	100418	136	117	44	584	Large flake with big flake scar on back.	268881	373273



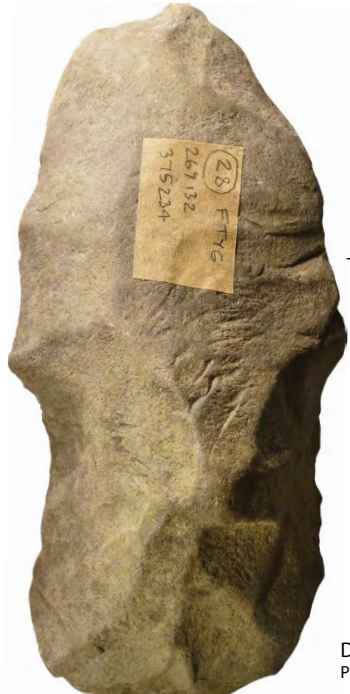
DT1



DT16



DT72A



DT28
PRN100405



DT42
PRN100406



DT48
PRN100407



DT73
PRN100408



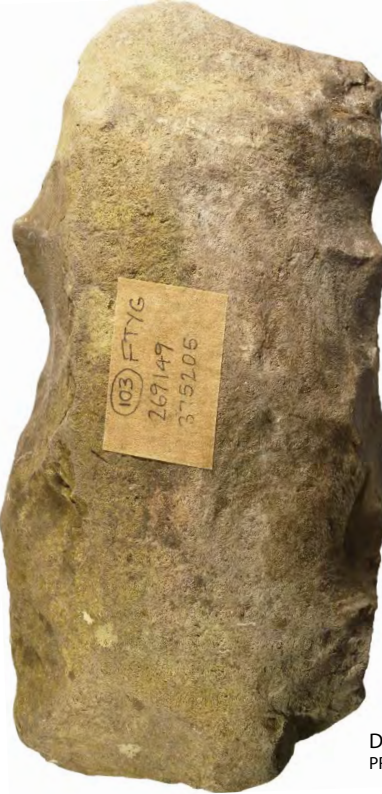
Figure 33. Roughouts and rounded clasts from Ffridd Tan y Graig and Dinas, collected by David Thorpe



DT76
PRN100409



DT79
PRN100410



DT103
PRN100411

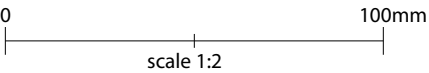
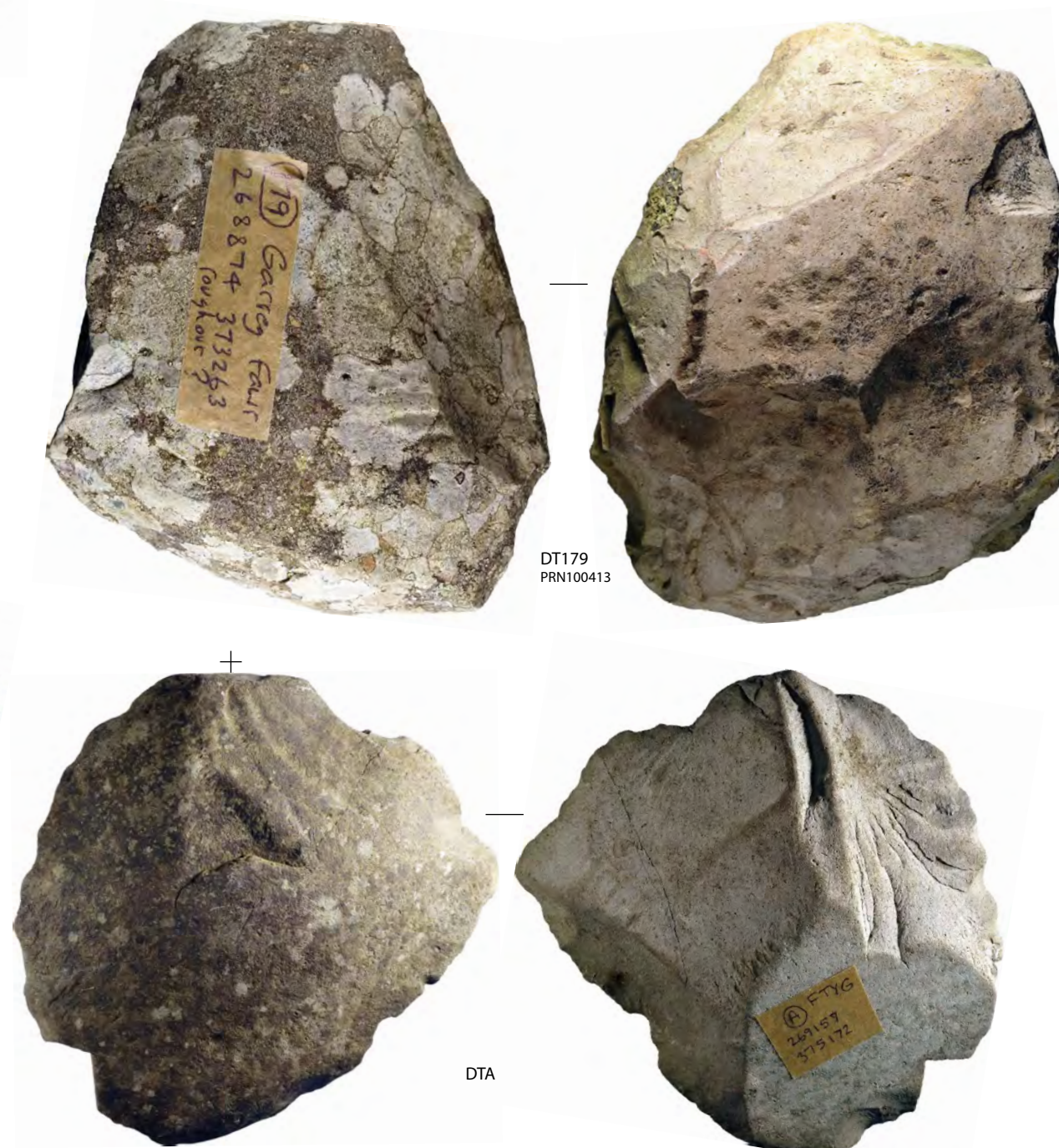
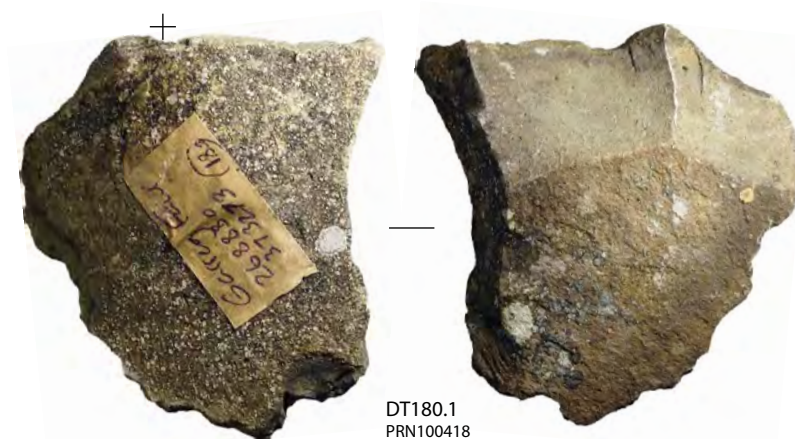




Figure 34. Roughouts and flakes from Ffridd Tan y Graig, collected by David Thorpe



Key
+ Point of percussion

0 100mm
scale 1:2



Figure 35. Large flake from Ffridd Tan y Graig,
collected by David Thorpe

8. OTHER FINDS

On 6th and 7th February 2023 Mark Edmonds, Emeritus Professor of Archaeology at the University of York, an expert on the Langdale axe source, visited the sites at Llanfairfechan and inspected the assemblages collected by the project. The site visits located several roughouts and other artefacts, four of which were collected, as recorded below. Some new features were also recorded.

Finds

Site	Id. No.	Length (mm)	Breadth (mm)	Thickness (mm)	Weight (g)	Description	Easting	Northing
Ffridd Tan y Graig	SF 10059 PRN 100577	190	138	49	1758	Large broken roughout. Well-shaped along the edges on both faces but broken across towards the butt end. Apparently aiming for a very broad but flat axe (Figure 36).	269162	375166
Ffridd Tan y Graig	SF 10060	98	84	83	991	Rounded clast with facets. Also some onion-skin weathering. Mark Edmonds considered the facets to possibly have been produced by use as a hammerstone.	269159	375170
Garreg Fawr	SF 10061	97	82	41	426	Plano-convex piece of white quartz with possible crushing around the edges. Seems to have been a piece of quartz deliberately broken in half to produce the flat base.	268921	373259
Garreg Fawr	SF 10062	132	113	59	1348	Rounded clast found on Garreg Fawr	268916	373268

Sites

Site	PRN	Description	Easting	Northing
Garreg Fawr	100578	A large angular boulder within the exposed scree. This has flakes and blocks removed from it but many of the scars are fresh. Those that are pale are so due to lichen cover, not weathering, so it appears that any working was due to recent activity, presumably wall construction. However, numerous flakes and some possible roughouts were seen below the boulder. Plate 56	269054	373588
Garreg Fawr	100579	Rock outcrop near top of Garreg Fawr with possibly quarried face. This is a low face that appears to have been broken and there is a flat area of ground below it as if very small-scale quarrying has taken place. The face is well weathered. Other vertical faces on low outcrops nearby appear natural and are more regular than this one.	268969	373207
Garreg Fawr	100580	A series of shallow, horseshoe-shaped hollows set into the hillslope. Visible on the Lidar but quite difficult to see on the ground. However, when located using the Lidar they can be recognised on the ground and are all a similar size and depth and form a shallow arc running across the slope. There appeared to be at least 5 hollows, four of which were recorded at the following locations (SH6893573453; SH6894573456; SH6894773464; SH6892073449). Whether these are related to the axe-working needs to be investigated.	268935	373453

Figure 35. Large flake from Ffridd Tan y Graig, collected by David Thorpe

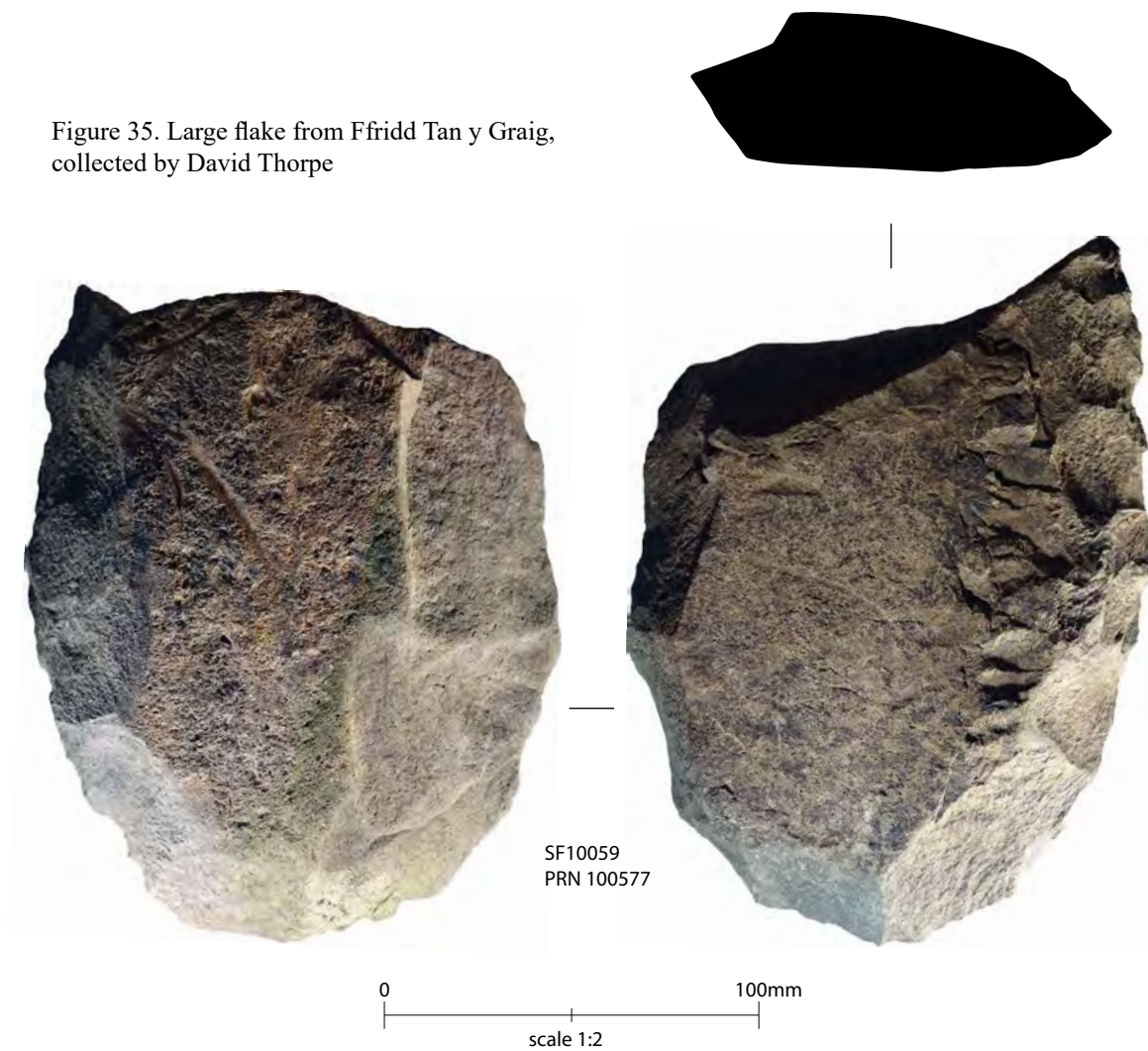


Plate 56. Large broken boulder on the side of Garreg Fawr (PRN 100578)

9. FURTHER WORK

The work so far at Maes y Bryn has resulted in a significant assemblage of axe debris and a range of other artefacts that are indicative of settlement. The test pitting has also given an indication of the extent of the site, although the full limits have not been reached. This site is deserving of much further work. More test pitting and a wider molehill survey would help establish the limits of the site, but to really understand the nature of the site excavation would be necessary. As much of the area has been disturbed by ploughing only deeper cut features might be expected to survive, but TP56 showed that there is an area that has avoided plough damage behind a field bank. This would be an ideal area to target with excavation. It is possible that a high resolution magnetometry survey could help to locate other areas for targeted excavation. It is difficult to identify isolated small pits through geophysics, but a concentration of pits might be visible. Much of the local stone gives a strong magnetic signal that confuses magnetometry and obscures archaeological features as seen in a commercial investigation on the edge of Llanfairfechan (Kenney 2023). However, the thin soils and relatively few stones on the Maes y Bryn site may make it suitable for geophysical survey.

This site is a high priority for future work, but the current project aimed an initial prospecting across the landscape, so more detailed work is beyond its scope and must await a future project.

At Ty'n y Llwyfan the main field has been thoroughly investigated by test pits. This has revealed concentrations of activity. If the lynchets do date from the Iron Age onwards then the ploughing has caused very substantial movement of artefacts and destroyed any *in situ* Neolithic deposits. Undisturbed deposits do survive on the parts of the field with scree, boulders and steep slopes that have made them impossible to plough. However, there is the possibility that the lynchets in fact formed in the Neolithic period and that deposits in TP75 are largely undisturbed. Elsewhere on the upper lynchet axe debris may have been incorporated into Neolithic ploughsoil and could have moved very little. The date and formation of the lynchets would be an important next step in the investigation of this area, but would require fairly large scale excavation and ideally OSL dating of sediments, both beyond the current phase of this project.

The evaluation trench (trench 31) in the lower screes was partially excavated in 2021 but was not finished in 2022 as its location split the team and made supervision of the test pits more difficult. This is therefore still to be completed. This will be done by a small team in 2023.

The lower field produced a much lower density of axe debris than the main field but the distribution of this does suggest that axe working took place lower down the hill slope and the topography of the field suggests that it may have been suitable for settlement. The find of one tiny piece of Neolithic pottery does suggest that further work to locate a settlement focus in this area would be worthwhile.

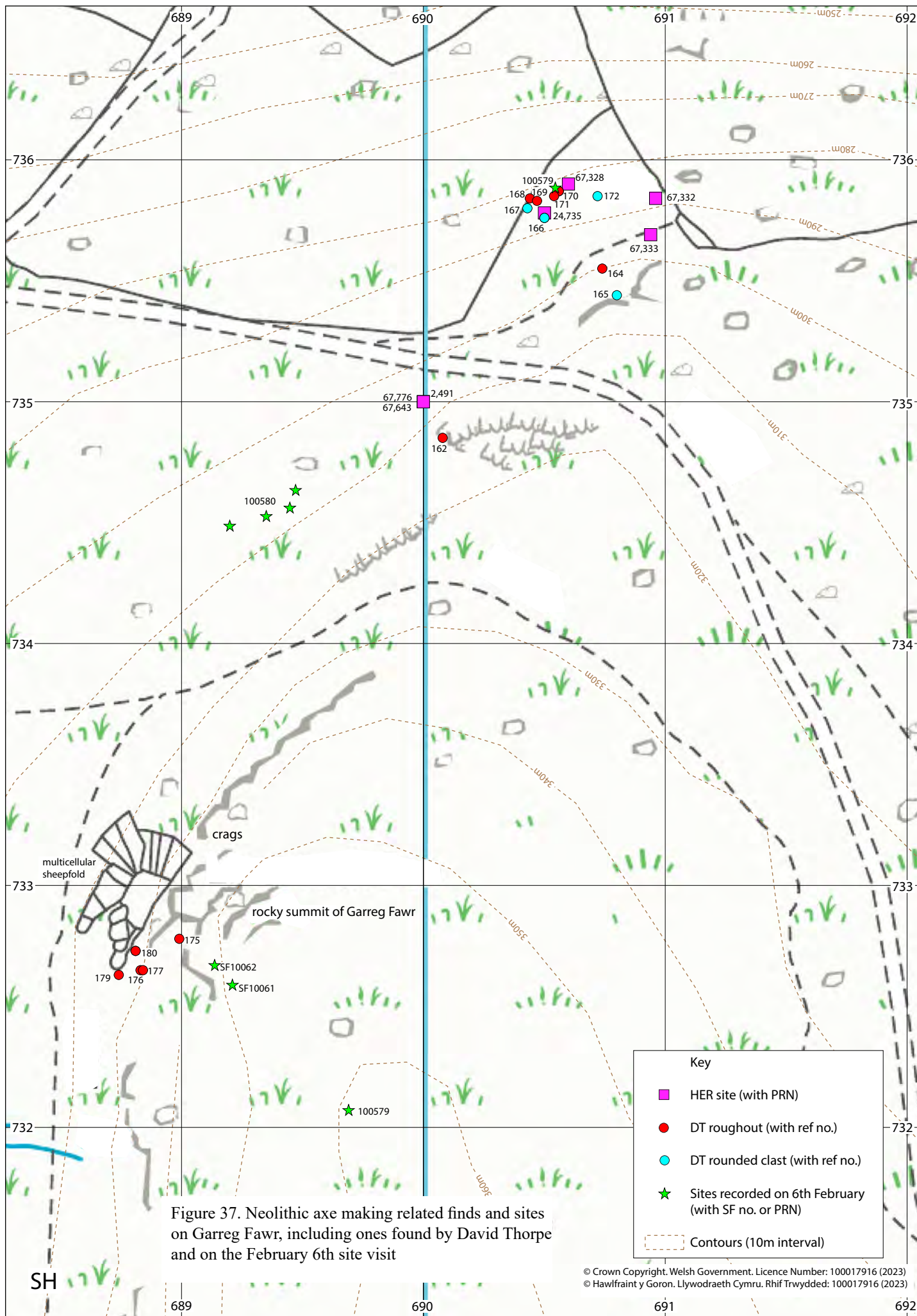
Funding has been obtained by Sheffield University for a PhD student to study the Group VII axe sources. The studentship is designed as a partnership with the Carneddau Landscape Partnership Scheme and one of the main aims is for the student to carry out a detailed study of the axe debris from this project. There is now a large assemblage of axe debris from the Ty'n y Llwyfan source, which will provide information on how working was carried out and the roughouts will give an indication of the type of objects that were being produced. This is valuable for this one source, but to understand the wider landscape assemblages from the other Group VII stone sources need to be compared to this one. The work of David Thorpe has produced a significant assemblage of roughouts from the Ffridd Tan y Graig site to provide a comparison of roughout styles and sizes, and he has been also working on Garreg Fawr. Test pitting on Garreg Fawr would produce an assemblage of axe debris directly comparable to the Ty'n y Llwyfan assemblage and would allow these two sources to be compared and contrasted. A priority for fieldwork in 2023 is therefore to focus on Garreg Fawr. Figure 37 shows known artefact findspots and other features on Garreg Fawr relating to axe making.

Some material from Graig Lwyd is available in the Penmaenmawr Museum and the Conwy Archive Service, which will enable a comparison with this site. However, a relatively small amount of flaked material has been retained and the production of more of this material from the Graig Lwyd area would aid comparisons. Extending the known area of working around the southern side of Graig Lwyd and possibly on to Clip yr Orsedd would also be valuable.

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11. ACKNOWLEDGEMENTS

The project has been grant aided by Cadw and undertaken in partnership with the Carneddau Landscape Partnership Scheme, with funding for advertising, volunteer recruitment, the school programme and other outreach activities from the National Lottery Heritage Fund through CLPS. 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. 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. Barbara Marshall and Louise Ingham washed and catalogued the finds, with help from Eddie Cox and students from Bangor University. Mike Lynes, Bethan Jones and Jane Kenney of GAT, John G Roberts (SNPA), and George Smith supervised the work on site. Special thanks to Gareth Wyn Jones for permission to work on his land and for help and support with the project (Plate 57).

This project is based on the work of the late David T Jones, and without his generosity in sharing his information and advice it would never have happened.



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APPENDIX I: LIST OF HER SITES AROUND LLANFAIRFECHAN AS SHOWN ON FIG 2

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, Llanfairfechan	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 Camarnaint	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, Llanfairfechan	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 Llanfair	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; medieval	Settlement; long hut	SH69657334
5420	Cultivation Terraces, Garreg Fawr	Unknown; medieval	Terraced ground; cultivation terrace	SH69637345
5473	Enclosed Hut Group, Ffridd Forfudd	Unknown	Hut circle settlement	SH70287329
7444	Enclosure, SE of Gwyllt Road	Unknown	Enclosure	SH68477341

PRN	Site name	Period	Site type	NGR
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
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

PRN	Site name	Period	Site type	NGR
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 Ffridd Forfudd	Prehistoric	Hut circle settlement	SH70087342
8047	Field System, W of Ffridd Forfudd	Unknown	Field system	SH70257354
8048	Platform, W of Ffridd Forfudd	Bronze age; unknown	Burnt mound; platform	SH70217348
8049	Circular Enclosure, W of Ffridd Forfudd	Unknown	Enclosure	SH70247339
8054	Possible Hut Group, N of Ffridd 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
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

PRN	Site name	Period	Site type	NGR
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 AND TRENCHES

Grid references for test pits rounded to the nearest metre. All test pits measured 1m by 1m, with the exception of TP 73, 75, 85, and 89.

Maes y Bryn

TP55

Location: SH 70510 73830

Height OD: 353.5m

Maximum depth of test pit: 0.30m

Context No.	Depth (m)	Description	Colour & Composition
5501	0.13	Turf and topsoil	Mid grey gritty loam with <10% small stones up to 0.05m long
5502	0.06	Ploughsoil	Mid grey-brown loamy silt with c.25% small and medium stones up to 0.1m long.
5503	0.04	Interface with natural, mixing between ploughsoil and natural	Mid brown gritty silt with occasional small stones and one larger rock about 0.25m long.
5504		Natural glacial clay	Yellow brown clayey silt with small and medium stones
5505	0.10 max	Probable burrow or root hole	Irregular linear hollow with undulating sides and base. Cut into 5504, filled by 5506.
5506	0.10 max	Fill of probable burrow or root hole	Dark grey-brown silt with occasional small stones and lenses of charcoal. Under 5503, fills 5505.

TP56

Location: SH 70510 73850

Height OD: 356m

Maximum depth of test pit: 0.45m

Context No.	Depth (m)	Description	Colour & Composition
5601	0.09	Turf and topsoil	Mid grey-brown silt
5602	0.05	Ploughsoil	Mid grey-brown clayey silt with small and medium sized stones.
5603	0.26	Stony silt layer	Grey clayey silt with about 35% stones up to 0.3m long
5604		Natural glacial clay	Mid orange-grey clayey silt with c.25% stones up to 0.3m long.

TP57

Location: SH 70510 73870

Height OD: 358m

Maximum depth of test pit: 0.33m

Context No.	Depth (m)	Description	Colour & Composition
5701	0.10	Turf and topsoil	Dark grey loam with occasional small stones.
5702	0.17	Ploughsoil	Dark grey-brown silt with c.30% small and medium stones.
5703	0.05	Mixed interface between 5702 and 5704	Greyish yellow-brown gritty silt with c.25% stones up to 0.2m long.
5704		Natural glacial clay	Greyish yellow-brown silty clay with c.30% small stones

TP58

Location: SH 70490 73871

Height OD: 357.5m

Maximum depth of test pit: 0.36m

Context No.	Depth (m)	Description	Colour & Composition
5801	0.09	Turf and topsoil	Dark grey silty loam.
5802	0.08	Ploughsoil	Dark grey-brown silt with c.35% small and medium stones.
5803	0.05	Stony interface between 5802 and 5804	Orange-brown silt with c.40% stones.
5804		Natural glacial clay	Yellow-brown clayey silt with numerous stones and one large boulder.

TP59

Location: SH 70470 73867

Height OD: 356m

Maximum depth of test pit: 0.30m

Context No.	Depth (m)	Description	Colour & Composition
5901	0.10	Turf and topsoil	Dark brown sandy silt with a few small stones
5902	0.12	Ploughsoil	Mid brown sandy silt with c.20% stones.
5903	0.12	Lower ploughsoil/relict soil	Grey-brown sandy silt with c.10% stones
5904		Natural glacial clay	Yellow-brown clayey silt.

TP60

Location: SH 70470 73850

Height OD: 354.5m

Maximum depth of test pit: 0.30m

Context No.	Depth (m)	Description	Colour & Composition
6001	0.06	Turf and topsoil	Dark grey silty loam.
6002	0.12	Ploughsoil	Dark grey-brown silty loam with c.30% small stones.
6003	0.10	Relict soil/interface with subsoil	Mid grey-brown silty loam
6004		Natural glacial clay	Orange-brown gritty silt with c.50% small stones

TP61

Location: SH 70470 73830

Height OD: 352m

Maximum depth of test pit: 0.36m

Context No.	Depth (m)	Description	Colour & Composition
6101	0.10	Turf and topsoil	Mid grey-brown sandy silt with c.15% small stones
6102	0.19	Ploughsoil	Mid grey-brown sandy silt with c.15% small stones.
6103	0.26	Lower ploughsoil/relict soil	Pale orange-brown sandy silt with c.35% medium sized stones, including a concentration of stones.
6104		Natural glacial clay	Mid yellow-brown sandy clay with c.30% small and medium stones.

TP62

Location: SH 70470 73810

Height OD: 350m

Maximum depth of test pit: 0.36m

Context No.	Depth (m)	Description	Colour & Composition
6201	0.10	Turf and topsoil	Mid grey-brown sandy silt with c.15% small stones
6202	0.19	Ploughsoil	Mid grey-brown sandy silt with c.15% small stones.
6203	0.26	Lower ploughsoil/ relict soil	Pale orange-brown sandy silt with c.35% medium sized stones, including a concentration of stones.
6204		Natural glacial clay	Mid yellow-brown sandy clay with c.30% small and medium stones.

TP63

Location: SH 70490 73890

Height OD: 359m

Maximum depth of test pit: 0.28m

Context No.	Depth (m)	Description	Colour & Composition
6301	0.05	Turf and topsoil	Dark brown sandy silt with a very few stones.
6302	0.10	Ploughsoil	Mid brown gritty sandy silt with c.10% stones.
6303	0.08	Lower ploughsoil/ relict soil	Grey-brown sandy silt with c.10% stones.
6304		Natural glacial clay	Yellow hard clayey silt with few stones.

TP64

Location: SH 70470 73890

Height OD: 358.5m

Maximum depth of test pit: 0.26m

Context No.	Depth (m)	Description	Colour & Composition
6401	0.07	Turf and topsoil	Dark grey humic silt
6402	0.12	Ploughsoil	Dark grey-brown silty loam with c.30% small stones.
6403	0.03	Interface between 6402 and 6404	Yellow-brown silty loam with c.30% small stones.
6404		Natural glacial clay	Yellow-brown clayey silt with c.10% small stones.
6405	0.06	Probable plough fur- row	Linear cut 0.18m wide and 0.06m deep filled by 6406. Cuts 6404.
6406	0.06	Fill of 6405	Yellow-brown silty loam. Essentially part of 6403.

TP65

Location: SH 70510 73890

Height OD: 360m

Maximum depth of test pit: 0.23m

Context No.	Depth (m)	Description	Colour & Composition
6501	0.10	Turf and topsoil	Dark grey loam with occasional small stones.
6502	0.13	Ploughsoil	Dark grey-brown gritty silt with c.30% small and me- dium stones.
6503		Natural glacial clay	Yellow-brown silty clay with c.30% small and medium stones.

TP66

Location: SH 70518 73848

Height OD: 356m

Maximum depth of test pit: 0.29m

Context No.	Depth (m)	Description	Colour & Composition
6601	0.19	Turf and topsoil	Dark grey silt with c.15% stones.
6602	0.06	Ploughsoil	Yellow-brown silt with c.10% stones.
6603		Natural glacial clay	Yellow-brown silty clay with some stone.

TP67

Location: SH 70490 73850

Height OD: 355m

Maximum depth of test pit: 0.29m

Context No.	Depth (m)	Description	Colour & Composition
6701	0.07	Turf and topsoil	Dark brown sandy silt with very few stones.
6702	0.20	Ploughsoil	Pale grey-brown gritty sandy silt with c.10% stones.
6703		Natural glacial clay	Yellow clayey silt with few stones.

TP68

Location: SH 70450 73890

Height OD: 358m

Maximum depth of test pit: 0.20m

Context No.	Depth (m)	Description	Colour & Composition
6801	0.10	Turf and topsoil	Brown-grey sandy silt with c.20% small stones.
6802	0.20	Ploughsoil	Mid orange-brown silty loam with c.35% small and medium stones.
6803		Natural glacial clay	Yellow-orange sandy clay with c.40% stones and fine gravel.

TP69

Location: SH 70450 73863

Height OD: 355m

Maximum depth of test pit: 0.26m

Context No.	Depth (m)	Description	Colour & Composition
6901	0.09	Turf and topsoil	Dark brown sandy silt with c.10% small stones.
6902	0.15	Ploughsoil	Grey-brown silty sand with c.25% stones.
6903		Natural glacial clay	Yellow silty clay with few stones.

TP70

Location: SH 70449 73849

Height OD: 353m

Maximum depth of test pit: 0.26m

Context No.	Depth (m)	Description	Colour & Composition
7001	0.11	Turf and topsoil	Mid grey-brown sandy silt with c.30% small stones.
7002	0.15	Ploughsoil	Mid grey-brown sandy silt with c.40% small and medium stones.

Context No.	Depth (m)	Description	Colour & Composition
7003		Natural glacial clay	Yellow-orange sandy clay with c.25% small and medium stones.

Ty'n y Llwyfan

TP71

Location: SH 69745 73902

Height OD: 202m

Maximum depth of test pit: 1.35m

Context No.	Depth (m)	Description	Colour & Composition
7101	0.12	Turf and topsoil	Dark brown clayey silt with few stones.
7102	0.30	Ploughsoil	Dark brown silt with c.50% small stones.
7103	0.90	Lower ploughsoil/ colluvium	Mid yellow-brown silt with c.50% small stones.
7104		Natural glacial clay	Pale yellow-brown silt

TP72

Location: SH 69753 73898

Height OD: 203.5m

Maximum depth of test pit: 0.32m

Context No.	Depth (m)	Description	Colour & Composition
7201	0.07	Turf and topsoil	Dark brown humic silty loam with few stones.
7202	0.16	Ploughsoil	Dark brown humic silty loam with c.40% stones.
7203		Natural glacial clay	Pale orange-grey clayey silt with c.60% stones.

TP73

Location: SH 69758 73888

Height OD: 204m

Size: 2m by 2m

Maximum depth of test pit: 0.57m

Context No.	Depth (m)	Description	Colour & Composition
7301	0.10	Turf and topsoil	Grey-brown silty loam with few stones.
7302	0.12	Ploughsoil	Mid orange-brown sandy silt with c.35% small stones.
7303	0.14	Lower part of plough-soil mixed with 7304	Orange-brown sandy silt with c.50% stones, some large stones.
7304		Natural scree	Yellow-brown silty sand with over 50% large angular stones, large sub-rounded stones and smaller cobbles.
7305	0.25	Fill of [7307]	Very dark brown crumbly silt with patches of charcoal and flecks of charcoal and slag and burnt clay throughout. Includes pieces of furnace lining. Few stones. Under 7303. Fills 7307.
7306		Natural glacial clay	Yellow-brown clayey silt seen inside of cut 7307 under 7304.
7307	0.25	Cut of pit containing furnace waste	About a quarter of the cut seen in the trench. Sub-oval pit with fairly steep north side, more gradually sloping east side and rounded base. Cuts 7304, filled by 7305.

TP74

Location: SH 69762 73914

Height OD: 208m

Maximum depth of test pit: 0.23m

Context No.	Depth (m)	Description	Colour & Composition
7401	0.07	Turf and topsoil	Dark brown silty loam with few stones.
7402	0.15	Ploughsoil	Mid brown silty loam with c.15% small stones.
7403	0.05	Bioturbation, roots or burrow	Irregular patch of dark grey-brown silty sand with rare fragments of charcoal.
7404		Natural glacial clay	Orange-brown silt with c.50% stones.

TP75

Location: SH 69779 73950

Height OD: 214.5m

Size: 3m by 2m

Maximum depth of test pit: 0.70m

Context No.	Depth (m)	Description	Colour & Composition
7501	0.09	Turf and topsoil	Mid brown silty loam with some small stones and many flakes.
7502	0.16	Ploughsoil	Reddish brown silty loam with some small stones and many flakes.
7503	0.10	Interface between 7502 and 7504, lower part of 7502	Orange-brown silty loam with some small stones and many flakes.
7504		Dense stone and axe debris deposit	At least 80% stones and axe debris in a brown silty loam matrix. Stones densely packed and up to 0.20m long.
7505	0.10	Thin, relatively charcoal-rich patch, possible bioturbation.	Reddish brown silty loam with numerous flecks of charcoal. Patch seen in corner of trench, extending up to 0.3m into the trench. Under 7502 and above 7503.
7506	>0.45	Part of 7504 in sondage	At least 80% stones and axe debris in a brown silty loam matrix. Stones densely packed and up to 0.20m long. A high proportion of the stones are axe flakes and other debris.
7507	>0.15	Colluvial deposit	Orange-brown silty loam with occasional small stones and some flakes. Much fewer stones and flakes than 7506. 7506 and 7507 seem to merge with no clear relationship between them.
7508	>0.50	Dump of larger stones	Sub-rounded and sub-angular stones up to 0.45m long with a dark brown silty loam matrix. These stones were generally unworked, though there were some flakes between them. Some of the larger stones seemed to have been stacked against each other, sloping down from west to east, with medium sized stones packed around them. A very large stone just projected through the grass at the southern end of the trench, and although initially it appeared that there was a line of larger stones here, when more fully revealed it appeared that the larger stones had been dumped to form a linear deposit. The smaller stones (7504/7506) had built up against these.

TP76

Location: SH 69760 73943

Height OD: 208m

Maximum depth of test pit: 0.40m

Context No.	Depth (m)	Description	Colour & Composition
7601	0.23	Turf and topsoil	Mid grey-brown sandy silt with c.30% small and medium stones.
7602	0.19	Ploughsoil	Mid brown sandy silt with c.30% medium stones.
7603		Natural glacial clay	Pale yellow-brown silty clay with c.40% medium and large stones.
7604	0.15	Bioturbation, probably animal burrowing	Mid orange-brown sandy silt with c.10% small and medium stones. Irregular patch.

TP77

Location: SH 69775 73928

Height OD: 213m

Maximum depth of test pit: 0.43m

Context No.	Depth (m)	Description	Colour & Composition
7701	0.20	Turf and topsoil	Mid grey-brown sandy silt with c.10% stones.
7702	0.15	Ploughsoil	Mid yellow-brown sandy silt with c.15% small and medium stones. A lens of dark grey organic material seen in north and east sections but probably the result of roots rotting <i>in situ</i> .
7703	0.20	Buried soil/ interface layer	Yellow-brown silty clay with c.20% medium and large stones.
7704		Natural glacial clay	Pale yellow-brown clay with c.30% medium and large stones.

TP78

Location: SH 69779 73917

Height OD: 213.5m

Maximum depth of test pit: 0.40m

Context No.	Depth (m)	Description	Colour & Composition
7801	0.26	Turf and topsoil	Mid grey-brown silt with c.30% stones.
7802	0.15	Ploughsoil	Mid brown clayey silt with c.20% small and medium stones.
7803		Natural glacial clay	Pale grey-brown clayey silt with c.60% medium and large stones.

TP79

Location: SH 69780 73903

Height OD: 213m

Maximum depth of test pit: 0.52m

Context No.	Depth (m)	Description	Colour & Composition
7901	0.22	Turf and topsoil	Dark brown silt with few stones.
7902	0.32	Ploughsoil	Pale brown clayey silt with numerous stones.
7903		Natural glacial clay	Pale grey-brown gritty silt with c.40% small and medium stones.

TP80

Location: SH 69766 73863

Height OD: 201m

Maximum depth of test pit: 0.65m

Context No.	Depth (m)	Description	Colour & Composition
8001	0.12	Turf and topsoil	Dark brown silty loam with few stones.
8002	0.15	Colluvium	Mid brown silt with c.40% stones up to 0.3m long.
8003	0.25	Natural scree mixed with silt	Pale yellow-brown clayey silt with c.30% stones up to 0.2m long.
8004		Natural glacial clay	Yellow-brown silty clay with c.40% stones up to 0.3m long.

TP81

Location: SH 69775 73874

Height OD: 206.5m

Maximum depth of test pit: 0.56m

Context No.	Depth (m)	Description	Colour & Composition
8101	0.07	Turf and topsoil	Dark brown silt with few stones.
8102	0.30	Natural scree	Mid brown silt with c.40% angular stones up to 0.25m long.
8103	0.17	Colluvium	Yellow-brown clayey silt with few stones.
8104		Natural glacial clay	Pale yellow-brown clayey silt with occasional small stones.

TP82

Location: SH 69688 73936

Height OD: 185.5m

Maximum depth of test pit: 0.30m

Context No.	Depth (m)	Description	Colour & Composition
8201	0.17	Turf and topsoil	Mid grey-brown silty sand with c.45% medium and large stones
8202	0.07	Ploughsoil	Mid brown silty sand with c.40% small angular stones.
8203		Natural glacial clay	Pale yellow-brown silty clay with c.20% medium and large stones.
8204	0.30	Natural deposit	Mid grey-brown clayey loam with c.30% small stones. Occurred over north half of test pit. Very firm, probably just a variation in the natural deposit. Over 8203.

TP83

Location: SH 69703 73910

Height OD: 188m

Maximum depth of test pit: 0.35m

Context No.	Depth (m)	Description	Colour & Composition
8301	0.15	Turf and topsoil	Mid brown sandy silt with c.20% small stones
8302	0.20	Ploughsoil	Mid grey-brown silty loam with c.40% medium and large stones.
8303		Natural glacial clay	Pale yellow-brown sandy clay with c.40% medium sized stones.

TP84

Location: SH 69708 73920

Height OD: 190m

Maximum depth of test pit: 0.40m

Context No.	Depth (m)	Description	Colour & Composition
8401	0.19	Turf and topsoil	Dark brown sandy silt with c.30% small stones.
8402	0.20	Ploughsoil	Mid grey-brown silty loam with c.40% small stones.
8403		Natural glacial clay	Pale yellow-brown sandy clay with c.40% medium and large stones.

TP85

Location: SH 69778 73953

Height OD: 214.5m

Size: 2m by 1m

Maximum depth of test pit: 0.35m

Context No.	Depth (m)	Description	Colour & Composition
8501	0.15	Turf and topsoil	Dark grey-brown silty loam with c.10% small stones.
8502	0.15	Ploughsoil	Dark brown silty loam with c.25% small stones.
8503	?	Dense stone deposit, same as 7504	Dark brown silty loam with c.80% densely packed stones up to 0.2m long and numerous flakes. Surface of deposit exposed only, not excavated.
8504	?	Colluvial deposit, same as 7507	Mid orange-brown gritty loam with c.25% small stones. Surface of deposit exposed only, not excavated.

TP86

Location: SH 69770 73976

Height OD: 211m

Maximum depth of test pit: 0.43m (not fully excavated)

Context No.	Depth (m)	Description	Colour & Composition
8601	0.20	Turf and topsoil	Mid grey-brown sandy silt with c.20% small stones.
8602	>0.20	Ploughsoil	Mid brown sandy silt with c.35% small stones.

TP87

Location: SH 69768 73981

Height OD: 210.5m

Maximum depth of test pit: 0.30m (not fully excavated)

Context No.	Depth (m)	Description	Colour & Composition
8701	0.20	Turf and topsoil	Mid grey-brown sandy silt with c.40% small stones.
8702	>0.10	Ploughsoil	Grey-brown silty loam with c.40% small stones.

TP88

Location: SH 69766 73987

Height OD: 209.5m

Maximum depth of test pit: 0.90m

Context No.	Depth (m)	Description	Colour & Composition
8801	0.10	Turf and topsoil	Dark brown humic silt with few stones.
8802	0.23	Ploughsoil	Dark grey-brown gravelly silt with c.35% small stones.

Context No.	Depth (m)	Description	Colour & Composition
8803	0.52	Lower ploughsoil/col-luvium	Mid yellow-brown clayey silt with c.20% small stones and gravel and occasional flecks of charcoal
8804	0.05	Mixed interface between 8803 and 8805	Mid orange-brown clayey silt with c.15% gravel and small stones
8805		Natural glacial clay	Mid orange-brown clayey silt with c.40% stones from gravel to large stones of 0.5m long.

TP89

Location: SH 69779 73947

Height OD: 215m

Size: 2m by 1m

Maximum depth of test pit: 0.36m

Context No.	Depth (m)	Description	Colour & Composition
8901	0.15	Turf and topsoil	Dark grey-brown silty loam with c.5% small and medium stones.
8902	0.15	Ploughsoil	Dark brown silty loam with c.25% small and medium stones.
8903	?	Dense stone deposit, same as 7504	Dark brown silty loam with c.80% densely packed stones up to 0.2m long and numerous flakes. Surface of deposit exposed only, not excavated.

TP90

Location: SH 69699 73896

Height OD: 185m

Maximum depth of test pit: 0.21m

Context No.	Depth (m)	Description	Colour & Composition
9001	0.10	Turf and topsoil	Dark brown sandy silt with c.30% small stones.
9002	0.09	Ploughsoil	Dark grey-brown silty loam with c.30% small stones.
9003		Natural glacial clay	Pale yellow sandy clay with c.45% small to large stones.

TP91

Location: SH 69682 73924

Height OD: 183m

Maximum depth of test pit: 0.20m

Context No.	Depth (m)	Description	Colour & Composition
9101	0.12	Turf and topsoil	Mid grey-brown sandy silt with few stones.
9102	0.09	Ploughsoil	Mid grey-brown silty loam with c.15% small stones.
9103		Natural glacial clay	Pale yellow sandy clay with c.40% mid to large stones.

TP92

Location: SH 69599 73914

Height OD: 163.5m

Maximum depth of test pit: 0.31m

Context No.	Depth (m)	Description	Colour & Composition
9201	0.14	Turf and topsoil	Mid grey-brown sandy silt with c.20% small stones.
9202	0.18	Ploughsoil	Mid yellow-brown silty loam with c.40% small and medium stones.

Context No.	Depth (m)	Description	Colour & Composition
9203		Natural glacial clay	Pale yellow sandy clay with c.50% stones up to 0.2m long.

TP93

Location: SH 69750 73904

Height OD: 203m

Maximum depth of test pit: 0.54m

Context No.	Depth (m)	Description	Colour & Composition
9301	0.09	Turf and topsoil	Dark brown silt with few stones.
9302	0.37 max	Ploughsoil	Dark grey-brown gravelly silt with c.30% small and medium stones.
9303		Natural glacial clay	Pale yellow-brown clayey silt with c.50% stones up to 0.3m long.

TP94

Location: SH 69777 73979

Height OD: 212m

Maximum depth of test pit: 0.25m (not fully excavated)

Context No.	Depth (m)	Description	Colour & Composition
9401	0.20	Turf and topsoil	Mid grey-brown sandy silt with c.50% small stones.
9402	>0.10	Ploughsoil	Grey-brown silty loam with c.60% small and medium stones, and one large rounded stone.

TP95

Location: SH 69595 73904

Height OD: 162.5m

Maximum depth of test pit: 0.42m

Context No.	Depth (m)	Description	Colour & Composition
9501	0.08	Turf and topsoil	Dark brown humic silty loam with few stones.
9502	0.31	Ploughsoil	Dark grey-brown silt with c.30% stones up to 0.3m long.
9503		Natural glacial clay	Yellow-brown gritty clayey silt with c.50% gravel and occasional larger stones.

TP96

Location: SH 69588 73910

Height OD: 162m

Maximum depth of test pit: 0.29m

Context No.	Depth (m)	Description	Colour & Composition
9601	0.10	Turf and topsoil	Dark brown humic silty loam with occasional stones up to 0.2m long.
9602	0.15	Ploughsoil	Dark grey-brown silt with c.50% stones up to 0.5m long.
9603		Natural glacial clay	Yellow-brown gritty clayey silt with c.50% gravel and occasional larger stones.

TP97

Location: SH 69767 73984

Height OD: 210m

Maximum depth of test pit: 0.15m (not fully excavated)

Context No.	Depth (m)	Description	Colour & Composition
9701	0.15	Turf and topsoil	Mid grey-brown sandy silt with c.25% stones.

TP98

Location: SH 69772 73985

Height OD: 211m

Maximum depth of test pit: 0.20m (not fully excavated)

Context No.	Depth (m)	Description	Colour & Composition
9801	0.20	Turf and topsoil	Mid grey-brown sandy silt with c.40% small and medium stones.
9802		Ploughsoil	Grey-brown silty loam with small and medium stones.

TP99

Location: SH 69798 73987

Height OD: 213m

Maximum depth of test pit: 0.24m

Context No.	Depth (m)	Description	Colour & Composition
9901	0.15	Turf and topsoil	Dark brown sandy silt with c.20% small stones.
9902	0.06	Ploughsoil	Mid grey-brown silty loam with c.30% small and medium stones.
9903		Natural glacial clay	Pale yellow-brown sandy clay with c.40% medium and large stones.

TP100

Location: SH 69808 73995

Height OD: 212m

Maximum depth of test pit: 0.53m

Context No.	Depth (m)	Description	Colour & Composition
10001	0.15	Turf and topsoil	Dark grey-brown silty loam with c.10% small stones.
10002	0.40 max	Ploughsoil	Mid brown gravelly silty loam with c.30% stones up to 0.2m long.
10003		Natural scree	Mid brown silt with c.90% densely packed angular stones up to 0.6m long.

TP101

Location: SH 69809 73979

Height OD: 215m

Maximum depth of test pit: 0.30m

Context No.	Depth (m)	Description	Colour & Composition
10101	0.15	Turf directly over scree.	Mid brown sandy silt with c.50% medium and large stones.
10102	0.15	Scree with some possible mixing with ploughsoil	Grey-brown silty loam with c.70% medium and large angular stones.
10103		Natural scree	Orange-brown sandy clay with c.75% medium and large angular stones.

TP102

Location: SH 69820 73966

Height OD: 218.5m

Maximum depth of test pit: 0.35m

Context No.	Depth (m)	Description	Colour & Composition
10201	0.15	Turf directly over scree.	Dark grey-brown sandy silt with c.70% angular medium and large stones.
10202	Dug to depth of 0.25m, not fully excavated	Natural scree	Almost entirely stone with matrix of grey-brown gritty silt. Stones are angular and sub-angular and measure from 0.05m to 0.34m in length.

TP103

Location: SH 69817 73931

Height OD: 224m

Maximum depth of test pit: 0.30m

Context No.	Depth (m)	Description	Colour & Composition
10301	0.15	Turf and topsoil	Mid grey-brown silty sand with c.35% small stones.
10302	0.10	Ploughsoil	Mid orange-brown silty sand with c.40% small and large stones
10303	0.08	Interface between 10302 and 10304	Mid orange-brown sandy clay with c.40% stones.
10304		Natural glacial clay	Yellow clay with c.30% small and medium stones.

APPENDIX III: LITHIC ASSESSMENT CATALOGUE

Key to abbreviations

Material

bc	black chert
cig	coarse igneous
fe	iron
gl	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	Find No.	Context	Class	No. of items	Material	Comment	0-50 mm	51-100 mm	101-1500 mm	1501 mm +
0	10051	0	f	1	gl	Short, broad, tertiary flake with pronounced bulb and recent damage	0	1	0	0
0	10052	0	f	2	gl	Both slightly twisting tertiary, one with a pronounced bulb. Both weathered and damaged	0	2	0	0
0	10008	0	f	1	gl	thin, tertiary flake with slight twist	1	0	0	0
0	10009	0	f/ff	1	gl	Thick flake with pronounced bulb	1	0	0	0
0	10010	0	f/ff	1	gl	Slightly twisting tertiary frag	1	0	0	0
0	10011	0	f/ff	1	gl	tertiary frag	1	0	0	0
0	10012	0	f/ff	1	gl	Curving tertiary frag with possibly prepared platform and minimum bulb	0	1	0	0
0	10013	0	f/ff	1	gl	Thick tertiary frag with faceted platform and pronounced bulb	1	0	0	0
0	10014	0	f/ff	1	gl	Thick, twisting tertiary frag	1	0	0	0
0	10015	0	f	1	gl	Thick tertiary flake with pronounced bulb	1	0	0	0
0	10016	0	f/ff	1	gl	Thin tertiary frag	1	0	0	0
0	10017	0	f	1	gl	Thick, short, broad, tertiary flake with plain platform and pronounced bulb	0	1	0	0
0	10018	0	f	1	gl	Thick secondary flake with plain platform	1	0	0	0
0	10019	0	f/ff	1	gl	Thick tertiary frag	1	0	0	0
0	10020	0	f/ff	1	gl	Thin tertiary frag	1	0	0	0
0	10021	0	f/ff	1	gl	Thin tertiary frag with recent break	1	0	0	0
0	10022	0	f	1	gl	Thin tertiary flake	1	0	0	0
0	10023	0	f	1	gl	Thin tertiary flake	1	0	0	0

Trench	Find No.	Context	Class	No. of items	Material	Comment	0-50 mm	51-100 mm	101-1500 mm	1501 mm +
0	10024	0	f	1	gl	Thick tertiary flake with plain platform and pronounced bulb	1	0	0	0
0	10025	0	f	1	gl	Thin tertiary flake with minim bulb and possibly faceted platform	1	0	0	0
0	10026	0	f/ff	1	gl	Thin, curving tertiary frag	1	0	0	0
0	10027	0	f/ff	1	gl	Thick, curving tertiary frag	1	0	0	0
0	10028	0	nat	1	slate	natural, unused split pebble	0	0	0	0
0	10029	0	f/ff	1	gl	Thin, tertiary frag	1	0	0	0
0	10030	0	f	1	gl	Thin, curving, tertiary flake with minim bulb	1	0	0	0
0	10031	0	f	1	gl	Thick tertiary flake with pronounced bulb	1	0	0	0
0	10032	0	f	1	gl	Thick tertiary flake with possibly prepared platform and pronounced bulb	0	1	0	0
0	10033	0	f	1	gl	Thick, broad, tertiary flake with pronounced bulb	1	0	0	0
0	10034	0	nat	1	gl	Natural, ice shattered frag	0	0	0	0
0	10035	0	f/ff	1	gl	Thin, tertiary frag	1	0	0	0
0	10036	0	f/ff	1	gl	Thin, curving tertiary frag	1	0	0	0
0	10037	0	f/ff	1	gl	Thin, twisting tertiary frag	0	1	0	0
0	10038	0	f	1	gl	Thin, curving and twisting tertiary flake	0	1	0	0
0	10039	0	f/ff	1	gl	Thin, curving and twisting tertiary flake with possibly prepared platform	0	1	0	0
0	10040	0	f	1	gl	Thick tertiary flake with pronounced bulb	0	1	0	0
0	10041	0	f/ff	1	gl	Thin, slightly twisting tertiary frag	0	1	0	0
0	10042	0	f/ff	1	gl	Thick secondary frag with pronounced bulb	1	0	0	0
0	10043	0	f	1	gl	Thick secondary frag with pronounced bulb	1	0	0	0
0	10044	0	f/ff	1	gl	Thin tertiary frag with minim bulb	1	0	0	0
0	10045	0	if	1	gl	Primary frag	0	1	0	0
0	10046	0	f	1	gl	Thick secondary flake with possibly prepared platform and minim bulb	1	0	0	0
0	10047	0	f	1	gl	Thin, curving tertiary flake with minim bulb	1	0	0	0
0	10048	0	f	1	gl	Thin, curving and twisting tertiary flake with minim bulb	1	0	0	0
0	10049	0	f	1	gl	Thin, curving and twisting tertiary flake with minim bulb	1	0	0	0
0	10050	0	nat	1	sst	Possibly plough-shattered frag of a pebble	0	0	0	0
0	10053	0	axro	1	gl	Surface find near water pipe trench. Complete rough-out with D-shaped cross-section, so possibly for an adze not an axe	0	0	0	0
55	5501	5501	f/ff	9	gl	Includes thin tertiary curving and twisting pieces	8	1	0	0
55	5502	5502	f/ff	5	gl	One piece thick with plain plat and pronounced bulb	5	0	0	0
55	5503	5503	f/bf	2	gl	one tertiary flake and one burnt frag	1	1	0	0
56	5601	5601	f/ff	1	gl	Thin, curving and twisting tertiary flake with minim bulb	1	0	0	0
56	5602	5602	f/ff	14	gl	One ff med curving and twisting. 9 ff under 25mm L	14	0	0	0
56	5603	5603	f/ff	33	gl	8 are tertiary	29	4	0	0
56	5608	5602	hst?	1	qzte	Possible hammerstone. Coarse igneous. Quartzite?	0	0	0	0
56	5609	5603	ctf/ff	2	gl	1 large ctf. One thick tertiary frag with pronounced bulb	0	1	1	0
56	5604	5602	rp	1	gl	Convex end scraper/edge retouched knife on a thick, long flake and with inverse retouch along one side edge	0	0	0	0
56	5605	5602	crp?	1	gl	Large thick flake with some possible removals along one edge. Or chance trample damage. Too weathered to be certain	0	0	0	0
56	5606	5602	rpf	1	gl	Broken convex scraper on a thick flake	0	0	0	0

Trench	Find No.	Context	Class	No. of items	Material	Comment	0-50 mm	51-100 mm	101-1500 mm	1501 mm +
56	5607	5603	rp	1	gl	Ovate end and side scraper on a large thick flake, unifacially trimmed all round	0	0	0	0
57	5701	5701	f/ff	5	gl	1 large flake thick with pronounced bulb. 1 small flake is thin tertiary	4	0	1	0
57	5702	5702	f/ff	16	gl		16	0	0	0
57	5703	5703	f/ff	4	gl	all under 25mm L	4	0	0	0
57	5704	5701	bf	2	dol?	Heat shattered. Coarse igneous. Suggests burnt stone activity	0	0	0	0
57	5705	5702	bf	1	gl	large, burnt scree frag	0	0	1	0
57	5706	5703	if	1	vq	angular, broken frag. Nat?	0	0	0	0
57	5707	5702	upeb?	1	qte?	Working slab? Flat, split pebble with scratch or cut marks on the outer face	0	0	0	0
58	5801	5801	f/ff	18	gl		15	3	0	0
58	5802	5802	f/ff	11	gl		10	1	0	0
58	5803	5803	f/ff	7	gl		7	0	0	0
58	5803	5803	upeb?	1	Qte?	Pebble frag with scratch or cut marks, see sf 5707	0	0	0	0
58	5805	5801	bf	1	dol?	Suggests burnt stone activity	0	0	0	0
58	5804	5802	ctf	1	fl	Poor quality mid-grey flint. Probably scalar and anvil-struck.	0	0	0	0
59	5901	5902	f/ff	4	gl	1 is curving and twisted	4	0	0	0
59	5902	5903	f/ff	2	gl		0	2	0	0
59	5903	5903	f/ff	2	gl		1	0	1	0
59	5904	5902	if	1	vq	Angular frag. Deliberately broken from a larger block?	0	0	0	0
60	6001	6001	f/bf	2	gl	1 flake with minim bulb. 1 burnt piece	2	0	0	0
60	6001	6001	upeb?	1	sl	Pebble frag with scratch or cut marks	0	0	0	0
60	6002	6001	bf	1	dol?	Heat shattered. Suggests burnt stone activity	0	0	0	0
61	6101	6101	f/ff	8	gl		8	0	0	0
61	6102	6102	f/ff	17	gl	one med flake with a pronounced bulb	16	1	0	0
61	6103	6103	f/ff	3	gl	1 small f thin and twisting. 1 med f with pronounced bulb	1	2	0	0
61	6104	6101	ctf	1	fl	Good quality, probably imported black flint. Small blade core, punch-struck	0	0	0	0
61	6105	6102	pf	1	fl	Small pebble frag	0	0	0	0
61	6105	6102	scalp	1	fl	Irregular scalar piece from an anvil-struck pebble of mottled mid-grey flint	0	0	0	0
62	6201	6201	f/ff	3	gl	1 small f thin, curving and twisting	3	0	0	0
62	6202	6202	f/ff	20	gl		18	2	0	0
62	6203	6202	if	2	gl		0	2	0	0
63	6301	6302	f/ff	5	gl		5	0	0	0
63	6302	6303	f/ff	20	gl		19	1	0	0
63	6303	6302	f/ff	11	gl		11	0	0	0
64	6401	6401	f/ff	25	gl	1 med ff thick with pronounced bulb	24	1	0	0
64	6402	6402	f/ff	12	gl		12	0	0	0
64	6403	6403	f/ff	4	gl		4	0	0	0
64	6406	6406	f	2	gl	1 small f is thin, curved and twisting	1	1	0	0
64	6408	6402	hst?	1	sst	Heavy cobble of fine sst with a weathered possible facet on end	0	0	0	0
64	6409	6406	bc	1	clay?	Irregular broken frag of a larger object of vesicular, quartz-gritted burnt clay. Oven frag? Could include carbon frags for dating?	0	0	0	0

Trench	Find No.	Context	Class	No. of items	Material	Comment	0-50 mm	51-100 mm	101-1500 mm	1501 mm +
64	6404	6401	scalp	1	fl	Small, irregular scalar piece, probably anvil-struck. Colour?	0	0	0	0
64	6405	6402	rp	1	gl	End and side scraper on a thick medium long flake	0	0	0	0
64	6407	6402	rp?	1	gl	Piercer? Small flake frag with an elongated point (now broken) produced by steep unifacial edge retouch	0	0	0	0
65	6501	6501	f/ff	7	gl	2 flake frags join	5	2	0	0
65	6502	6502	f/ff	23	gl		21	2	0	0
65	6503	6502	f	2	gl	Both thick with pronounced bulb	0	2	0	0
65	6504	6501	cf?	1	cq	Small frag of rock crystal quartz, possibly deliberately broken	0	0	0	0
66	6601	6601	f/ff	16	gl		15	1	0	0
66	6601	6601	bf	9	gl		0	0	0	0
66	6602	6602	f/ff	5	gl		5	0	0	0
67	6701	6702	f/ff	9	gl		9	0	0	0
67	6702	6702	f	1	fl	Small. Thin, tertiary flake of pinkish grey flint. Punch struck	0	0	0	0
67	6703	6702	f/ff	1	bc	Tip of a small thin flake of fine black chert. Possibly from a blade core	0	0	0	0
68	6801	6801	f/ff	13	gl		9	4	0	0
68	6802	6802	f/ff	33	gl		26	7	0	0
68	6803	6803	ch?	1	gl	Small piece of scree bifacially flaked one end	0	0	0	0
69	6901	6901	f/ff	26	gl		24	2	0	0
69	6902	6902	f/ff	18	gl		18	0	0	0
69	6902	6902	rp	1	gl	medium flake retouched to a narrow point. Piercer	0	0	0	0
70	7001	7001	f/ff	12	gl		12	0	0	0
70	7002	7002	f/ff	5	gl		5	0	0	0
71	7101	7101	if	2	gl		2	0	0	
71	7102	7102	f/ff	3	gl		2	1	0	
71	7103	7103	f/ff	9	gl		9	0	0	
72	7201	7201	f/ff	5	gl		4	1	0	
72	7202	7202	if	1	gl		0	1	0	
73	7301	7301	f/ff	21	gl		13	8	0	
73	7302	7302	f/ff	13	gl		9	4	0	
73	7303	7303	f/ff	14	gl		11	3	0	
73	7303	7303	rp	1	gl	Large edge-retouched flake	0	0	1	
73	7304	7302	angf	1	slag	fe slag. Modern	0	0	0	
73	7305	7303	angf	6	slag	fe slag. Modern	0	0	0	
73	7306	7303	angf	1	vq	Angular facets suggest it was worked in some way or at least an import	0	0	0	
73	7307	7303	axrof	1	gl	Broken axe roughout	0	0	0	
74	7401	7401	f/ff	3	gl		2	1	0	
74	7401	7401	rp	1	gl	Denticulate scraper	0	1	0	
74	7401	7401	rp?	1	gl	Denticulate scraper?	0	1	0	
75	7501	7501	f/ff	232	gl		208	23	1	0

Trench	Find No.	Context	Class	No. of items	Material	Comment	0-50 mm	51-100 mm	101-1500 mm	1501 mm +
75	7502	7502	f/ff	250	gl		232	16	1	1
75	7502	7502	f/ff	229	gl		217	12	0	0
75	7502	7502	rp?	1	gl	Possible casually retouched piece, medium	0	0	0	0
75	7502	7502	f/ff	176	gl		160	16	0	0
75	7503	7501	f/ff	1	gl	One large angular scree block with some recent damage	0	0	1	0
75	7503	7501	axro	1	gl	very large elongated scree block, partly worked, rough-out reject. Very weathered.	0	0	0	0
75	7550	7504	f	1	gl	Thick, broad, secondary flake	0	1	0	0
75	7551	7504	f/ff	1	gl	Thick, broad, secondary flake frag	0	1	0	0
75	7552	7504	f	1	gl	Thick, broad, secondary flake	0	0	1	0
75	7553	7504	f/ff	1	gl	prepared platform	0	1	0	0
75	7554	7504	f/ff	1	gl	Small twisting flake	1	0	0	0
75	7555	7504	f	1	gl	thin flake with prepared platform	0	1	0	0
75	7556	7504	if	1	gl	angular frag, reject piece	0	0	1	0
75	7557	7504	f/ff	1	gl	thin, twisting flake frag	1	0	0	0
75	7558	7504	f/ff	1	gl	thin, twisting flake frag	1	0	0	0
75	7559	7504	f	1	gl	thin, twisting flake	1	0	0	0
75	7560	7504	f/ff	1	gl	thin, twisting flake frag	1	0	0	0
75	7561	7504	f/ff	1	gl		0	1	0	0
75	7562	7504	f/ff	1	gl	thin, twisting flake frag	0	1	0	0
75	7563	7504	f	1	gl	thin, twisting flake	0	1	0	0
75	7564	7504	f	1	gl	thin flake	0	1	0	0
75	7565	7504	f/ff	1	gl	Thick, broad, secondary flake frag	0	1	0	0
75	7566	7504	f/ff	1	gl	Broad, tertiary flake	0	1	0	0
75	7567	7504	f	1	gl	Tertiary twisting flake	0	1	0	0
75	7568	7504	f	1	gl	Broad, tertiary flake with pronounced bulb	0	1	0	0
75	7569	7504	f	1	gl	Broad, tertiary flake with slight twist	0	1	0	0
75	7570	7504	f	1	gl	Broad, thick primary flake with slight twist	0	1	0	0
75	7571	7504	ctf	1	gl	Thick, angular secondary piece	0	0	1	0
75	7572	7504	f	1	gl	Thin flake with slight twist and plain platform	0	1	0	0
75	7573	7504	f	1	gl	Thick, broad, primary flake with pronounced bulb	0	1	0	0
75	7574	7504	f	1	gl	Thick tertiary flake with minim bulb	1	0	0	0
75	7575	7504	f	1	gl	Thick secondary flake with minim bulb	0	1	0	0
75	7576	7504	f	1	gl	Thin flake with twist and pronounced bulb	0	1	0	0
75	7577	7504	f	1	gl	Thick tertiary flake with twist and plain platform	1	0	0	0
75	7578	7504	f	1	gl	Thick, broad, tertiary flake with twist and pronounced bulb	0	1	0	0
75	7579	7504	ctf	1	gl	Very thick, large, secondary core trimming flake	0	0	1	0
75	7580	7504	ctf	1	gl	Very thick, large, secondary core trimming flake	0	0	1	0
75	7581	7504	f	1	gl	broad secondary flake	0	1	0	0
75	7582	7504	f	1	gl	broad primary flake with natural platform and pronounced bulb	0	0	1	0
75	7583	7504	f/ff	1	gl	thin, tertiary twisting flake frag with minim bulb	1	0	0	0
75	7584	7504	f/ff	1	gl	large, thick tertiary frag	0	0	1	0
75	7585	7504	if	1	gl	Thick secondary frag	0	0	1	0
75	7586	7504	if	1	gl	thick, irregular primary frag	0	0	1	0
75	7587	7504	f/ff	1	gl	Thick secondary frag	0	1	0	0

Trench	Find No.	Context	Class	No. of items	Material	Comment	0-50 mm	51-100 mm	101-1500 mm	1501 mm +
75	7588	7504	rpf	1	gl	Large flat thin slab of ovate shape with unifacial invasive flaking. Edge retouched knife	0	0	1	0
75	7589	7504	if	1	gl	Thick secondary frag	1	0	0	0
75	7590	7504	f	1	gl	Thick, broad, secondary flake	0	1	0	0
75	7591	7504	f	1	gl	Thick, broad, secondary flake with pronounced bulb	0	1	0	0
75	7592	7504	f/ff	1	gl	large, thick tertiary frag with a pronounced bulb and faceted platform	1	0	0	0
75	7593	7504	ctf	1	gl	Thick secondary frag	0	1	0	0
75	7594	7504	f	1	gl	Thick secondary flake	0	1	0	0
75	7595	7504	f/ff	1	gl	Long, narrow primary frag	0	0	1	0
75	7596	7504	f	1	gl	thin, tertiary twisting flake with minim bulb	1	0	0	0
75	7597	7504	f/ff	1	gl	Long, narrow primary frag	0	0	1	0
75	7598	7504	f	1	gl	Thick, broad primary flake	0	1	0	0
75	7599	7504	nat	1	gl	Natural scree frag. Probably raw material import	0	0	1	0
75	75100	7504	f	1	gl	Thick secondary flake with pronounced bulb	0	1	0	0
75	75101	7504	if	1	gl	Thick primary frag	0	1	0	0
75	75102	7504	if	1	gl	Scree block frag, probable reject piece	0	0	1	0
75	75103	7504	axrof	1	gl	Large, thick block partly bifacially worked. Broken throughout reject	0	0	1	0
75	75104	7504	ctf	1	gl	Long, narrow, irregular, secondary frag with pronounced bulb	0	0	1	0
75	75105	7504	ctf	1	gl	Long, narrow, irregular, secondary frag	0	0	1	0
75	75106	7504	f	1	gl	Short, broad flake with natural platform and pronounced bulb	0	1	0	0
75	75107	7504	f/ff	1	gl	Broad, twisting tertiary flake	0	1	0	0
75	75108	7504	f	1	gl	Thick tertiary flake	0	1	0	0
76	7601	7601	f/ff	4	gl		1	3	0	
76	7602	7602	f/ff	3	gl		0	2	1	
77	7701	7701	f/ff	13	gl		6	5	2	
77	7702	7702	f/ff	32	gl		25	6	1	
77	7702	7702	rp?	1	gl	Possible retouched piece	0	0	1	
77	7702	7702	rp?	1	gl	Possible retouched piece	0	0	1	
77	7703	7703	f/ff	7	gl		5	2	0	
78	7801	7801	f/ff	6	gl		2	3	0	1
78	7802	7802	f/ff	5	gl		5	0	0	0
79	7901	7901	f/ff	5	gl		2	2	1	0
79	7902	7902	f/ff	2	gl		2	0	0	0
79	7902	7902	upeb?	1	sh	utilised? Pebble. Frag of a fine-grained pebble with poss scratch or incised marks	0	0	0	0
80	8001	8001	f/ff	15	gl		11	4	0	0
80	8002	8002	f/ff	36	gl		26	0	10	0
80	8003	8003	if	2	gl	possibly just natural scree	0	0	1	1
80	8003	8003	crp?	1	gl	Very large frag with possible edge retouch, or perhaps just trample damage	0	0	0	1
80	8003	8003	f/ff	13	gl		7	0	5	1
81	8101	8101	f/ff	34	gl		23	11	0	0
81	8102	8102	f/ff	33	gl		22	11	0	0

Trench	Find No.	Context	Class	No. of items	Material	Comment	0-50 mm	51-100 mm	101-1500 mm	1501 mm +
81	8103	8102	axro	1	gl	Made on a large, thick flake	0	0	0	0
81	8104	8103	f/ff	9	gl		0	5	4	0
81	8104	8103	f/ff	27	gl		21	6	0	0
81	8104	8103	rp?	1	gl	Possible edge-retouched knife	0	1	0	0
81	8104	8103	f/ff	14	gl		6	6	2	0
81	8104	8103	crp?	1	gl	Possible casually retouched flake	0	1	0	0
82	8201	8201	f/ff	3	gl		2	1	0	0
82	8202	8202	f/ff	11	gl		10	1	0	0
82	8203	8203	axro	1	gl	Short, broad scree piece. Rejected due to poor material	0	0	0	0
83	8301	8301	f/ff	5	gl		3	2	0	0
83	8302	8302	f/ff	1	gl		1	0	0	0
84	8401	8401	f/ff	1	gl		0	1	0	0
84	8402	8402	f/ff	1	gl		1	0	0	0
85	8501	8501	f/ff	58	gl		52	6	0	0
85	8501	9501	f/ff	117	gl		111	6	0	0
85	8502	8502	f/ff	192	gl	No obvious curving flakes	186	6	0	0
85	8502	8502	f/ff	149	gl	No obvious curving flakes	130	19	0	0
85	8502	8502	crp?	3	gl	2 medium flakes and one small flake with possible casual retouch.	0	0	0	0
85	8502	8502	f/ff	155	gl	No obvious curving flakes	138	17	0	0
85	8502	8502	f/ff	135	gl	No obvious curving flakes	124	11	0	0
85	8502	9502	f/ff	116	gl	No obvious curving flakes	99	17	0	0
85	8502	8502	upeb	1	sl	Pebble with possible incisions/scratches from use	0	0	0	0
85	8503	8502	if	1	cq		0	0	0	0
85	8504	8502	if	2	vq		0	0	0	0
86	8601	8601	f/ff	41	gl		39	2	0	0
86	8602	8602	f/ff	89	gl		77	12	0	0
86	8604	8601	other	1	cp	clay pipe stem frag	0	0	0	0
86	8605	8601	other	1	bone	pig molar	0	0	0	0
86	8603	8602	rp?	1	gl	A thick medium flake fragment with a chance convex tip and one edge of which may have some deliberate retouch to produce a sharp slightly convex edge. Possibly just damage but too weathered to be certain	0	0	0	0
87	8701	8701	f/ff	61	gl		56	2	3	0
87	8701	8701	rp?	1	gl	Denticulate scraper	0	1	0	0
87	8702	8702	f/ff	207	gl		195	11	1	0
87	8703	9701	if	3	vq	2 af. 1 sub-rounded f	0	0	0	0
88	8801	8801	f/ff	84	gl	some curving flakes	68	15	1	0
88	8801	8801	rp?	1	gl	Possible retouched piece medium	0	0	0	0
88	8802	8802	f/ff	134	gl		102	32	0	0
88	8802	8802	rp?	1	gl	Possible retouched piece small	0	0	0	0
88	8802	8802	f/ff	190	gl		174	16	0	0
88	8806	8801	if	1	vq		0	0	0	0
88	8807	8802	if	1	pumice/ lava	Vesicular. Natural.	0	0	0	0

Trench	Find No.	Context	Class	No. of items	Material	Comment	0-50 mm	51-100 mm	101-1500 mm	1501 mm +
88	8805	8803	drill trial piece?	1	sl	small thin natural fragment shallowly drilled, probably by a flint point once on one side and twice on the other. These concavities are not in line. The size of the piece could have made a bead, if further worked as found on several Mesolithic sites.	0	0	0	0
89	8901	8901	f/ff	147	gl		130	15	2	0
89	8901	8901	f/ff	147	gl		131	16	0	0
89	8902	8902	f/ff	110	gl		77	31	2	0
89	8902	8902	f/ff	62	gl		55	7	0	0
89	8902	8902	axro	1	gl	Rough-out reject	0	0	0	0
89	8904	8902	axro	1	gl	Broken rough-out. Unusual broad form. Made on a flat scree slab	0	0	0	0
90	8004	8004	f/ff	5	gl		0	0	4	1
90	9001	9001	f/ff	1	qte	Probably accidental break. Discard?	0	0	0	0
91	9101	9101	f/ff	1	gl		1	0	0	0
91	9101	9101	rp?	1	gl	Large flake with possible casual edge retouch -knife	0	0	0	0
91	9102	9102	f/ff	2	gl		2	0	0	0
91	9103	9101	nat	1	f	Gravel flint. Kept for reference	0	0	0	0
92	9201	9201	f/ff	5	gl		2	3	0	0
92	9202	9202	f/ff	2	gl		1	1	0	0
92	9202	9202	if	1	qte		0	0	0	0
93	9301	9302	f/ff	2	gl		1	1	0	0
93	9301	9302	rp?	1	gl	Possible edge-retouched knife	0	0	0	0
94	9401	9401	f/ff	65	gl		55	9	1	0
94	9403	9401	if	1	vv	natural gravel, discard	0	0	0	0
94	9402	9402	f/ff	19	gl	all very weathered	19	0	0	0
95	9501	9502	f/ff	20	gl		16	4	0	0
95	9501	9502	rp?	1	gl	Possible casually retouched piece	0	0	0	0
96	9601	9602	f/ff	2	gl		2	0	0	0
97	9701	9701	f/ff	88	gl		75	11	2	0
97	9701	9701	rpf?	1	gl	medium	0	0	0	0
98	9801	9801	f/ff	132	gl		124	6	2	0
98	9802	9802	f/ff	54	gl		48	6	0	0
99	9901	9901	f/ff	4	gl		3	1	0	0
99	9902	9902	f/ff	1	gl		1	0	0	0
100	10003	0	f/ff	1	gl	Thin, curving, finishing flake	1	0	0	0
100	10004	0	f/ff	1	gl	Probably natural rolled frag	1	0	0	0
100	10001	0	f/ff	1	gl	Thin, tertiary flake frag	1	0	0	0
100	10007	0	f/ff	1	gl	Thin, shaping flake	1	0	0	0
100	10002	0	f/ff	2	gl	Thin, shaping flakes	2	0	0	0
100	10006	0	f/ff	2	gl	Thin, shaping flakes	2	0	0	0
100	10005	0	f/ff	1	gl	Thin, shaping flake	1	0	0	0
100	10054	0	f/ff	1	gl	Some later edge damage	0	0	0	1
100	10055	0	f/ff	1	gl		0	0	0	1
100	10056	0	f/ff	1	gl	Some recent edge damage	1	0	0	0

Trench	Find No.	Context	Class	No. of items	Material	Comment	0-50 mm	51-100 mm	101-1500 mm	1501 mm +
100	10057	0	f/ff	1	gl		1	0	0	0
100	10058	0	f/ff	2	gl		2	0	0	0
100	10001	10001	f/ff	28	gl		19	9	0	0
100	10002	10002	f/ff	58	gl		38	19	1	0
100	10002	10002	f/ff	162	gl		144	18	0	0
101	10101	10101	f/ff	15	gl		13	2	0	0
101	10101	10101	crp?	1	gl	possible casually retouched piece. Small	0	0	0	0
101	10102	10102	f/ff	5	gl		4	1	0	0
101	10103	10103	f/ff	13	gl		12	0	1	0
102	10201	10201	f/ff	29	gl		8	12	9	0
102	10202	10201	axro	1	gl	rough out reject	0	0	0	0
102	10203	10202	f/ff	25	gl		5	18	2	0
102	10203	10202	f/ff	24	gl		4	16	4	0
102	10203	10202	rp?	1	gl	Possible casually retouched piece, medium	0	0	0	0
102	10203	10202	f/ff	24	gl		5	15	4	0
102	10203	10202	rp?	1	gl	Possible casually retouched piece, medium	0	0	0	0
102	10203	10202	rp?	1	gl	Possible casually retouched piece, large	0	0	0	0
102	10203	10202	f/ff	52	gl		21	28	3	0
102	10203	10202	f/ff	23	gl		4	18	1	0
102	10204	10202	f/ff	2	gl	Large flakes. No secondary working. Not rough-outs	0	0	2	0
103	10301	10301	f/ff	16	gl		13	3	0	0
103	10302	10302	f/ff	32	gl		19	10	3	0
103	10303	10303	f/ff	26	gl		11	15	0	0

APPENDIX IV: TABLE OF ARTEFACTS AND SITES FOUND BY DAVID THORPE

Text in table

Red=roughouts

Black = potential hammers

Blue = potential core material

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[illegible]

Survey date	Reference number	Picture	NGR	Size	Description
28/1/22 FTYG	1		269199 375171	15 x 9 cm	Surrounded by old flakes and some more recent debris. Elongated clast. Collected
28/1/22 FTYG	16, 17 and 18		269220 375174	9 x 10cm 15 x 13cm 12 x 13cm	3 cobbles found together 16 (top in picture) collected . Very round but some oxidised surface damage

Survey date	Reference number	Picture	NGR	Size	Description
4/2/22 FTYG Dave and Ian Thorpe	22		269073 375209		Rough out discarded flake / axe on edge of path ?Check, poor pictures. Collected by I. Thorpe.
4/2/22 FTYG	28 PRN 100405		269132 375234		Good axe rough out, collected. Clearly worked both sides but thick at one end. Collected
4/2/22 FTYG	41		269132 375234	12 x 11cm	Smaller round hammer, several in area

Survey date	Reference number	Picture	NGR	Size	Description
4/2/22 FTYG	42 PRN 100406		269115 375232		Thin discarded roughout or flake. Flake scars both sides but thin. Next to hammer stone 12x12x10.5 (no pic) Collected
4/2/22 FTYG	43		268137 375193	Hammer 23 x 13cm	Working area with abundant flakes and hammers and possible roughout. Left on site
4/2/22 FTYG	46		269146 375188		Possible rough roughout next to path surrounded by flakes

Survey date	Reference number	Picture	NGR	Size	Description
4/2/22 FTYG	47			13.5 x 7cm	Possible roughout found by IST. Both sides have flake scars but thick and irregular shape. Collected by I. Thorpe
10/02/22 FTYG DT	48 PRN 100407		269162 375186	18.5 x 8 x 4.5cm	Well-made unworn axe roughout, found on flat side in flake field close to edge of woodland in ancient flake/work area Collected
10/02/22 FTYG	49		269171 375199		20m up hill above 48 roughout, another broken roughout left in situ
10/02/22 FTYG	51		269175 375195	10 x 10cm	Good roughout left in situ and broken hammer
10/02/22 FTYG	53		269191 375198		Broken roughout and possible roughout tip, collected by Rory Bryson and nice hammer. Another hammer 3m above

Survey date	Reference number	Picture	NGR	Size	Description
11/02/22 FTYG Ian Thorpe	63		269172 375174		Excellent finely worked but broken roughout found by Ian Thorpe. Well finished, fine flaking near finished and relatively thin but broken end. Possible adze as very thin Collected by Ian Thorpe
11/02/22 FTYG Ian Thorpe	64		269172 375174		Flattened but worked roughout found by I Thorpe. Possible scraper, thin. Collected

Survey date	Reference number	Picture	NGR	Size	Description
Dinas partial survey 19/2/22	72A		269776 373849	12 x 10 x 5.5cm	2 small, rounded cobbles near base of scree on terrace above steep slope. Left hand cobble measured and collected, well rounded river cobble, broken, coarse grained compared to local screes. Collected
Dinas partial survey 19/2/22 DT	73 PRN 100408		269776 373849	19 x 9 x 5.5cm	Good roughout 1.5m from hammer cobbles. Highly weathered surface and assume discarded as thick with multiple cracks/ flaws. First picture as found. Collected First picture – as found

Survey date	Reference number	Picture	NGR	Size	Description
Dinas partial survey 19/2/22 DT	76 PRN 100409		269836 373891	18 x 11 x 4cm	Broken possible roughout surrounded by flakes. Possible scraper, apparently worked surface point but irregular Collected
Dinas partial survey 19/2/22 DT	77		269814 373876	8 x 7 x 4.5cm	2 cobbles/ hammers 1.3m apart. Contrast to angular scree around them
Dinas partial survey 19/2/22 DT	79 PRN 100410		269783 373858	17 x 12 x 7 cm	Very thick roughout or core with percussion scarring on both sides. Surrounded by flakes. Photo as found - collected

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan y Graig 19/02/22 DT	83		269212 375188	21cm long	Elongated rounded clast surrounded by angular debris/scre. One broken face and damage to end Collected
FTYG 19/2/22 DT	103, 104		269149 375205	9x8cm	Courser grained near-round cobble with surface damage in flake field hammer 80cm from good roughout collected Close to roughout below

Survey date	Reference number	Picture	NGR	Size	Description
FTYG 19/2/22 DT	103		269149 375205	18x9cm	Good roughout, flat one side, Flake scars on both sides. collected
FTYG 19/2/22 DT	104		269149 375205	10x9x6.5cm	Very round cobble clast, coarse grained compared to scree in area, darker with some lichen. Some damage – flattened broken face

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd tan y Graig survey Ian Thorpe21/2/22	IA		269124 375198		Excellent well-flaked but broken roughout, very similar to IB Clear percussion scars both sides. Thin. Could be adze or scraper Collected by Ian Thorpe
Ffridd tan y Graig survey Ian Thorpe21/2/22	IB		269169 375180		A number of roughouts found in a short visit with cobbles (large and small) and numerous flakes and large scree boulders with old percussion scars/ weathered lichen conchoidal fracture. First roughout well-made finely flaked but broken roughout (photographed in situ above) Much darker than other roughouts and flakes/ scree in the area. Again thin Collected by Ian Thorpe

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd tan y Graig survey Ian Thorpe21/2/22	IC		269134 375180		Large apparently worked roughout
Ffridd tan y Graig survey Ian Thorpe21/2/22	ID	  	Needs confirming		Enormous 4kg probable roughout. Zig zag edge, similar in form to 28, 48 and 73. One flattened surface. Found very close to IB 48 and IC and large potential source boulders.

Survey date	Reference number	Picture	NGR	Size	Description
25/02/22 Graig Lwyd site visit DT	105		271899 275230		Concussion scarring on weather boulders below cliffs at Craig Lwyd. Most of slope vegetation covered – bilberry, mosses etc
25/02/22 Craig Lwyd site visit DT	106		271866 275266		Flake scars on boulder next to wall
25/02/22 Craig Lwyd site visit DT	110		271756 275023	20x12x11cm	First rounded clast with broken end next to old flakes with conchoidal fracture percussion marks. Well lichenized, right next to 2 good flakes

Survey date	Reference number	Picture	NGR	Size	Description
25/02/22 Craig Lwyd site visit DT	115		271860 275340	28x23cm	Older scree, well Very rounded clasts close together, well lichened
25/02/22 Graig Lwyd site visit DT	116			18x17cm	2 metre away to west. Well-rounded clast, slightly broken, well lichen covered, surrounded by finer flakes with percussion scars, all in old scree
Ffridd Tan y Graig 25/02/22 DT and IT	117		269187 375168	19x13cm	2 Rough roughouts left in situ

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan y Graig 25/02/22 DT and IT	118		269179 375170		Irregular roughout perched on oak stem, irregular and broken. Left where found
Ffridd Tan y Graig 25/02/22 DT and IT	119	 	269179 375170		5 reasonable hammers within 3 m of roughout

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan y Graig 25/02/22 DT and IT	120		269172 375174	8.5x8x6.5cm	Area of Ian's flat axe and 1 st possible adze. Excellent small hammer very round but broken surfaces (collected) next to adjacent roughout (left in situ)

Survey date	Reference number	Picture	NGR	Size	Description
					

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan y Graig 25/02/22 DT and IT	122	 	269178 375182	23x5.5cm	Excellent roughout 2m below last picture, left in situ by IST

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan y Graig 25/02/22 DT and IT	124 PRN 100412		269154 375189	21x11.5x5cm	In scree, excellent roughout below hut area; well flaked but thick. One orange brown surface (base) flat white surface with moss (top), surrounded by flake scree. 1.85kg. Collected
Ffridd Tan y Graig 25/02/22 DT and IT	125		269154 375189		Good roughout above large ash tree near hut, irregular and thin in almost exclusively Neolithic material, still close to hut site., Possible keeled scraper. Worked end.

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan y Graig 25/02/22 DT and IT	126		269154 375189		Working terrace with large core still in situ, obvious working floor with abundant debitage, still close to hut. Numerous roughouts found around this area (5+)
Ffridd Tan y Graig 25/02/22 DT and IT	127		269150 375221		Excellent long thin roughout found by IST with irregular roughout next to it, left in place. On raised rock ledge

Survey date	Reference number	Picture	NGR	Size	Description
				13x10cm	4m below excellent hammer, very rounded, coarse grained broken base
Ffridd Tan y Graig 25/02/22 DT and IT	135		269158 375222		Good potential core of very fine-grained white microdiorite with numerous flake scars, surrounded by scree, flakes and abundant cobbles. Left as found
Ffridd Tan y Graig 25/02/22 DT and IT	137		269158 375222		Cobbles/ hammers in scree/ flake field

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan y Graig 25/02/22 DT and IT	147		269167 375216	25x12cm 10x9cm	Big roughout found by IST, broken end -bite taken out, left in situ. Next to 2 good hammers. At base of Victorian screes just above 4 ash trees and hammer cluster. Left on site.
Ffridd Tan y Graig 25/02/22 DT and IT	149		269172 375213	15x10cm	Small very round hammer next to irregular roughout, left in situ

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan y Graig 25/02/22 DT and IT	153		269195 375192		Rough roughout found by IST. Left in situ. Good source material, abundant cores with conchoidal fracture/ percussion, hammer stones 1.5 m below

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan y Graig 25/02/22 DT and IT	154		269223 375176		Roughout found by IST with hammers in area, left as found. Underside looks like it's worked.
Ffridd Tan y Graig 25/02/22 DT and IT	157				Junction between Victorian debris field at top of picture-dark flakes with no lichens and old scree at base. Hammers only found in older scree

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan y Graig 25/02/22 DT and IT	161		269256 375174		Just higher up Large roughout high at top edge of old scree. Has percussion scars and zig zag edge but broken in half, more weathered than roughouts in woodland. Close to hammers. At top of old scree with 4 hammers within a metre. All left in situ.
Garreg Fawr IST Survey	162		269008 373485		Roughout found in gorsy scree on Garreg Fawr IST

Survey date	Reference number	Picture	NGR	Size	Description
Garreg Fawr survey 1/4/22 DT 3 hours	164		269074 373555		Old weathered potential core material on scree at top of slope. Well lichened, fine grained ringed stone with percussion scars.
Garreg Fawr survey 1/4/22 DT 3 hours	165		269080 373544	8.5x7cm	Small potential hammer, very well rounded, surrounded by very coarse scree.

Survey date	Reference number	Picture	NGR	Size	Description
Garreg Fawr survey 1/4/22 DT 3 hours	166		269050 373576	12x6cm 13x13cm	Very weathered scree with some rounded clasts and abundant flakes Coarse grained clasts in fine grained scree, battered clasts, roughouts recorded in area before
Garreg Fawr survey 1/4/22 DT 3 hours	167		269043 373580	13x11x10cm	Very rounded potential hammer, white lichen covered, very rounded compared to angular scree around it. Irregular potential roughouts within a metre – weathered but left in situ
	PRN 100578		269056 373587		Large boulder surrounded by screes with flakes and roughouts beneath

Survey date	Reference number	Picture	NGR	Size	Description
Garreg Fawr survey 1/4/22 DT 3 hours	168		269044 373584	11x9cm	Lichen covered, potential roughouts in area
Garreg Fawr survey 1/4/22 DT 3 hours	169		269047 373583		Really good percussion scarred lichenized flake

Survey date	Reference number	Picture	NGR	Size	Description
Garreg Fawr survey 1/4/22 DT 3 hours	170		269056 373587	18x10x4cm 12x10x3.5cm	2 simple roughouts with percussion scars both sides, sheltered under large boulder with abundant sharp flakes protected in cave. Photographed then left as found.

Survey date	Reference number	Picture	NGR	Size	Description
Garreg Fawr survey 1/4/22 DT 3 hours	171	   	269054 373585		The boulder is old, well lichen and weathered, surrounded by old scree, and perched on a natural seat (flat boulder). Sheltered behind this “seat” are what looks like 3 stacked roughouts, the bottom two glued in place by lichens but 1 looks like a reasonably well-made axe, the upper 2 more irregular/ thicker. Found by Ian Thorpe Left as found. Other possible roughouts in the area Top roughout moved, photographed and returned, others not touched. Another potential roughout just next to seat

Survey date	Reference number	Picture	NGR	Size	Description
Garreg Fawr survey 1/4/22 DT 3 hours	172		269072 373585	16x10cm	Broken potential hammer
Garreg Fawr survey 1/4/22 DT 3 hours					Picture of 3 sites

Survey date	Reference number	Picture	NGR	Size	Description
Garreg Fawr survey 1/4/22 DT 3 hours	175		268899 373278	50x20cm	Flakes and worked debris in old, oxidised scree. Sett working material above and below, but older material is well-weathered with percussion scars and big flakes up to 50cmx 20cm
Garreg Fawr survey 1/4/22 DT 3 hours	176		268883 373265		Large amount of lichen covered percussion scarred flakes below summit above sheep folds

Survey date	Reference number	Picture	NGR	Size	Description
Garreg Fawr survey 1/4/22 DT 3 hours	177		268884 373265		Rough roughouts with flakes and weathered scree and potential hammer stones
Garreg Fawr survey 1/4/22 DT 3 hours	179 PRN 100413		268874 373263		Large broken potential broken roughout next to pen
Garreg Fawr survey 1/4/22 DT 3 hours	180 PRN 100418	 	268881 373273	22x17cm	Large possible roughout left as found. Well oxidised, well lichened with smaller potential roughout (broken). Good percussion scarred flakes in area (several collected)

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan Y Graig 4/03/22 DT	181		269137 375224		2 potential roughouts (top one potential keeled scraper) at bottom of Ffridd tan y Graig site. Lots of flakes in area. Left in situ.
Ffridd Tan Y Graig 4/03/22 DT	182		269092 237215	22x8x3.5cm	Thin potential roughout surrounded by flakes. Left in situ

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan Y Graig 4/03/22 DT	191		269180 375183	17x10x 4cm	Another roughout below are large oak tree with multiple stems. Left in situ
Ffridd Tan Y Graig 4/03/22 DT	192 PRN 100416		269180 375183		Another roughout on top of leaf litter next to oak tree, thicker, better shaped, Collected . Abundant material in area, flakes stacked against oak tree with 4 potential hammers and core material just above tree at 269194 237197 – not photographed, too many

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan Y Graig 4/03/22 DT	193				Good hammers and potential core material
Ffridd Tan Y Graig 4/03/22 DT	194		269173 375175	22x11x5.5cm	Rough roughout beneath oak tree, left in situ

Survey date	Reference number	Picture	NGR	Size	Description
					
Ffridd Tan Y Graig 4/03/22 DT	195		269156 375177		Potential roughouts with large flakes and cobbles. Left in situ
Ffridd Tan Y Graig 4/03/22 DT	196		269269 375237		Irregular roughout, left in situ

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan Y Graig 4/03/22 DT	197				Another irregular roughout. Left where found
Ffridd Tan Y Graig 4/03/22 DT	199 PRN 100417		269159 375191		Strange long elongated flake partially buried uncertain if oxidised surface, not as dark as Victorian material. Lots of flakes and chips in area. Collected
Ffridd Tan Y Graig 4/03/22 DT	200		269150 375178	230x150cm	Really big roughout?

Survey date	Reference number	Picture	NGR	Size	Description
Ffridd Tan Y Graig 4/03/22 DT	201		269138 375187	19x11cm 19x13cm thicker	2 rough roughouts next to each other under branch, 1 irregular. Lots of flakes in area, close to path
Ffridd Tan Y Graig 4/03/22 DT	202		269150 375200		3 potential roughouts in area with cobbles. All left in situ

Survey date	Reference number	Picture	NGR	Size	Description
		 			



Gwynedd Archaeological Trust
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