



**Site 123, Harrison
Coombe, Great
Langdale
Cumbria**

Archaeological Excavation



Oxford Archaeology North

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SUMMARY

Due to the problem of footpath erosion, the Lake District National Park Authority wished to upgrade the footpath over Pike of Stickle (NY 27560 07370). This involved works on a known prehistoric Langdale Axe production site, Site 123, Harrison Coombe, where the footpath has caused considerable erosion in the area. Site 123 represents the largest of the Type D axe factories, which are those where stone has been worked away from a source of the raw material. Prior to the work taking place, and following a verbal brief issued by the Lake District National Park Authority Archaeologist, Oxford Archaeology North was invited to submit a Project Design for a small-scale mitigation excavation on the area of the site to be effected by the proposed works. They were commissioned to undertake the work in May of 2003 and undertook the work in July 2003.

An area measuring 7.70m by 2.0m wide was excavated as a single trench, and a peat hag located to the north-east of the excavated area was also cleaned and recorded. Within the trench a single layer of worked waste flakes was located, which had been evidently disturbed over much of the area of the excavation by footpath erosion. Two rough outs were also recovered from the flake layer, although this report does not detail the results of the finds analysis which will be published in full at a later date. Similarly, the results of the environmental samples will also be included within a later publication. An area at the north-western end of the trench was considered to contain sealed deposits undisturbed by erosion, and was, subsequently, sampled. A bulk sample was taken from the flake layer, and a monolith from the section. Subsequent radio carbon dates, obtained from the charred seeds of crowberry (*Empetrum nigrum*), produced a date of 5968-5732 CalBC (KIA23485). The flake layer was also located within the recorded peat hag, but was only present intermittently. A monolith was also taken from an exposed section, but the material it contained was not considered suitable for further work.

This report presents the results of the excavation, presents the radio carbon dates obtained, and gives a discussion on the reliability of these dates and their implications. It is recommended that further excavation at Site 123 is essential to obtain a second date from the flake layer, and if possible one from directly below this layer, to confirm the proposal that Site 123 does represent later Mesolithic polished axe working in the North West. The area to the north of the current excavation, undisturbed by current footpath erosion and within the boundaries of Site 123, would be ideally suited for such an excavation.

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Oxford Archaeology North would like to thank Robert Maxwell of the National Trust who commissioned the work, and John Hodgson, the Lake District National Park Archaeologist, for their continued assistance during the course of the project. Oxford Archaeology North would also like to thank other staff of the National Trust involved with upgrading footpaths for their assistance with the logistics of the project.

The excavation was undertaken by Andy Bates and Tony Lee, and the report compiled by Andy Bates. Elizabeth Huckerby completed the processing of the environmental samples and commented on the radio carbon dates. The drawings were produced by Emma Carter. The report was edited by Jamie Quartermaine and Emily Mercer. The project was managed by Jamie Quartermaine.

1. INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

1.1.1 As part of the ongoing work to improve footpaths within the Lake District National Park, Oxford Archaeology North (OA North) was invited by Robert Maxwell of the National Trust to submit a Project Design (*Appendix 1*) for the archaeological excavation of Site 123, Harrison Coombe (NGR NY 27560 07370), in advance of the upgrading of this section of the footpath. Following a verbal brief issued by Robert Maxwell and discussions with John Hodgson, the Lake District National Park Archaeologist, and the submission of the Project Design OA North was commissioned to undertake the work in May of 2003. The primary objective of the project was an archaeological excavation which involved the excavation of a single trench measuring 7.70m in length and 2.0m wide, across the area of the site to be disturbed by the program of works; in addition the work also comprised the recording of a section of peat hag formed by the erosion of the footpath (Plate 5). A watching brief was to be carried out on the footpath construction to insure that the extent of the site was preserved, and that the removal of turfs did not expose new sites; in the event the past repair teams did not identify any new archaeological sites and there was not deemed to be a need for a watching brief. This report details the results of the excavation and presents the radio carbon dates obtained from the samples.

1.2 SITE LOCATION AND TOPOGRAPHY

1.2.1 Site 123, on Harrison Coombe, is one of 566 sites identified in a survey of the Great Langdale and Scafell Pike area associated with stone axe production (Claris and Quartermaine 1989, 1). The site is located on the current footpath which extends east/west between Pike of Stickle and Harrison Stickle (NGR NY 27560 07370), at approximately 659m OD (Figs 1 and 2). The area is one of spectacular mountain scenery comprising of a mosaic of high craggy peaks with scree slopes, heaths, mires, peatland, heath moorland, acid grassland, bracken, fast flowing streams and tarns (Countryside Commission 1998, 31). The Cumbrian high fells is an area with radiating deep U-shaped glacial valleys, such as that of Great Langdale immediately to the south of the site (*ibid*). The land form in the area has been repeatedly cut by glaciers, leaving a series of hanging valleys (eg Blea tarn), raised benches (eg area of Harrison Path), cwms (eg Stickle Tarn) and morainal deposits. The site is on a gentle sloped plateau, which was carved by ice sheets, and is edged to the south by the steep crag edge of the glacially cut Great Langdale valley.

1.3 GEOLOGICAL BACKGROUND

1.3.1 The geology of the area is dominated by the igneous rocks of the Ordovician period (500 to 440 million years ago) known as the Borrowdale Volcanic Group. The Borrowdale Volcanic Group comprise of a series of mainly volcanic rocks, including lava flows, tuffs and agglomerates (Taylor *et al* 1971, 12-17). The source rock of the axe manufacture is a fine-grained tuff of the Seathwaite Fell Tuffs, itself an upper band of the Borrowdale Volcanic Group (Claris and Quartermaine 1989,

3). The tuff was formed by the deposition of volcanic ash under water, and this and other narrow bands of tuff are interspersed with bands of ignimbrite, resultant from the deposition of lava (Taylor *et al* 1971). Although originally a horizontal band, this now slopes down to the north, and outcrops mainly on the faces of Pike of Stickle and Harrison Stickle in the Langdale area. The band has been eroded by glacial action and detached blocks of the tuff are present within morainal mounds, as well as scattered as scree across the slopes of the Great Langdale valley.

2. ARCHAEOLOGICAL BACKGROUND

2.1 GENERAL BACKGROUND

- 2.1.1 The Neolithic axe factory sites of Langdale and Scafell Pike are some of the most important archaeological monuments in the country, representing as they do, the large-scale manufacture and processing of axes which had a national distribution. Along with Grimes Graves, these sites represent the earliest true mass productive industry in Britain. The area of Langdale and Scafell Pike is where the rough outs of the axes were manufactured, producing abundant waste flakes, with the final polishing or finishing of the axes, using a grinding slab, taking place away from the immediate area of the source material. Sites which have evidence for the finishing of these axes have been located along the Cumbrian coast, notably at Ehenside Tarn from which both partially polished axes and sandstone grinding slabs were recovered (Darbishire 1873), however, other sites in Low Furness and Cartmel have also produced both rough outs and polished axes and were potentially polishing sites (Manby 1965, 3-8). Some rough outs, however, have also been found as far away as East Yorkshire and South West Scotland (Manby 1965, 20-21). Finished axes originating from the Langdale have been found across both Britain and Scotland, and also in Ireland and the Isle of Man (Clough and Cummins 1988, 270).
- 2.1.2 There is a notable concentration of Group VI axes in Eastern Yorkshire, particularly around the Wolds, where the numbers of axes exceed those found around the source in Cumbria. Using an analytical tool that compared the concentration of Group VI axes with axes of different geological types, Cummins (1979) produced a distribution chart which showed that the highest concentration of axes was centred on the area of the Humber, and reduced in number out from there. He postulated that this reflected the transport of axes in bulk to East Yorkshire and that there was a secondary distribution or trading out from there. Manby (1965) has demonstrated a significant number of unretouched and unworn axes from the cross-Pennine access routes, notably the Craven gap, and has postulated that these were lost in transit. Bradley and Edmonds developed this model highlighting the propensity of axes found from henge monuments and stone circles and suggesting that such sites served as the focus for regional exchange networks (Bradley and Edmonds 1993, 43-57 and 200-206). Bradley and Edmonds also emphasised the fact that objects can change their significance in different 'regimes of value' (*ibid*). This point is made with particular emphasis to the change in treatment of the axes that are more remote from their source of origin, compared to other locally produced axes; a model used to explain the deliberate deposition of axes in rivers, bogs, burials and pits in both Neolithic and Bronze Age contexts in contrast to their more practical uses in wood working and woodland management (*ibid*; Framework 2000, 12).
- 2.1.3 ***Axe Factory Workings:*** the fine-grained tuff which is the source material of the Langdale axes is located in a band of outcrop rock which extends around the summits of Langdale, Bow Fell, Scafell Pike and Glaramara. Associated with this source, either directly or indirectly, are the axe factory sites. At Great Langdale the source rock outcrops just below the summits, the strata having an incline slope extending back into the mountain. The majority of axe production sites were directly associated with the outcropping of this source material on either the face of

Pike of Stickle (known as Top Buttress), within the adjacent South Scree gully, or on the face of Harrison Stickle.

2.2 PREVIOUS ARCHAEOLOGICAL WORK

- 2.2.1 The initial identification of axe production in the area was on Mart Moor Crag by a Professor Watson, between Stake Pass and Pike of Stickle (Bunch and Fell 1949) and the industry initially named after Stake Pass. Then in 1948 Clare Fell along with Brian Bunch, discovered the enormous working deposits in South Scree gully (*ibid*), and further research by Clare Fell was able to highlight the very substantial scale of the workings across Great Langdale; this led to a corresponding change in name to the Langdale axe factories (Fell 1950; 1954). Chris Houlder (1979) and Dick Plint (1962) were then able to demonstrate further working around the area of Scafell Pike and Glaramara. An attempt to schedule the monuments by Tom Clare was thwarted by the lack of reliable mapping for the monuments, and this prompted the establishment of a detailed survey of the axe remains by The National Trust in conjunction with the Cumbria and Lancashire Archaeological Unit (now OA North). This survey extensively explored the Langdale and Scafell Pike areas, but also examined areas above and below lines of outcropping of the fine-grained tuff, and recorded numerous small axe working areas relating to this geology (Claris and Quartermaine 1989). A typology for the axe production sites was defined comprising Types A to D. A Type A site is one where axe production is located in a position directly associated with the an outcrop of the fine-grained tuff; Type B where the production is located on scree slopes or block fields adjacent to the outcrop of the bedrock; Type C the exploitation of scree slopes below from the outcrop of bedrock; and Type D, working floors located away from the source material implying that the material was carried to the site, although there remains the possibility of using suitable glacial drift material (Claris and Quartermaine 1989, 5). It is within this latter category that Site 123 falls, and indeed was the largest Type D site identified.
- 2.2.3 Excavations at the axe factory sites are relatively few, the earliest being that of a similar Type D site to Site 123, between 1969-1970, at Thunacar Knott. This site revealed a single flake layer, or chipping floor, with associated broken rough outs beneath 0.10m to 0.25m of peat and above a natural inorganic or mineral soil (Clough 1973, 21-31). Importantly, this site produced a radiocarbon date of 2850-3250 BC (BM 676), and also a tentative posthole. A second trial trench produced a further scatter of many thousand small trimming flakes (*ibid*).
- 2.2.4 More recently Richard Bradley and Mark Edmonds excavated six sites at Stake Beck, Dungeon Gill (Site 148), Harrison Stickle, two sites on Top Buttress (Sites 95 and 98), and one on Loft Crag (Site 87). Summary results of these excavations may be found in Bradley and Edmonds (1993, 105-130) from which the descriptions below are taken (*Sections 2.2.5 to 2.2.8*).
- 2.2.5 The two sites at Top Buttress are both Type A sites. Site 98 is suggested to have formed reasonably quickly, with clearly defined layers of quarrying by fire setting followed by layers of axe production, although the initial layer provides evidence for both activities. A high degree of control over the working of axes is suggested by the debitage and rough outs collected, with attempts to correct errors in working to avoid wasted effort. In contrast, Site 95, which is the extraction of material from

a cave, was believed to represent more intermittent activity of quarrying and axe production. This was followed with a period when the cave was used as a dump for stone working waste material, succeeded by a return to the cave for *in-situ* working of stone brought to the site; a period when the cave merely provided a convenient position for preparing rough outs. The main phase of quarrying and axe production produced two radio carbon dates, 3100-3500 BC (BM 2627) and 3370-3690 BC (BM 2628). As with Site 98, there was evidence for attempts to correction of errors in the preparation of rough outs to avoid waste.

- 2.2.6 Dungeon Gill (Site 148) is a Type A site, an extraction pit effectively forming an open-cast quarry, but with no evidence of fire setting with blocks simply prised out of the ground where possible. Two phases of activity were identified, separated by a thin soil horizon. The initial phase of the site only provides evidence for the earlier stages of axe production, with few flakes recovered associated with the final stage of the reduction process. There is also little evidence for the development of unworkable flaking angles, indicative of a high degree of wasted effort when the rough out became difficult to finish off. In contrast, the second phase of activity has all stages of the reduction process with greater effort made to develop flaking angles, including the working of material abandoned in the earlier phase.
- 2.2.7 Stake Beck and Harrison Stickle are both Type D sites, with the emphasis on the latter stages of production with material brought to them as large or partially worked blocks. Trench 4 of Harrison Stickle contained flakes predominantly associated with the final finishing of crude rough outs. At Stake Beck the rough outs showed little effort to work from difficult flaking angles, similar to the earlier phase of Dungeon Gill, although in contrast a higher standard of finishing is suggested at Harrison Stickle. A radiocarbon sample from Stake Beck produced a date of 3410-3730 Cal BC (OXA 2181), and two samples from Harrison Stickle gave dates of 3532-3780 Cal BC (BM 2625) and 3530-3780 Cal BC (BM 2626). Loft Crag represents a third Type D site with evidence of all stages of production except the initial shaping and mass reduction. It is suggested that the waste material from this site represents the working of two pieces of stone, one a crudely-shaped block and the second a partially-flaked rough out.
- 2.2.8 Excavations at Thorn Crag (Site 187) were conducted by Lancaster University Archaeology Unit (now OA North) in 1991, a Type C site. A radio carbon date from charcoal recovered from directly below a layer of waste flakes produced a date of 4041-3662 CalBC (OxA-4212; Hedges *et al* 1994, 360-361). This date provides a *terminus post quem* for Site 187, which coincides with the beginnings of forest clearance identified in the pollen sequence at Blea Tarn (Pennington 1975).

2.3 SITE 123

- 2.3.1 Site 123 is located on the plateau behind the faces of Pike of Stickle and Loft Crag, and is set above the outcropping band of Group VI bedrock (Fig 2; Plate 1). This is the stone, upon initial visual inspection of material recovered from the excavation, which is being worked, opposed to a separate higher band of tuff of a distinct petrographic group (probably Group XI). The Group XI rock outcrops across the upper face of Harrison Stickle and also across the area of the Harrison Coombe plateau and near Site 123.

2.3.2 Site 123, is classed as a Type D site (Claris and Quartermaine 1989), indicating that it is removed from the geological source; this reflects that the rock used at the site appears to be Group VI, rather than the locally available Group XI. Type D is a rare site type, representing only 0.5% of Langdale axe production, but such sites have the potential to reveal the working practices and the communication routes used. In particular, there is the possibility that these sites reflect camp sites, as an excavation by Tim Mck Clough of a Type D site, Thunacar Knott, revealed a post-hole associated with the working floor (*Section 2.2.3*). Site 123 is the largest known Type D working site and, by virtue of its rarity and in terms of how it can contribute to an understanding the working practices at Langdale, it is one of the more important Langdale Neolithic axe factory working sites.

3. METHODOLOGY

3.1 PROJECT DESIGN

- 3.1.1 A project design (*Appendix 1*) was submitted by OA North in accordance with a verbal brief by the Lake District National Park Authority (LDNPA). Following formal acceptance of the project design by LDNPA, OA North undertook the fieldwork in July 2003. The work was consistent with the relevant standards and procedures of the Institute of Field Archaeologists, and generally accepted best practice.
- 3.1.2 The work was undertaken in accordance with the method statement detailed in the project design (*Appendix 1*) and complied with current legislation and accepted best practice, including the Code of Conduct and the relevant professional standards of the Institute of Field Archaeologists (IFA).

3.2 THE EXCAVATION

- 3.2.1 The programme of field observation accurately recorded the location, extent, and character of any surviving archaeological features.
- 3.2.2 **Trenching:** the program of work included the excavation a single trench by hand, measuring 7.70m in length and 2.0m wide (Fig 2). All horizons exposed were examined, with the accurate recording of all archaeological horizons, features and any artefacts found during the excavation. A section of peat hag which had formed due to path erosion, and within which the chipping floor was visible, was also cleaned back and recorded for a length of 1.85m (Plate 5).
- 3.2.3 **Sampling of the flake layer:** in light of previous excavations it was not possible to recover all artefacts and a sampling strategy of flakes was considered essential. The *in-situ* working floor (flake layer) was sampled on a 0.50m grid system, taking approximately half of the material in each 0.50m square unless the number of flakes was so small within the 0.50m square that all of the flakes were taken. Only large and obviously local igneous rock was removed from the sample, as this material was not evidently associated with axe production. The material was collected as bulk samples to avoid any bias in flake size by hand collection, although hand collected material was also taken and recorded as such.
- 3.2.4 **Recording:** a complete record of all features and horizons was made, comprising a full description and preliminary classification of features, structures or horizons revealed on OA North *pro-forma* sheets, with their accurate location recorded in plan. A plan of the site was produced, showing the excavated area and the section of the peat hag (Fig 2) (Plate 6). A photographic record in colour slide and monochrome formats was also compiled. All rough out axes and hammer stones were issued an object number (OBJ), and their position was recorded three dimensionally.

3.3 THE ARCHIVE

- 3.3.1 A full professional archive has been compiled in accordance with the project design (*Appendix 1*) and in accordance with current IFA and English Heritage guidelines

(English Heritage 1991). The archive will be deposited in the Cumbria Record Office with a copy to the Cumbria SMR.

4. EXCAVATION RESULTS

4.1 INTRODUCTION

- 4.1.1 Below is presented a summary of the results from the excavation of the trench and the recorded section of the peat hag (Fig 2); detailed descriptions of all contexts may be found in *Appendix 2*. The extent of Site 123 is not precisely known, as it has a substantial buried component, but, in the light of trial trenches excavated subsequent to this exploration (J Quartermaine pers comm) it is now known to extend at least 11m to the north-west of the trench. The walkers cairn located at the site was removed prior to the excavation by the National Trust.
- 4.1.2 The initial excavation of the trench involved the removal of a maximum of 0.18m of overburden, although across most of the trench the overburden was considerably less than this. The greatest amount of overburden was located in the position of the removed walkers cairn, where the base of the cairn had still to be removed, and in the north-west quarter of the site where it had a thickness of 0.18m (recorded as context **1009**). There was some limited plant growth and soil formation in this area, indicating some level of stability in this highly eroded area, and it is undoubtedly due to the formation of this material that the underlying stratigraphy was better preserved in this part of the site.

4.2 STRATIGRAPHY RECORDED WITHIN THE TRENCH

- 4.2.1 *Natural Subsoils and Outcrop*: the natural subsoil, at the base of the excavation, comprised a natural gravel and fine scree, defined as **1006** and **1007** in both halves of the trench, which was separated by an area of fragmented igneous blocks in a black humic soil **1003**. Deposit **1003** was present across roughly the centre of the trench and in its north-western quarter. It would appear that the humic soil **1003** formed above the stone layer (**1006** and **1007**) and was subsequently eroded into the voids between the stones. The upper part of this deposit comprised mainly sediment with much fewer larger stones. This humic soil was also recorded above the gravel natural **1007** as **1005**, although in this area it was so thin that it did not survive a second cleaning of the trench (Fig 3). Natural bedrock was also visible in the south-western corner of the trench with a further smaller outcrop visible at the eastern end.
- 4.2.2 *Archaeological Stratigraphy*: the archaeological stratigraphy was not complex in its nature. Above the natural deposits described above, located mainly in the north western quarter of the trench, was layer **1004** (Fig 4 and Plate 4). This comprised the surviving *in situ* chipping floor with a density of flakes much greater than 10 flakes per one meter square, and was sampled as detailed in the methodology (*Section 3.2.3*). This layer was only 0.13m thick comprising mainly local igneous rock and flakes of fine-grained tuff; its soil matrix appears to have originated from either the sediment below, mainly **1003**, and the layers above, **1009** and overburden (Fig 5). Layer **1004** can only be interpreted as being a product of one phase of activity, resulting in the rapid accumulation of abundant fine-grained tuff flakes amongst fragments of local igneous rock. A single rough out axe was recovered from this layer (OBJ 2) (Plate 3).

- 4.2.3 Visible in the section only, above **1004** for a width of 1.9m, was a second thin layer of humic soil, **1009**, which in part was an *in-situ* deposit of humic soil post-dating the chipping floor **1004**. However, in places this deposit was mixed in with the stony overburden (*Section 4.1.2*) and was either redeposited or the stones had sunk into the humic layer. In this localised instance there was apparently a mixing of the deposits and also the characteristic stratigraphic reversal, particularly of the layers below **1004**, that is typical of down-slope erosion and spread.
- 4.2.4 Also stratigraphically above **1004** was **1008** (Fig 3), which was a thin layer of soil formation containing fine-grained tuff flakes in a similar abundance to **1004**. The explanation for this layer was clearly demonstrated in section (Fig 5), where the chipping floor **1004** could be seen to continue into **1008**. This deposit represents where **1004** has been effected by soil formation processes resulting in the spread and redistribution (**1008**) of the original flake filled deposit (**1004**); however, it is unlikely that the flakes themselves have moved any great distance as a result of this process alone. This, therefore, indicates the survival of a chipping floor within the trench extending over an area 3.90m in length, 2.0m wide and which had a maximum thickness of 0.13m, although thinner in places (Fig 3). From the removal of this layer, at the interface between layers **1004** and **1008**, was a second rough out axe (OBJ 1).
- 4.2.5 A final layer, **1002**, was seen in plan and section (Figs 3 and 5), which contained a few Group VI flakes but also contained at its base, a “Blue Ribbon” chocolate bar wrapper. This deposit merely represented the recent erosion of the removed walkers cairn.
- 4.2.6 There was one tentative feature within the trench, a possible posthole, feature **1000** (Fig 3); it was only 0.05m deep, but the arrangement of the stones within its fill, **1001**, was suggestive of packing material (Fig 6). However, alternatively the feature could perhaps be a natural hollow, or possibly where a stone was removed, with its fill the accumulation of the humic soil, **1003**, in which case the arrangement of the stones was coincidental.

4.3 STRATIGRAPHY RECORDED IN THE SECTION OF THE PEAT HAG

- 4.3.1 Three layers were identified in the cleaned section of the peat hag (Fig 6; Plate 5). Exposed at the base was a natural deposit **1012**, consisting primarily of fragmented igneous rock, above which the chipping floor was represented by **1011**. At this location the occurrence of waste flakes within the section was very intermittent, with the greatest concentration of flakes at the western extant of the section. It is likely that the section was located near the eastern limit of the surviving working floor. This deposit was overlain by a 0.38m deep peaty topsoil, **1010**.

4.4 RADIO CARBON DATES

- 4.4.1 A total of three radio carbon dates were obtained from two layers (Table 1). One radio carbon date of 5968-5732 cal BC ($6965 \pm 30\text{BP}$; KIA23485) was obtained from charred seeds of crowberry (*Empetrum nigrum*), recovered from a bulk sample <17>, of the flake layer **1004**. Both the alkali residue and the humic acid fractions of the sample from deposit **1009**, the humic peaty soil above **1004**, recovered from monolith <19> were dated to 1434-1316 cal BC ($3155 \pm 25\text{BP}$;

KIA23484) and 756-396 cal BC ($2415 \pm 30\text{BP}$; KIA23484ii) respectively (Plate 4). The results of the radio carbon dates are given in the table below.

Laboratory Number	Context Number	Sample Number	Fraction	Radio Carbon Date	Date cal BC	Probability
KIA23484(i)	1009	17	Alkali residue	$3155 \pm 25\text{BP}$	1434 - 1316	95.4%
KIA23484(ii)	1009	17	Humic acid	$2415 \pm 30\text{BP}$	756 - 396	95.4%
KIA23485	1004	19		$6965 \pm 30\text{BP}$	5968-5732	95.4%

Table 1: Radio carbon dates

4.4.2 The date of 5968-5732 cal BC ($6965 \pm 30\text{BP}$; KIA23485), from charred *Empetrum nigrum* seeds from the organic material around the flake layer, suggests a Mesolithic date for this deposit of waste flakes associated with the preparation of axe rough outs. This is in contrast to those dates published in Bradley and Edmonds (1993) and those obtained from Thorn Crag (Hedges *et al* 1994, 360-361), all of which lie within the Neolithic period. Interpretation of the dates from layer **1009** is, as yet, unresolved as the dates do not correlate with one another, but modern contamination is thought by the laboratory to be unlikely.

4.4.3 **Palaeoenvironment:** Crowberry (*Empetrum nigrum*), a native plant, is found growing today on peaty and rocky moors, bogs and mountain tops to altitudes above 650m (Stace 1991). The identification of seeds from the plant indicates that the vegetation surrounding Site 123, at an altitude of 690m AOD, was already open by 5968-5732 cal BC ($6965 \pm 30\text{BP}$; KIA23485). The tree limit in the Lake District is thought to have been somewhere in the region of 750m AOD at during the Holocene climatic optimum (Birks 1988) and Pearsall and Pennington (1973, 227) considered that only the mountain tops, above 762m, were not wooded. At Red Tarn, at an altitude of 1700 feet above Langdale on the southern side of the Great Langdale valley, *Empetrum* pollen continues to be recorded in the pollen diagram later than at other sites (Pennington 1965) suggesting that more open conditions prevailed locally in the wider area of Langdale than in the rest of Cumbria. However, pollen analysis of deposits at Langdale Coombe, about 1.5km north-west of Site 123 (Walker 1965), suggests that pine, birch, oak and elm were flourishing at the higher altitudes of Langdale Coombe. Although the identification of Ericaceous pollen suggests that soil acidification may have already commenced in the Mesolithic and with it a more open type of vegetation. The position of Site 123 near the upper tree limit may have resulted in a more vulnerable fringe type of woodland community, which would be more easily damaged by grazing animals, lightning strikes or from anthropogenic agencies both of burning and trampling (Simmons 2003, 43).

5. DISCUSSION

5.1 DISCUSSION

- 5.1.1 The stratigraphy recorded from within the trench and from the section of the eroded peat hag both demonstrate a single layer of fine-grained tuff waste flakes associated with the preparation of rough out axes; two failed rough outs were recovered from the excavation of the trench (Plate 3). However, it is also clear from the trench that the archaeological deposits have been substantially impacted by footpath erosion, and the working floor was evidently more extensive than that recorded in the trench. The recorded section of peat hag had only occasional waste flakes, suggesting that this location may have been near to the eastern limit of the *in-situ* flakes.
- 5.1.2 **Chronology:** the Mesolithic date from the radio carbon dating of charred crowberry seeds (*Empetrum nigrum*) recovered from flake layer **1004** (Section 4.4) is in the order of 2000 years earlier than the dates obtained from charcoal from the excavations carried out by Clough (1973), Bradley and Edmonds (1993) and by Lancaster University Archaeology Unit (Hedges *et al* 1994). The Langdale axe factories were very productive, and produced a petrologically distinctive type of axe that was widely distributed around Britain (Clough and Cummins 1988). These axes have been found on Neolithic sites of all types, and are the archetypal datable artefact for the period; the implications for the Neolithic of extending back the date range of this artefact type would be enormous. There are consequently considerable concerns as to the security of the dating for the working floor.
- 5.1.3 From the stratigraphic record three suggestions can be made. Firstly, and most simply, is that this does represent a date for the establishment of the flake layer, and as such is the earliest record of stone axe production in the North West at a significantly earlier date than had previously been envisioned. A second alternative is that the dry conditions of the latter half of the Boreal period (7000BC to 5000BC) may have led to a slow accumulation rate of the humic soil **1003** (Evans 1975, 101) and that there has been some compression of the flakes into the earlier humic soil resulting in an earlier date than the axe working layer. A third hypothesis is that, prior to the formation of the flake layer, a period of erosion of the underlying humic soil **1003** had taken place. However, subsequent excavation of three test pits up to 11m to the north-west of this trench (to be reported on separately) revealed a very similar stratigraphy with shallow humic soils both above and below the layer of debitage (J Quartermaine pers comm) which would suggest that the stratigraphy does not reflect localised erosion.
- 5.1.4 In both the latter scenarios the charred seed would, therefore, represent an episode of burning predating the stone working at the site, the waste material from such workings being subsequently incorporated into the upper surface of an earlier sediment. Regardless of the above discussion, it is clear that burning was taking place on these slopes during the sixth millennium BC, which begs the question as to whether this represented a fire of anthropogenic or natural origin.
- 5.1.5 Although it is clear from the above discussion that the matter has not been resolved, a potential Mesolithic date for the production of polished stone axes must be considered as a possibility. Polished axes of a Mesolithic date are known from both Wales (David 1995) and Ireland (Woodman 1978). Those in Wales, recovered from

Nab Head II, are typologically different to the Langdale axes having a splaying on either side of the cutting edge. They are made from igneous rock, thought to be sourced from amongst beach material, and were found in association with 23,000 other artefacts considered pre-agricultural in age (David 1995, 248-249). Two later Mesolithic radio carbon dates were obtained for the site, 7360±90BP (OxA-860) and 6210±90BP (OxA-861) (*ibid*). Polished axes from later Mesolithic contexts were also recovered from Newferry Site I, Ireland, made from Mudstone and Schist (Woodman 1978, 108-109). Other possible Irish examples have been recovered from sites associated with the Mesolithic/Neolithic transition, such as from Newferry Site I and Dalkey, but may be associated with Neolithic intrusions. A single polished stone axe from Mount Sandel, Ireland, has been attributed to the early Mesolithic (*op cit*, 51-52). Further afield, similar axes of a Mesolithic date are found in Denmark, and more commonly, in both southern and central Sweden (*op cit*, 108-109).

- 5.1.6 No polished axes have been unambiguously recovered from Mesolithic contexts in North-West Britain, although it is worth noting that Ehenside Tarn is dated as Neolithic due to presence of polished, and partly polished, axes despite the fact the site shows some similarities to the Mesolithic settlement at Eskmeals (Darbishire 1873; Bradley and Edmonds 1993, 136). A later excavation at Ehenside, in 1957, produced radio carbon dates ranging from the early Mesolithic to the Bronze Age, although these were undertaken during the early development of the technique and therefore do not have the precision of modern dates (Hodgkinson *et al* 2000, 73). Other suggestive comments may be found in the literature by authors such as Larch Garrad, writing on Group VI axes found on the Isle of Man, where the field walking evidence suggests that these axes were associated with Manx heavy-bladed Mesolithic flint sites (Coope and Garrade 1988, 67).
- 5.1.7 On the evidence presented above it must be recognised that there is a real possibility that axe production started before the Neolithic, and there is therefore a need for further investigation of this site to obtain further dating evidence. Even if it is established that the date relates to humus formation that predates the axe manufacture, this is of considerable significance as it would indicate that there was a burning of the area at this date, which could be of anthropogenic origin. Because crowberry (*Empetrum nigrum*) is found today in peat and rocky moors, mountains and bogs the presence of charred seeds from this plant suggests that in this area there was a loss of forest cover, with the subsequent formation of an acid mor humus soil and possibly an early date for peat initiation, which only occurs if there is paludification of the mor humus (Pearsall and Pennington 1973, 124-129). The speed with which mor humus soils can develop is also variable, either over a long or short timescale, and, therefore, if the worked flakes had become embedded into the humic soils, there is the possibility that the crowberry seeds predated the flakes by a substantial period.

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APPENDIX 1
PROJECT DESIGN

SEPTEMBER 2002

**Oxford
Archaeology
North**

**SITE 123
HARRISON COOMBE
GREAT LANGDALE
CUMBRIA**

ARCHAEOLOGICAL EXCAVATION

Proposals

The following project design is offered in response to a request from Robert Maxwell, National Trust for an excavation of the axe factory working floor, Site 123, on Harrison Coombe of Great Langdale.

1. INTRODUCTION

1.1 Oxford Archaeology North (OA North) have been requested by Robert Maxwell, National Trust, to submit a project design and costs for an archaeological excavation of Site 123, on Harrison Coombe, in advance of proposed path repair work. The proposed archaeological work would also involve the supervision of the path repair work in order to protect as much as possible of this very important axe factory working site.

1.2 ARCHAEOLOGICAL BACKGROUND

1.2.1 The Neolithic axe factory sites of Langdale and Scafell Pike are some of the most important archaeological monuments in the country, representing as they do, the large scale manufacture and processing of a nationally distributed product. Along with Grimes Graves, these sites represent the earliest true mass productive industry in Britain. The source material for the working sites was a band of fine-grained tuff (Group VI), which extends around the summits of Langdale, Bow Fell, Scafell Pike and Glaramara, and associated with this source, either directly or indirectly are the axe factory sites. At Great Langdale, the source rock strata outcrops just below the summits, and slopes down into the mountain; the majority of the sites are directly associated with this source on either the face of Pike of Stickle (Top Buttress) or within the adjacent South Scree gully. Site 123 is on the plateau behind the faces of Pike of Stickle and Loft Crag, and is set above the outcropping band of Group VI. It may, however, exploit a separate higher band of tuff, which is of a distinct petrographic group (probably Group XI), or represent the working of a source of rock manually carried up from the outcrop in South Scree below. Normally visual inspection will normally clarify the rock source of the Site 123 flakes; however, the site has been beneath peat and the flakes are deeply patinated through to their cores severely restricting geological examination and potentially also limiting petrographic analysis as a result of thin sectioning.

1.2.2 Site 123, is classed as a Type D site (Claris and Quartermaine 1989), indicating that it is removed from the geological source; this is a rare site type, representing only 0.5% of Langdale axe production; however these sites have the potential to reveal the working practices and the communication routes used. In particular there is the possibility that these sites reflect Neolithic camp sites, as an excavation by Tim Mck Clough of a Type D site revealed a post-hole associated with the working floor (Clough 1973). Site 123 is the largest Type D working site, and by virtue of its rarity, and in terms of how it can contribute to an understanding the working practices at Langdale, it is one of the more important Langdale Neolithic axe factory working sites.

1.3 OXFORD ARCHAEOLOGY NORTH (OA NORTH)

1.3.1 OA North has considerable experience of the assessment and excavation of sites of all periods, having undertaken a great number of small and large scale projects during the past 20 years. In particular OA North (formerly Lancaster University Archaeological Unit) undertook with the National Trust a major programme of survey of the axe factories around Scafell Pike and Langdale (Claris and Quartermaine 1989), then undertook a programme of excavation of key sites on the path (LUAU and National trust 1991) and more recently has undertaken a programme of research into the erosion of the Langdale Axe Factories (LUAU 1994). The proposed programme of archaeological research is based on the results of the work undertaken with the National Trust in recording axe working in advance of path repairs on Harrison Path and Thorn Crag. The detail survey of Site 123 was undertaken at the same time as the work on the two lower paths in anticipation of path work repairs here, but which are now being implemented some time after the earlier phase.

1.3.2 OA North has the professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. LUAU is a registered organisation (No 17) with the Institute of Field Archaeologists' (IFA).

2. OBJECTIVES

2.1 The following programme has been designed in accordance with a verbal brief by Robert Maxwell of The National Trust to enable the mitigative recording in advance of path repair

work and supervision in the course of the path repair. There are three stages to achieve the project objectives.

- 2.1.1 **Mitigation Excavation:** a narrow trench will be manually excavated along the south side of the present path in anticipation of repairs to the path. This will extend into the southern, exposed edge of the path to allow for stone revetment of the scarp edge as path of the path. The trenches will be a maximum of 15m long which will extend beyond the observed extent of the working floor. Samples will be taken under specialist advice to enable radiocarbon dating if and palaeoecological analysis appropriate.
- 2.1.2 **Supervision of Path Repair:** initial guidance and on going supervision should be provided to ensure that the extant deposits are adequately protected, and that the gathering of turfs does not expose new sites. This would provide for erratic visits at the request of the National Trust, rather than a continuous presence. In the course of the site visits records will be made of the progress and any archaeological features or finds exposed in the course of the work, and the character and impact of the path works will be recorded. The precise extent of the new path will be recorded by means of survey instrument and will be superimposed with the existing survey record.
- 2.1.3 **Reporting:** a written report will present the results of the excavations, and will present the results of the monitoring of the path work. The report will assess the significance of the data generated by this programme within a regional and national context, and within the context of the earlier results. The report will define the extent and character of the path works.

3. METHODS STATEMENT

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3.1 PATH DESIGN / TRENCH LOCATION

□

- 3.1.1 The present path has a broad split level course, the northernmost part of which incorporates the main working floor of Site 123, although there is a less concentrated spread of debitage extending into the lower, southern part of the path exposure. This latter material may potentially reflect spread out from the main part of the working floor subsequent to its exposure by the path, and does not necessarily indicate *in-situ* material in the southern section of the path. It is proposed by the National Trust that the southern part of the path become the principal, narrowed path line and the northern part of the path be backfilled and topped with turfs, covering over the main working floor (the surface of which would be topped with terram). In addition it is proposed to excavate a drain to take run off from the narrowed path on a line that would extend north from the new path line along a route that would extend to the immediate east of the site (Fig 1). Beyond photographic recording, there would not need to be any archaeological work on the northern section of the path. The southern section of the path and the line of the drain would need to be subject to full mitigative excavation prior to the repair development of the path. In the course of the earlier programme of path repair (1990), it became apparent that there was a serious risk of exposing and damaging, as yet undiscovered sites, when turfs were cut for covering the sites. It is therefore necessary that there is an archaeological presence when sites are selected for the extraction of turfs and stones, to ensure that there are no working floors beneath the turf.

3.2 MITIGATION EXCAVATION

- 3.2.1 This programme of trenching will establish the presence or absence of any archaeological deposits and will record these down to the level of natural deposits; it will examine the date, nature, and quality of preservation. The trenching will need to extend over a length of up to 15m, but may be reduced subject to the results of the excavation. The trenching will be undertaken in 5m sections (each would be no more than 1.5m in width), to ensure that it will be possible to have the trench completed and backfilled by the weekend, when there will be an increased number of tourists and will be necessary to ensure the safety of walkers. One trench will be on the southern part of the path, adjacent to the working floor, and two other trenches will follow the line of the proposed drain (Fig 1). The trenches will

be excavated manually, and this will be undertaken in a stratigraphical manner and will examine all sensitive deposits, and all identified features exposed will be fully excavated. The excavation will examine the nature, date and state of survival of these deposits. It is important to excavate into undisturbed strata at the side of the path to provide a long working section.

- 3.2.2 **Excavation Recording:** all elements of the work will, as a matter of course, be recorded in accordance with current English Heritage guidelines (*Management of Archaeological Projects, 2nd edition 1991*) and the best practices formulated by English Heritage's Centre for Archaeology. All excavation, by whatever method, will be recorded by the compilation of context records, and of object records for any finds, and the production of manually drawn accurately scaled plans and section drawings (probably at scales of 1:20 and/or 1:10; this will include the planning of the flake scatters. The stratigraphy of all trenches will be recorded irrespective of whether archaeological deposits have been identified. Where stratified deposits are identified a 'Harris' matrix will be compiled.
- 3.2.3 A photographic record will be maintained within 35mm black and white, digital and colour transparency formats and a photographic gazetteer will be maintained. A detailed oblique photographic record will be made of the site prior to the excavation, and from the same fixed points that were used during a detailed photographic study of this and all axe factory sites in 1990, thereby providing a direct comparison in order to assess how the condition of the site has changed in the last 12 years.
- 3.2.4 It is proposed to use a total station to record the location of the trench and also any changes to the extent of the site and the path as a result of erosion since the site plan was produced in 1990. The base plan will be scanned into a CAD system and the results of the present survey will be superimposed onto the original base.
- 3.2.5 **Environmental Sampling:** environmental sampling will be undertaken under guidance by the OA North environmental specialist. Bulk samples will be taken, as appropriate, of deposits with environmental potential, and a monolith will be taken through any identified buried ground surface. The level of environmental analysis will depend upon the potential of the samples and the excavation results, and is costed as a contingency within the present project design. The implementation of this contingency will only occur subject to discussions with the National Trust.
- 3.2.6 **Dating Methods:** the deposits will be assessed for their potential for radiocarbon and archaeomagnetic dating and costs for such work have been identified as a contingency. The contingency costs allow for two dates, which would be undertaken under the supervision of Dr Gordon Cook at the Scottish Universities Research and Reactor Centre at East Kilbride.
- 3.2.7 **Finds Sampling:** finds recovery and sampling programmes will be in accordance with best practice (current IFA guidelines for finds work). All artefacts and ecofacts will be handled and stored according to standard practice (following current Institute of Field Archaeologists guidelines) in order to minimise deterioration. Although it is recognised that all surface flakes will be ex-situ, at the outset of the excavation a 1:20 plan of the lithics scatter will be produced so as to provide a comparison with stratified deposits, and thereby provide a measure of the path disturbance. The flakes will be collected according to stratigraphic unit, although where they are within a more generalised layer deposit then they will be collected according to a 0.2m x 0.2m grid. The material will be weighed on site, and the average size of the flakes will be recorded, then a sample of the material from each stratigraphic unit will be bagged and retained and the remainder will be left on site. Significant finds, such as rough-outs or hammer stones will be three-dimensionally recorded. Finds storage during fieldwork and any post-excavation assessment and analysis (if appropriate) will follow professional guidelines (UKIC). Emergency access to conservation facilities is maintained by OA North. The sampled finds will be washed, marked and packaged as appropriate. Small finds will be individually packaged, in a manner appropriate to the find type.
- 3.2.8 The artefact assemblage will be examined by the OA North lithics specialist, and by Jamie Quartermaine, who has particular expertise in the analysis of Langdale material. The potential for further examination will be assessed. A summary report on the significance, character and date range of the assemblage will be generated.

- 3.2.9 **Petrographic Analysis:** given the undetermined source for the rock used at site 123, it is proposed to undertake a limited geological sampling programme from local outcrops. Each rock source will be located on the site map and no more than five sources will be sampled. Thin sectioning will be undertaken on flakes from the excavation and from the local sources, to establish the petrographic group and to establish the source. The flakes will need to be selected to ensure that they have a minimum of patination, and which will have a usable core for thin sectioning. The thin sectioning will be undertaken by Dr RV Davis (1984), an experienced geologist who has considerable expertise in this field..

3.3 PATH SUPERVISION

- 3.3.1 Given the sensitivity of the site, and the potential for exposure and corresponding disturbance of new sites, there is a need that the path repair programme is undertaken under intermittent archaeological supervision. The initial stage would involve a detailed, on site briefing of the path repair team by a member of OA North, and it is anticipated that this would be Jamie Quartermaine. This would involve explaining the archaeological background to the site, and demonstrating examples of sites in the immediate environs of Site 123, and also further afield, so that all path workers are capable of recognising worked flakes and sites. Guidance will be given on the parameters for working on the site, and which parts of the site can and should be preserved. Guidance will also be given on borrow sites, necessary to extract stones and turfs for the path maintenance.
- 3.3.2 Path supervision should be maintained at regular intervals and at the behest of the path team. Supervision visits should also be undertaken when a new borrow site is established, to ensure that turf exposure does not reveal new flaking. Care should be taken by the path teams when extracting turfs to check that there are no flakes revealed beneath the turfs, and if any are identified then an archaeologist should be called out to investigate the site, and to record any exposures revealed.
- 3.3.3 In the course of all site visits, the progress of the path work should be photographically recorded, and photographs should be taken on completion of the works. All archaeological deposits or new sites exposed in the course of turf extraction will be subject to detailed recording (*Section 3.2.2*). The precise extent of the new path will be recorded by means of survey instrument and will be superimposed with the existing survey record.

3.4 REPORTING

- 3.4.1 **Archive:** the results of Stage 3.2-3 above will form the basis of a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of archaeological projects*, 2nd edition, 1991). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. This archive will be provided in the English Heritage Central for Archaeology format, as a printed document, and a synthesis (the evaluation report and index of the archive) will be submitted to the relevant Sites and Monuments Record. The archive and finds will be deposited with Kendal Museum within 6 months of the end of the fieldwork.
- 3.4.2 The archive will be formed of all the primary documentation, including the following:
- Survey Information
 - Context Records
 - Finds Records
 - Sample Records
 - Field / Inked Drawings and digital copies of CAD data
 - Photographic negatives, prints and colour transparencies
 - Finds
 - Written report
 - Administrative records

- Conservation records
- 3.4.3 **Report:** five copies of a written synthetic report will be submitted to the client and a further copy to the SMR. The report will present, summarise, and interpret the results of the programme detailed in Stages 3.1-3 above, and will include an index of archaeological features identified in the course of the project, with an assessment of the sites development. It will incorporate appropriate illustrations, including a location map, copies of the site plans and section drawings, and the trench location plan all reduced to an appropriate scale. The report will consist of an acknowledgements statement, list of contents, executive summary, introduction summarising the brief and project design and any agreed departures from them, methodology, interpretative account of the archaeological stratigraphy and details of the features and stratigraphy recorded from each trench, table of contexts, a complete bibliography of sources from which data has been derived, and a list of further sources identified during the programme of work.
- 3.4.4 The report will include the results from the thin sectioning programme, any environmental analysis and if possible Carbon 14 dating. The report will look at the results of the excavation within a wider context, it will examine the extent to which the working site reflects an exploitation of a local source or potentially the exploitation of manually transported material to a camp site, as was implied by the findings of the Thunacar Knott site (Clough 1973). The results will be set within the context of earlier excavations on paths and also the results of the excavations by Richard Bradley and Mark Edmonds (1993). Digital copies of the report and the drawings will be provided to the National Trust, in Microsoft Word, .JPG, and Autocad 14 formats.
- 3.4.5 **Publication:** the excavation of the axe factory sites will certainly warrant publication. However, logically they should be published in conjunction with the excavation results of the Harrison and Loft Crag Paths. This will involve negotiation with English Heritage, and at this stage it is not possible to quantify the costs necessary to produce a combined publication. Consequently the present costs are exclusive of publication.
- 3.5 GENERAL CONDITIONS**
- 3.5.1 **Health and Safety:** full regard will, of course, be given to all constraints (services) during the excavation, as well as to all Health and Safety considerations. All site procedures are undertaken in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1991, revisions 1993). Risk assessments are undertaken as a matter of course for all projects, and will anticipate the potential hazards arising from the project. Training in mountain craft will be given to any member of staff on the project not experienced in working in upland landscapes. In order to satisfy basic health and safety considerations OA North does not allow staff to work alone on landscape projects and therefore the team comprises two personnel (team leader and assistant).
- 3.5.2 **Confidentiality:** the report is designed as a document for the specific use of the client for the particular purpose as defined in this project design, and should be treated as such. Any requirement to revise or reorder the material for submission or presentation to third parties or for any other explicit purpose can be fulfilled, but will require separate discussion and funding.
- 3.5.3 **Project Monitoring:** any proposed changes to this project design will be agreed with the National Trust and Lake District National Planning Authority. If required, a meeting with the National Park Archaeologist and the client can be established at the outset of the project.
- 3.5.4 **Insurance:** the insurance in respect of claims for personal injury to or the death of any person under a contract of service with the Unit and arising in the course of such person's employment shall comply with the employers' liability (Compulsory Insurance) Act 1969 and any statutory orders made there under. For all other claims to cover the liability of OA North in respect of personal injury or damage to property by negligence of OA North or any of its employees there applies the insurance cover of £10m for any one occurrence or series of occurrences arising out of one event.

- 3.5.5 **Contingencies:** a contingency cost is submitted to cover the eventuality of environmental analysis and carbon dating. The environmental contingency work provides for a basic level of analysis of two samples. The contingency cost provides for two conventional carbon dates or a single accelerator date. Any further work will be subject to discussions with LDNPA and the client.

APPENDIX 2

DETAILED CONTEXT DESCRIPTIONS

Context Number: 1000
Category: Posthole?
Form: Cut
Filled by: 1001

Description

An irregular circular cut, with a shallow flat bottomed U-shaped profile, measuring 0.40m by 0.30m and 0.05m deep. Very little of the sides were present due to its shallow nature, although it was perceptibly steeper on its southern edge (Fig 3 and 6). It was filled by 1001 and cut 1007.

Interpretation

There is a possibility that this was an archaeological feature, mainly due to the position of stones within the fill 1002 being reminiscent of packing stones. However, it is perhaps more likely that this was a natural hollow filled with a decayed peat or humic soil, 1003, possibly caused by the removal of a larger stone. The flakes associated with this feature could have been pressed in from above. Despite the doubts concerning this feature its potential archaeological nature can not be entirely discarded.

Context Number: 1001
Category: Posthole?
Form: Fill
Fill of: 1000

Description

A very dark-brown silt measuring 0.40m in length, 0.30m wide and 0.05m deep, the only fill of 1000. Included within the deposit was less than one percent angular local igneous stone of a maximum size of 0.15m by 0.10m by 0.05m. It was located stratigraphically below the humic layer 1003, and above 1000.

Interpretation

The natural accumulation of a humic soil, similar to 1004 and 1009. Some of the stones were positioned in a way reminiscent of packing stones, although this may be coincidental. The few fine-grained tuff flakes recovered from this deposit were from its surface.

Context Number: 1002
Category: Stone
Form: Layer

Description

A mid-brown-grey, loose, fine sandy silt. Included within the deposit was 90% to 95% sub-rounded and sub-angular stones of a maximum size of 0.20m by 0.16m by 0.10m. Some worked flakes were recovered from the deposit, although in quantities of about 10 flakes per one meter square. Also recovered from the layer, towards its base, was a blue ribbon chocolate bar wrapper. The layer measured at least 1.9m in length by 0.98m wide and 0.10m deep.

Interpretation

This material represents the erosion of the removed walkers cairn down slope.

Context Number: 1003
Category: Humic Soil
Form: Layer

Description

This was a friable, silty, black, humic soil. Included within the deposit was 30% to 40% sub-rounded stone inclusions of a maximum size of 0.40 by 0.25m by 0.18m. A very small number of worked flakes were recovered from the surface of this deposit, in the western extent of the trench (Fig 3). It measured

at least 3.40m in length, 0.84 wide and at least 0.40m thick. It was located stratigraphically below **1004** and above natural **1006/1007**.

Interpretation

This layer represents a very humic soil, with frequent local igneous rock inclusions, predating the flake layer **1004**. The small number of flakes initially recovered from the surface of this deposit were more likely to originate from the very eroded remains of **1004** in the north-western corner of the trench. Further excavation of this context produced no further finds at any depth. The deeper the excavation the greater the concentration of stones. It is thought that these larger stones formed a layer of fragmented igneous rock with the matrix of **1003** washed into, or formed in, the voids between the stones.

Context Number: **1004**
Category: Chipping Floor
Form: Layer

Description

A silty, black, humic soil with sub-rounded stone inclusions of a maximum of 0.25m by 0.13m by 0.08m comprising 80% to 90% of the layer. Worked flakes comprised 5% to 10% of the deposit, in quantities greater than 10 flakes per one meter square. It measured at least 2.6m in length, 2.0m wide and 0.13m thick, and continued beyond the limit of excavation.

Interpretation

This deposit forms the chipping floor of the site, although it was undoubtedly disturbed around its edges (see **1003**). The layer was more expansive than recorded here, but had been effected by erosion from the footpath. It is noticeable that in the central part of the surviving layer, there was a maximum amount of overburden visible in the south facing section of the trench (Fig 5), which may suggest that this deposit survived best because of the deeper overburden deposit here. Along the southern extent of the trench there was only very limited overburden above the recorded layers. The matrix of this layer, as oppose to the flakes, largely consisted of sediment originating from the underlying deposit **1003**.

Context Number: **1005**
Category: Natural
Form: Layer

Description

A black, silty, humic soil noted in plan only in the eastern half of the trench (Fig 3). It was at least 2.80m by 0.80m and less than 10mm thick, but did not survive a second cleaning of the trench. It was located stratigraphically below **1008** and above natural **1007**. There were no worked flakes recovered from this layer.

Interpretation

This deposit is thought to represent the very eroded remains of **1003** in this part of the trench, where it had formed above natural **1007**. At the initial phase of the excavation it was separated in plan from **1003** by intervening, later, layers (Fig 3). As already noted, the extremely thin nature of the deposit meant that it did not survive subsequent cleaning of the trench.

Context Number: **1006**
Category: Natural
Form: Layer

Description

A dark grey, loose, medium sand and included sub-rounded and sub-angular stone, of a maximum size of 0.14m by 0.08m by 0.06m, which comprised approximately 99% of the layer. It contained no artefacts of anthropogenic origin.

Interpretation

This layer represents a natural gravel, the same as **1007**.

Context Number: **1007**
Category: Natural

Form: Layer

Description

A dark-grey, loose, medium sand, and included sub-rounded and sub-angular stone, of a maximum size of 0.15m by 0.08m by 0.07m, which comprised approximately 99% of the layer. A sondage was excavated 1.4m in length and 0.50m wide, to a maximum depth of 0.30m before reaching natural bedrock.

Interpretation

This layer represents a natural gravel, the same as **1007**, overlying the bedrock.

Context Number: **1008**

Category: Soil Horizon

Form: Layer

Description

A dark-grey-brown, friable, fine sandy silt. included within the deposit was 80% to 90% sub-rounded and sub-angular stone inclusions of a maximum size of 0.16m by 0.08m by 0.07m. The layer measured at least 2.10m in length, 1.20m wide and 0.06m deep. Worked flakes were present in numbers greater than 10 flakes per one meter square.

Interpretation

This is where the chipping floor **1004** has been disturbed by soil formation processes, which was present in a very limited area over the trench, and as such this deposit is the out of situ, disturbed remains of the chipping floor. Despite this disturbance the flakes of the chipping floor can still be seen to continue in a distinct band in section (Fig 5).

Context Number: **1009**

Category: Layer

Form: Humic Soil

Description

A very dark-grey, firm, silty humic soil measuring 1.9m in length and 0.10m thick. It was only noted in section, in a location where the stratigraphy was less disturbed by erosion. This humic soil was stratigraphically above the chipping floor **1004**.

Interpretation

This humic soil may be *in situ*, but in part may be redeposited, as it was located below gravel or scree which was excavated as overburden; this may be an indication of down slope erosion and soil slippage.

Context Number: **1010**

Category: Layer

Form: Humic Peaty Topsoil

Description

A black, firm, silty humic peaty topsoil measuring 0.52m thick (Fig 6). It was located stratigraphically above **1011**, and was present across the cleaned section of the peat hag.

Interpretation

A humic, peaty, topsoil.

Context Number: **1011**

Category: Layer

Form: Chipping Floor

Description

A very dark-grey, friable, silty layer with 1% to 5% stone inclusions of a maximum size of 0.23m by 0.20m by 0.20m, although the vast majority were a maximum size of 50mm by 50mm by 50mm. It measured 0.38m thick, and was present across the length of the exposed section peat hag. Worked flakes were present across the length of the deposit, their presence defining the position of the layer, although they were concentrated in the first 0.40m at the western extent of the section. It was located stratigraphically below **1010** and above **1012**.

Interpretation

This deposit represents the *in-situ* chipping floor, although the intermittent presence of flakes suggests that the section was located at the eastern extent of the working area.

Context Number: 1012
Category: Layer
Form: Natural

Description

A very dark-grey, humic, silty soil with 70% to 80% sub-angular and occasionally sub-rounded stone inclusions of a maximum size of 0.23m by 0.20m by 0.20m. It measured at least 0.34m thick, and was present across the length of the exposed section of the peat hag, and located stratigraphically below 1011.

Interpretation

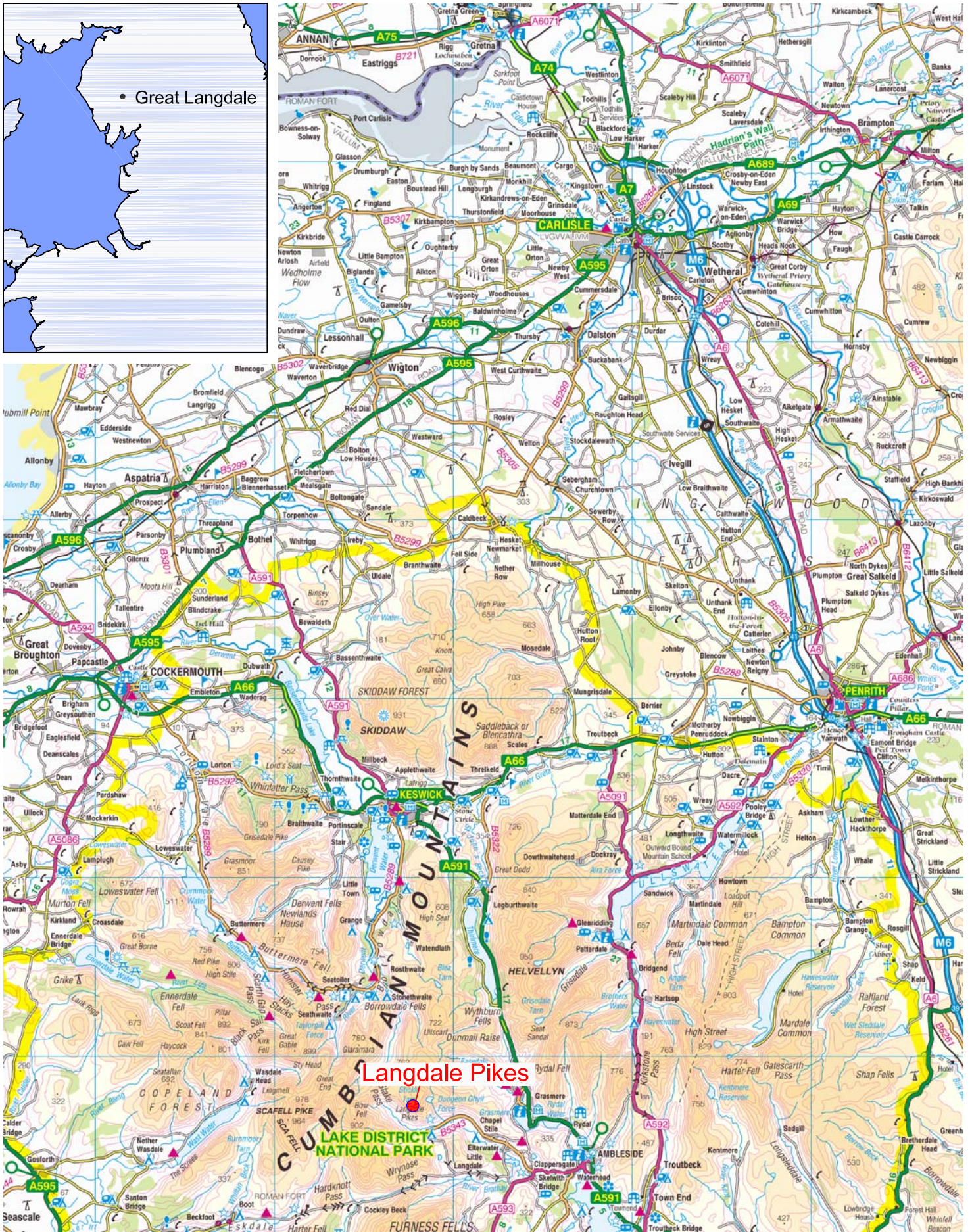
A natural scree with a humic soil eroded into, or formed in, the voids between the stones. In this respect it was very similar to 1003, and was almost certainly the same deposit.

ILLUSTRATIONS

- Fig 1: Location map.
- Fig 2: Trench location plan
- Fig 3: Plan of trench after the removal of the overburden, showing chipping floor **1004** and **1008**
- Fig 4: Plan of the chipping floor **1004**, post-excavation of layer **1008**
- Fig 5: South-facing section of trench
- Fig 6: South-facing section of peat hag, and east-facing section of feature **1000**

PLATES

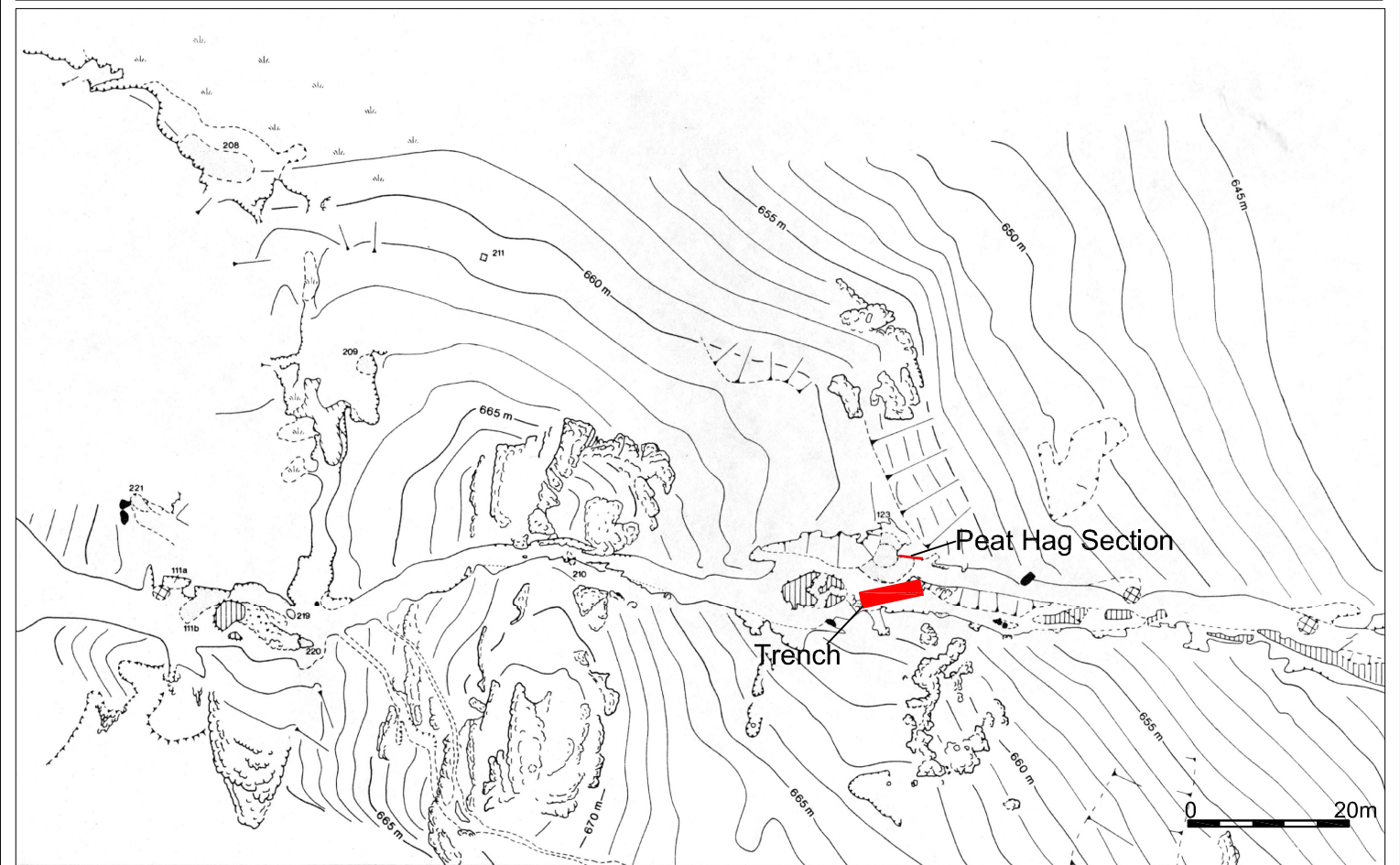
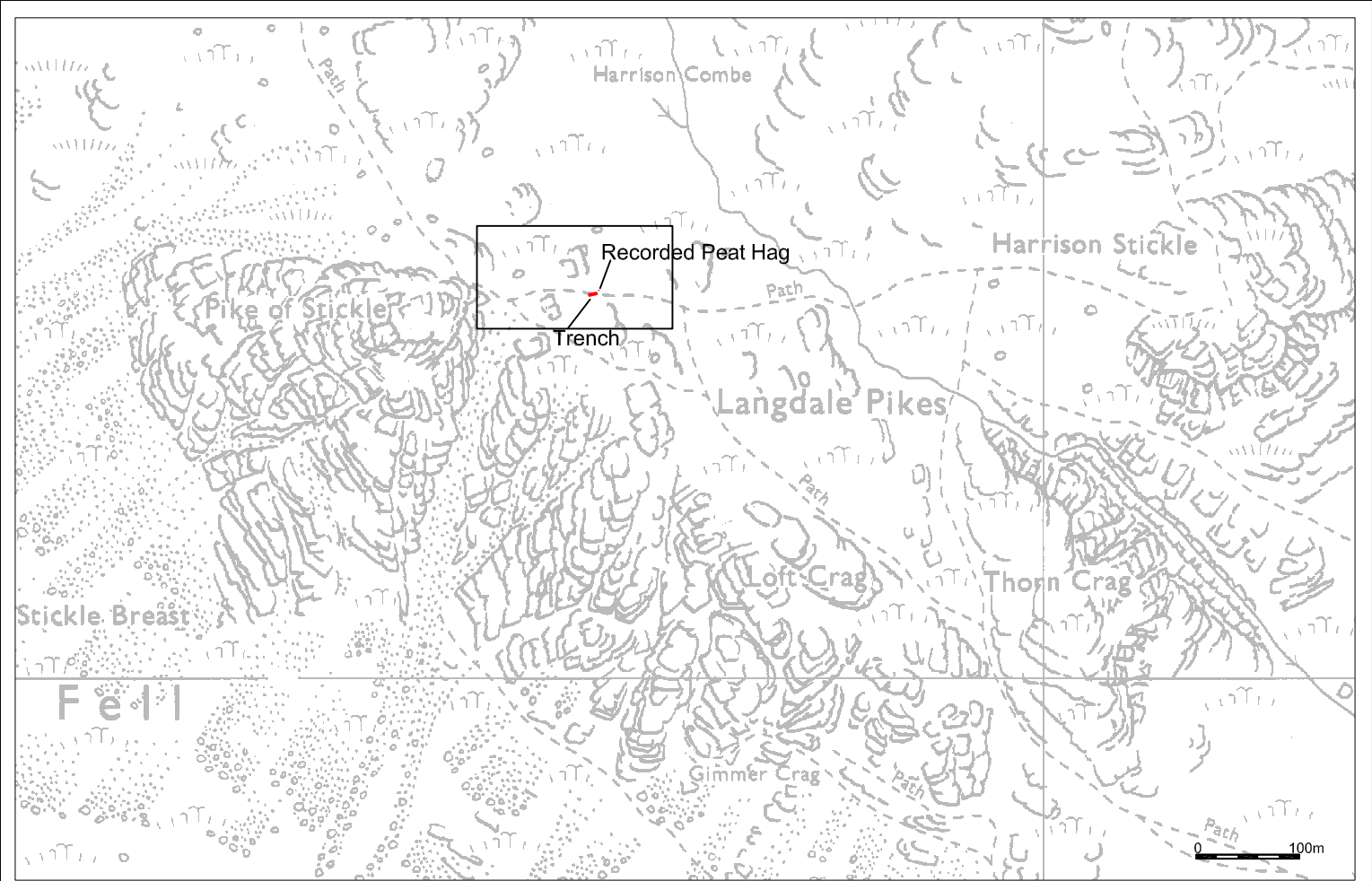
- Plate 1: Site 123 at the outset of the excavation, facing south
- Plate 2: The excavated trench, showing flake layer **1004**, facing north-west
- Plate 3: Roughout axe (OBJ1) within flake layer **1004**
- Plate 4: Flake layer **1004**, in the south-west-facing section of the trench prior to the taking of monolith <19>
- Plate 5: The recorded peat hag, facing north-east
- Plate 6: Recording the trench, facing south



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Figure 1: Location Map



based upon the Ordnance Survey 1:10000
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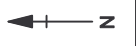
Figure 2: Trench Location Plan



Figure 3 : Plan of trench after removal of overburden, showing chipping floor 1004 and 1008



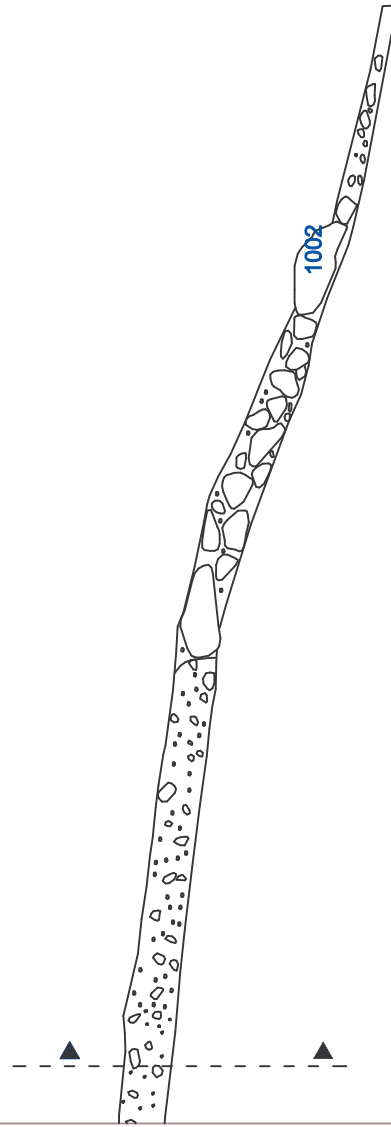
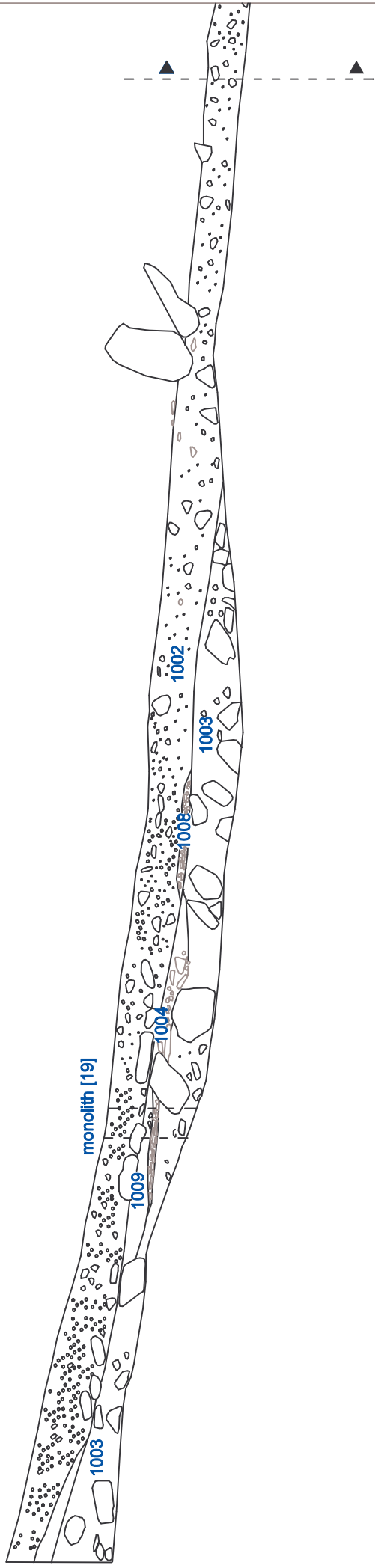
 natural local rock
 worked flakes



Scale 1:50



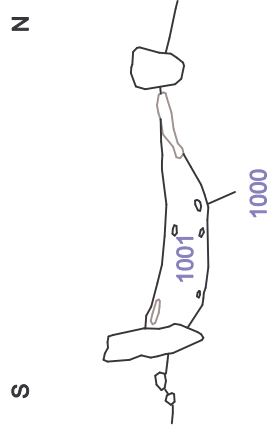
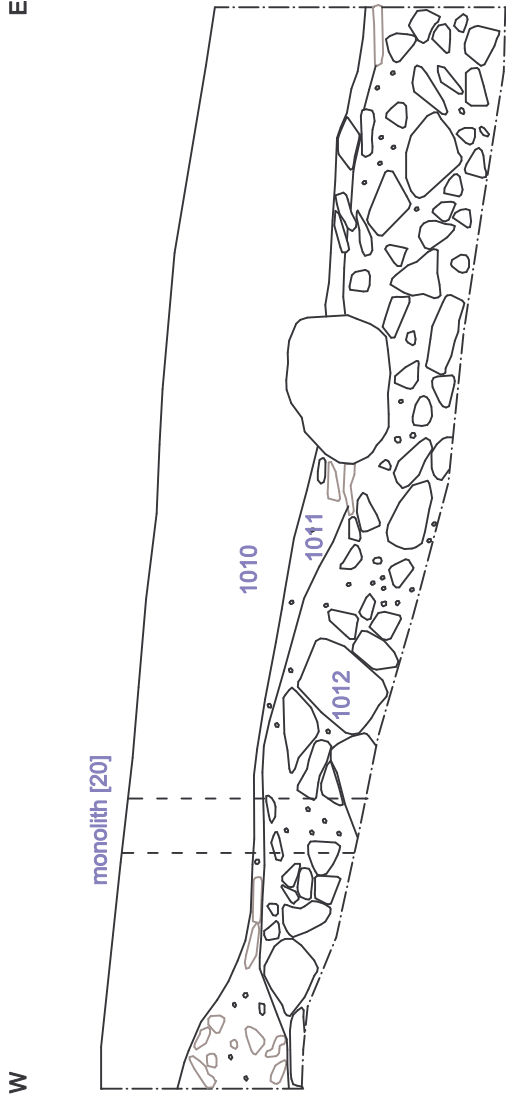
Figure 4 : Plan of chipping floor 1004



-  natural local rock
-  group VI flakes



Figure 5: South-facing section of trench



-  natural local rock
-  group VI flakes



Scale 1:10



Figure 6: South-facing section of peat hag and east-facing section of feature 1000



Plate 3: Roughout axe (OBJ1) within flake layer *1004*



Plate 4: Flake layer *1004*, in the south-west-facing section of the trench prior to the taking of monolith <19>



Plate 1: Site 123 at the outset of the excavation, facing south



Plate 2: The excavated trench, showing flake layer *1004*, facing north-west



Plate 5: the recorded peat hag, facing north-east



Plate 6: Recording the trench, facing south