GRAIGLWYD

ARCHAEOLOGICAL SURVEY

REPORT NO. 50

Ymddiriedolaeth Archaeolegol Gwynedd
Gwynedd Archaeological Trust

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ARCHAEOLOGICAL SURVEY

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for R.C.A.H.M. (Wales)
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Gwynedd Archaeological Report No. 50

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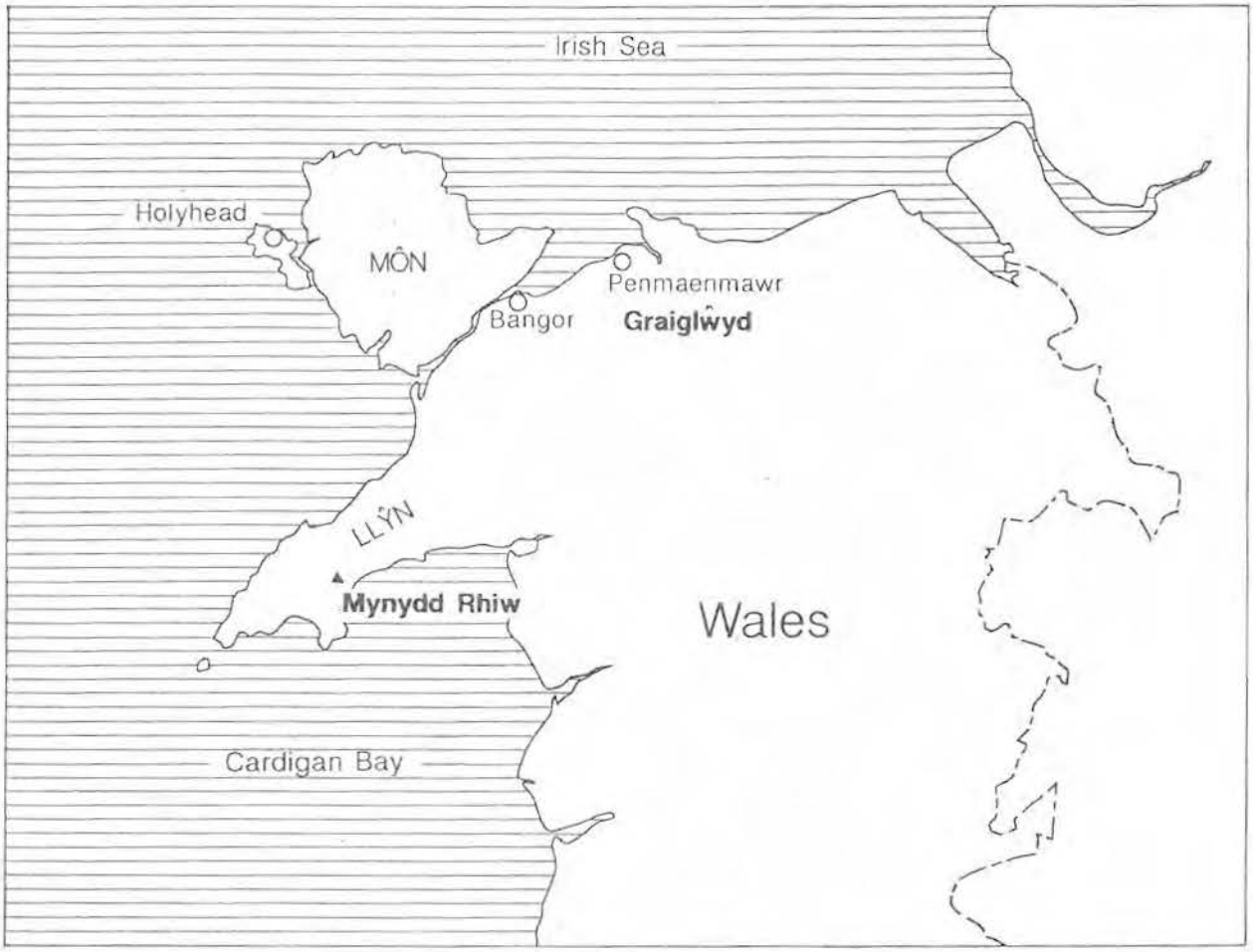
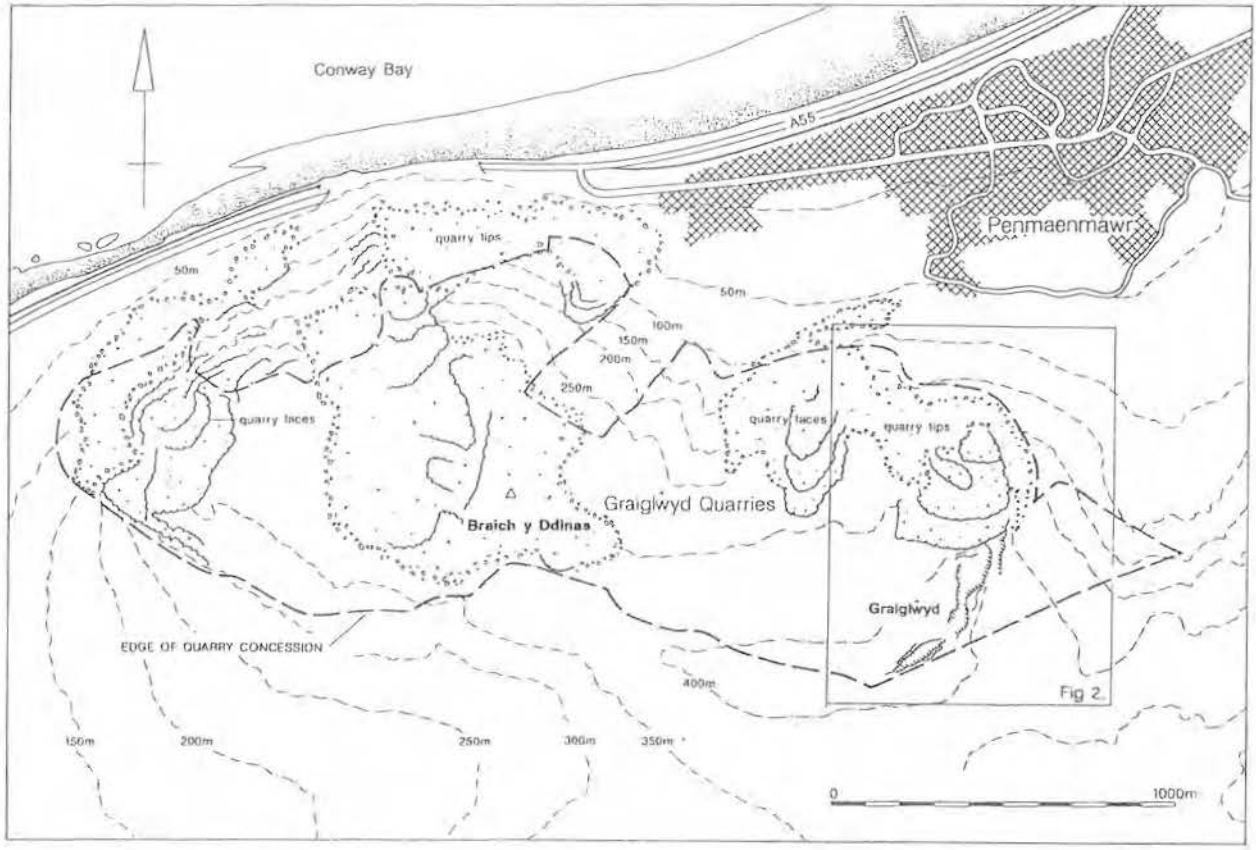
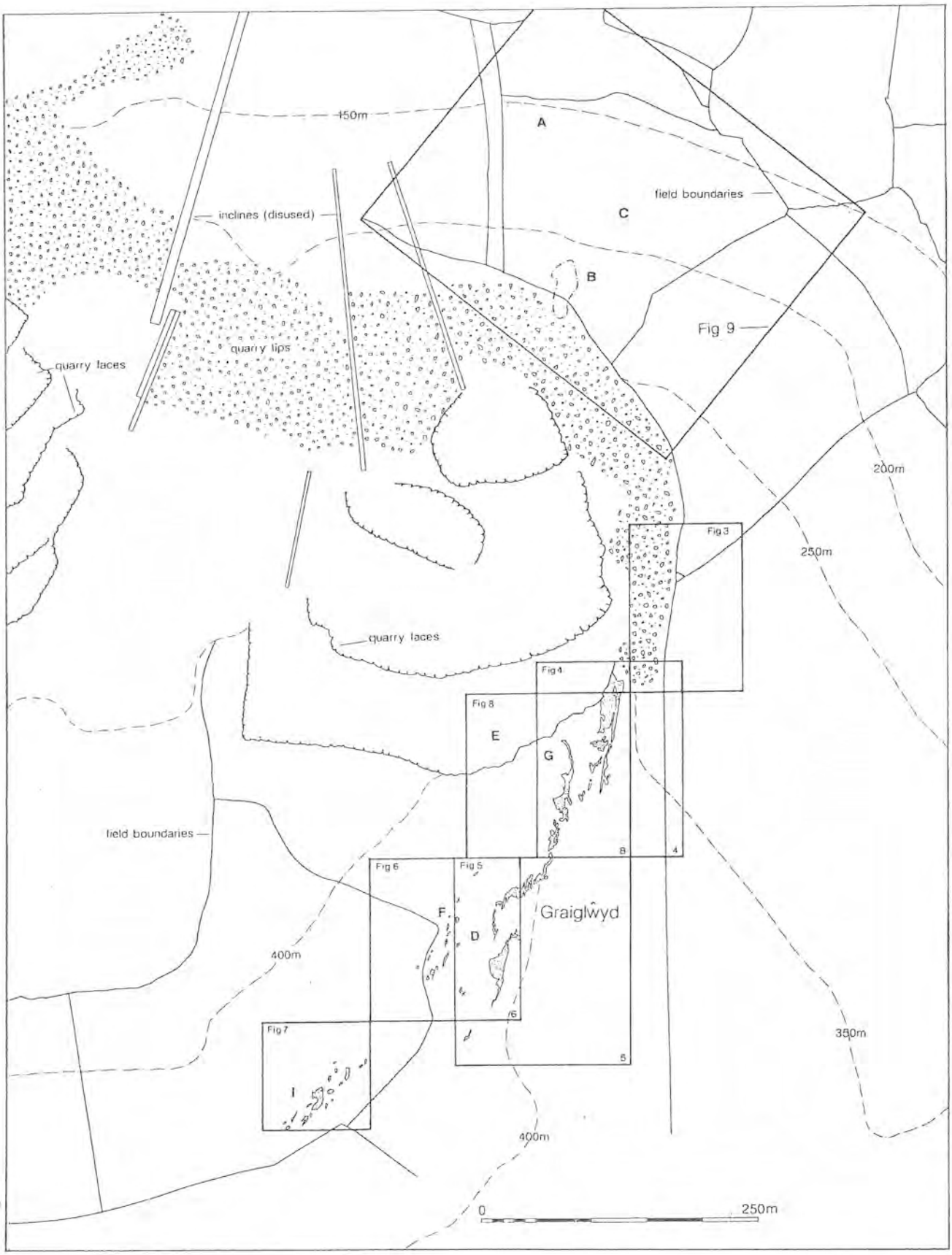




Graiglŵyd Fig 1. a) General location b) Modern quarries & survey area.



Graiglŵyd Fig 2. Hazzledine Warren's sites & location of survey figures.

SUMMARY

Fieldwork carried out in the summer of 1992 at Graiglwyd(1) and Clip yr Orsedd near Penmaenmawr, Gwynedd has recorded features which may be associated with prehistoric stone axe making. The survey has identified features which correspond to prehistoric axe working floors discovered by Hazzledine Warren in the 1920's as well as potential new sites of a similar character. In addition, several areas have been identified which may represent prehistoric quarrying from the virgin rock for axe production.

1. BACKGROUND

Geology:

The geology of Graiglwyd and the associated sites at Dinas and Garreg Fawr is known in general, although surprisingly little detailed work on the petrography has been published (Sargent 1915 & 1924-5, Davies 1969, Roberts 1979).

The distinctive rock material selected for the manufacture of axes comes from the fine grained chilled margins of igneous intrusions in shales of Ordovician age. The largest of these forms the headland of Penmaenmawr, within which the rock varies visibly from greenish grey coarse grained (1-2mm) in the central portion, to dark grey fine grained ($<$1mm) around the periphery. The fine grained rock has a rough fracture, but in a zone up to 50-100m wide around the eastern and southern edges, there is a paler grey chilled facies which breaks with a conchoidal fracture.

There are similar chilled facies around fine grained rock in the smaller intrusions which form the steep hill of Dinas and the crags of Garreg Fawr.

The mineralogy of the rock corresponds to that of a microdiorite or microtonalite. In the chilled rock it comprises a microgranophyric matrix of plagioclase and quartz with intersertal granular clinopyroxene and titanite, and carrying phenocrysts of the plagioclase (Ab20-35) and pyroxene which were often heavily chloritised. In the coarser grained varieties there are also colourless iron-stained prisms of orthopyroxene (enstatite), often pseudomorphed by chloritic material. Differentiation had apparently occurred within the intrusion with the proportion of plagioclase, quartz, K-feldspar, epidote and iron ores increasing, and that of pyroxenes decreasing, upwards.(2)

History of the Site:

The stone axe factories of Penmaenmawr are the source of the most important stone implement group in Wales. The Graiglwyd site was in fact the first of its type to be discovered in the British Isles. The discovery was made in 1919 by S. Hazzledine Warren and excavations were carried out by him over the next two summer seasons (Hazzledine Warren 1919, 1921, 1922). These resulted in the identification of numerous sites containing struck stone flakes as well as 5 prehistoric working floors (assigned letters 'A' to 'E' by Warren) (Fig.2).

Site B was apparently completely excavated by Warren and seems to have contained two hearths, one with a laid stone floor associated with much charcoal. In addition, Warren removed 3 tons of axe and adze core material as well as burying masses of further examples which were of less interest to him. Sites A and C also seem to have been trial trenched.

Unfortunately, Warren was mainly concerned with the typology of the artifacts that he recovered and so few records have survived of the actual excavations themselves other than a reasonably accurate sketch map locating the features discovered, and a rough schematic section through his Site B deposits (Warren 1921, 1922).

Further work was carried out by the Rev. Kendall in 1926 who undertook an excavation of Site E on the summit (Kendall, 1927). He recovered celts and roughouts as well as hammer stones and anvil stones. In addition he mentions numerous fire places containing charcoal and burnt earth and it appears from these descriptions that he was indeed excavating a working floor.

The only other work undertaken was a description and small scale survey by the Royal Commission in the 1950s (RCAHM, 1956)

A large part of the prehistoric axe factory lies within the quarry area (Fig.1). Graiglwyd has probably been subjected to periodic phases of quarrying for stone at various levels of intensity since at least the 18th century. Even before organised commercial quarrying commenced it was the custom for small transport ships to call at Penmaenmawr to collect stone as ballast after unloading their cargoes at ports along the Menai Straits (I.Davies, 1974). These stones could then be sold for use as cobbling for streets. This eventually encouraged local small scale quarrying of the scree slopes and sett making to supply the demand. Formal commercial quarrying at Graiglwyd commenced in 1834 and, except for occasional periods of slack, continued until the 1930s. There was an attempt to restart the sett making industry at Graiglwyd in the 1960s, but by this time there were no longer sufficient skilled craftsmen available to make it viable.

The present quarry covers an area of approximately 3 square kilometres which is defined by an existing Interim Development Order. At present the quarry is active only on its western side. No systematic survey of surviving archaeology has been undertaken in the permission areas, it is clear that in the past there has been destruction by the quarry works of significant known archaeology, the most dramatic being the total destruction of the hillfort of Braich y Ddinas. In addition, it is certain that significant areas of the Graiglwyd axe factory have also been destroyed by past quarrying on the east side above Penmaenmawr.

2. THE 1992 PROJECT

In 1992, as part of the Uplands Initiative, the Trust received funding from the Royal Commission on Ancient and Historical Monuments (Wales) to undertake a detailed survey of potential sites of prehistoric stone axe working on Graiglwyd, Clip yr Orsedd and Dinas.

Project Brief:

The aims of this work were:

1. A detailed survey of all features on the NE face of Graiglwyd including various ephemeral scoops or hollows on the hillside which may be the sites of working floors. These were to be defined by EDM survey leading to the production of a contour plan.

2. A detailed survey of all the features on the SE side of Graiglwyd and on Clip yr Orsedd to the west, including the drawing of all overhangs in the rock face to identify possible working areas.

3. Fieldwalking and survey in the area around the Dinas outcrop.

3. METHODS AND PROCEDURES

The area of the NE slope above Graiglwyd Farm was field walked to identify features and then surveyed using a Geotronics 400 EDM. Three staff undertook this work, two provided by the Gwynedd Archaeological Trust (GAT) comprising one Project Officer and one Archaeological Assistant, and a further member of staff provided by the University College of North Wales (UCNW). Altogether 13 survey stations were set up, two of which are permanent and a total of 4194 points taken.

Work on the NE slope was particularly labour intensive due to the limited line of sight permitted

by the many trees on the hillside which forced the creation of frequent new stations. Thus, two staff carried out the EDM survey of each small area while the third defined the next, its features and station location. The greater part of the NE slope had recently been sprayed by the farmer to kill bracken and brambles which was fortunate; however, the area along the N margins of the area was still somewhat overgrown restricting the detection of features here. In addition, the area immediately to the W, being outside the farmer's control, was heavily overgrown. A further nuisance was the steep and irregular angle of the slope of the hill which made working conditions difficult and, again, often restricted the line of sight from some stations.

On the summit area and round the S side of the hill towards Clip yr Orsedd the line of sight was considerably less encumbered. Therefore this work could be carried out with 2 staff, one, a Project Officer, provided by GAT and one by UCNW. The area was fieldwalked to identify potential features and then surveyed with a Geotronics 400 EDM. A total of 14 survey stations were set up of which two are permanent and 11,529 points were taken. The main factor bearing on the work carried out in this area was the weather which was very windy, sometimes to the point of affecting the functioning of the EDM. Later in the season this was accompanied by sudden impenetrable walls of fog and heavy rain.

The area of Clip yr Orsedd was fieldwalked on two occasions but no features comparable to those identified in the areas to the E could be discerned.

All the main elements of the rock outcroppings along with the ledges and overhangs were recorded by EDM where accessible, though some areas could only be recorded in outline due to safety considerations.

Field boundary walls in the survey areas were also inspected for incorporated roughout axes.

The main elements of potential features were defined directly using the EDM to produce an interpretative plan. Several broad classes of features could be discerned (see below) and features were recorded using the conventioned lines assigned to their particular class. Levels were also taken at appropriate points in order to produce a contour survey. Features were recorded in some detail so that plans in certain areas of particular interest could be produced at a larger scale for future use.

It was difficult to judge the likely significance of any feature identified because the character of the prehistoric workings is largely unknown. In addition there have been various organised and ad hoc phases of quarrying on the hillside from at least the 18th C (above). All of this was compounded by the fact that, unlike some other axe factory sites, for example Langdale in Cumbria, the area of the prehistoric workings is now largely turfed over. Therefore it was felt that all variations in the ground surface however ephemeral were potentially important and should be recorded to produce a comprehensive base plan. This could then be filtered later when excavation or more information permitted modern or natural features to be differentiated and extracted.

The intensity of the recording carried out on the NE slope of Graiglwyd, the summit area and the sites towards Clip yr Orsedd meant that there was insufficient time to carry out a similar process at Dinas. It was decided that it was better to complete the areas in hand to the same level of detail rather than presenting all three defined in the brief at a reduced level.

Processing of the EDM survey was carried out on an MJN 386/33 computer running Map400 software version 2.40, and edited using EasyCAD2. Contours were produced using Digital Ground Model version 3.

4. DESCRIPTION AND SIGNIFICANT FEATURES

Fig 3 - Hazzledine Warren's lower hut circles

General Character:

This area is located on the east side of Graiglwyd just beyond the quarry wall. It is on the extreme eastern edge of a reasonably level terrace which runs for a short distance from the base of the quarry tips. Immediately to the E of this terrace, the hillside plunges steeply down. The terrace contains a small group of depressions, some of which are particularly prominent, as well as occasional large boulders; presumably tumble from the eroding outcrop face.

Features:

(1) shallow linear terrace, possibly a trackway, appears to aim towards a gap in the field wall near (2)

(2) prominent semi circular depression formed by slight turfed bank 0.2 - 0.4m high, central area is 0.75m deep.

(3) prominent circular depression formed by slight turfed bank 0.2 - 0.4m high, central area 0.7m deep.

(4) pronounced linear hollow, appears to dogleg around base of a possible early scree bank. Note E edge lines up with crook in field boundary. Probably represents an old trackway.

(5) approximate position of hut circle identified by Warren, now engulfed by quarry tip

(6) stub of dry stone wall maximum 0.8m tall, with area of collapse at E end; W end disappears into modern quarry tip

Discussion:

The prominent circular depressions were identified by Hazzledine Warren as 2 huts circles and were apparently excavated to some extent. It is therefore difficult to discern what is in fact archaeological evidence, and what is the result of Warren's excavations. Note the apparent semi-circular depression between (2) and (3), this may be created by the space between the two features rather than being a separate structure. There are further semi-circular depressions to the S of (2) & (3), though much less convincing, they may be the remnants of further hut platforms.

Fig.4 - the northern half of the southeast outcrop face

General Character:

This area comprises the SE cliff face of the outcropping igneous intrusion and an area skirting the base of the outcrop. The area contains a multitude of potential features throughout, this is particularly so in the NE where there is evidence of modern quarry activity and structures, and a concentration of depressions both ephemeral and more prominent. Some of these appear to correspond to features identified by Warren.

Although single overhanging blocks occur elsewhere along this section of the cliff face, there is a concentration of larger multiple block overhangs on the upper 'range' of the outcrop towards the S. Some of these are adjacent to ledges, platforms or shallow depressions. It is noticeable that, fairly regularly at the foot of the outcropping stone, there are patches of concentrated loose jumbled blocks of stone. These may be the result of water drainage eroding the soil matrix sealing or supporting the natural scree rather than actual features. A wide band of tumbled large boulders litters the area below the outcrop face.

Features:

(7) large oval bowl, 0.8m deep, moderate sloping turfed sides, small recent cut in bottom

(8) partly turfed over ring shaped feature with two short arms extending to W and E. Maximum 0.6m tall with scattered and protruding stones and patches of more concentrated stone revealing occasional dry stone wall facings. Possible entrance on S side. It appears on Warren's sketch map and was not identified as a potential archaeological feature which may suggest that its modern function or origin was obvious at the time.

(9) small sunken area revetted with very rough dry stone walling, full of apparent collapse, entrance to the E from within (8) ?

(10) linear alignment of 3 areas of stone running up the slope to the base of the outcrop, appears to align with the 'arms' of (8), various levels of preservation, occasional wall facings visible, maximum 0.5m tall, more ruinous up slope; field boundary?

(11) very ephemeral linear spread of stones at base of existing fence line, one stone tall, maximum 0.3m high; possibly represent the remains of a previous boundary wall or blocking at base of old fence?

(12) industrial ? building; trimmed and mortared stone, 1.5m tall surrounded by an area of collapsed stone

(13) sub-circular feature formed by turfed banks with central depression, possible extended entrance to E, and stone faced corner visible to N, walls 0.3 - 0.5m tall central area 0.8m deep. Appears to correspond to hut circle identified by Warren

(14) shallow oval depression enclosed on S side by turfed bank 0.8m tall, appears to be encroached upon by raised terrace for (12).

(15) shallow semi-circular shaped depression enclosed on S side by small turfed bank 0.4m tall. Modern long linear cut runs N - S in base of depression. Appears to correspond to hut circle identified by Warren.

(16) prominent irregular semi-circular depression 0.6m deep, appears to correspond to hut circle identified by Warren

(17) very shallow semi-circular depression; appears to correspond to hut circle identified by Warren

(18) prominent semi-circular depression 0.9m deep; possible hut platform?

(19) ephemeral linear spread of stones

(20) near vertical cliff face of Graiglwyd stone with prominent parallel joint planes, and frequent large overhanging blocks

(21) footpath rising within significant cleft in the outcrop

(22) large modern test quarry into shale deposit at base of the visible outcrop (large spread of concentrated shale fragments immediately to the E is the waste from the test quarry)

(23) nearly intact industrial building of trimmed and mortared stone, one storey, roofed with corrugated iron sheet

(24) ledge

(25) ledge

(26) very large overhang formed by multiple blocks of stone producing one single large overhanging mass some 1m deep at the base of the outcrop. Note bowl shaped depression at base.

(27) peculiar low funnel shaped area between two upstanding stone ridges

(28) very faint linear turfed ridge with occasional boulders and an area of erosion at its W end

(29) low linear turfed bank maximum 0.35m high

(30) small ledge

(31) small ledge

(32) series of irregular linear edges eroding away from the face of the shale horizon within the outcrop

(33) approximate position of hut circle identified by Warren and now apparently engulfed by modern quarry tip

(34) near vertical face comprised of frequent overhanging blocks, Two large overhangs. Note mound of turfed over stones at base.

Fig 5 - the southern half of the southeastern outcrop face

General Character:

This is the continuation of the outcrop of the igneous intrusion towards the S including the area skirting the base of the outcrop on its E side. The stone here is generally more accessible than the section to the N, in large part due to the generally less steep terrain but also, much of the outcropping stone can be easily reached from the wide ledge or platform at (37).

The area contains significant shallow depressions particularly at the base of the lowest range of the outcrop and some larger multiple block overhangs are evident in the outcrop face itself. As with the N section (Fig 4), amorphous patches of concentrated loose blocks of stone appear to congregate at the outcrop base within a wider spread of much larger tumbled boulders.

Features:

(35) cliff face comprised of large irregular stone blocks with frequent single overhanging blocks and occasional multiple block overhangs. Note very large overhang at base of outcrop which appears to correspond to the area excavated by Hazzledine Warren as a possible rock shelter.

(36) series of parallel rock faces forming narrow stone terraces progressing down the hillside

(37) large ledge or platform in the hillside surrounded by upstanding ridges or faces of stone. The stone from (36) can be harvested in easily quarried blocks from this area.

Fig 6 - Area F, a possible early quarry site

General Character:

The area consists of a small dome of the igneous outcrop further along on the SE side of Graiglwyd. The dome is largely turfed but the western face contains significant areas of protruding stone. The stone forms irregular blocks with occasional single block overhangs and there are many sub-circular depressions, some fairly prominent, on top of, as well as down the W face of the dome. Even at the base of the dome it would appear that the bedrock is not far from the surface as many apparent single independent boulders when tested appear in fact to represent protruding bedrock.

Features:

(38) large area of occasional boulders and protruding narrow ridges or fingers of bedrock which run roughly parallel to the contours

(39, 40, 41, 42) low funnel shaped areas between upstanding ridges or faces of stone

(43) small patch of concentrated stone flakes found within a recent cut

(44) dry stone boundary wall; has produced 5 roughout axes to date

(45) second small patch of concentrated stone flakes (immediately adjacent to field wall)

(46) approximate location of Warren's Site D

(47) large vertical face of stone with large depression at base

Fig 7 - Area I, a possible early quarry site

General character:

This area is similar to Area F though more completely turfed over. It contains many single large blocks of protruding stone with occasional larger expanses of stone. Also evident is a concentrated series of semi-circular depressions set into the hillside sometimes forming prominent ledges. The depressions are often defined by a stone edge on the hill side of the feature. Along the base of the outcrop, the depressions form embayments, some cut back into the hill with a depth of 1m or so. No obvious overhangs.

Features:

(48) large area of occasional boulders

(other features as illustrated)

Fig 8 - Area G, Possible Axe Making Site

General Character:

This is a reasonably level area on top of the outcrop on the eastern side between the modern quarry edge and the E edge of the outcrop. It contains many shallow sub-circular depressions, some prominent.

Features:

(49) modern prospection pit or erosion scar? Actively eroding, contains concentrated struck stone flakes and at least one roughout has been recovered from this feature

(50) large ledge or platform possibly following the natural bed of the stone

(51) approximate location of Kendall's Site E

(other features as illustrated)

Fig 9 - the main NE slope

General Character:

This consists of a steep, fairly constant slope with a multitude of features and potential features, some very large and prominent. It is criss-crossed by footpaths specific to the area as well as others which communicate with other areas beyond the limit of the survey. The intensity of the evidence of disturbance appears to increase up slope and is particularly noticeable in the SW corner of the survey area.

Features:

(52) area of frequent small, shallow scoops, some to 0.4m deep

(53) large shallow depression with smaller internal depression; appears to correspond to Hazzledine Warren's Site A

(54) large steep sided, turfed depression, very irregular with irregular bottom, 0.7m deep; probable modern quarry linked by footpath (72). Note dry stone wall along field boundary line

(55) large area of hummocky ground with protruding stones; disturbed ground or waste from quarry (54)?

(56) large area of hummocky ground with protruding stones; disturbed ground ?

(57) area of shallow depressions, appears to correspond to Warren's Site C

(58) area of deep steep sided turfed bowls maximum 1.0m in depth with linking footpath; modern quarry ?

(59) deep steep sided turfed bowl 0.65m in depth with linking footpath; modern quarry? (sampled by 1992 trial excavation)

(60) area of intense disturbance, mounds and hollows on both sides of the field wall, corresponds to Warren's Site B; subject to much modern disturbance post-Warren (also sampled by 1992 trial excavation)

(61) large footpath cu deeply into the hillside on up-slope side with terraced down-slope edge; sledgeway for transport of finished setts?

(62) linear terrace, raised down-slope edge; possible trackway (part of possible trackway F1 on Fig.3?)

(63) prominent earth and stone wall with ditch to E, stones particularly visible on the E face of wall, 0.55 -0.6m tall, ditch is shallow 'U' profile 0.5 - 0.6m deep, both wall and ditch

become more substantial at NE end. Large steep sided bowl at NE end. Note spring (68) located beyond boundary wall at S end of (63)

(64) series of cairns of loose stones, partly turfed over particularly on up-slope side, generally 0.3 - 0.4m tall, occasional to 0.6m

(65) large cairn of loose stone, 0.8m tall with small dry stone walled enclosure 0.7m tall on S side (probably modern conversion)

(66) very irregular bank of earth and stone, very disturbed, maximum 0.4m tall. At N end a series of inter-cutting shallow depressions forms almost a ditch like hollow on the E side of the wall. S end of the wall is largely obliterated, though (70) and (69) may be remnants

(67) face of quarry waste tip has been faced with dry stone revetting here

(68) spring; area below wall is perpetually waterlogged

(69) turfed bank with stones, possibly part of (66)/(70)

(70) concentrated linear spread of stones 0.4m high, maybe part of wall (66) however, appears to seal a shallow depression.

(71) known as the "Prisoners of War" footpath

(72) footpath from "Prisoners of War" footpath to modern quarry (54)

(73) footpath running to modern quarry sites (58) and (59)

(74) main footpath from Graig Lwyd Farm to Druid's Circle (deeply cut into hillside at this point)

(75) large shallow bowl shaped depression sampled by 1992 trial excavation

5. INTERPRETATION and DISCUSSION

The survey has revealed that one working floor, that excavated by Kendall in 1926 (Site E), has now been destroyed by the subsequent encroachment of the quarry face southwards (Fig.8 F51) Also, at least two of the hut circles identified by Warren in the 1920's appear to have been engulfed by the quarry waste tips (Fig.4 F33, Fig.3 F5). However, in the same area four features have been recorded which appear to correspond to other hut circles also identified by Warren (Fig.4 F13,15,16,18). In addition, a large stone overhang on the SE side of Graiglwyd at the base of the cliff face is probably the site of Warren's excavation of a potential 'rock shelter' (Fig.5 F35).

The remains of a late post-medieval water collection system designed to provide Penmaenmawr with water have also been recorded on the NE slope of Graiglwyd. (D. Roberts, pers. comm.) The system involved a series of ditches running down the slope feeding water into large holding tanks at the bottom. At least one element of the system has so far been identified: a ditch emanating from a spring at the base of the outcrop which runs down the slope towards the NE and appears to empty into a deep hollow (Fig.9 F63).

A network of secondary footpaths was recorded on the NE slope of Graiglwyd above Graig Lwyd Farm some of which appear to run to areas of ground disturbance (see below). A very substantial footpath in a deep cut and running diagonally up the hillside (Fig.9 F61) may be a sledgeway used to transport finished setts down the slope (I. Davies, 1974).

A concentration of field cairns was recorded on the main NE slope in the field to the SE (Fig.9 F64). The field lies at a very steep angle and seems unsuitable for ploughing.

In addition, the survey identified other areas suggesting evidence of apparent ground disturbance of different types. Several hundred features have been recorded in all and these can be divided into 6 broad classes:

Class 1: large shallow semi or sub-circular depressions some 20-30m across and occasionally up to 60 m across

Class 2: large steep sided bowls over 1m deep and tending to be less than 20m across

Class 3: one or two areas of concentrated small scoops less than 5m across

Class 4: areas of concentrated loose surface stones

Class 5: areas of protruding or turfed over stones

Class 6: fresh cuts

Class 6.
The fresh cuts are certainly very modern, possibly the work of sheep, or recent quarrying. It would appear from comments of local people that much unofficial prospecting for prehistoric artifacts has been going on since the publication of Warren's work. Apparently the quarry men hired by Warren carried on in their new 'occupation' after his departure, hiring themselves out to visiting tourists to dig up artifacts. In addition, local people, intrigued by the results of Warren's work, carried out their own impromptu and unrecorded 'excavations': one told of going up there "most weekends" to dig when a boy!

Class 4 & 5.
The areas of loose or protruding stones possibly represent the natural scree slope, however, the fast rate of turf formation noted on the modern quarry waste suggests that all but the most modern disturbances should be turfed over by now. In addition, the areas of this type of disturbance often appear as discrete anomalous features within a larger area of a different character so it may be that they represent areas of disturbance (modern quarrying?) that have partially turfed over.

Class 3.
The small scoops could be anything from turfed over sheep scrapes, casual quarrying, to digging for artifacts.

Class 2.
It seems likely that it maybe possible to sort some of these features to a certain extent by the visible evidence. The large steep sided bowls are likely to be modern in that their edges have not eroded back to a position of rest. In addition, some of the footpaths recorded by the survey appear to run to, and stop at the mouths of some of these bowls. This reinforces the idea that the Class Two features are fairly modern quarry sites.

In the case of other features, some rough, relative dating can be had from the fact that field boundary walls descend into some of them. Estate maps, quarry records, and tithe maps may therefore produce at least *termina ante quem*. In the same way, old blackthorn trees, which seem to like to grow in many of the features, can be aged and provide a minimum age for the features they have taken root in.

Class 1.
From this evidence, and that provided by Warren in his articles, it would seem that the Class 1 features (large shallow depressions) are most likely to represent the sites of prehistoric disturbance. Two Class 1 features have been located by the survey which correspond with

Warren's Sites A & C (Fig.9 F53 & F57). However, as the hillside is largely turfed over, the real significance of most of these potential features cannot be ascertained. But it may be significant for understanding how Warren located his own sites to note that all three on the main NE slope (Sites A, B, and C) are adjacent to footpaths. This perhaps suggests that it was only where material was eroding out of existing ground disturbance that sites could be positively identified.

Perhaps of more significance, the survey has also identified several new areas as potential axe making/quarrying sites. Three of the most promising are 'F', 'G' and 'I' (Fig.6, 8 & 7 respectively). Of these, 'F' and 'I' are of particular interest as they appear to be areas where quarrying of the virgin rock has taken place. This is significant as the sites identified by Warren were solely exploiting the scree for axe making material. Warren does identify a Site D near to 'F', but this appears to be located on the top of the outcrop rather than along its flank.

At 'F' there is considerable evidence that blocks of stone have been removed from the outcrop leaving occasional overhangs. In addition, it would appear that some of the blocks have been lifted from near horizontal positions (ie against the action of natural forces).

Peculiar funnel shaped low areas also appear along the outcrop flank (Fig.6, F39, 40, 41, & 42). These have their wide end up the slope and narrow at the base of the outcrop. They could be interpreted as representing areas where the outcropping blocks of stone have been harvested and then directed down the outcrop slope for processing. The most obvious interpretation is that this quarrying was to provide construction materials for the substantial dry stone wall which passes immediately adjacent to the W side of the outcrop. However, aside from these signs of quarrying, 'F' has also produced at least two small patches of concentrated struck flakes (Fig.6, F43 & 45) and five roughout axes have been recovered from the field wall.

'I' represents a similar site to 'F' where it would appear that blocks of stone have been removed from the outcrop face leaving a series of semi-circular depressions or ledges. However, no struck flakes or roughout axes were recovered from the site or nearby walls.

Site G is an area of shallow bowl shaped depressions some of which are eroding out at the top edge of the inactive quarry face. This erosion has produced occasional roughout axes and a considerable quantity of struck stone flakes. It is just possible that it represents a remnant of Kendall's Site E or perhaps nearby associated features.

It would appear then that the Graiglwyd survey has, at the very least, served to enhance the work carried out by Warren by relocating many of the important sites he identified as well as recording a wealth of potential new sites of a similar character. However, if as seems possible, there is evidence that stone has been quarried directly from the outcrops for prehistoric axe production, then the survey will also have added a significant new dimension to the understanding of the character of the axe making processes at Graiglwyd.

Though the axe factory sites are arguably the most important archaeological features encompassed by the survey, they are by no means the only ones. It is a testimony to the richness of the archaeological landscape around Penmaenmawr that, even within the relatively narrow corridor defined by the project brief, the survey has identified a diversity of elements of periods ranging from the neolithic to the industrial.

6. THE 1992 TRIAL EXCAVATIONS (see Note 3)

As discussed above, the NE slope of Graiglwyd has been subjected to periodic phases of quarrying since at least the 18th century. And as the slope is now largely turfed over, it is impossible to know for certain whether the features recorded by the EDM survey represent modern or ancient ground disturbance or even in some cases natural phenomena.

It soon became obvious that it would increase the usefulness of the survey if it were possible to sample representatives of the different classes of features being identified. This was particularly true for the most potentially interesting features: Classes 1 and 2. Sampling of these features would hopefully confirm or deny the suppositions arrived at concerning their likely dates (see above). It was hoped that this information could then be used to more confidently identify other sites of a similar character.

It would also be possible to sample the stone debitage from the two different classes of feature in the hope of identifying differences between modern and ancient quarry flakes. This could then be used as a diagnostic tool to quickly assess whether an area of disturbance was most likely to be modern or ancient.

In addition, it was believed that a baulk of intact stratigraphy representing Warren's working floor Site B might survive beneath a stone boundary wall that bisects the site. As this is a known prehistoric working floor, re-excavation of Warren's trench to record the section of the baulk would provide a quick resource efficient way of ascertaining the likely stratigraphy to be expected on similar sites and perhaps from this some clue as to their likely surface or visible character.

Therefore, very limited trial excavations were undertaken on the NE slope of Graiglwyd from August 17 to 28th 1992. The work was carried out as part of a training excavation run jointly by the Gwynedd Archaeological Trust and the Extra-Mural Department of the University College of North Wales.

Firstly, a representative of both the 'Class one and Class two features was selected for limited trial trenching in order to test the tentative interpretations arrived at by the survey.
Secondly, Hazzledine Warren's trench at Site B was re-opened.

Results

The re-excavation of small areas of Warren's trench (Fig.9, F60) appears to confirm that a baulk of prehistoric stratigraphy approximately 2.0 m wide and at least 0.75m tall does indeed survive beneath the boundary wall. The baulk is made up of layers comprised almost entirely of concentrated stone flakes with occasional irregular blocks of Graiglwyd stone and discarded roughout axes. A moderate amount of charcoal flecks and fragments was also encountered dispersed throughout the layers and this was sampled to provide a radiocarbon date.

Excavations in the Class One feature (Fig.9, F75) produced stone flakes and roughout axes though these were on nothing like the scale recovered at Warren's Site B. Nevertheless, the fact that flakes and roughouts were recovered here throughout the sub-soil would seem to indicate that this feature has been the site of intensive disturbance. The scarcity of finds compared to Site B may only serve to suggest that Site B was an area of prehistoric activity of unusual intensity or duration.

The Class Two feature (Fig.9, F59) was excavated in the hope that it would yield incontrovertible evidence to confirm its interpretation as a modern quarry site. Unfortunately, no datable finds were recovered and no stone artifacts or debitage which could be identified as modern. Though only one roughout axe fragment was found, the nature of the stone flakes sampled seems indistinguishable from those presumed to be prehistoric.

On balance, however, it still seems most likely that the Class two features are modern considering their steep profiles.

It should be emphasised that these features were subjected to only very limited excavation and much further work will be necessary to determine their full significance.

NOTES

1) The author has adopted the local Welsh spelling of Graiglwyd which incorporates the two components into a single name.

2) The section summarising the geology of Graiglwyd was produced by Dr D.A. Jenkins, University College of North Wales, Bangor.

3) The 1992 Trial Excavations at Graiglwyd will be published in the near future, what appears here is a superficial preliminary assessment.

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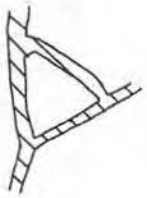
KEY TO MAP CONVENTIONS



Drystone or brick wall.

Concentrated stone spread.

Turf & stone field boundary wall with ditch.

cairns/field clearance.

Shallow depressions

turf covered stone/stone scatter

Deep depressions or features.

Graiglwyd stone. Fracturing into large blocks, some overhanging.

Graiglwyd stone. Irregular medium blocks.

Graiglwyd stone. Frequent tabular fractures, few overhangs.

Ordovician shales.

Graiglwyd stone. Multi-faceted, fractures closely.

Graiglwyd stone. Poor quality, frequent fractures; interface with shales.

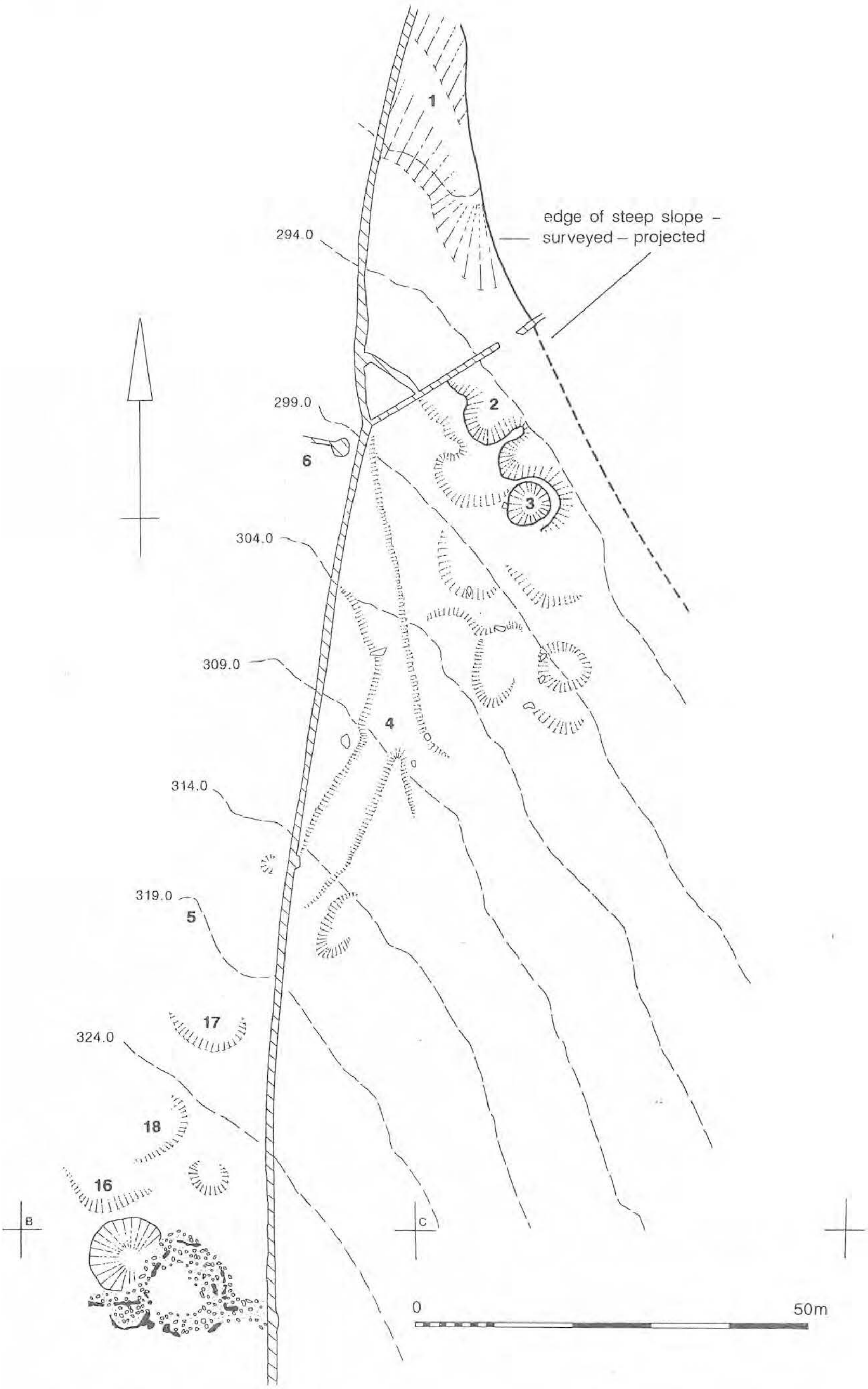
Graiglwyd stone. Large tabular blocks, some overhanging.

Large areas of overhanging rock.

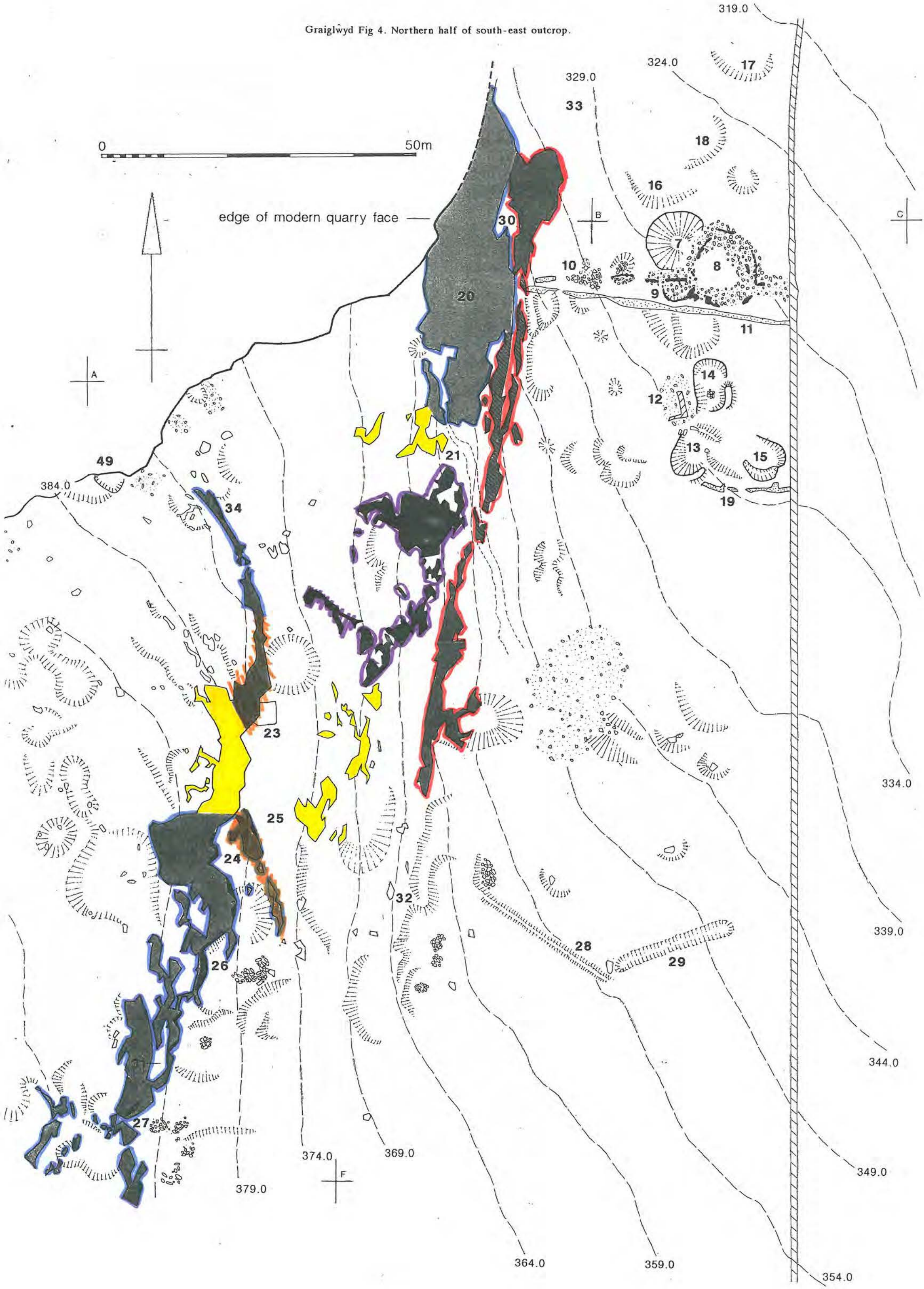
Graiglwyd stone. Large irregular blocks forming a series of stepped terraces.

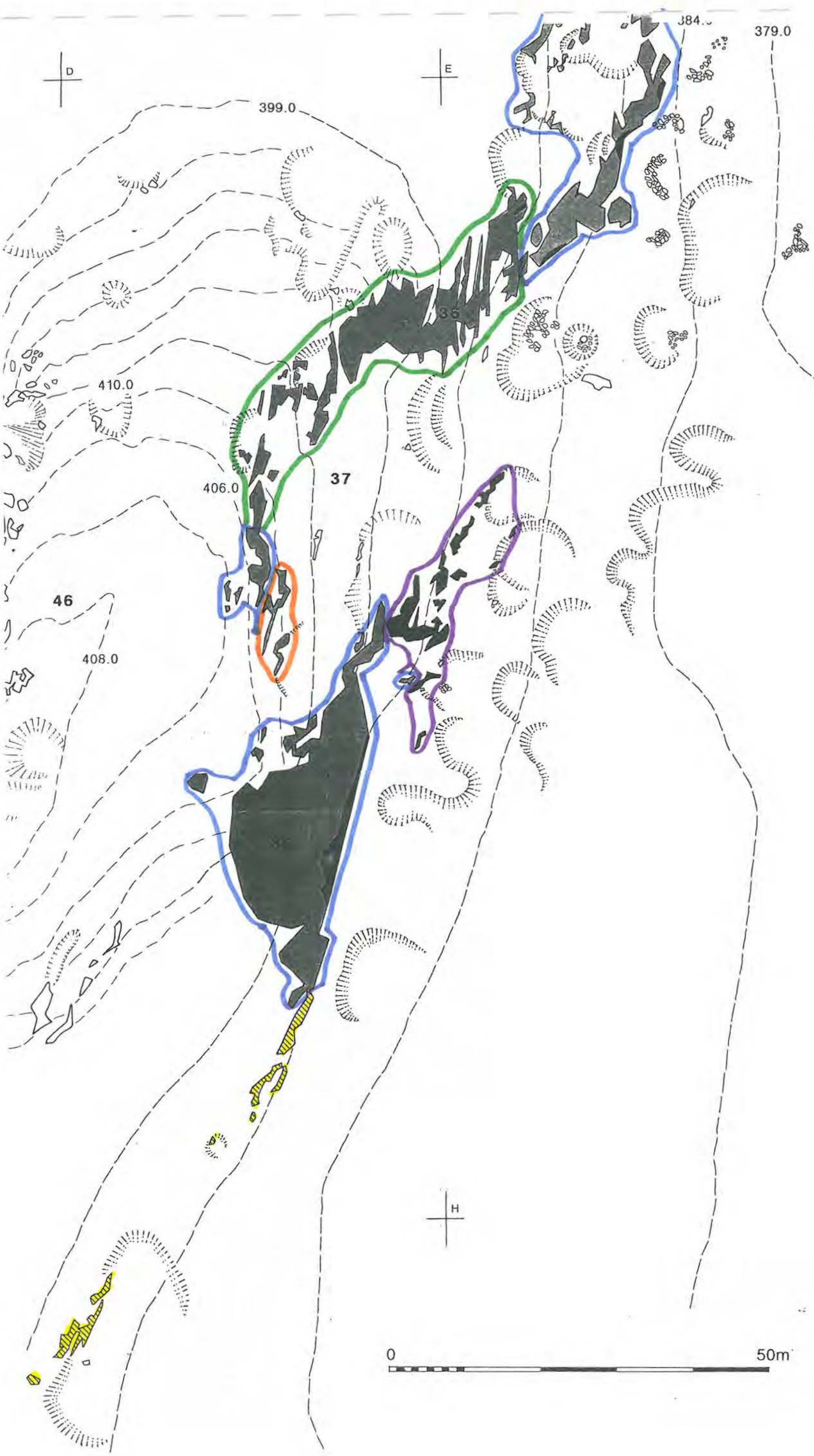
Graiglwyd stone. Uncharacterised.

Graiglŵyd Fig 3. Hazzledine Warren's lower hut circles.



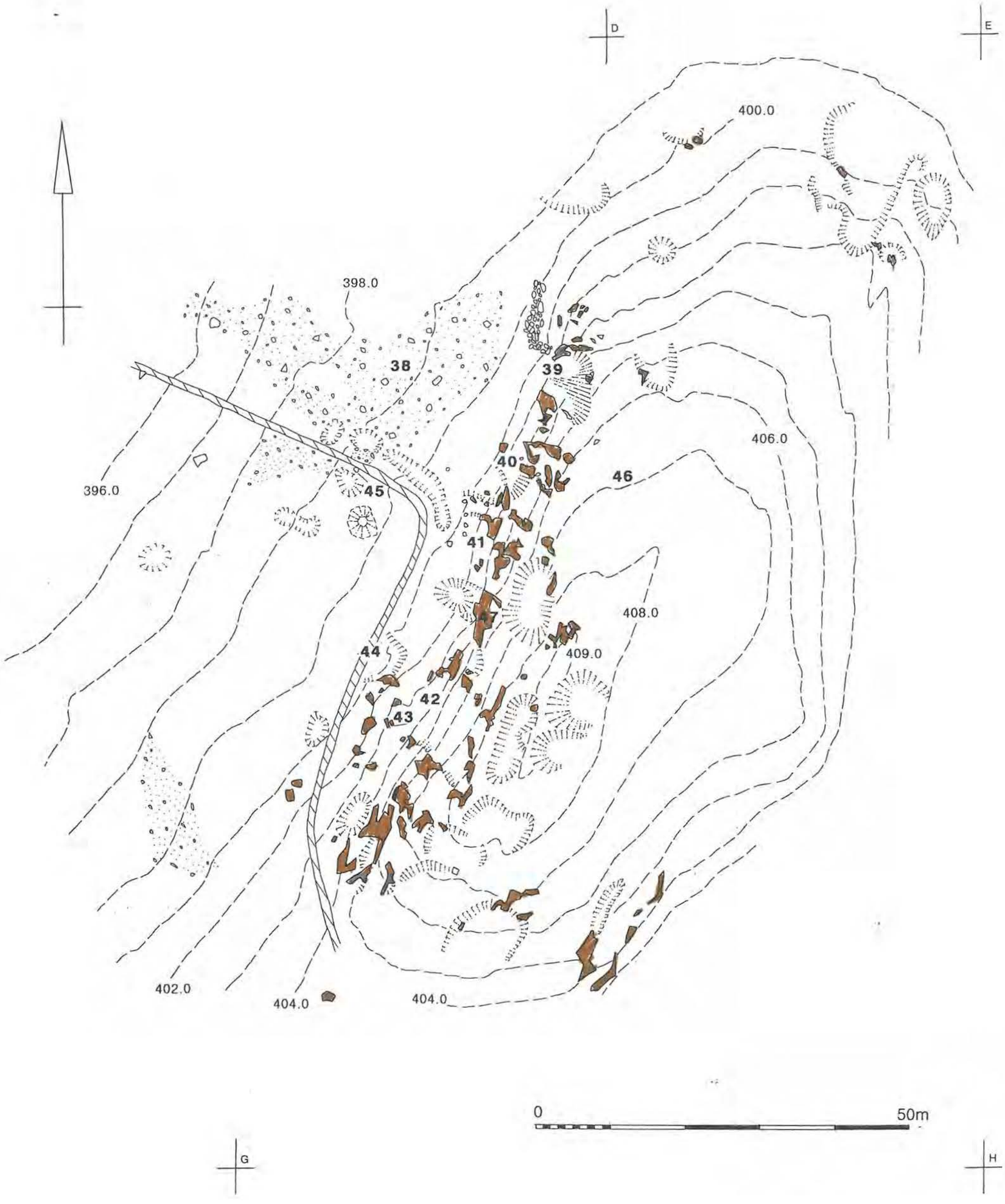
Graiglŵyd Fig 4. Northern half of south-east outcrop.

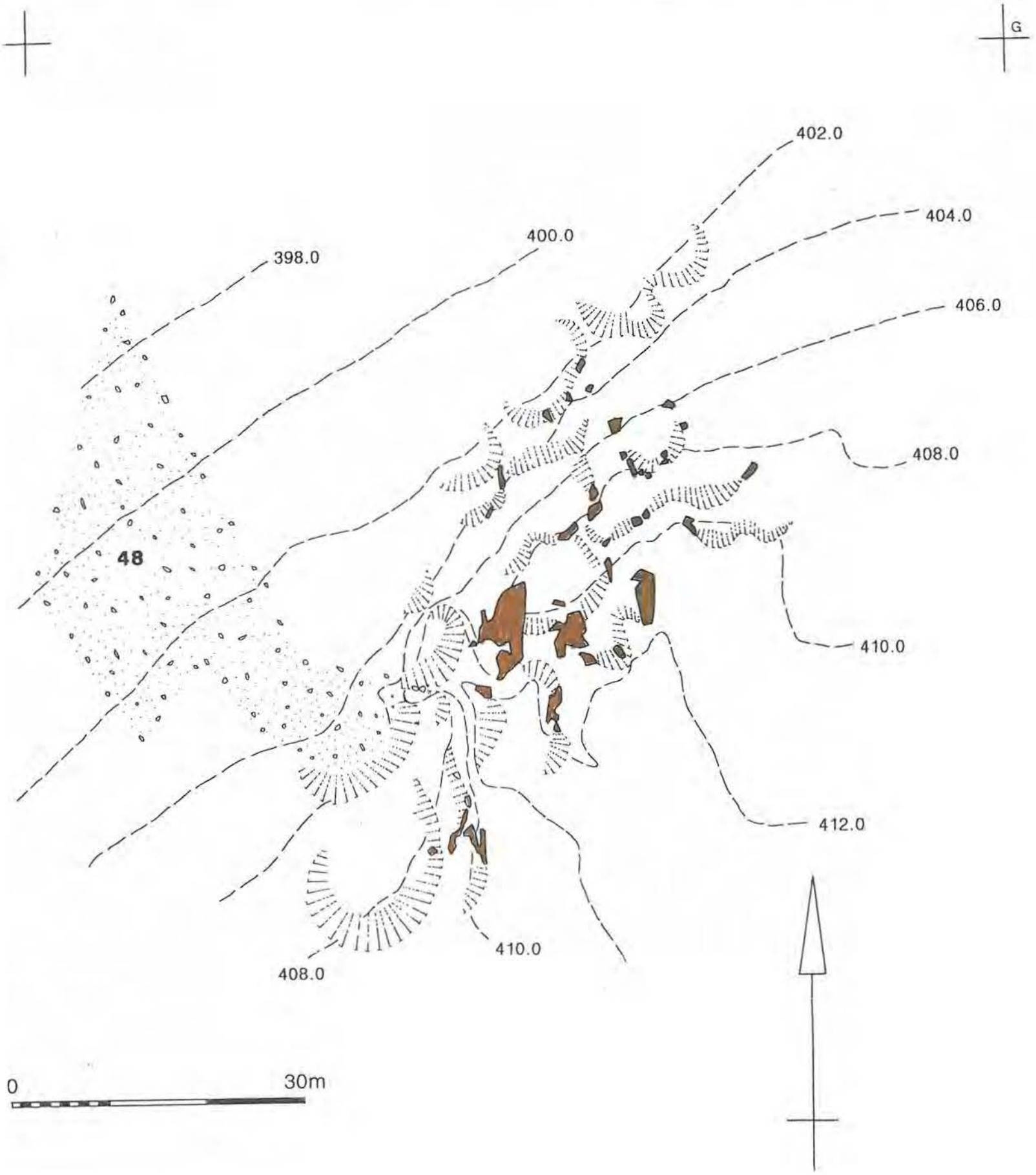




Graiglŵyd Fig 5. Southern half of south-east outcrop face.

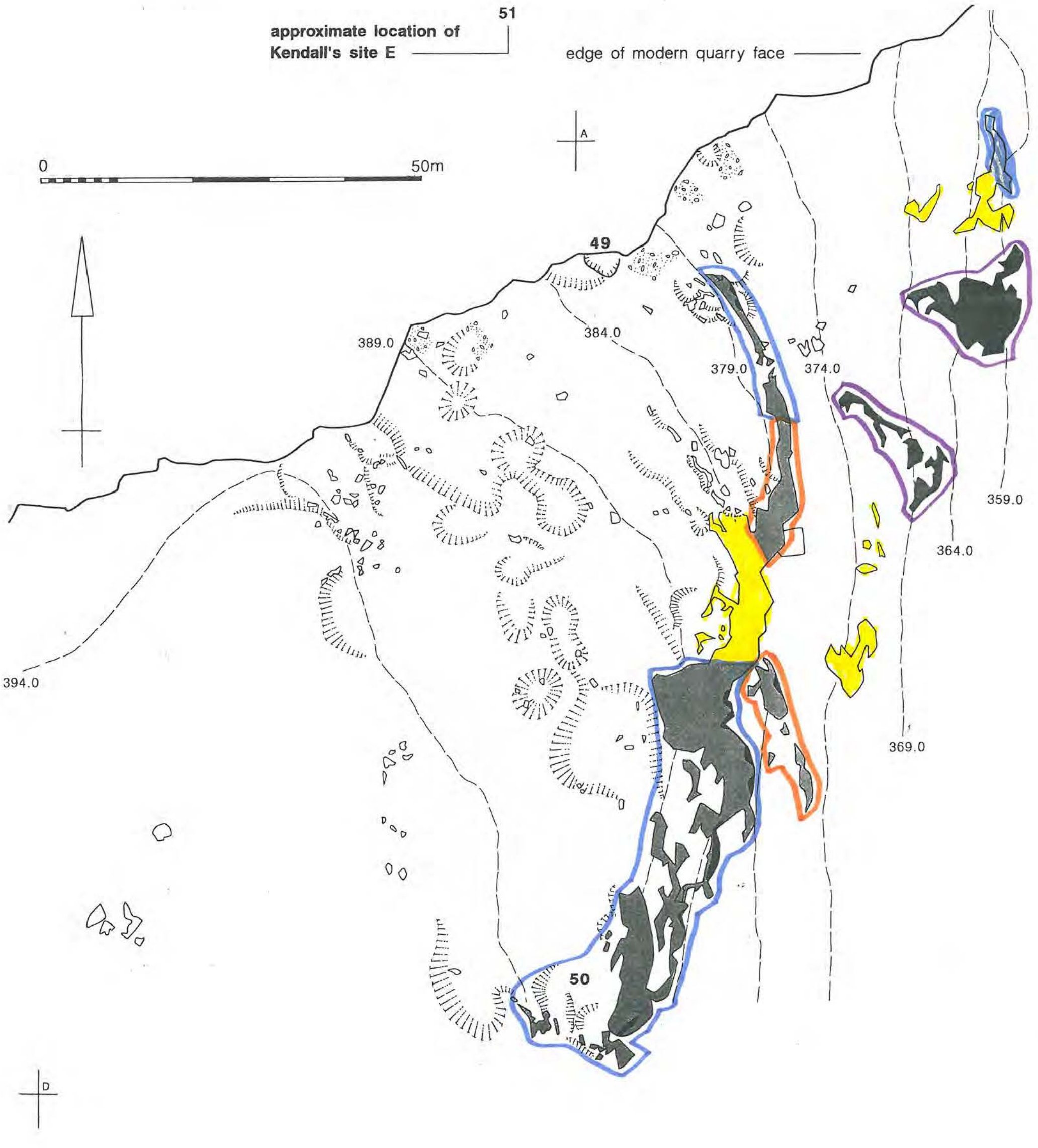
Graiglŵyd Fig 6. Possible early quarry site.





Graiglŵyd Fig 7. Area I. Possible early quarry site.

Graiglŵyd Fig 8. Area G. Possible axe making site.



Graigfawr Fig 9. The main north-east slope.