
*REPORT ON A SECOND SEASON OF EXPLORATORY
EXCAVATION OF TWO CAIRNS AND ASSOCIATED
FEATURES ON THE SOUTH SIDE OF FAWDON HILL IN
REDESDALE,
NORTHUMBERLAND*

~ INTERIM REPORT FOR REVITALISING REDESDALE ~

THE ARCHAEOLOGICAL PRACTICE LTD.

MAY 2022



Prepared for: <i>Revitalising Redesdale Landscape Partnership</i>	By: <i>The Archaeological Practice Ltd.</i>	Site Code: FH19 Grid Reference: NY 89754 93870 (centre) Date of fieldwork: September 2019 Oasis Number: thearcha2-
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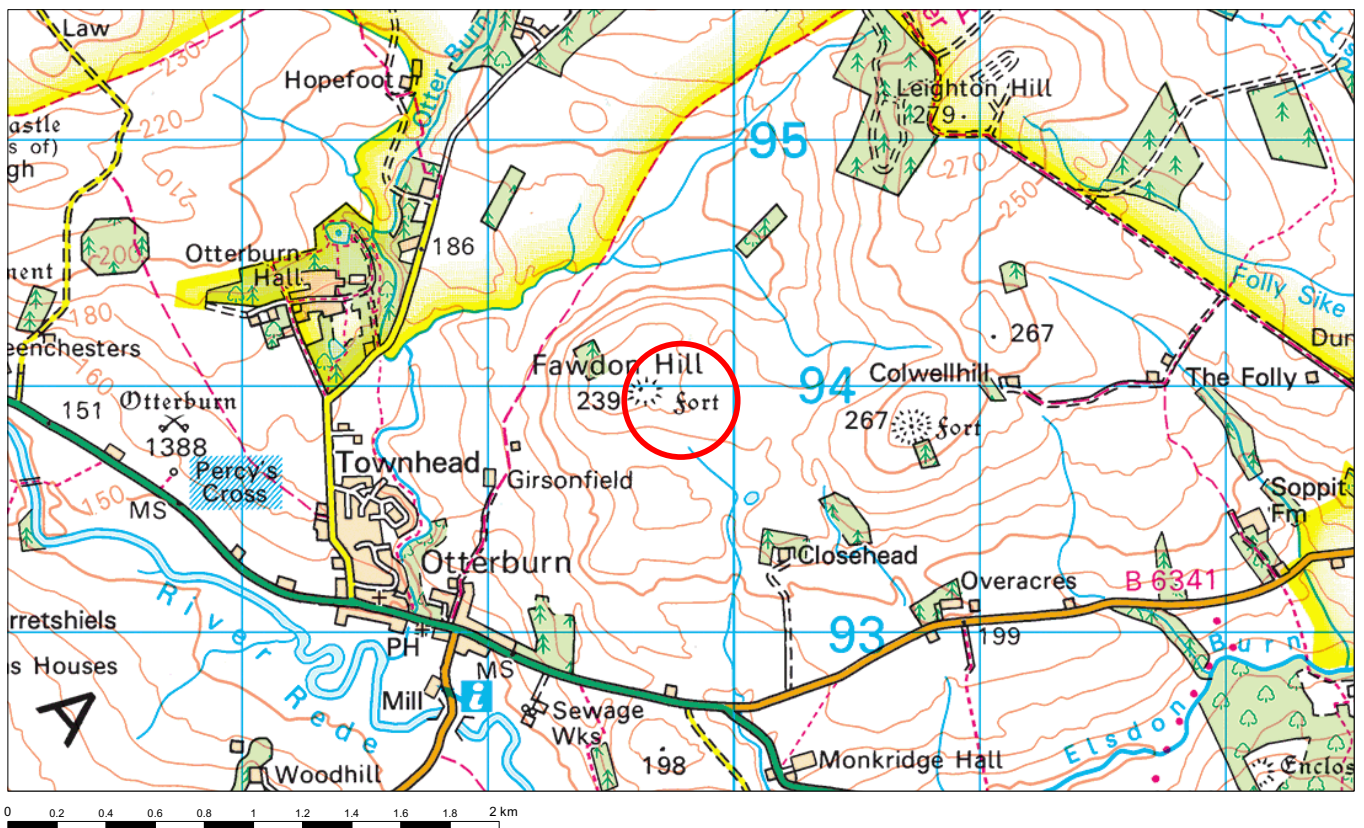
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ACKNOWLEDGEMENTS

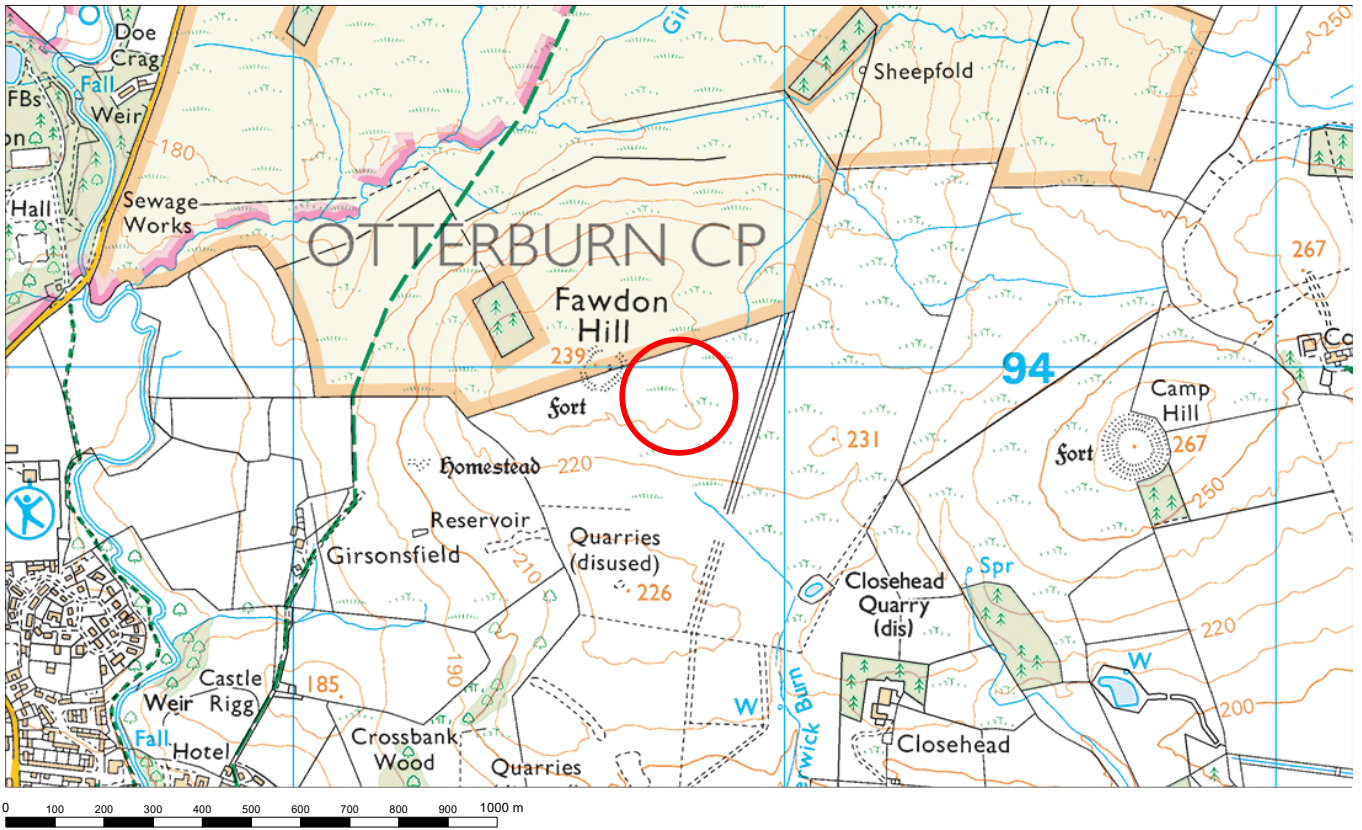
The fieldwork carried out on Fawdon Hill in June 2021 was supervised on behalf of Revitalising Redesdale Landscape Partnership (RRLP) by Richard Carlton and Marc Johnstone of The Archaeological Practice Ltd., who also produced this report. Jeanette Dagg, Keith Cooper, Bob Jackson and Barbara McCabe assisted in carrying out a preliminary survey of the site in February, 2019, following which Jeanette made initial contact with the landowner, Mr Ryan O'Kane of Close Head Farm. Special thanks are due to him for giving permission for the fieldwork to take place and enthusiastically supporting it with site visits and land-use information. Karen Collins, Revitalising Redesdale Heritage and Engagement Officer, ensured other permissions were in place and co-ordinated RRLP volunteer involvement.



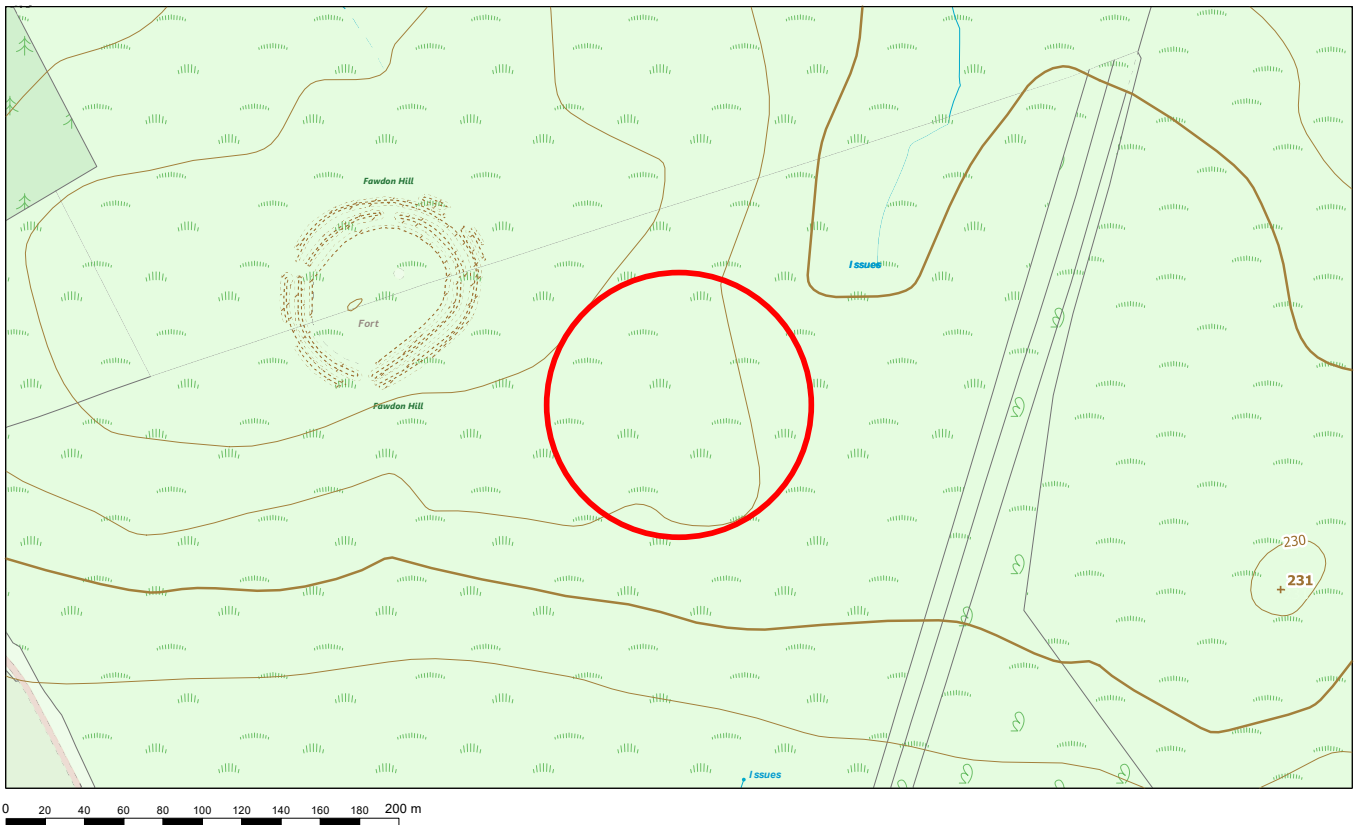
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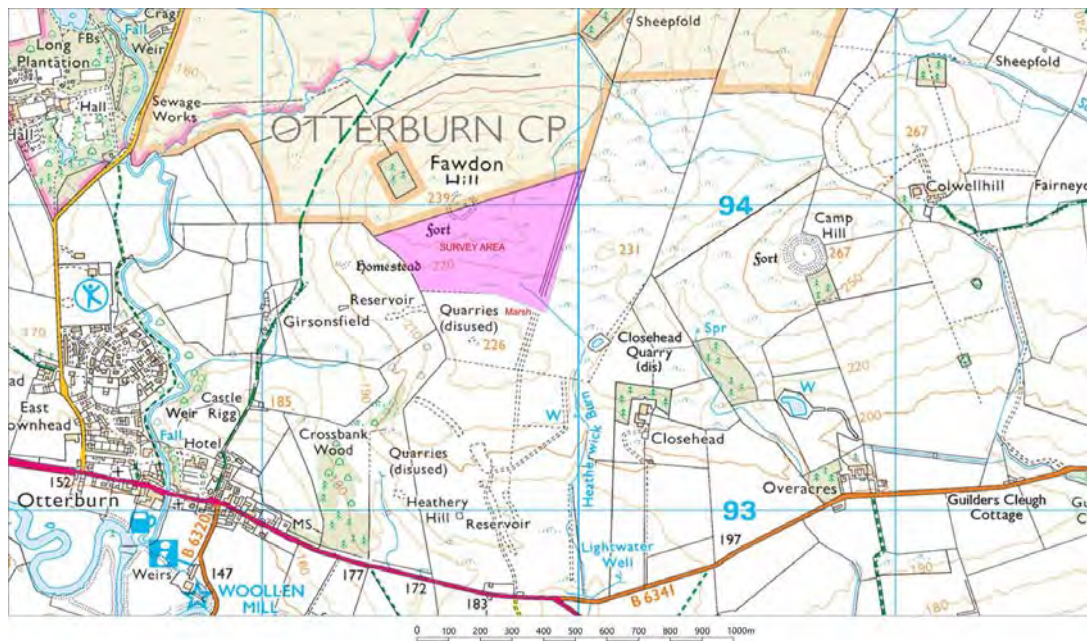
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Illus. 04: The location of study (circled in red) less than 100 metres to the south-east of the hillfort on Fawdon Hill.

1. INTRODUCTION

The origins of the fieldwork findings discussed here lie in the early 1960s when R H Walton included in his analytical account of the Battle of Otterburn delivered to the Berwickshire Naturalists Club (Walton 1962-3) a note on some possible medieval burial mounds found on Fawdon Hill, an open area of enclosed, south-facing moorland above Otterburn in Redesdale which he had come to believe was the site of the late-14th century battlefield. Whilst not entirely dismissing that possibility (see Carlton & Johnstone 2019, *APPENDIX 1*), as reported in the Phase I interim report (Carlton & Johnstone 2019) a site visit carried out on February 13th 2019 with Revitalising Redesdale volunteers including Capn. Walton's daughter, Barbara McCabe, reinterpreted the mounds as surviving components of a prehistoric and later, multi-phase landscape dominated in the north by the impressive earthwork remains of Fawdon Hill iron age hill-fort enclosure. A search of the ground south and south-east of the enclosure revealed several such low mounds of stone and earth, as well as indications of others largely buried below the turf, circular or sub-circular in form and measuring up to c 5 m in diameter and 0.8 m high. The features appeared to be restricted in distribution entirely to the rough sloping ground on the south side of the hill, with searches in the wider vicinity, towards a marsh in the south-east and Colwell hill-fort further to the east, failing to produce similar features beyond the line of an Inclosure-period triple-linear embankment.



Illus 05: Site Location map.

A subsequent episode of intensive field survey within a large area enclosed by field walls and fence-lines lying south of Fawdon Hill, backed-up by study of aerial photographs and Lidar data was carried out for Revitalising Redesdale ahead of trial excavations in the Summer of 2019. This revealed that much of the west part of the area under consideration, divided from the east by a linear dyke extending from close to the southern entrance to the hill-fort, had been subject to medieval or post-medieval cultivation, as evidenced by extensive areas of overlapping rig & furrow earthworks, which had destroyed all but a handful of earlier features. In the east part, however, where no evidence for past cultivation was apparent, a variety of subtle earthwork features survived, including up to 20 cairn-like features within and around low-lying, sinuous, linear earthworks. Within this area a particular cluster of such features was recorded in the centre of the area defined by linear banks to the west, north

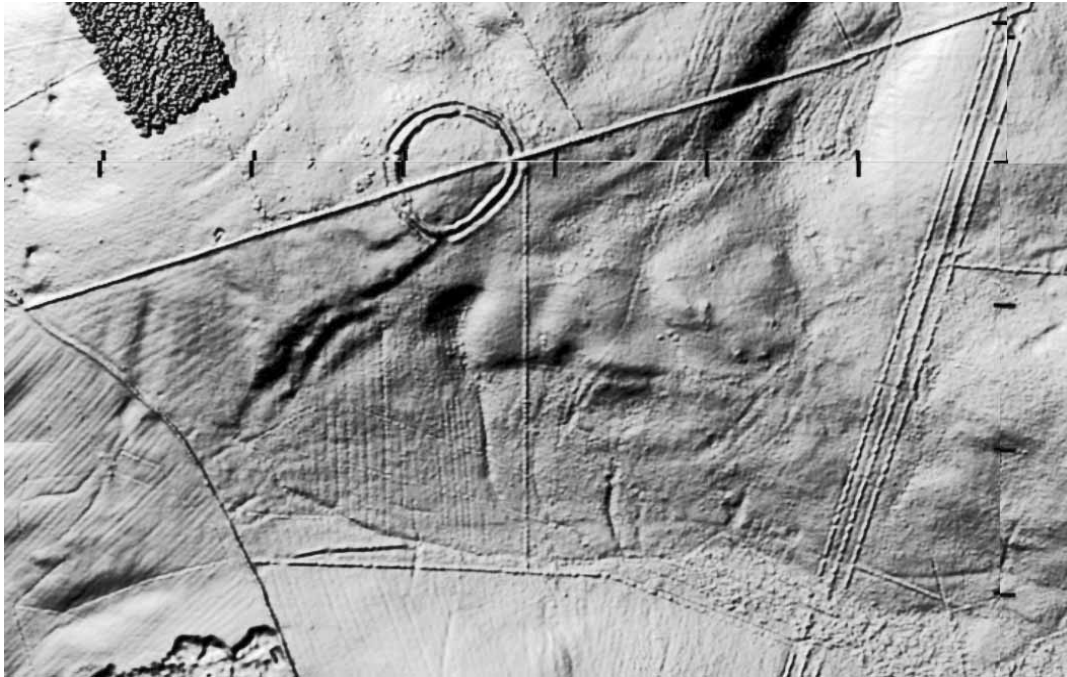


Illus. 06: Aerial view of the study area in 2002. Image courtesy of Google Earth.

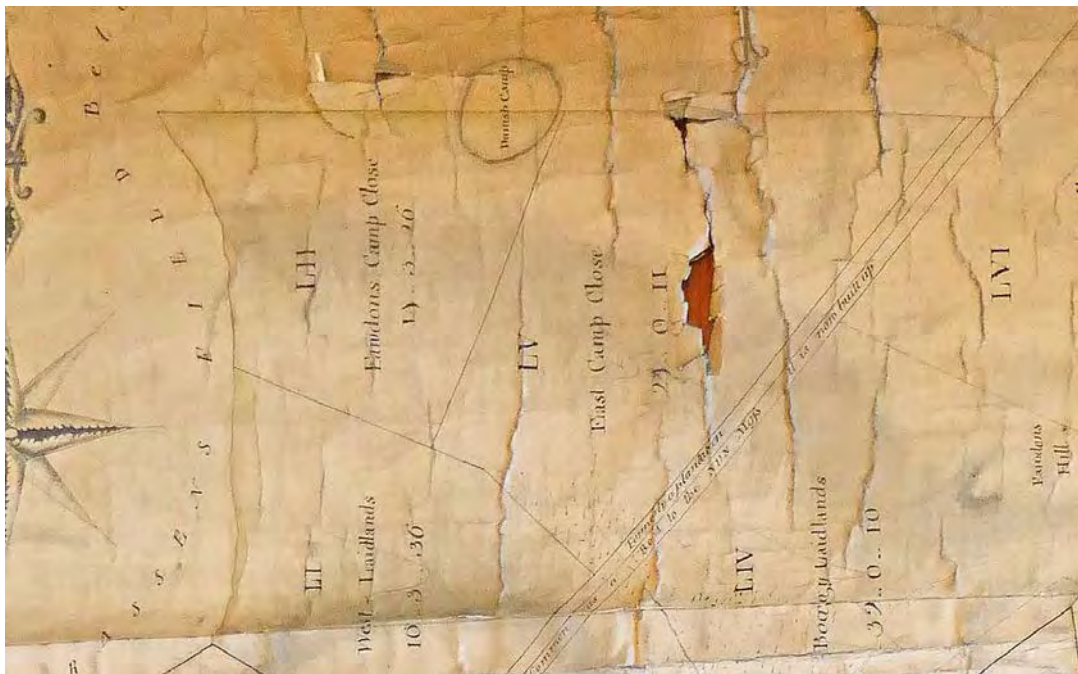


Illus. 07: Aerial view of the study area in 2019, with location of archaeological trenches from 2019 season visible. Image courtesy of Google Earth.

and east, and by marshland to the south. Hints of possible prehistoric 'cord rig' seen on aerial photographs were not substantiated by visible remains on the ground, however, and the isolated sections of earthwork embankment detected so far do not amount to a recognisable field system.

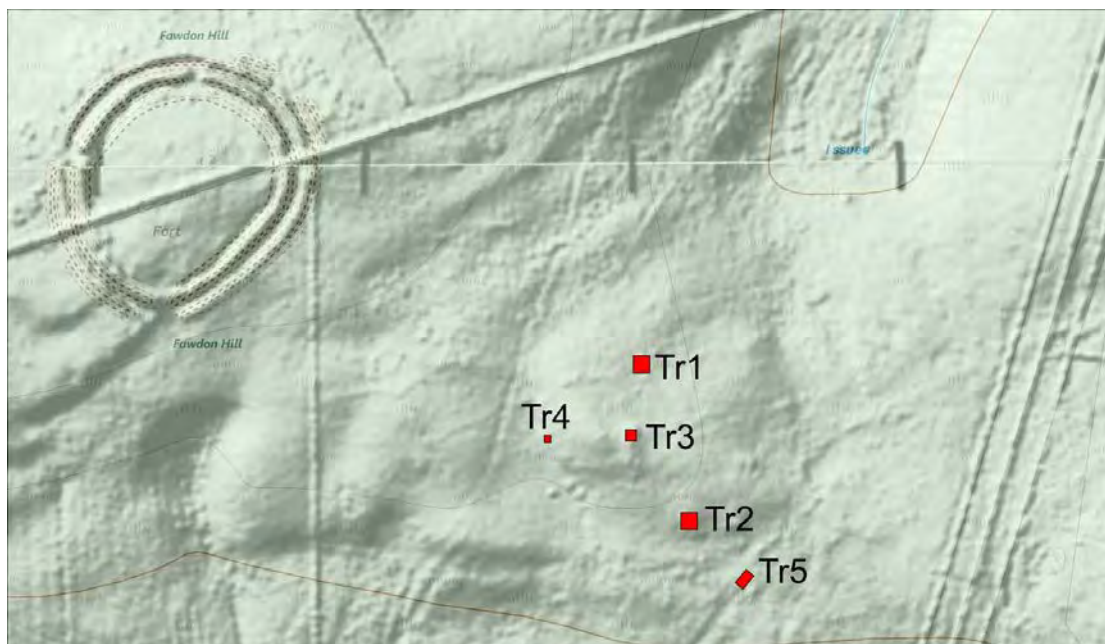
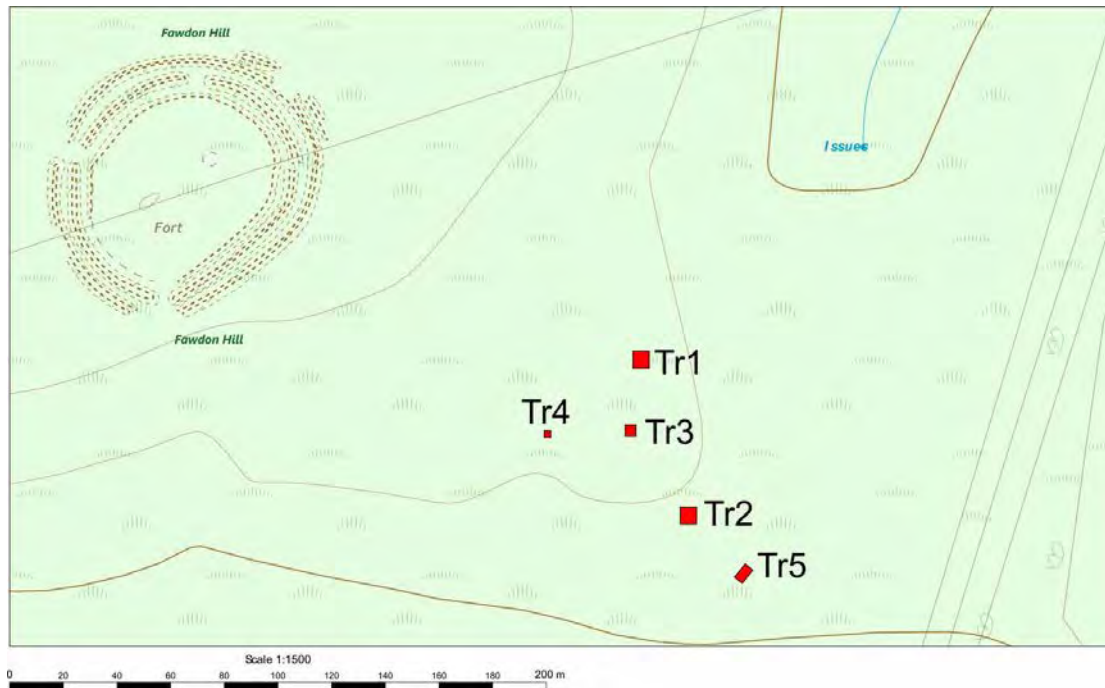


Illus. 08: LIDAR Survey plot of the fieldwork area on the south side of Fawdon Hill, showing earthwork features.



Illus. 09: Plan of Monkridge Hall and Close Head Farm 1809 showing the survey area, labelling the Fawdon Hill enclosure 'Danish Camp' and the triple-dyke feature as a former 'road to the Nun Moss' south-east side) and 'formerly a plantation (noth-west side).

Time constraints in the subsequent excavation phase which aimed to clarify the date and character of these remains allowed the partial investigation of only five features over two periods of three and five days, respectively, three of them being stony mounds and the others, parts of a linear bank around a prominent natural knoll.



Illus. 10a&b: Trench locations shown on an Ordnance Survey base map (10a – top); with Lidar survey superimposed (10b, below).

The investigation of three apparent cairn-like features produced strikingly different results. The first (Trench 3 at NGR NY 89800 93899), a rocky mound 3 m long in its longer E-W axis, forming the highest point of a distinct knoll approximately 130 metres south-east of Fawdon Hill hill-fort, was soon shown to be a natural, apparently unmodified outcrop of bedrock. A

second, superficially similar mound below it, however, partially investigated in 2019 and more completely in 2021, was found to be the southernmost of a cluster of possible cairns around the natural knoll. This feature (Trench 2 at *NGR: NY 89823 93862*), 4.10 m N-S by 6 m E-W, comprised a compacted layer of medium and small sub-rounded and subangular sandstones within a loose matrix of reddish-brown silty soil, forming a roughly oval-shaped low mound, orientated approximately east-west and inclining to the south. Voids revealed after exploratory excavation in 2019 near the centre of the mound were suggestive of a possible burial cavity, leading to further exploration in 2021 (see below).

Two other features around the knoll were investigated by test-pits. The first (Trench 4, at *NGR NY 89767 93903*) targeted a large protruding boulder, 0.70 m long by 0.50 m wide and 0.50 m high, one of several erratics forming a linear bank enclosing or demarcating the perimeter of the natural knoll, revealing a firm upper layer of smaller stones and earth into which the boulder was set. The second (Trench 5 at *NGR NY 89866 93877*) examined the eastern part of what appeared to be the same, sinuous earthwork and found it to be a drystone bank or wall which survived well for a considerable length around the east side of the knoll.

Finally, a third apparent mound (Trench 1 at *NGR: NY 89807 93929*), 3.25 m long (N-S) by 2.85 m wide (E-W) and approx. 0.27 m high prior to excavation, positioned on fairly level ground north of the features noted below, was explored in 2019 and more fully reinvestigated in 2021. The upper part of this roughly-oval feature comprised a layer of small, rounded and angular sandstone fragments mounded up within a reddish-brown silty matrix. Within the stone mound two cup-marked stones were initially identified *in situ*, both containing single cup-marks marked on naturally flat surfaces and facing upwards. One of these (Stone 7), a large angular block of sandstone was centrally-positioned within the cairn, while the other, smaller and more portable stone (Stone 7) was located on the edge of its north-east quadrant.

Removal of the upper layers of stones revealed, towards the north-western end of the structure, a possible inner cairn structure comprising flatter stones arranged in a sub-circular pattern measuring approximately 1.32 m (E-W) x 0.90 m (N-S) and initially suspected to overlie a possible grave cut, although later excavation discounted this. Positioned east and west of the 'inner cairn' were two possible post-settings, while a well-made flagged surface extended some 1.20 m south-west from the edge of the overlying stone mound and continued beyond the western limit of excavation.

3. TRENCH DESCRIPTIONS

Trench 1 - (*NGR: NY 89800 93924*)

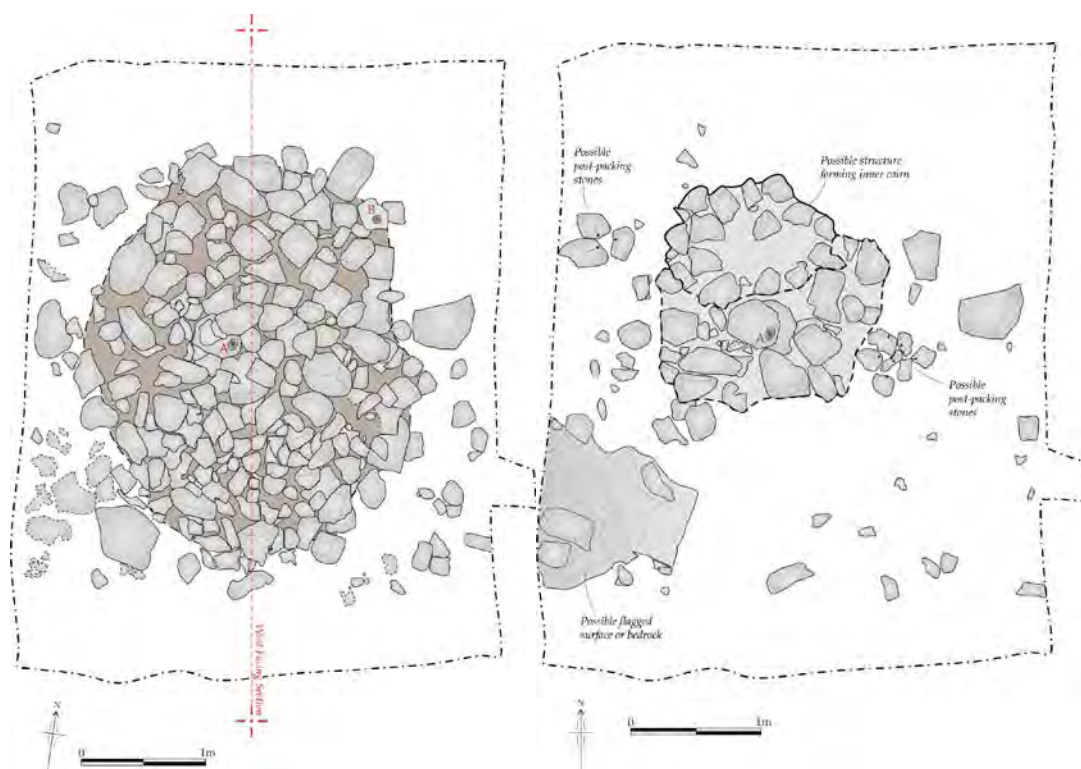
This trench, first opened in 2019, was positioned on fairly level ground over feature [36] identified during the preliminary field survey phase, the northernmost of a cluster of possible cairns surmounting a natural knoll located approximately 130 metres SE of Fawdon Hill, and possibly enclosed by an upstanding, low sinuous earthwork.

The overall dimensions of the cairn prior to removal of the stones forming its mound was recorded in 2019 as 2.85 m (maximum width E-W) x 3.25 m (maximum length N-S) x 0.27 m (maximum excavated depth of the upper stone deposit). The upper cairn material comprised a layer of medium-small sub-rounded and subangular sandstones without bonding but deliberately mounded up, though only two or a maximum of three courses deep, with

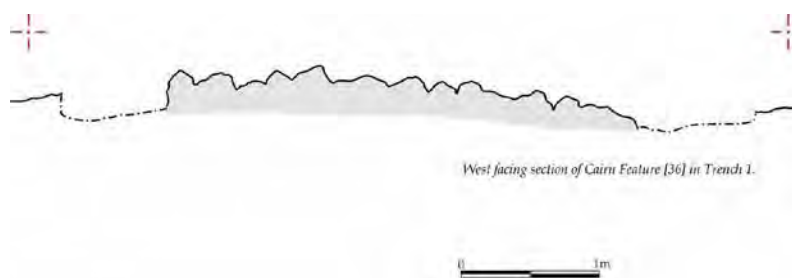
reddish-brown silty soil infilling the cavities, forming a roughly oval shaped low mound orientated approximately north-south.

Two cup-marked stones were identified from the upper cairn material, both containing single cup-marks on flat surfaces (see *Illus. 00* (below) labelled 'A' and 'B') with their cup-marks facing skywards. Stone 'A' (now renamed 'Stone 7') was located almost exactly at the centre of the cairn and is a sub-angular sandstone rock measuring 0.41 m x 0.29 m with the cup-mark measuring approximately 0.10 m x 0.07 m. Stone 'B' (now 'Stone 00'), was located at the NNE edge of the cairn some 1.43 m NE from Stone 'A' and comprised a sub-angular sandstone rock measuring 0.26 m x 0.23 m, with the cup-mark measuring approximately 0.07 m in diameter.

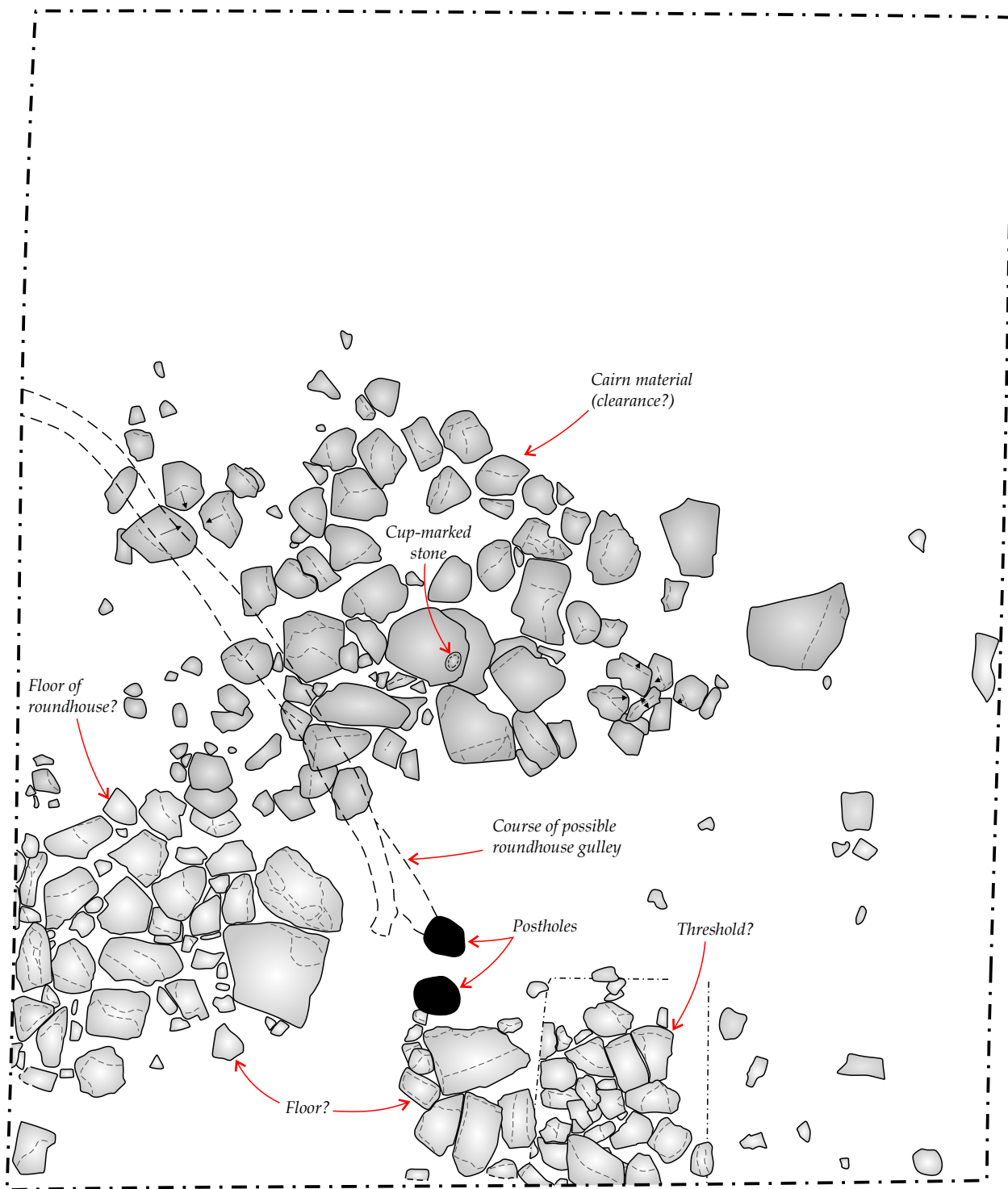
In addition to the two cup-marked stones, one of which was removed from the site, two flint chippings/wasters were recovered from amongst the upper cairn material.



Illus. 11a & b: Plans of Trench 1, showing the stone mound immediately below the turn (above left) and following removal of loose stone (above right).

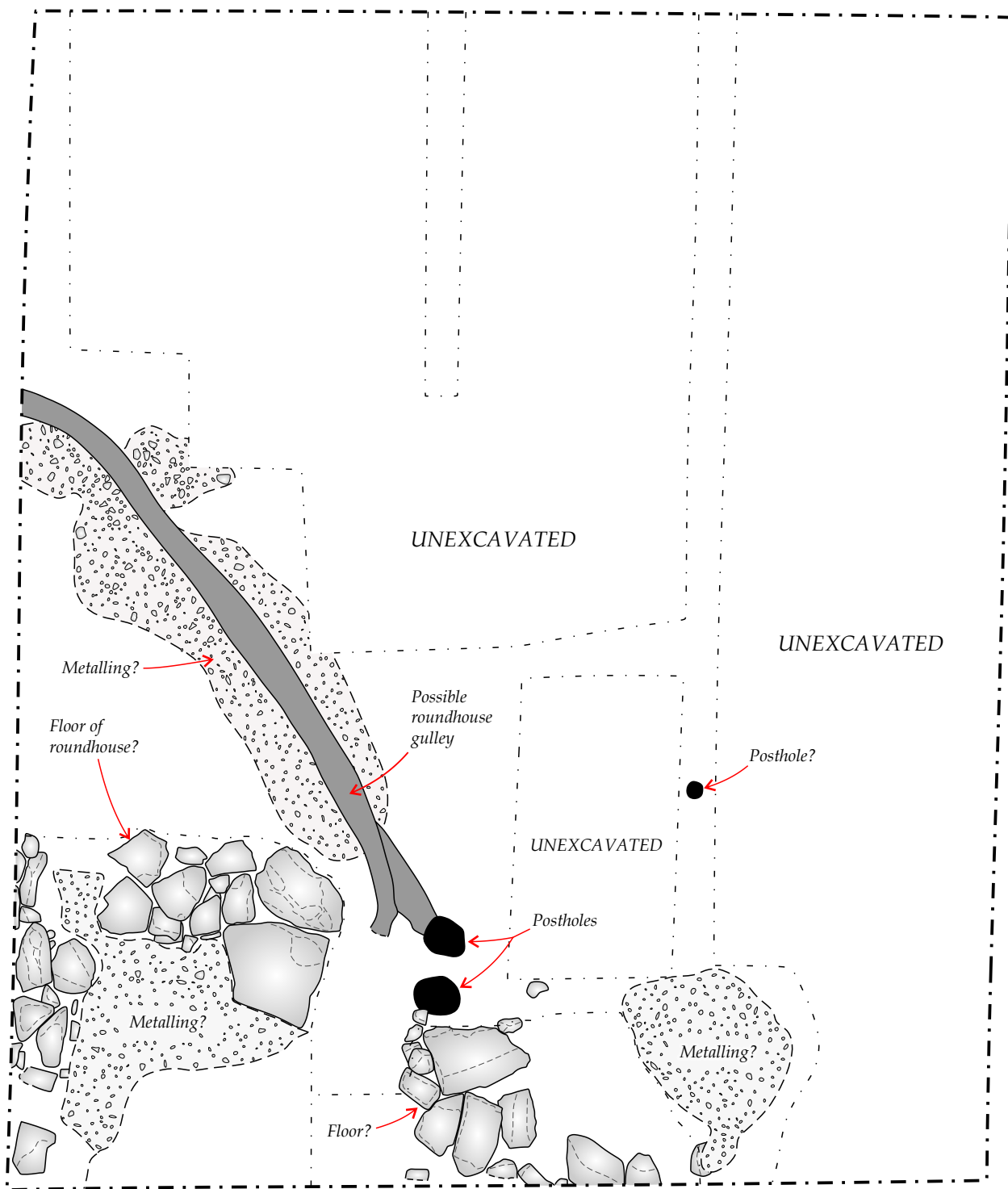


Illus. 12: Profile drawing of Cairn 1.



0 Scale 1:30 1m

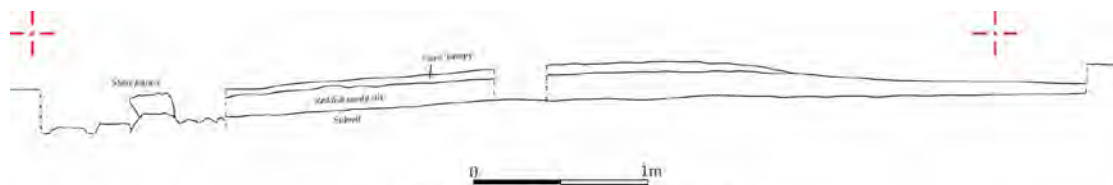
Illus. 13: Plan of Cairn 1 and underlying features, Fawdon Hill 2021.



0 Scale 1:30 1m

Illus.14: Plan of possible Roundhouse features beneath Cairn 1, Fawdon Hill 2021.

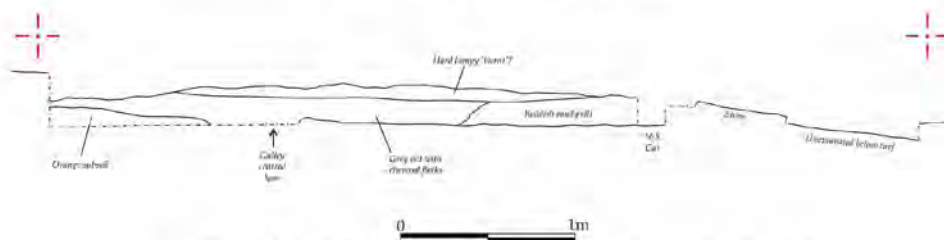
After recording the upper layer in plan and profile (see *Illus. 11 & 12, above*), the stones were removed to reveal any underlying structures or features (see *Illus. 13-17*). Three areas of interest were identified; firstly, beneath the upper stones towards the north-western end of the Cairn, a possible structure forming the perimeter of an inner cairn was observed comprising of flatter rocks relatively level to one another, arranged in a subcircular outline and measuring approximately 1.32 m (E-W) x 0.90 m (N-S). Although this feature was left unexcavated, its location and character were thought potentially to indicate the position of an undisturbed grave of likely Bronze Age origin. Further stonework extended for an additional 0.90 m to the south of the feature but was impossible to interpret and may just be tumble either associated with the inner cairn or the upper cairn material.



Illus. 15: East facing profile of Trench 1.



Illus. 16: East facing section of Trench 1.



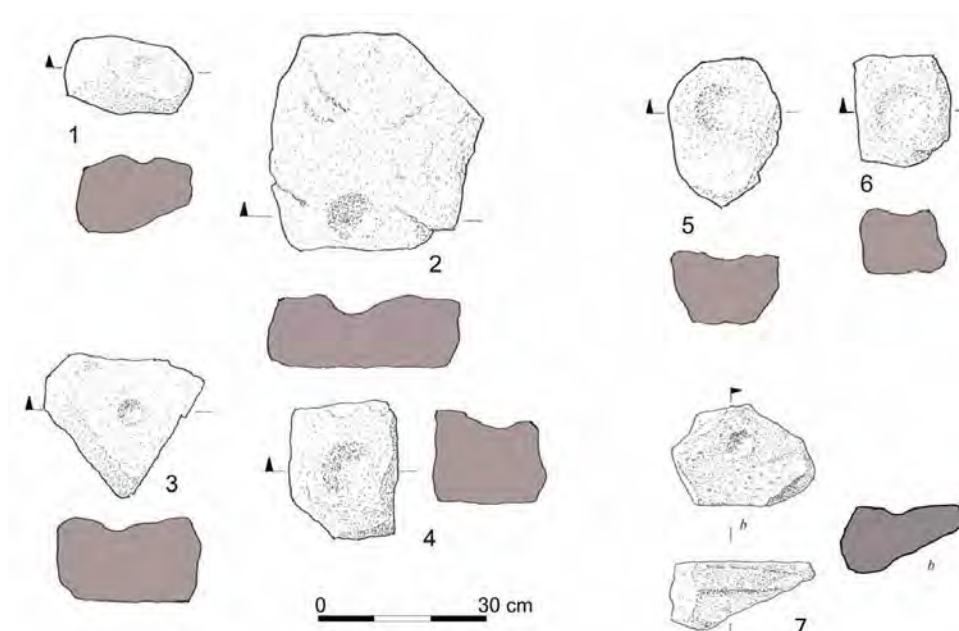
Illus. 17: South facing section of E-W slot through mound in Trench 1.

Secondly, positioned either side of the possible inner cairn, approximately on an E-W axis, two possible post-settings were observed, constructed using packing-stones and positioned carefully around central post-holes. Again, these features were left unexcavated. It is however, not unfeasible to assume that they may have supported a superstructure/canopy of some sort associated with the cairn.

Thirdly, at the southern edge of the upper stone layer and extending beyond the western limit of excavation, an area of possible flagged surface was observed to measure approximately 1.20 m x 1.20 m. Without associated finds, dating evidence or paleoenvironmental material, the surface was difficult to interpret; nonetheless it is most likely an extra-mural feature associated with the cairn or the post-settings either side of it. Perhaps it was simply a paved area for mourning relatives to use during funeral rites or later votive ceremonies.

After recording these lower features in plan and covering them with a breathable textile membrane, the upper cairn material was carefully reinstated and the trench backfilled.

Further investigation in July 2021 revealed a compact (or compacted) silty deposit below the inner stone cairn sitting partly upon a substantial deposit of ashy silt, which appeared principally to underlie the south-west quadrant of the inner cairn. Removal of the flagged surface revealed that while most of it sat upon natural sub-soil, underlying stonework existed on its east side in two main concentrations, perhaps representing the sides of a doorway. Extending south-east from the middle of the western edge of the trench, adjacent to the centre-point of the inner cairn was a narrow, ash-filled gulley directly underlying the wider ash deposit noted above, which ran on a more or less straight course towards the possible doorway where it ended in a soakaway or post-hole. Associated with the ashy deposit and apparent doorway were a number of struck flint flakes and two fragments of pottery, including a small rim fragment of possible food-vessel type. Another piece of struck flint was recovered from the base of the stone cairn at its intersection with the underlying compacted silty deposit. A total of seven cup-marked stones was recovered exclusively from the stone mound, but there was no obvious pattern to their distribution or orientation, with some facing upwards and others downwards.



Illus. 18: Cup-marked stones found in Cairn 1.

The sizes of the stones range from 19 to 43 cm maximum diameter and 11 to 18 cm maximum depth, with cup-marks also varying in diameter from 4 to 12 cm, as shown in Illus. 16 and described below:

Stone 1: 23 cm max diam.; 14 cm deep; cup 4 x 4 cm diam. x 1 cm deep.

Stone 2 (found in 2019): 43 cm max diam.; 15 cm deep; cup 12 x 8 cm diam. x 3 cm deep (possible double-cup, circular at one end with a tapering, shallower depression at the other)

Stone 3: 31 cm max. diam.; 14 cm deep; cup 5 x 6 cm diam. in a wider pecked surface

Stone 4: 23 cm max. diam.; 18 cm deep; cup 8 x 8 cm diam. x 2 cm deep (clearly pecked)

Stone 5: 27 cm max. diam. x 13 cm deep; shallow cup 5.5 cm diam. in a wider pecked area of c 6 x 9 cm. Hints of other incipient cups next to the main one which is c 1.5 cm deep.

Stone 6: 19 cm max. diam. x 17 cm deep; c. 5 x 5 cm diam. x 1.4 cm deep within a pecked area of c 9 cm diam.

Stone 7 (found in 2019): 28 cm max. diam. x 11 cm deep; cup 6.8 x 6.0 cm diam. X 2 cm deep. Worn, with no pecking visible.

In order to determine the nature of the deposits upon which the cairn was constructed, three bulk samples recovered from the excavation were analysed by Lorne Elliott of Durham University (see *Appendix 1*, below), comprising the compressed or burnt silty deposit [01] immediately below the stone mound, a thick deposit of ashy material [02] below [01], and a narrow, ash-filled gully [03] cut into the natural sub-soil. All three samples produced relatively large amounts of organic remains, but deposit [02] had the greatest concentration of charred material, dominated by fragmented charcoal of several species, as well as modest quantities of charred grass-type rhizomes and seeds from plants characteristic of rough grassland. Charcoal was also common in gully fill [03] which additionally provided evidence of food waste including the charred remains of hazelnut shells and a wheat grain, probably emmer, typical of the neolithic and bronze ages. The apparent absence of oak charcoal may reflect the limited nature of resources locally available, while the charred plant macrofossils from deposit [02] are characteristic of burnt turves rather than peat. Despite the absence of cremated bone from the deposits, the charcoal and charred plant macrofossil assemblages are considered characteristic of pyre debris and it is considered very possible on palaeo-environmental grounds alone, especially in view of the sheer quantities of burnt material generated, that the site was used for cremation.

Radiocarbon dating analysis carried out on charcoal recovered from the samples described above produced dates suggesting activity over a considerable period (see *Appendix 2*, below), probably extending over at least two centuries in the middle bronze age during the second half of the 2nd millennium B.C. Dates from the following three samples were procured:

- [1] from 'burnt', hard silty material directly below the stone pile;
- [2] from a thick ashy deposit immediately below [1];
- [3] from the ashy fill of a gully below [2].

FH21 [1]

(95.4% probability) 1412 - 1227 cal BC

(91%) 1412 - 1257 cal BC

(4.4%) 1247 - 1227 cal BC

(68.2% probability) 1389 - 1274 cal BC

(35.9%) 1389 - 1337 cal BC

(32.3%) 1322 - 1274 cal BC

FH21 [2]

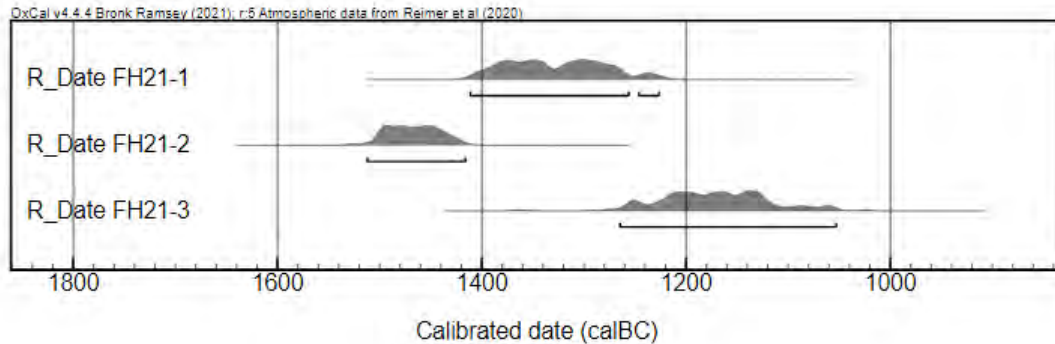
(95.4% probability) 1513 - 1416 cal BC

(68.2% probability) 1499 - 1444 cal BC

FH21 [3]

(95.4% probability) 1265 - 1053 cal BC

(68.2% probability) 1223 - 1122 cal BC



The dates suggest activity over a considerable period, probably at least two centuries, in the middle bronze age during the second half of the 2nd millennium B.C. Sample 2 is dated earlier than the overlying Sample 1, but Sample 3 (a hazel-nut fragment) which should be the earliest is dated earlier than both, suggesting either some mixing of deposits at the time of deposition or a degree of subsequent bioturbation.

A slight anomaly is provided by a hazel-nut fragment from [03], which on the basis of stratigraphy should derive from the earliest context, apparently being dated later than samples from the overlying deposits, suggesting either some mixing of deposits at the time of deposition or a degree of subsequent bioturbation. These dates confirm the initial dating of struck flint and pottery finds to the middle bronze age.

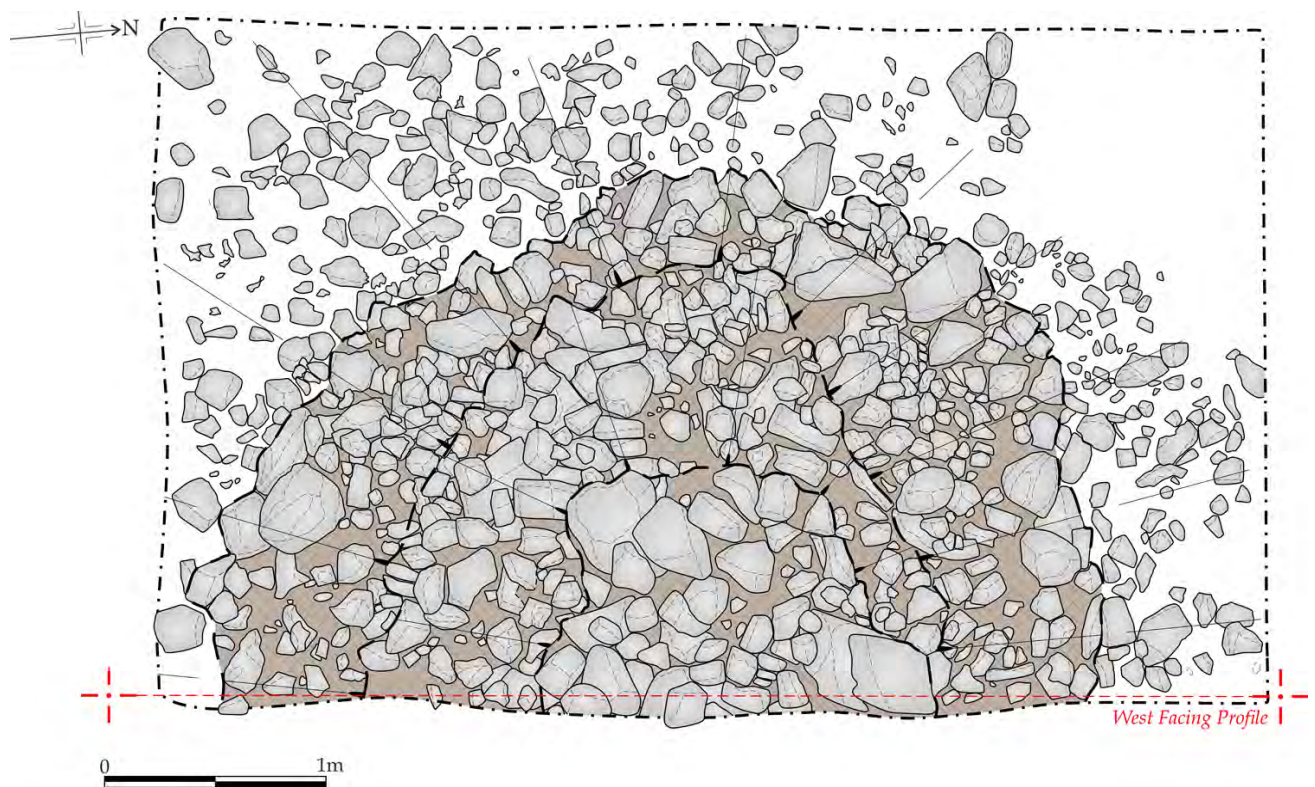
Amongst a number of intriguing elements, the discovery of seven cup-marked stones within this small cairn of no more than 100 individual stones sitting on burnt deposits appears to provide greatest potential for site interpretation. All but one of the cups were marked on flat facets of broken pieces of the natural, relatively finely-textured sandstone which outcrops in places across the site, the exception being a more rounded boulder probably derived from the sub-soil. The cup-marked stones ranged in size from the latter, rounded example of c 22 cm max. diam. to the barely-portable Stone 2, measuring 43 cm max. diam., and all appeared unworked save for the cup-marked surfaces which tend in most cases to be centrally-placed, though in the case of Stone 2 is placed at the extreme periphery of the worked surface. The cup-marks themselves are highly varied in form and size, ranging from c 4-8 cm diam. and 1-3 cm deep, though they all tend to be roughly circular. Some, such as Stones 3 and 4, are represented by discrete, regular, circular cups 1.5 – 3 cm deep while others, notably Stone 2, are formed of double-cups or, in the case of Stone 6, shallow cups within a wider, pecked area. Stone 6, indeed, may contain the remains of two other incipient cups in addition to the most prominent example within a wider area of pecking, while Stone 2 contains a second, incipient cup next to the primary example, effectively forming the beginnings of an elongated single cup, with another possible cup-mark just visible in low light at the opposite end of the stone. Pecking is clearly visible on the majority of stones, sometimes around the cup where it seems intended to create a working surface, but most frequently within the cup-marks themselves. In some cases, however, such as Stone 7 which was found in the upper part of the cairn, weathering has removed traces of pecking and smoothed the upper surface of the stone and its cup. The variety of forms, dimensions and

patterns represented here, as well as the context of their deposition in a discrete, but rather featureless mounded cairn above features and finds which seem potentially related to domestic and funerary or ceremonial activities is intriguing and merits some consideration from a regional perspective.

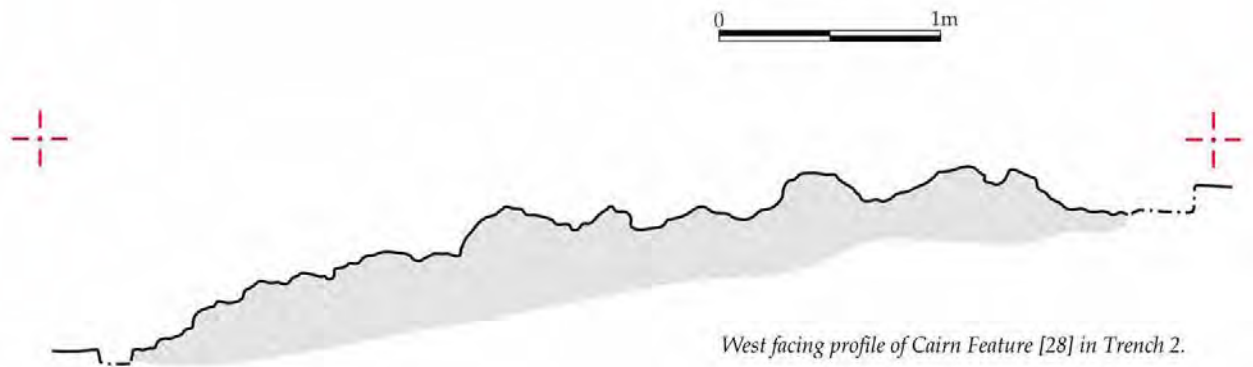
Trench 2 - (NGR: NY 89820 93865)

This trench targeted another mound feature [28] at the southernmost mound of a cluster of possible cairns surmounting a natural knoll located approximately 130 metres SE of Fawdon Hill. The NW corner of the trench was located 56.7 m SSE of Trench 1 SE corner.

In 2019, when the western half of its upper layer was uncovered, the overall dimensions of the feature were 4.10 m (max. width N-S) x approx. 5 m E-W), with its depth undetermined. The upper cairn material comprised a compacted layer of medium and small sub-rounded and subangular sandstones without bond but deliberately mounded up, with reddish-brown silty soil mixed in, forming a sub-circular or slightly oval-shaped low mound orientated approximately east-west and inclining to the south (a difference of 0.75 m in ground level between the north and south edges of the trench was measured).



Illus. 19: Plan of Feature no. [28] exposed in Trench 2.



Illus. 20: Profile drawing of cairn 2, showing its position on sloping ground.

After revealing the upper cairn stones a number of voids were apparent near the centre of its summit which it was considered merited further investigation in a second phase of excavation which was duly carried out at the end of June, 2021. During this second phase of investigation it was determined that the that the cairn comprised unmodified fieldstones principally derived from the boulder clay, with some perhaps quarried or otherwise broken from local outcrops, arranged with little obvious patterning in a heap up to 0.8 m high at the centre, where voids in the group of larger stones had suggested the possibility of a burial feature. This arrangement, and the overall circular shape of the mound in plan, were found to be the only non-random elements to its construction, however, with no kerbs, platforms, cist remains or artefacts suggestive of a burial function. Although the structure was not completely removed, the original ground surface was reached by means of a slot in the centre which revealed the original, unmodified ground surface.



Illus. 21: ESE Facing Profile of Cairn 2

Additional Trenches

Two further trenches excavated in 2019 provided little insight. Trench 3 (NGR: NY 89789 93898), positioned over feature [26], a more centrally located mound within a cluster of possible cairns surmounting a natural knoll located approximately 130 metres SE of Fawdon Hill, proved it to be an entirely natural feature while Trench 4 (NGR: NY 89767 93900), which targeted a large protruding boulder, one of several glacial erratics forming a linear bank [27] enclosing or demarcating the perimeter of a natural knoll now interpreted as a possible Bronze Age Cemetery, tentatively interpreted it as a marker in a possible enclosure boundary.

A final exploratory trench, Trench 5, opened at the end of the 2021 fieldwork season revealed the make-up of the same linear bank [27] on the east side of the natural knoll noted above, as it curved northwards from the south. Removal of its turf covering revealed it to be a low bank, some 0.65 m wide, constructed of loose fragments of sandstone between 0.10 – 0.30 m max. diam. Time constraints prevented further work on this feature which is considered to merit further investigation to determine its surviving height above original ground level, whether any deposits survive beneath it which could be subjected to palaeo-environmental, OSL or other techniques to determine their age and context, and whether an internal or external ditch accompanied this feature.

4. DISCUSSION

Additional excavation work on Fawdon Hill in 2021 focused on two cairns first located and partially-investigated in 2019, but extended to a linear feature considered part of the same, probable bronze age landscape lying just over the 200 m contour level. The three features investigated are now understood to comprise a linear enclosure feature, a large clearance cairn and a rather smaller cairn the latest phase of which seems to have capped or sealed a probably pyre which, in turn, partially-overlays cut and stone-built features more suggestive of settlement, rather than burial or other 'ritual' remains. Thus, the cairns excavated on Fawdon hill in 2019 & 2021 seem to be part of a complex of features representing both settlement and a ceremonial site possibly involving human cremation, represented by the remains of a likely pyre over the possible settlement remains. This pattern reflects other Bronze Age landscapes of upland Northumberland which often contain settlements, fields and funerary monuments in close proximity to each other, along with simple rock art, suggesting discontinuity with the past and, perhaps, more transient usage. Frodsham links this with the intensification of agricultural and settlement activities in the uplands with the move towards a forward-looking 'landscape of agriculture', implying reduced reverence for the past and greater dependence on human, rather than supernatural agency. While sacral or funerary and domestic-agricultural features are often found in close proximity within this more congested, later landscape, however, it seems that consideration was still paid to maintaining some separation, as seen in the different character of funerary-ceremonial and clearance cairns on Fawdon Hill and at Ravensheugh Crag (Bowyer & Curtis, pers. com.), where the majority of cup-marked stones were located in conjunction with the eastern of two cairnfields, each containing in the region of 20 small cairns; the eastern cairns being suggestive of burial monuments whilst the western cairnfield, where no cup-marked stones were found, seemed to contain only clearance cairns.

The Fawdon Hill cairn containing several cup-marked stones sits within such a mixed landscape of farming and ceremony where it appears to represent the final of several phases of activity, which palaeo-environmental analysis confirms included both domestic and likely ceremonial functions, while the results of Radiocarbon analysis indicate that it took place over a relatively long period of time. Interpretation of the function or meaning of the cup-marked stones cannot be divorced from the context of their use and deposition, which in this case seems to be related directly to the formation of the stone cairn, rather than with preceding activities on the site. Evidence for this is in the apparently rather random choice of stones for the creation of cup-marks, where the main criterion of selection seems to have been the presence of a flattish working surface rather than portability or durability, as might be expected if they had been produced for a purely utilitarian function. Secondly, the pecking on several of the stones appears very fresh, suggesting that it had been carried out immediately prior to deposition in the cairn. Finally, the cup-marks themselves were varied

in form and depth, with at least one (on Stone 6) visible only as a shallow intention or possibly a series of indentations on a heavily-pecked surface.

This last observation led to some speculation during the course of the Fawdon Hill excavation regarding the time investment required to create such shallow, in some cases almost ephemeral features, and what might be deduced from that. One of the excavators, Keith Cooper, took on the task of creating cup marks by using a rounded cobble to peck the flat faces of locally-available sandstone pieces of similar size to those found in the cairn. This showed that a bowl-shaped cup c 5 cm diameter and 2 cm deep could be created in around 20 minutes, with shallower cups or pecked surfaces achieved in rather shorter periods of time. This indicates that the assemblage of cup-marked stones found on the Fawdon Hill cairn could have been created by a small group of people in half an hour or so, although the presence of a double-cup on one of the stones and possible subsidiary cups on other suggests the possibility of repeated use, either during separate episodes or during the same event by different individuals. Another observation made during the manufacturing process was of the rhythmical knocking sound made by the action of repeated stone-on-stone pecking, a sound that would have been amplified if carried out by simultaneously by multiple individuals. While none of these observations and speculations conclusively indicate how, why and in which circumstances the stones were made and deposited, they widen our interpretive options and tend to suggest that the act of creation may have been in the form or intent of a rather more modest act of piety, reverence or respect than it is sometimes tempting to believe. While cairns are often the only and frequently the most-prominent features of bronze age activity to survive in the landscape, it is wrong to assume that they were necessarily accorded greater or lesser prominence in the contemporary bronze age landscape than more transient features or wood or earth construction, just as the cup-marked stones within them may have been accorded similar level of significance as a host of potential artifacts made of cloth, wood, leather and other organic materials.

What is the likely meaning of the cup-marks and of their deposition in a cairn? Beckensall (1983, 33) and Frodsham, amongst others, comment on the multiple interpretations of rock art, principally of the complex sort incorporating cup-and-ring motifs on bedrock or large, non-portable slabs, noting that while much of this interpretation is of the distinctly speculative kind, such features appear to be sacred in that they are often associated with early bronze age ritual activity. However, it barely needs stating that simple cup-marks, as opposed to more complex motifs and designs, can also derive from more utilitarian functions such pounding or grinding activities. This seems likely to be the function of cup-marks occasionally found on the undersides of saddle querns, as at Newgrange in Ireland and on a newly-discovered example from Coquetdale, as well as the very small cup-marked cobbles-stones occasionally found on northern iron age sites, as recently at Harehaugh in Coquetdale and Mardon Hill near Branxton. In North America, where cup-stones are among the most common lithic remains of indigenous activity, they are sometimes referred to as 'anvil stones' and 'nutting stones' indicating two possible interpretations alongside domestic food and tool production, pigment preparation and sacral importance (Varner 2008).

However, where such stones are found in numbers in association with funerary or other ceremonial sites, it does seem reasonable to assume that they have been made and positioned with sacral intent. Speculation about a common origin of such symbols as expressions of some fundamental, universal human impulse, or indication of the human neural system remains valid as an hypothesis but is ultimately unprovable, even though supported by repetition in different context and parts of the world. Related to this, and also unprovable, it remains distinctly possible that the same symbols were used continuously over the entire period of their use in northern Britain, gradually modified through use in

changing contexts by an unquestioning population (Beckensall 1999, 34). Beckensall's expressed conclusion (in 1983) that motifs based on cup-marks may be abstractions of a fertility goddess has given way to a more measured approach to interpretation in which he stresses that it must be supported by evidence and based on an understanding of how they fit into the landscape, achieved by understanding their settings and relationships with other cup-marked panels and contexts (Beckensall 1999, 34-36).

How such cup-marks on parietal or portable stones should be viewed in relation to similar, presumably earlier features made on bedrock and funerary monuments, sometimes within more complex motifs in extensive designs, remains unclear. While there is broad acceptance that the earliest cup-and-ring marked panels were made on natural bedrock outcrops in the 4th millennium BC and that such carvings were later incorporated into Neolithic ceremonial monuments, specifically within burial monuments by the Early Bronze Age, there is little direct dating evidence for this sequence and even less to relate it to the phenomenon of cup-marks found on portable stones incorporated in cairns. The current study dates the Fawdon Hill cairn to the later part of the middle bronze age, towards the end of the sequence noted above, by which time it may be doubted that the function or meaning of the act of creating the cup-marks and depositing them in cairns remained as it had been in earlier periods. As noted above, part of this suggested sequence has it that the earliest rock art on exposed slabs of natural bedrock gives way to its incorporation in the hidden spaces of burial monuments, a phenomenon associated also with the positioning of cup-marked stones facing downwards within early and middle bronze age cairns such as at Fowberry and Weetwood Moor. However, if the Fawdon Hill is representative this sequence does not seem to continue into later Bronze age since several of the cup marks were found facing upwards, an observation also made by during recent survey work in North Tynedale, where at Ravensheugh Crag a probable kerbed cairn was observed with a cup-marked portable rock visible on the surface of its interior, and another with three cup-marked stones along its apparent edge. Larger, non-portable cup-marked stones were reported in the same survey and similar cup-marks made on small boulders, apparently associated with early or middle bronze age burial monuments have also been recorded at Lordenshaw, where they may well have been created over considerable periods of time but seem to mark the end of the cup-marking tradition. These seem likely to be contemporary with the parietal cup-marked tradition, although as yet there is no direct dating evidence to indicate whether they precede or are directly contemporary with the portable tradition which evidence from Fawdon hill shows extended well into the second half of the second millenium BC, later than previously suspected.

While a purely utilitarian function cannot be ruled out, it seems more likely that most or all of the cup-marked stones at Fawdon Hill and other sites of multiple deposition were created in a single event which itself represented the final act of use of the site, representing either an act of abandonment or its sanctification, perhaps both. The making and positioning in cairns of cup-marked stones could be seen as a final phase in a continuous, non-utilitarian tradition extending from the early Neolithic, but as discussed elsewhere, there are good reasons to suspect that the meaning and purposes of the acts of making, displaying and viewing them changed considerably, albeit perhaps gradually, between the neolithic and early bronze ages. However, while the 'meaning' or 'purpose' of such cup-marks is destined to remain beyond contemporary understanding, almost certainly representing different beliefs at different times, their meaning changing with context and location, it is tempting to view them as an echo or resonance of periods past, perhaps even a modest acknowledgment of continuity and universality. By the end of this phase, however, the production of the cup-mark itself seems, on the basis of the late Fawdon Hill examples, to

have become subsidiary to the act of making them, with their positioning in the cairn no longer of the significance implied by patterning observed in earlier cairns at Fowberry and elsewhere, and that towards the end of the millenium such acts of communal respect or reverence no longer resulted in material traces on stone.

It is notable that, when reported from cairns, cup-marked stones are sometimes found to occur in numbers, and that when such cairns have been excavated elsewhere in northern England they have often, as at Fawdon Hill, been associated with multi-phase sites. In this regard Beckensall highlights several examples in Northumberland where cairns containing cup-marked stones lie above complex rock art panels carved on bedrock (Beckensall 1983, 119-22 & 131-33), as at Fowberry near Wooler where a small doubled-kerbed round cairn containing 24 portable stones containing complex designs, rather than simple cups, was built on bedrock covered with motifs. The nearby Weetwood Moor cairn on Whitsun Bank contained 37 decorated cobbles, 11 of which were placed face-down at the base of the cairn, while a second cairn described by Beckensall at Weetwood contained decorated material broken off an adjacent bedrock panel, providing some relative dating for the cairns and portable petroglyphs in relation to the earlier panels (Beckensall 1983, 146). Beckensall (op. cit.) notes a small number of other cairn sites containing multiple cup-marked stones, notably Pitland Hills barrow in the North Tyne valley which was associated with two cist burials and contained 17 examples (op. cit. 36-7). The Ford Westfield burials also produced a number of cup-marked stones over cremations (op. cit. 37), although in the majority of cases only single stones are reported (op. cit. 42), as well as numerous others which it is suggested may have come from destroyed burial cairns (ibid.).

Elsewhere in the north, multiple finds of cup-marked stones in cairns have been documented in the northern Dales (Brown & Brown 2008), including, as noted above, on Barningham Moor, and around the northern edge of the North Yorkshire Moors (Brown & Chappell 2005). Here, the notable site of Hinderwell Beacon (op. cit. 170-1), excavated in the early 20th century contained an estimated 150 cup-marked stones out of c 300 in total, while the Street House cairn at Loftus, excavated by Vyner (1984) contained several cup-marked stones within the kerb of a barrow dated to c 1900 BC, and the nearby Street House 'Wossit' 'ritual enclosure' contained 12 cup-marked stones presumed to be of similar, early bronze age origin (Brown & Chappell 2005, 181). At Howe Hill south of Brotton a cairn covered grave cuts containing eight cup-marked stones placed facing downwards (ibid.), as in the Weetwood Moor cairn (above).

The fact that all of the cup-marked stones in the Weetwood Moor cairn were found facing down suggested to Beckensall that, unlike the earlier rock art panels on bedrock, the decoration was no longer meant to be seen, and that it reflected an intimate relationship between the dead and the living, perhaps similar in purpose to grave goods but intended as an individual or collective mark of respect by and for the living rather than for the use of the dead in afterlife. Beckensall also notes that the stones displayed variety in the complexity of their design, with many unfinished, suggesting that the act of making the marks may have been more significant than the finished product, an observation which appears paralleled in the Fawdon Hill assemblage.

The phenomenon of multi-phase complexity seen in the Weetwood Moor cairns seems to apply to examples where cup-marked and other decorated stones are absent, as much as where they are present in numbers. At Blawearie in Northumberland, a site first excavated by Canon Greenwell in 1865, re-examination by Hewitt and Beckensall in the 1980s (Hewitt and Beckensall 1996) provided evidence that the original function of the site was probably

not funerary and that the burial cists in the cairn were secondary. Conversely, however, amongst a series of associated cairns one appeared to seal a pyre, suggesting a primary mortuary function. Similarly, more recent excavations on two cairns at Turf Knowe in Northumberland also revealed a complex sequence of activities ranging in date from the early bronze age to iron age and including cist burials, cairns and a number of pits containing food vessel pottery and worked flint tools (Frodsham and Waddington 2004, 173-177). Multi-period burial sites have also been excavated at Chatley Crag (Frodsham 1995), Chatton Sandyford (Jobey 1968), Cobden Sike (Gates 1979) and Dour Hill where a Bronze Age cist was built into the earlier Neolithic long cairn (Waddington, Godfrey and Bell 1998), all of which tend to indicate that stone cairns are complex, multi-phase and potentially multi-functional monuments. While clusters of such small, stony mounds, or cairns are the most common form of burial monuments represented in the uplands, it is increasingly observed that they are highly varied in form, size and materials, presumably reflecting chronological and regional differences (see Fowler 2013), and that some are indistinguishable, at least outwardly, from residential or other features. Confusion may also arise, prior to excavation, in distinguishing burial cairns from clearance cairns which more often occur in association with farmed landscapes and more elusive residential settlement at lower altitude, but can occur alongside funerary or ceremonial monuments. Features usually associated with settlements and farmed landscapes, but not burial monuments, include pit alignments and field systems, the latter including cultivation terraces and field or property divisions of the kind tentatively identified on Fawdon Hill.

Thus, while the nature and distribution of bronze age settlement remains poorly understood in the Northumbrian uplands, as more widely in north-east England and the Borders, burial and related ritual monuments of the early and middle bronze age are more prominent in the landscape and better-represented in the archaeological record than those of any other period prior to the later middle ages, albeit that the late Bronze Age and Iron Age are notable for their lack of detectable burial remains (Petts and Gerrard 2006, 39). The bronze age landscape identified on Fawdon Hill is in many respects typical in containing indications of both settlement, farming and burial, but much work remain to be done to elucidate the chronological, spiritual and practical relationships between these activities, both with respect to the Fawdon Hill site and more widely.

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APPENDIX 1:

Archaeological Services Durham University, on behalf of The Archaeological Practice Ltd.
Fawdon Hill, Redesdale, Northumberland: palaeoenvironmental assessment
Report 5625, September 2021.

1. Summary

The project

1.1 This report presents the palaeoenvironmental assessment results of three bulk samples taken during archaeological works at Fawdon Hill, Northumberland.

1.2 The works were commissioned by The Archaeological Practice Ltd, and conducted by Archaeological Services Durham University.

Results

1.3 Despite the absence of cremated bone, the charcoal and charred plant macrofossil assemblages, particularly from deposit [02], are characteristic of pyre debris. The apparent absence of oak stemwood charcoal, which usually dominates pyre material may be a reflection of the available resources in the local landscape.

Recommendations

1.4 A more detailed record of the charcoal and charred plant macrofossil remains would help to determine what material is the most representative for each deposit. At the same time, the results would provide a better understanding of the archaeological resource, and in an area where palaeoenvironmental studies of this nature are generally lacking, any further information on the local earlier prehistoric landscape would be particularly valuable for future regional syntheses.

1.5 The flots should be retained as part of the physical archive of the site. Apart from a sub-sample from deposit (01), the residues were discarded following examination.

2. Project background

Location and background

2.1 Archaeological works were conducted by The Archaeological Practice Ltd at Fawdon Hill in Redesdale, Northumberland. This report presents the palaeoenvironmental assessment results of three bulk samples, taken from a clearance or burial cairn containing several cup-marked stones.

Objective

2.2 The objective of the scheme of works was to assess the palaeoenvironmental potential of the samples, establish the presence of suitable radiocarbon dating material, and provide the client with appropriate recommendations.

Dates

2.3 The samples were received by Archaeological Services on 2nd September 2021. Assessment and report preparation was conducted between 9th and 30th September 2021.

Personnel

2.4 Sample processing, assessment and report preparation was conducted by Lorne Elliott.

Archive

2.5 The site code is **FH21**, for **Fawdon Hill 2021**. The finds are currently held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University awaiting collection. The flots and charred plant remains will be retained at Archaeological Services Durham University.

2. Methods

3.1 The bulk samples were manually floated and sieved through a 500 μ m mesh. The residues were examined for shells, fruitstones, nutshells, charcoal, small bones, pottery, flint, glass and industrial residues, and were scanned using a magnet for ferrous fragments. The flots were examined at up to x60 magnification for charred and waterlogged botanical remains using a Leica MZ7.5 stereomicroscope. Identification of these was undertaken by comparison with modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University. Plant nomenclature follows Stace (2010). Habitat classifications follow Preston *et al.* (2002).

3.2 Selected charcoal fragments were identified, in order to provide material suitable for radiocarbon dating and to determine the nature and condition of the assemblages. The transverse, radial and tangential sections were examined at up to x500 magnification using a Leica DMLM microscope. Identifications were assisted by the descriptions of Schweingruber (1990), Gale & Cutler (2000) and Hather (2000), and modern reference material held in the Palaeoenvironmental Laboratory at Archaeological Services Durham University.

3.3 The works were undertaken in accordance with the palaeoenvironmental research aims and objectives outlined in the regional archaeological research framework and resource agendas (Petts & Gerrard 2006; Hall & Huntley 2007; Huntley 2010).

3. Results

4.1 The samples produced relatively large flots. Deposit [01] has by far the largest amount of material, although much of this is compacted humified organic matter and modern roots. There is some charcoal in this deposit, together with a low number of (<2mm) charred grass-type rhizomes. Deposit [02] has the greatest concentration of charred material, which is dominated by fragmented charcoal comprising several species, and also includes modest numbers of charred grass-type rhizomes and seeds from plants typically found in rough grassland, such as ribwort plantain, sedges and redshank. Charcoal is also common in gully fill [03], but there is only trace amount of rhizomes. There is however some evidence of food waste in this lower deposit, comprising the charred remains of hazel nutshell and a wheat grain. The grain is poorly preserved, but has some recognisable features that are characteristic of emmer (*Triticum dicoccum*), such as a rather pointed upper end and sides that are not parallel (Jacomet 2006). Finds consist of a few small fragments of abraded prehistoric pottery, including a rim sherd [03], and a tiny fragment of flint in [02] and [03]. There is no sign of calcined bone.

4.2 Detailed palaeoenvironmental results and a provisional date for each context are presented in Appendix 1. Material suitable for radiocarbon dating is shown in Appendix 2.

4. Discussion

5.1 Despite the absence of cremated bone, the charcoal and charred plant macrofossil assemblages, particularly from deposit [02], are characteristic of pyre debris. Comparable plant remains have been found in cremation-related contexts at Fylingdales in North Yorkshire (Archaeological Services 2021) and at Milnthorpe in Cumbria (Platell 2013). The apparent absence of oak stemwood charcoal is worth noting, as it usually dominates pyre debris. If it is absent it may be a reflection of the resources that were available in the local landscape at the time.

5.2 All of the charred plant macrofossils identified in deposit [02] have been listed as characterising the remnants of burnt turves in the archaeological record (Hall 2003). Rather than heathland or peaty turves that were used as fuel, these would have been grass sods. It is worth adding, the charred hazel nutshell and wheat grain in deposit [03] may have had a ritual use rather than reflecting domestic food waste. The cereal grain in [03] is cautiously identified as emmer, which was the principal wheat during the Neolithic and Bronze Age (Hall & Huntley 2007; Greig 1991).

5. Recommendations

6.1 A more detailed record of the charcoal and charred plant macrofossil remains would help to determine what material is the most representative for each deposit. At the same time, the results would provide a better understanding of the archaeological resource, and in an area where palaeoenvironmental studies of this nature are generally lacking, any further information on the local earlier prehistoric landscape would be particularly valuable for future regional syntheses.

6.2 The flots should be retained as part of the physical archive of the site. Apart from a sub-sample from deposit (01), the residues were discarded following examination.

6. Sources

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Table 1: Data from palaeoenvironmental assessment

Sample	Context description	Volume processed (l)	Flot volume (ml)	C14 available	Rank	Notes
01	Burnt deposit immediately below stone heap above gully	15	1600	Y	***	This sample is dominated by compacted humified organic matter, comprising modern roots and occasional charcoal. The charcoal is in reasonable condition with little sign of mineral inclusions and some fragments have been obliquely cut or 'worked' across the grain of the wood. Selected fragments show that Salicaceae (cf. willow) and hazel were used. The relatively large fragment size (up to 20mm) is typical of a primary context (<i>in situ</i> burning) where charring has occurred in a reducing environment (lack of oxygen) or the remains were rapidly buried. There is also a trace amount of small charred grass-type rhizomes. Finds comprise three small fragments of abraded prehistoric pottery. Neolithic/Bronze Age
02	Deposit immediately below [01] and above gully	18	350	Y	***	This is dominated by charred material made up of charcoal and a modest number of charred plant macrofossils. The charcoal is relatively more fragmented (<12mm) and in reasonable condition with minimal mineral encrusting. Selected fragments include remains of birch, Salicaceae (cf. willow) and hazel, and contains some twigs. The charred plant macrofossil assemblage is dominated by small grass-type basal monocot stems and rhizomes, and there is a modest number of charred seeds (species noted are ribwort plantain, sedges, redshank and pale persicaria). Not surprisingly there are fewer modern roots than in [01] the deposit above. There is a trace of fired clay and a tiny piece of flint. Neolithic/Bronze Age
03	Gully fill below [02]	14	300	Y	***	Charcoal is common and in fair condition with some mineral precipitation. Selected fragments include evidence of birch, Salicaceae (cf. willow), hazel and cf. alder. Probable insect tunnels are noted in a fragment of hazel branchwood. Charred plant macrofossils are sparse, comprising a few grass-type monocot stems and rhizomes, a hazel nutshell and a wheat grain. The wheat grain is damaged, but it has a rather pointed upper end and the sides are not parallel, which is more characteristic of emmer wheat. This is the only deposit with signs of food waste and may relate to domestic or ritual activity. Finds comprise three fragments of prehistoric pottery, including a rim sherd, and a tiny fragment of flint. Neolithic/Bronze Age

[Rank: *: low; **: medium; ***: high; ****: very high potential to provide further palaeoenvironmental information]

Table 2: Material available for radiocarbon dating

Sample	Single Entity recommended 1st choice	Weight	Notes	Single Entity recommended 2nd choice	Weight	Notes
01	Salicaceae charcoal	348mg	(8 growth rings) strong growth ring curvature branchwood	Salicaceae charcoal	403mg	(4 growth rings) moderate growth ring curvature small stemwood
02	Hazel charcoal	196mg	(5 growth rings) moderate growth ring curvature small stemwood	Salicaceae charcoal	78mg	(5 growth rings) cf. willow twig (Ø 3.22mm)
03	charred Hazel nutshell	18mg	reasonable condition	Hazel charcoal	91mg	(4 growth rings) strong growth ring curvature (asymmetrical) small calibre branchwood

APPENDIX 2:
Radiocarbon Analysis of Samples from an excavated cairn on Fawdon Hill, Redesdale.



ISO/IEC 17025:2017-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Charlotte E. O'Brien

Report Date: March 28, 2022

Archaeological Services University of Durham

Material Received: March 18, 2022

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes	
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Beta - 622319	FH21-1	3060 +/- 30 BP	IRMS δ13C: -25.9 o/oo
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(91.0%)	1412 - 1257 cal BC	(3361 - 3206 cal BP)
(4.4%)	1247 - 1227 cal BC	(3196 - 3176 cal BP)

Submitter Material: Charcoal
 Pretreatment: (charred material) acid/alkali/acid
 Analyzed Material: Charred material
 Analysis Service: AMS-Standard delivery
 Percent Modern Carbon: 68.32 +/- 0.26 pMC
 Fraction Modern Carbon: 0.6832 +/- 0.0026
 D14C: -316.78 +/- 2.55 o/oo
 Δ14C: -322.70 +/- 2.55 o/oo (1950:2022)
 Measured Radiocarbon Age: (without d13C correction): 3080 +/- 30 BP
 Calibration: BetaCal4.20: HPD method: INTCAL20

Results are ISO/IEC-17025:2017 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB. References for calendar calibrations are cited at the bottom of calibration graph pages.



REPORT OF RADIOCARBON DATING ANALYSES

Charlotte E. O'Brien

Report Date: March 28, 2022

Archaeological Services University of Durham

Material Received: March 18, 2022

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes	
Beta - 622320	FH21-2	3200 +/- 30 BP	IRMS δ13C: -26.4 o/oo

(95.4%) 1513 - 1416 cal BC (3462 - 3365 cal BP)

Submitter Material: Charcoal
 Pretreatment: (charred material) acid/alkali/acid
 Analyzed Material: Charred material
 Analysis Service: AMS-Standard delivery
 Percent Modern Carbon: 67.14 +/- 0.25 pMC
 Fraction Modern Carbon: 0.6714 +/- 0.0025
 D14C: -328.58 +/- 2.51 o/oo
 Δ14C: -334.40 +/- 2.51 o/oo (1950:2022)
 Measured Radiocarbon Age: (without d13C correction): 3220 +/- 30 BP
 Calibration: BetaCal4.20: HPD method: INTCAL20

Results are ISO/IEC-17025:2017 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the 14C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. d13C values are on the material itself (not the AMS d13C). d13C and d15N values are relative to VPDB. References for calendar calibrations are cited at the bottom of calibration graph pages.



ISO/IEC 17025:2017-Accredited Testing Laboratory

REPORT OF RADIOCARBON DATING ANALYSES

Charlotte E. O'Brien

Report Date: March 28, 2022

Archaeological Services University of Durham

Material Received: March 18, 2022

Laboratory Number	Sample Code Number	Conventional Radiocarbon Age (BP) or Percent Modern Carbon (pMC) & Stable Isotopes	
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Beta - 622321

FH21-3

2960 +/- 30 BP

IRMS $\delta^{13}C$: -23.6 o/oo

(95.4%)

1265 - 1053 cal BC

(3214 - 3002 cal BP)

Submitter Material: Charred Hazel Nutshell

Pretreatment: (charred material) acid/alkali/acid

Analyzed Material: Charred material

Analysis Service: AMS-Standard delivery

Percent Modern Carbon: 69.18 +/- 0.26 pMC

Fraction Modern Carbon: 0.6918 +/- 0.0026

D14C: -308.22 +/- 2.58 o/oo

$\Delta^{14}C$: -314.22 +/- 2.58 o/oo (1950:2022)

Measured Radiocarbon Age: (without $\delta^{13}C$ correction): 2940 +/- 30 BP

Calibration: BetaCal4.20: HPD method: INTCAL20

Results are ISO/IEC-17025:2017 accredited. No sub-contracting or student labor was used in the analyses. All work was done at Beta in 4 in-house NEC accelerator mass spectrometers and 4 Thermo IRMSs. The "Conventional Radiocarbon Age" was calculated using the Libby half-life (5568 years), is corrected for total isotopic fraction and was used for calendar calibration where applicable. The Age is rounded to the nearest 10 years and is reported as radiocarbon years before present (BP), "present" = AD 1950. Results greater than the modern reference are reported as percent modern carbon (pMC). The modern reference standard was 95% the ^{14}C signature of NIST SRM-4990C (oxalic acid). Quoted errors are 1 sigma counting statistics. Calculated sigmas less than 30 BP on the Conventional Radiocarbon Age are conservatively rounded up to 30. $\delta^{13}C$ values are on the material itself (not the AMS $\delta^{13}C$). $\delta^{13}C$ and $\delta^{15}N$ values are relative to VPDB. References for calendar calibrations are cited at the bottom of calibration graph pages.

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables: $\delta^{13}\text{C} = -25.9$ o/oo)

Laboratory number **Beta-622319**

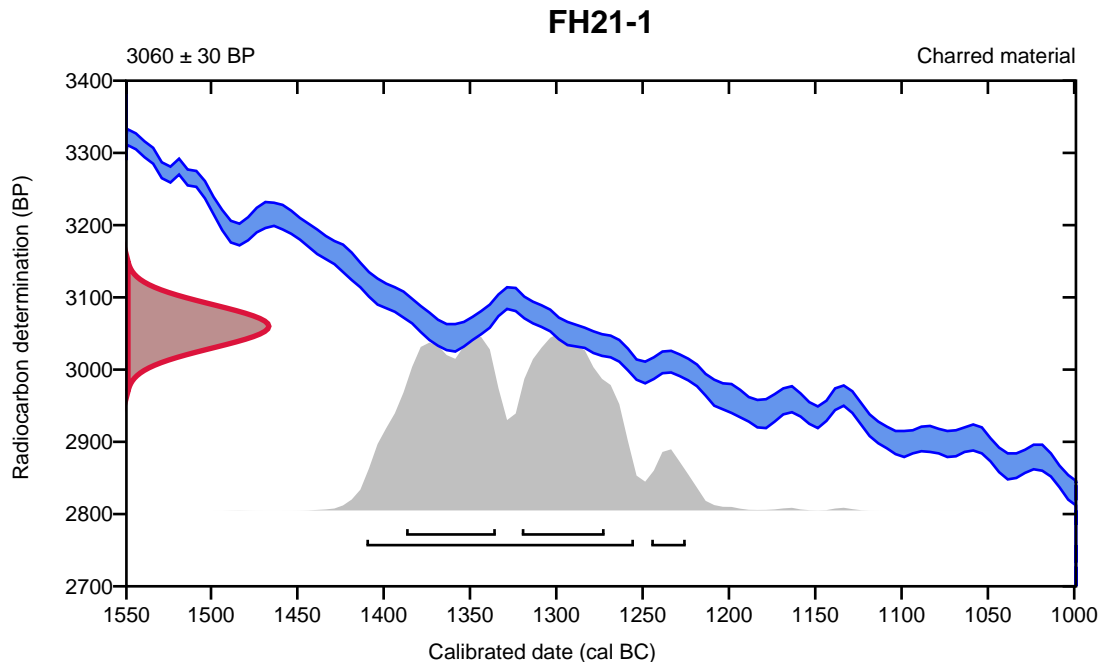
Conventional radiocarbon age **3060 \pm 30 BP**

95.4% probability

(91%)	1412 - 1257 cal BC	(3361 - 3206 cal BP)
(4.4%)	1247 - 1227 cal BC	(3196 - 3176 cal BP)

68.2% probability

(35.9%)	1389 - 1337 cal BC	(3338 - 3286 cal BP)
(32.3%)	1322 - 1274 cal BC	(3271 - 3223 cal BP)



Database used
INTCAL20

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. *Radiocarbon*, 51(1), 337-360.

References to Database INTCAL20

Reimer, et al., 2020, *Radiocarbon* 62(4):725-757.

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables: d13C = -26.4 o/oo)

Laboratory number Beta-622320

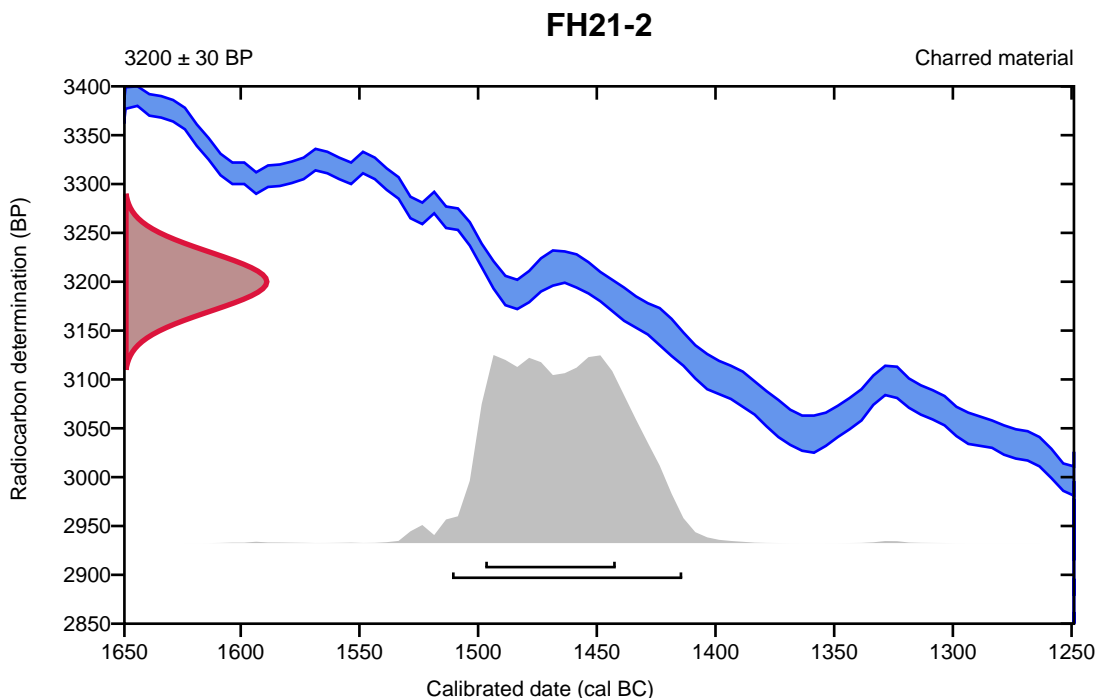
Conventional radiocarbon age 3200 ± 30 BP

95.4% probability

(95.4%) 1513 - 1416 cal BC (3462 - 3365 cal BP)

68.2% probability

(68.2%) 1499 - 1444 cal BC (3448 - 3393 cal BP)



Database used
INTCAL20

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. Radiocarbon, 51(1), 337-360.

References to Database INTCAL20

Reimer, et al., 2020, Radiocarbon 62(4):725-757.

Calibration of Radiocarbon Age to Calendar Years

(High Probability Density Range Method (HPD): INTCAL20)

(Variables: $\delta^{13}C = -23.6$ o/oo)

Laboratory number Beta-622321

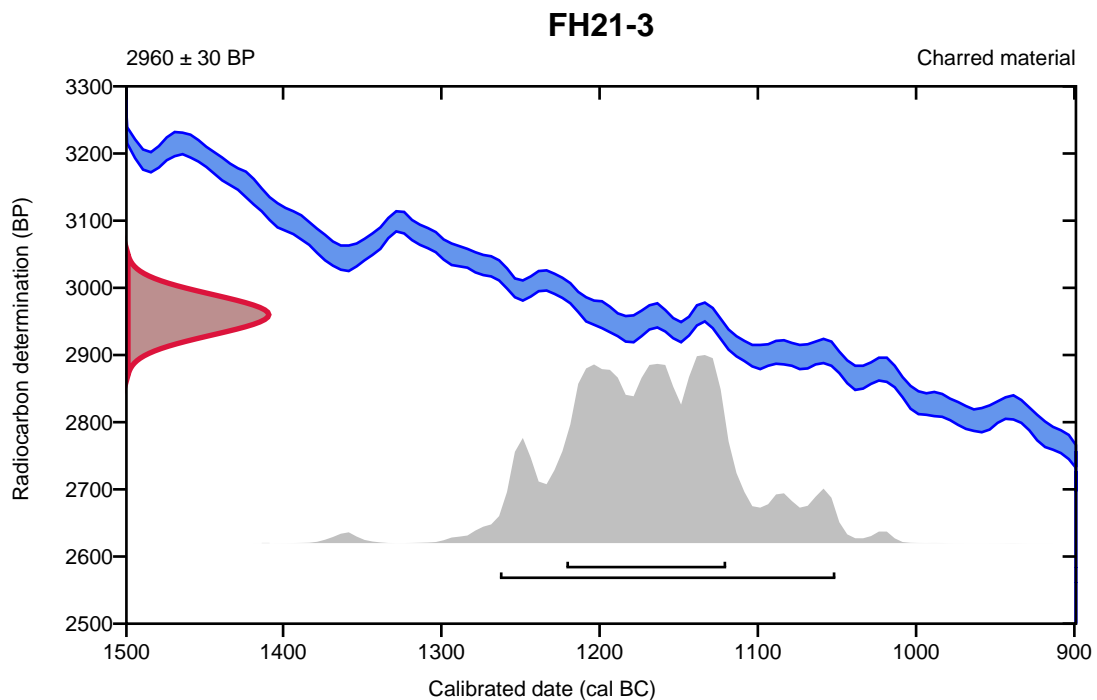
Conventional radiocarbon age 2960 ± 30 BP

95.4% probability

(95.4%) 1265 - 1053 cal BC (3214 - 3002 cal BP)

68.2% probability

(68.2%) 1223 - 1122 cal BC (3172 - 3071 cal BP)



Database used
INTCAL20

References

References to Probability Method

Bronk Ramsey, C. (2009). Bayesian analysis of radiocarbon dates. *Radiocarbon*, 51(1), 337-360.

References to Database INTCAL20

Reimer, et al., 2020, *Radiocarbon* 62(4):725-757.

APPENDIX 3: *Photographic Record of fieldwork in 2021*



Photo. 01: Cairn 1, vertical view.



Photo. 02: Cairn 1, oblique view from the south.



Photo. 03: Cairn 1, vertical view during Phase 2 excavations after removal of the central cairn feature.



Photo. 04: Cairn 1, vertical view, with remains of 'platform feature in the south associated with a narrow gully and deeper-set stonework with post-holes, suggestive of a possible doorway.

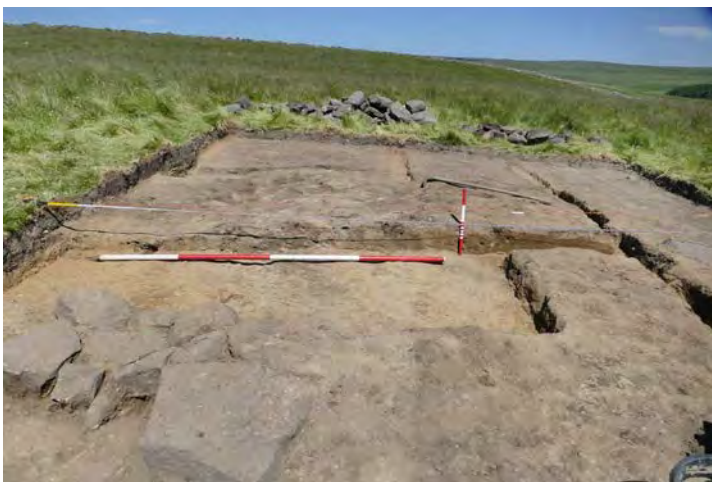


Photo. 05: Cairn 1 seen from the south in the latest phase of excavation.



Photo. 06: Cairn 1, seen from the east side in the latest phase of excavation.



Photo. 07: Cairn 1, possible doorway feature



Photo. 08: Cairn 1, gully viewed from the north-west.



Photo. 09: Cairn 1, ashy deposit in East section.



Photo. 10: Cairn 2, east view.



Photo. 11: Cairn 2, vertical view.



Photo. 12: Cairn 2 seen from the east during excavation.



Photo. 13: Cairn 2, vertical view following excavation.



Photos. 14 (above left) and 15: Exposed section of linear stone-bank feature seen in Trench 5 on the east side of a knoll east of Cairns 1 & 2.