Digging for Britons in Cumbria! Excavations of an Iron Age settlement in the Lune Gorge, Cumbria

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Between 2018 and 2019 the Lunesdale Archaeology Society investigated a prehistoric settlement in the Lune Gorge, located 3.5km to the south of Tebay. The project involved non-invasive geophysical and photogrammetric surveys followed by targeted excavation of six trenches across identified features. The settlement comprised two enclosures defined by abutting banks, which contained several circular and sub-circular platforms and earthworks. The banks were dated through radiocarbon determination to the late second/early first centuries BC, and thus predated the Roman occupation of the area. Excavation of internal features uncovered the foundations and floors of several circular structures interpreted as dwellings, possible livestock pens and/or storage facilities. The pottery assemblage and radiocarbon dating give a suggested occupation date for these structures in the second and early third centuries AD, contemporary with occupation of the Roman fort at Low Borrowbridge, which lies less than 1km to the north of the settlement. The presence within the assemblage of high status Samian ware pottery and South-East Dorset Black Burnished ware, widely used by the Roman army, suggests possible trading links with the fort. Further dating evidence from the excavations shows activity on the site in the Early Medieval period (fifth to sixth centuries AD) though it is not clear whether this was continued occupation, later reoccupation of the site, or transitory utilisation.

Keywords: Iron Age – Romano-British

Introduction

In 2018 Lunesdale Archaeology Society (LAS) received a grant from the National Lottery Heritage Fund (Reference: OH-17-07347) to investigate a presumed prehistoric settlement at High Carlingill in the Tebay Gorge (National Grid Reference: NY 61407 00687; Fig. 1). The site was discovered through aerial photography in the 1970s (Higham 1979) and surveyed by the Royal Commission for Historic Monuments in England in the 1990s (RCHME 1993), but remained otherwise un-investigated. The settlement consists of a series of earthwork banks and sub-circular features typical of the late Iron Age in Northern Britain. What was particularly interesting was its close proximity (within 700m) to the known Roman fort at Low Borrowbridge and its position next to the main Roman road leading north from Ribchester in the south to Carvoran in the north (Margary 1957, 113; Toller 2014; Ratledge 2017). The road is located on the western side of the Pennines and is known locally as Howgill Lane and Fairmile (Hooley *et al* 2019).

The settlement is located on the eastern side of the River Lune on a shoulder of land above its floodplain but below the steep slopes of Blease Fell in the western Howgills. To the north, west and south of the settlement enclosures are relatively flat fields suitable for cultivation and/or grazing. The British Geological Survey records

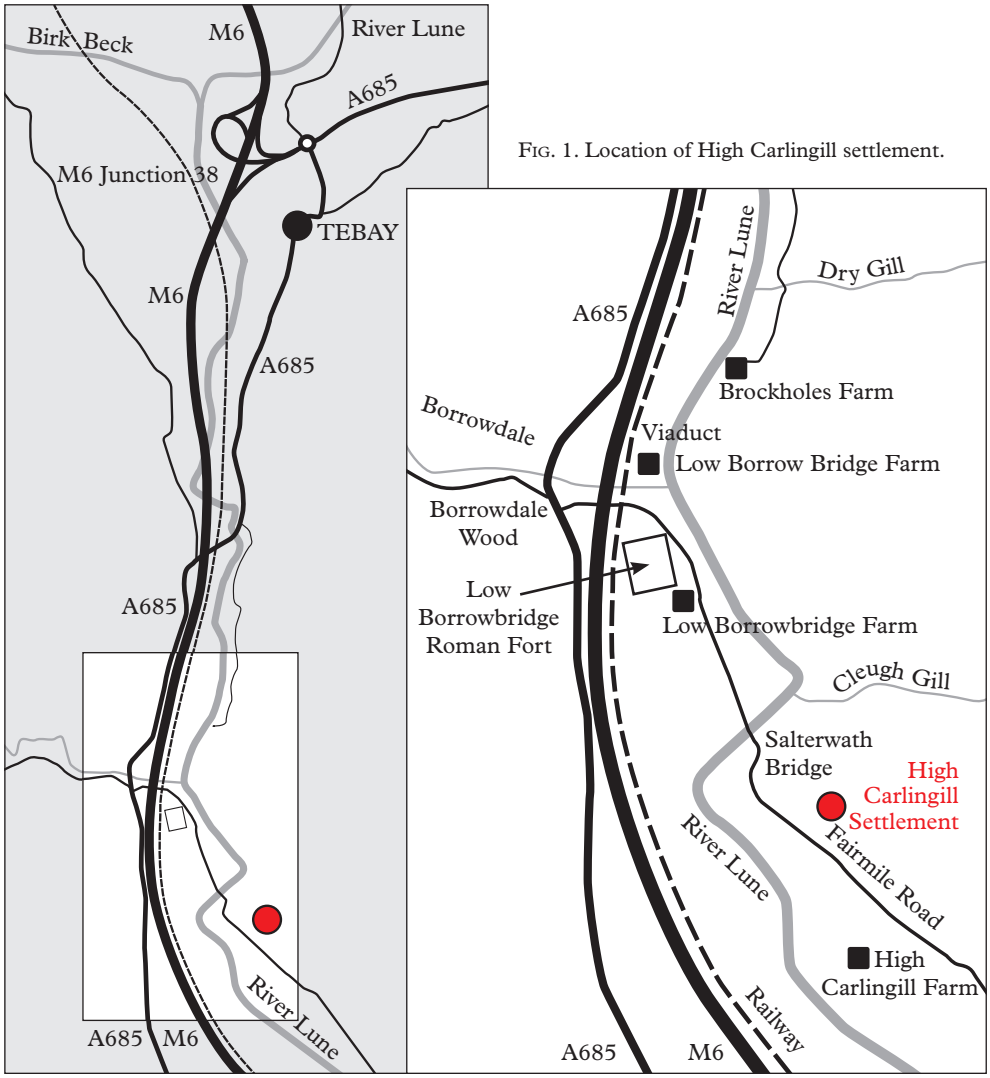


FIG. 1. Location of High Carlingill settlement.

the superficial deposits across the site as Devensian till, a diamicton sediment which overlies a solid geology of the Coniston Group – a sedimentary bedrock of sandstone, siltstone and mudstone (BGS 2019). Online mapping provided by the UK Soil Observatory characterises the soils across the site as 'slowly permeable, seasonally wet, acid, loamy and clayey soils' (UKSO 2019).

Initial investigations

Historic map regression showed that the field boundaries within the study area were in place by the time of the tithe map of 1841 (Tebay Tithe Map 1841, County Records Office, Kendal, WPR 9/3/1/9), and had stayed largely unchanged ever since with the exception of the plantation of new woodland along the eastern side of the

southernmost field in the mid-19th century, and two watercourses defined on the Ordnance Survey maps of 1862 and 1898.

Using the RCHME (1993) field survey as a guide, LAS commissioned SUMO Geophysics Ltd to undertake a magnetometer survey of the settlement and its environs (Fig. 2), along with an aerial photogrammetric survey (Fig. 3). The full Sumo report (Sumo Geophysical Survey 2018) is available on the Lunesdale Archaeology Society website. The areas surveyed extended beyond the observable boundaries of the settlement to help identify any outlying features of potential significance.

Additionally, a walkover survey was undertaken, led by Daniel Elsworth of Greenlane Archaeology (see Sumo Geophysical Survey 2018, Appendix D) which indicated that the RCHME (1993) survey had not covered the north-west part of the site in detail. This was in part due to the area being significantly wetter, but also due to ground disturbance through drainage attempts during the 19th or 20th centuries.

The magnetometer survey was undertaken using a Bartington Grad 601-2 instrument with a 1.0m traverse interval and a 0.25m sample interval. The photogrammetry was undertaken using a UAV with a gimbal mounted camera and a sample interval of 1.35cm/pix.

FIG. 2. Geophysical Interpretation overlaid on the RCHME survey (SUMO Geophysical Survey 2018).

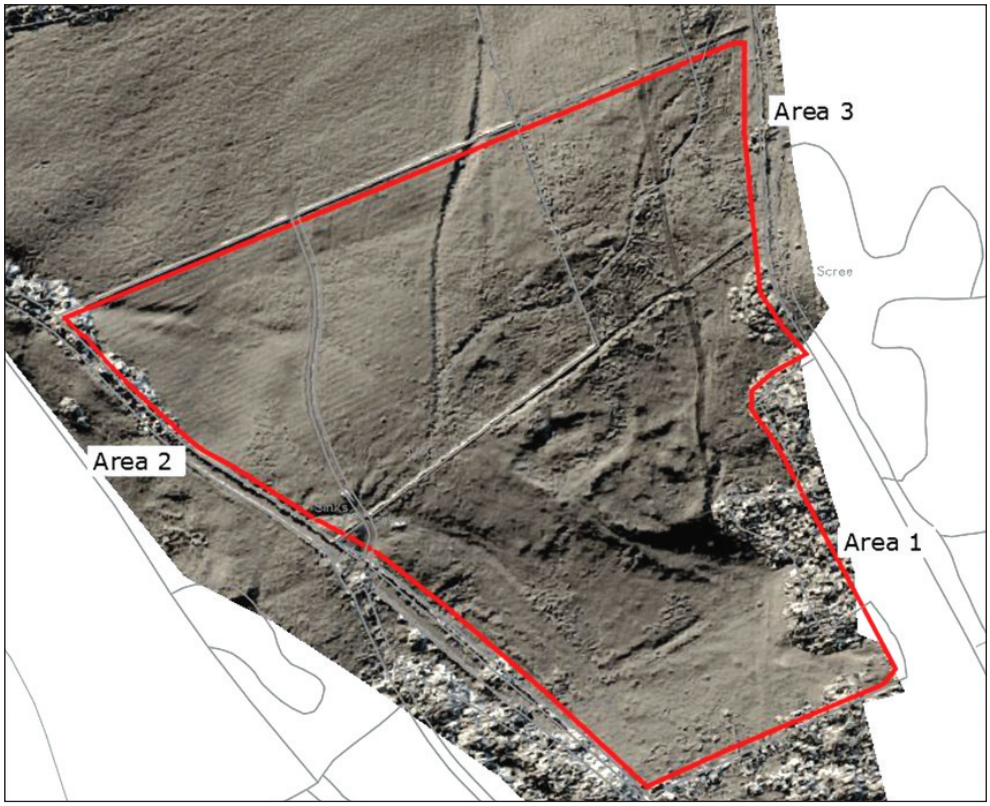


FIG. 3. Photogrammetric Survey (Sumo Geophysical Survey 2018).

The magnetometer survey confirmed several weakly enhanced small sub-circular anomalies (marked 1 to 7 in red on Fig. 2), each approximately 7m in diameter, corresponding with small earthwork 'hut circles' previously recorded by the RCHME (1993). In addition the survey identified two further possible hut circles (marked 9 and 10 on Fig. 2) not recorded in the RCHME survey. Also identified were two curving linear responses (marked 14 and 15 on Fig. 2) towards the north of the survey area. These align with ditches identified in the photogrammetry and walkover surveys and may relate to hollow ways. Finally, the surveys identified several more recent anomalies such as probable post-medieval tracks and quarries.

Excavations

Excavations targeted on areas identified as potential archaeological features were undertaken between 27th September and 12th October 2018, and 13th May to 4th June 2019. A full report (Williams 2020) is available on the Lunesdale Archaeology Society website. De-turfing was undertaken by hand as the archaeological remains were likely to be close to the surface. In total, six trenches were excavated (Fig. 4). Two trenches were situated to target the enclosure banks (Trenches 3 and 6) to determine their character, and the method and date of construction, while the remaining trenches were situated over features identified by the topographical and geophysical surveys.

FIG. 4. Location of excavation trenches over the RCHME survey (Williams 2020).

Trench 1 was located over a potential junction of the two enclosures to determine the chronological sequence of construction. Trench 2 was positioned over a platform which appeared built into the enclosure bank. Trenches 4 and 5 were opened over circular or sub-circular platforms built into the slope.

The bank of the northern enclosure was examined in Trench 3 (along its eastern boundary) and Trench 6 (along its western boundary). Trench 4 was extended towards the north to examine the southern boundary of this enclosure. A paleoenvironmental sample suitable for radiocarbon dating was obtained from the base of the southern enclosure bank in Trench 1.

The enclosure banks

Trench 1 was located to examine the junction between the sub-circular, northerly, and southerly enclosure banks to determine their character and chronology of construction. The northern enclosure bank was further examined in Trenches 3, 4 and 6 which contributed to an understanding of its construction on the eastern (uphill), southern, and western (downhill) sides.

The northerly enclosure bank was constructed of a core mound of re-deposited natural substrate which was laid onto the slope of the hillside. Internally, the bank material was supported by an alignment of kerb stones which appeared to be discontinuous along its length. Externally, the bank appeared to consist of a compact, well-constructed

wall, comprising large stones laid in alignment, with a slight inward batter (Fig. 5). Smaller sub-angular stones were packed behind the facing stones. This wall gave the bank a steeper external profile, whereas internally the bank profile was more gradually sloping. Large stones capped the bank, which generally measured *c* 5.2m wide and *c* 1m high.

FIG. 5. Northern enclosure bank showing capstones, steep outer profile (to left) and shallow internal profile (to right).

The larger, northerly enclosure bank had been deconstructed in the area of Trench 1 to accommodate the construction of a small roundhouse feature (see Fig. 6).

Radiocarbon dating was undertaken by SUERC using the methods outlined in Dunbar *et al* (2016). The dates were calibrated using the OxCal software (Bronk Ramsey and Lee 2013). Calibrated date ranges are cited at the 95.4% probability unless otherwise stated. In accordance with international standards, dates are rounded to the nearest 10 years. Bayesian modelling has been undertaken using OxCal v4.3.2 involving the combine function for samples derived from the same context and sequence modelling of dates for which a clear or probable stratigraphic relationship was observed on site (see Bronk Ramsey 2009). Modelled dates are posterior density estimates and are shown in Table 1.

Samples from the northern enclosure bank returned a modelled date span of 180–60 cal BC (SUERC-90248, and SUERC-90252, Table 1). The southern enclosure bank was built against the larger bank, indicating a later date for its construction.

Radiocarbon dating from beneath the southern enclosure bank in Trench 1 returned a modelled date span between 160–40 cal BC (SUERC-85832, Table 1), suggesting that the two banks were near contemporaneous, with a short time span passing between their construction. Both sets of dates place the construction of the enclosures in the Late Pre-Roman Iron Age (LPRIA).

Internal structures

In total, seven structures were excavated within the two LPRIA enclosures. Plans of the trenches and structures are available in the full report (see Williams 2020). All were sub-circular in form and had external diameters of between 2.5m and 4.2m. Structures 1 to 5 were all small, being *c* 3m diameter or less, and their purpose remains unclear, a dearth of finds has hindered their interpretation. Structure 1 (Fig. 6) was built into, and over, the bank of the northern enclosure. It appeared that the bank had been deconstructed and remodelled to accommodate this small round structure. A probable hearth was identified within Structure 1, although this did not produce any datable material.

Viable organic dating material was recovered, however, from the degraded floor surface. This dating proved problematic, in that two contradictory dates ranging between 180–60 cal BC (SUERC-85831; Table 1) and cal AD 480–600 (SUERC-85830; Table 1) were obtained from the same context (*1019*; Fig. 6). It is probable that the earlier date relates to material from the deconstructed bank, as it closely matches other

Fig. 6. Structure 1 under excavation (Entrance middle-right of photograph).

dates obtained for the enclosure banks (see above). The later date may indicate re-occupation or transitory use of the site in the Early Medieval period.

Structures 6 and 7 both appeared to be small domestic roundhouses with compacted earth and flagstone floors, as well as clearly defined entrances facing south-west. Both were dated through radiocarbon determination to the Romano-British period cal AD 140-240 (68% probability, SUERC-90254; Table 1) and cal AD 80-230 (SUERC-90255, SUERC-90256, SUERC-90257 and SUERC-90258; Table 1) respectively. Structure 7 was inside the earlier, northern enclosure, whilst Structure 6 was inside the later, southern enclosure. This suggested that the settlement may have expanded southwards during the second century AD.

Fig. 7. Structure 6 with paved floor and steps leading southwards (foreground).

Structure 6 (Fig. 7) was partially constructed along its northern circumference over the bank of the earlier, northern enclosure. The structure was *c* 3m across with an internal diameter of 2.3m. The walls, 0.4m wide, remained standing to *c* 0.25m. The whole structure was set on a flattened terrace and contained a well-preserved flagged stone floor throughout. A series of steps were identified leading southwards from the structure down towards a cobbled surface or yard which was retained by a wall.

Structure 7 (Fig. 8), within the earlier enclosure, was *c* 4.2m across, with an internal diameter of 3.6m. An entrance to the structure faced roughly west (downhill) and eight large flat threshold stones were set in the opening. The largest of the stones was heavily dished, presumably through use and wear over time. Towards the entrance, an

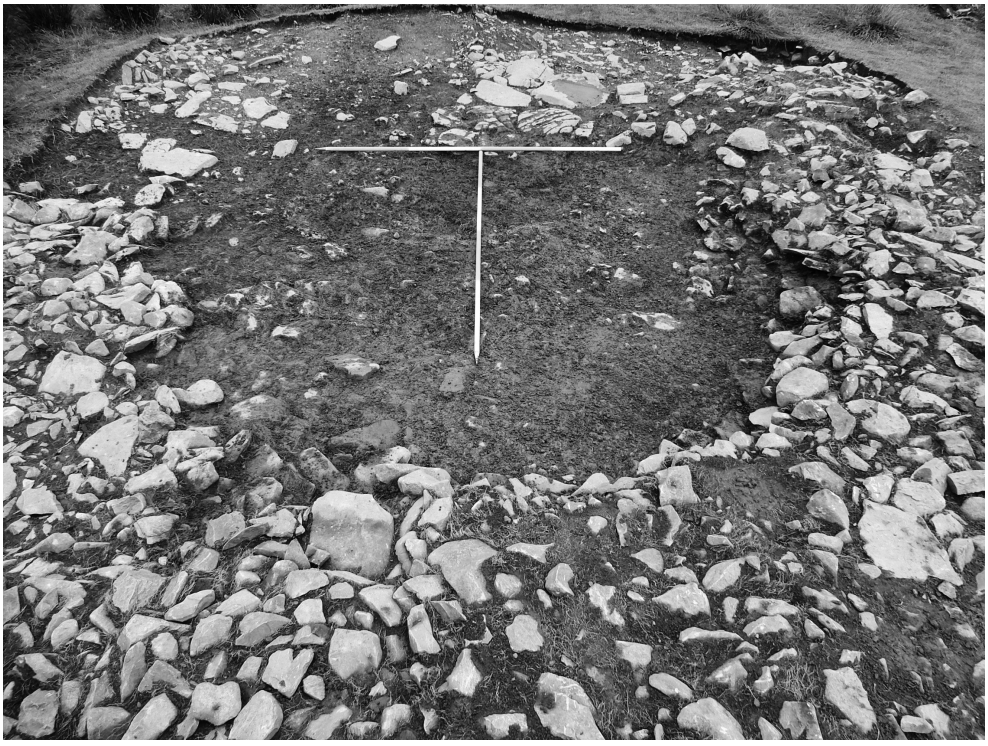


FIG. 8. Structure 7 with entrance slabs at top of photograph.

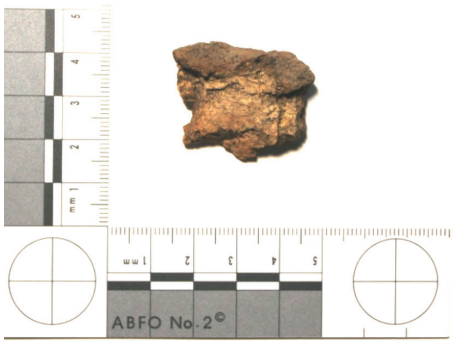
occupation deposit consisting of an ashy burnt layer containing numerous pieces of pottery was investigated. This deposit was interpreted as representing an accumulation of ash emptied from a fire (in the general direction of the doorway) and domestic waste. However, no evidence of a fire pit setting was observed within the structure. In the centre of the floor, a heavily corroded metal object was found. X-ray analysis suggested that this object was the blade of a knife (Fig. 11, see metal finds below).

Ceramics (analysis by Alex Croom)

Trench 1 returned 13 sherds of pottery, weighing a total of 60g and representing a maximum of six vessels. This included four sherds of Samian bowls or dishes (dating to the first or second centuries AD), five sherds of oxidised ware with thin walls, likely to have come from cooking pots (probably locally produced in the second century AD), and three sherds of South-East Dorset ware, the largest of which is a flat rimmed bowl or dish with a sooted exterior (Fig. 9d). These were first made in the Hadrianic period (AD 117–138) but were superseded by other forms by the end of the second century AD.

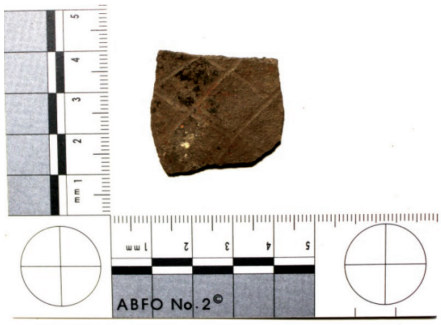
Trenches 4 and 5 produced an assemblage of 31 sherds of pottery with a total weight of 0.144kg, plus five scraps of fired clay that are not definitely pottery. There is one sherd from a plain rimmed bowl in local traditional ware, first produced in the late Bronze Age and continued to be made into the Early Medieval period (Fig. 9a). A

Fig. 9: Examples of Ceramics finds.



a. Local Traditional Ware
Produced from late Bronze Age through to Early Medieval.

b. Decorated Samian Ware.



c. Black Burnished Ware I
decorated body sherd.

d. Black Burnished Ware I
cooking pot rim.

single body sherd of Samian ware was found with some surviving decoration (Fig. 9b). There are sherds from at least two South-East Dorset Black Burnished Ware I cooking pots (Fig. 9c). As there were no surviving rim sherds, no closer dating than Hadrianic was possible. Other pottery consists of a sherd from a flagon in buff ware, base sherds from two vessels in a locally produced gritty oxidised ware, and sherds in a micaceous brown fabric, including a possible everted rim from a cooking pot. The sherds are thin walled and are likely to come from enclosed vessels such as cooking pots. None of these wares can be dated closely, but a second century date is likely.

Nine fragments of burnt clay weighing a total 69.1g were examined and found to be a pale red sandy fabric with common quartz and moderate black iron stone inclusions. Most were unidentifiable but there was one fragment of daub with a double twig wattle impression. Each twig was 10mm in diameter and could be from a small wattle and daub structure (analysis by Dr Philip Mills).

The amount of pottery found is unusually small. The earliest dates appear to be Hadrianic and no pottery from later than the end of the second century AD was found. It is probable that the Roman fort at Low Borrowbridge was the source of the pottery. While the fort continued in use beyond the end of the second century, and the nearby Brockholes settlement site also saw continued occupation at least into the early

third century AD (Anstee *et al* 2018), there is no ceramic evidence for occupation at High Carlingill beyond the end of the second century AD.

Stone (analysis by Dr Scott Williams)

Two whetstones (Fig. 10a), a partial loom weight (Fig. 10b), and a partial probable quern stone (Fig. 10c) were recovered during the excavations. The whetstones weighed 277.8g. Both were cuboid in shape with smoothed edges and flattened surfaces indicative of heavy use. They were formed of a fine-grained fabric.

The fragment of loom weight, weighing 40.4g, was recovered from Trench 5. It was created from fine-grained igneous rock. The exterior edge had been rounded and a small circular hole measuring 11.3mm in diameter had been bored through the centre.

Fig. 10: Examples of Stone Objects.

a. Whetstone.

b. Loom Weight.

c. Fragment of Quernstone.

The probable quern stone weighed 2.5kg and was found in the pitched stone foundations of Structure 5 in Trench 2. The fragment was 250mm by 206mm with a thickness between 10.6mm towards the centre and 76mm at the exterior edge. The fragment represented approximately one eighth of a full circle and was worn towards the centre where a sub-circular cut-out was evident. The diameter of the cut-out was estimated at 108.8mm. The quern shows possible evidence of having been cut along one of the edges which may suggest it was deconstructed for some reason.

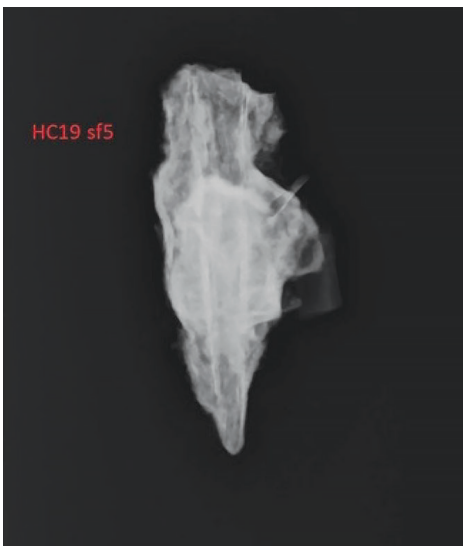
The artefacts recovered are utilitarian objects which would have been used in daily life at the settlement. The small whetstones were probably used for sharpening small blades, possibly in the context of food production. The broken quern stone suggests on-site processing of flour for bread making (which correlates with charred spelt grains recovered from the site).The loom weight suggests the use of warp-weighted looms used in the manufacture of fabrics.

Metal (analysis by Dr Scott Williams)

Five ferrous objects were recovered from the roundhouse in Trench 5. The objects were badly corroded with a thick crust of accretion and had become adhered to the surrounding soil and stone, making identification impossible. The objects were sent to the Department of Archaeology at Durham University to undergo X-Radiography. Although the analysis produced limited results, within one object it was possible to discern a short, broken length of knife blade, 107mm long by 14mm at the break and 5mm at the tip (Fig. 11). Within two of the other objects it was possible to identify what may be rectangular buckles. The knife blade was recovered from roundhouse Structure 7, which fits well with the recovery of whetstones from the same area, suggesting everyday use of such objects within the settlement.

Fig. 11: Corroded Metal Object.

Corroded metal object.



XRay of metal object showing pointed section of knife blade.

Paleoenvironmental assessment (analysis by Dr Charlotte O'Brien)

Six bulk samples and five hand-recovered charcoal samples were recovered during the excavations. The bulk samples were manually floated and sieved through 500μm mesh. The residues were examined for shells, nutshells, charcoal, small bones, pottery, flint, glass and industrial residues, and were scanned for ferrous objects using a magnet. Items suitable for radiocarbon dating were identified.

TABLE 1: List of Radiocarbon determinations (Williams 2020).

Lab Code	**Context**	**Material**	**Age BP**	**$\delta^{13}C$ relative to VPDB**	**Calibrated date (95.4% confidence)**	**Modelled date (95.4% confidence)**
SUERC-85831 GU50789	HC18 *1019*	Charcoal Birch	210430	-24.8%	200-50 CalBC	180-60 CalBC
SUERC-85832 GU50790	HC18 *1008*	Charcoal Willow/ poplar	211430	-26.1%	340-50 CalBC	160-40 CalBC
SUERC-90248 GU53065	HC19 *4014*	Charred grain Barley	209624	-24.4%	180-50 CalBC	180-60 CalBC
SUERC-90252 GU53066	HC19 *4014*	Charcoal Birch	207921	-25.9%	170-50 CalBC	180-60 CalBC
SUERC-90254 GU53068	HC19 *4016*	Charcoal Hazel	180721	-26.1%	130-320 CalAD	-
SUERC-90255 GU53069	HC19 *5006*	Charred Grain Wheat (spelt)	187324	-20.9%	80-220 CalAD	130-230 CalAD
SUERC-90256 GU53070	HC19 *5006*	Charred nut shell Hazelnut	183224	-23.1%	90-240 CalAD	130-230 CalAD
SUERC-90257 GU53071	HC19 *5011*	Charred nut shell Hazelnut	191124	-24.4%	30-140 CalAD	80-210 Cal AD
SUERC-90258 GU53072	HC19 *5011*	Charred Grain Barley	180024	-22.1%	130-320 CalAD	80-210 CalAD
SUERC-85830 GU50788	HC18 *1019*	Charred nut shell Hazelnut	151230	-23.4%	430-620 CalAD	-
SUERC-90253 GU53067	HC19 *4016*	Charred nut shell Hazelnut	152721	-23.8%	430-600 CalAD	-

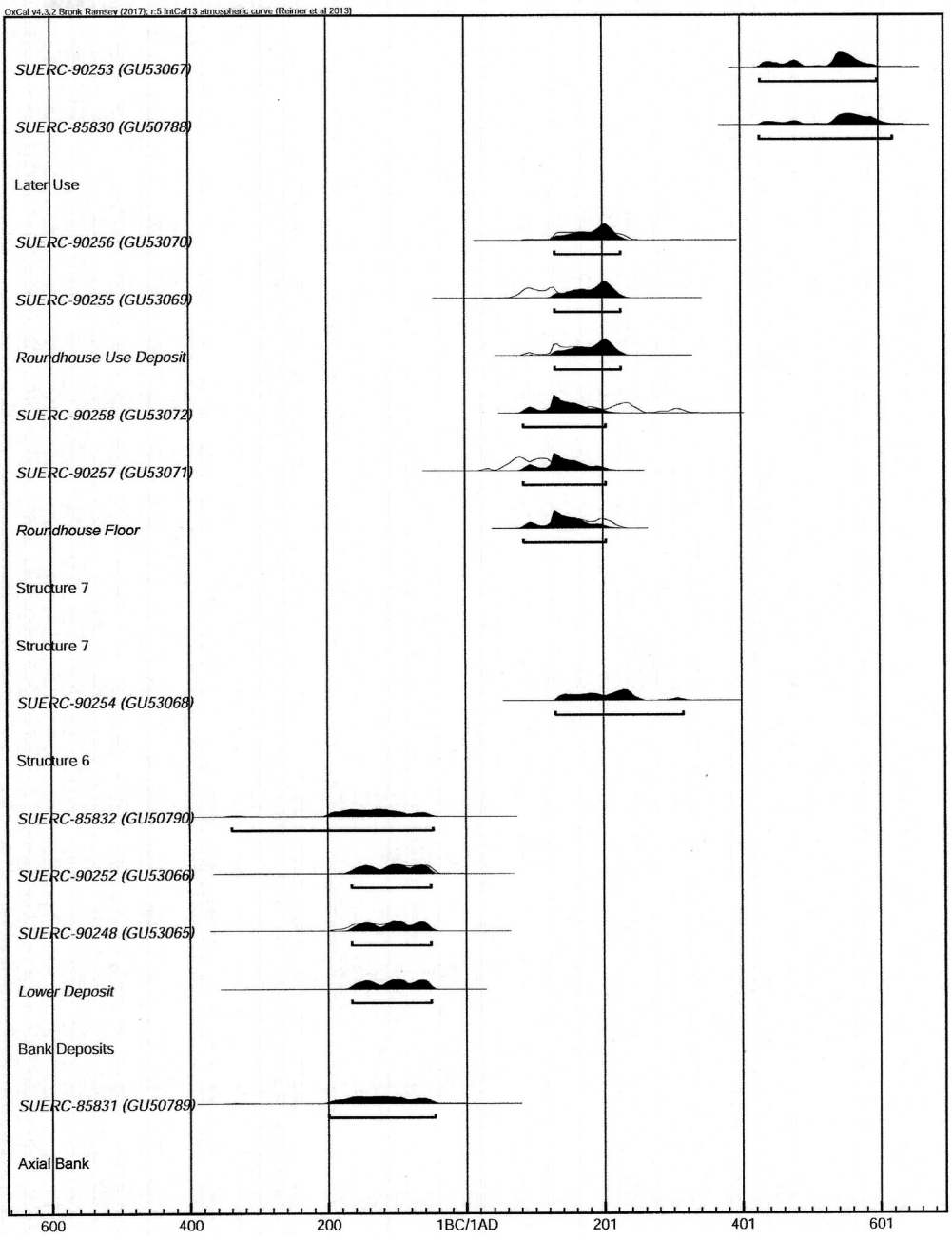


Fig. 12. Modelled radiocarbon dates (Williams 2020).

The charcoal assemblages included hazel, alder, birch, ash, oak and willow/poplar, and give some indication of the species available in the local woodland resource with both brushwood and larger stemwood exploited. The presence of insect tunnels in some of the hazel may reflect collection of deadwood, long term wood storage, or the action of insects on wooden structures such as wattle.

In Trench 5, an occupation deposit produced a large number of charred plant macrofossils comprising barley and wheat grains, hazel nutshell fragments, heather twigs and weed seeds of brome, wild radish, cleavers, redshank, common chickweed, sedges and grasses. Diagnostic chaff confirms the presence of spelt wheat, and barley grains suggest the use of 6-row barley.

The presence of a charred hazel nutshell suggests use of wild foods. The charred cereal remains indicate use of spelt wheat and barley, common crops in Britain during the Iron Age and Romano-British periods. Traditional uses of heather twigs include bedding, thatching and fodder.

Although a well-defined hearth was not archaeologically visible in the Trench 5 roundhouse (Structure 7), the accumulation of charcoal and charred plant remains is consistent with deposits from hearth waste. Hazel, oak and Maloideae (fruit trees) comprise species known for their excellent firewood properties.

Discussion

The High Carlingill settlement is one of a series of similar earthworks (Higham 1979, 36) along the east side of the Lune valley, on or around the 180m contour, between Low Borrowbridge in the north and Howgill in the south. The settlements are located above elevations that were liable to suffer flooding and inundation from the river, but beneath the steeper slopes of the Howgill fells to the east. They sit on land suitable for cultivation and livestock pasturing. In form and location, they have been assumed to be Iron Age or Romano-British in origin (Higham 1979) although no detailed work, other than limited field surveys, has been undertaken prior to the current study. To the south, along the Lune between Middleton and Kirkby Lonsdale, other similar sites have also been noted (Hardwick 2017).

The aerial surveys of the mid-1970s by Higham and Jones identified 65 sites in the Upper Lune valley (from Tunstall in the south to Crosby Ravensworth in the north) of which 24 were classed as 'settlements' or 'native settlements' (Higham 1979, 36-7). Some of these may have been single farmsteads, and others may have remained undetected, underlying modern farms and buildings. Hoaen and Loney (2004) found 17 later prehistoric or Romano-British settlements in the Matterdale and Hutton parishes on the north shores of Ullswater, of varying morphologies but the majority having curvilinear enclosures (Hoaen and Loney 2004, 43). Both studies suggest that settlements were clustered in habitable locations prior to and during the Romano-British period.

Earlier identification of archaeological sites through aerial photography (Higham and Jones 1975) has been greatly accelerated with the use of GoogleEarth images, and more recently by freely available LiDAR. Using LiDAR, Toller (2014) was able to show that the road north from Low Borrowbridge ran to Kirkby Thore, not Brougham as originally thought, and Ratledge (2017, 2020a) has identified many miles of previously unknown Roman Roads throughout Cumbria including on the western side of the Lune between Middleton in the south and Low Borrowbridge in the north (Ratledge 2020b, 2020c).

The earthworks at High Carlingill are situated on or close to the Roman road, known locally as Howgill Lane and Fairmile, running north from Ribchester to Carvoran on Hadrian's Wall. This road was the main route north on the western side of the Pennines in the early Roman period (Margary 1957; Toller 2014; Ratledge 2017; Hooley *et al* 2019). Given that proximity, and the location of the Roman fort at Low Borrowbridge in the Lune Gorge, the relationship between the settlements and the occupying Roman forces in the Late Iron Age and Romano-British periods is of particular interest.

The Low Borrowbridge fort is thought to have been occupied by an Auxiliary unit of around 480 troops (Birley 1947) which would have required feeding and other support which may have been supplied, at least to some extent, by the local farms and settlements. The Ewe Close settlement lies on the same Roman road to the north near Crosby Ravensworth (known there as Wicker Street). Collingwood (1933) suggests that the road was deliberately diverted to go close to an existing, pre-Roman, settlement, presumably for purposes of trade and/or supply. To the south the road has been shown to pass close to a morphologically similar settlement at Barbon (Ratledge 2019) and approximately 3km south of High Carlingill the road cuts directly through a settlement at Fairmile Beck (Higham 1979, 32). Elsewhere in Cumbria aerial photography has shown that the Roman roads system not only facilitated military movement but also provided links to native settlements and farms, presumably for the purposes of supply and trade (Higham and Jones 1975, 25; Brindle 2016, 322, 325).

The settlement at High Carlingill is morphologically akin to the enclosed settlements in the Lake District National Park Survey (LDNPS) noted by Quartermaine and Leech (2012, 322) and dated from the Late Bronze Age or Early Iron Age into the Roman period. They suggest development from unenclosed settlements due to an increased emphasis on defence (Quartermaine and Leech 2012, 321). Later enclosures were more complex with a greater emphasis on agriculture than defence and are characterised by sunken stock pounds and internal wall divisions, such as at Ewe Close (Quartermaine and Leech 2012, 324, Philpott 2006, 76), Urswick (Dobson 1907), Middleton (Higham 1979, 33) and Broadwood (Quartermaine and Leech 2012, 325).

Hoaen and Loney (2010) found evidence at Glencoyne Park, Ullswater, to suggest development of an enclosed settlement from the Bronze Age through the Romano-British period, activity from around 1000 BC through to 200 AD. The earliest layers appear to date from pre-enclosure activity radiocarbon dated to 1105-835 BC (95% confidence) while a first phase enclosure wall was dated to 260-50 BC, broadly in line with the dates at High Carlingill. A hearth inside the excavated roundhouse returned dates of 50-230 AD and 20-220 AD, again in line with the occupation layers at High Carlingill.

Research by Hodgson and colleagues in Northumberland (Hodgson *et al* 2012), in the hinterland of Hadrian's wall, also suggests that similar settlements originated as individual roundhouses, farms or scattered settlements in the late Bronze Age or early Iron Age (around 800 BC) but were consolidated into bank and ditch enclosed settlements from around 200 BC. On the basis of radiocarbon dating across many sites Hodgson argues that these settlements were abandoned (or cleared by the

occupying Roman forces) by the late second or early third centuries. Others, however, have disputed this interpretation suggesting that the Romans would have relied on the native population for supplies and been reluctant to disrupt valuable and viable farming supply (for example, see Young 2018, 28).

The earliest dates recovered from the excavations at High Carlingill relate to the construction of the banks of both enclosures in the Late Pre-Roman Iron Age (*c* 180–40 BC). At its earliest date range, this accords with Hodgson *et al's* (2012) findings for enclosures in Northumberland. At the Broadwood enclosed settlement near Ingleton, North Yorkshire, Johnson dated construction of the boundary banks 88 Cal BC to Cal AD 66 (reported in Quartermaine and Leech 2012, 325), at the more recent end of the date range at High Carlingill. At High Carlingill, the thickness of the banks of the northern, sub-circular enclosure at around 5m are substantial. A comparable site at Urswick, excavated in 1906, revealed an enclosure bank of nearer 3m (Dobson 1907, 79). The bank of the second phase enclosure uncovered at Glencoyne Park (Hoaen and Loney 2010) was also estimated at 3m.

No evidence has yet been found to date the construction of the roundhouses or other structures within the High Carlingill enclosures. However, it should be noted that only seven structures have been investigated, which represents less than 1% of the settlement area, and all are located close to the enclosure banks. Elsewhere, such as Ewe Close and Urswick, the structures interpreted as early have been found nearer the centre of enclosures (see Collingwood 1908; Dobson 1907; Smith 1907). It remains possible that there may have been earlier structures more centrally located in the larger northern enclosure, now underlying (and perhaps providing material for) eighteenth/nineteenth century stone walls. A single sherd of pottery recovered from within the area of Structure 6 (Fig. 9a) is of a type produced from the late Iron Age through to the Early Medieval period; its poor stratification and longevity of manufacture did not allow for accurate dating of the structure. The Late Pre-Roman Iron Age in the North West is largely aceramic (Quartermaine and Leech 2012, 325; Hoaen and Loney 2004; 42; Philpott 2006, 83; Brindle 2016,313), due in part to the fragile nature of the material.

Where dating material was available from within the structures investigated, either pottery sherds or organic material suitable for radiocarbon dating, the dates returned are firmly within the early Romano-British period, from the first to early third centuries AD. This period of occupation coincides with known occupation of the Low Borrowbridge fort (see Hildyard and Gillam 1951; Hamilton-Gibney 2012; Hooley *et al* 2016; Hooley *et al* 2019). The pottery found in the roundhouses included Roman Samian ware (typically imported from Gaul, modern day France, in the first and second centuries AD) and South-East Dorset Black Burnished Ware used by the Roman military. These finds are strongly suggestive of interaction and trade between the settlement and the fort occupants. The absence of pottery or radiocarbon dating evidence from the third century onwards may indicate abandonment of the settlement at this time, similar to the known examples in Northumberland (Hodgson *et al* 2012).

Brindle (2016, 313), in a macro-analysis of 123 settlement sites in the north of England (Lancashire, Cumbria, North Yorkshire, Northumberland, County Durham, Tyne and

Wear) noted that the number of rural native settlements peaked in the second century AD but declined markedly in the third and fourth centuries. The abandonment in the area south of Hadrian's Wall, however, was less marked than to the north (Brindle 2016, 315) perhaps indicating that the Wall afforded some protection from raids from the north. Young (2018, 29) has pointed out that there is a general paucity of material culture items of any sort on native settlements in the north and that absence of finds beyond the end of the 2nd century AD does not necessarily indicate that occupation of these settlements ceased. Many of the sites included in Brindle's (2016) analysis were excavated without access to radiocarbon dating, and relied heavily on pottery evidence for dating of occupation.

While both pottery and radiocarbon evidence at High Carlingill may suggest at least limited abandonment in the third century, coin evidence collected at Low Borrowbridge during the construction of the railway in the nineteenth century suggests that the fort at Low Borrowbridge continued in occupation until at least the late fourth century (Shotter 2003). Further coin finds in 2011 (Hamilton-Gibney 2012, 24) and 2017 (Portable Antiquities Scheme Reference: LANCUM-C9F5FF) and excavation of the fort cemetery (Lambert 1996, 124) support this later and enduring occupation which would have had a continued requirement for supply and provision.

The paleoenvironmental analysis showed use of hazel, alder, birch, ash, oak and willow/poplar. Such a diverse assemblage is consistent with indiscriminate exploitation of woodland resources and may be indicative of woodland clearance (Williams 2020, 64). Pollen analysis records from Archer Moss and the Carlingill valley, approximately 1km from High Carlingill in the Howgills, demonstrate a sharp reduction in tree and shrub pollen levels and an increase in grasses and herbs from around 1990-1870 BP (40 BC to 80 AD) (Cundill, 1976; Chiverrell *et al* 2008, 54), coinciding with the time of the establishment of the enclosed settlement at High Carlingill. Tree and shrub levels remained relatively low until reforestation began following the Roman withdrawal from Britain after 400 AD (Cundill 2000, 325).

The paleoenvironmental analysis also uncovered evidence of spelt wheat and six-row barley, which would have been cultivated in the cleared fields around the settlement, in line with findings from Brindle's macro-analysis of other rural settlements in the north (Brindle 2016, 326). The fragment of quern stone suggests the processing of grain. The inhabitants of the settlement were also consuming wild foods such as roasted hazelnuts. Whether excess production was traded with the fort is unclear, however geophysical surveys of the fort interior have shown a layout very similar to Segedunum (Wallsend) including probable substantial granaries (Hooley *et al* 2019,50). Philpott (2006, 69) notes that Vindolanda writing tablets suggest a strong working relationship between forts, *vici* and farmers in the fort hinterlands. In 2011/12 excavations of a building to the south of the Low Borrowbridge fort, grains of charred barley were found along with a grain of wheat (Hamilton-Gibney 2012, 20) which may have been supplied from local native settlements.

There was little evidence for consumption of meat at the settlement. It is possible, however, that animals were husbanded for trade with the fort. The pollen analysis at Archer Moss noted above is indicative of livestock grazing on the fells close to

the settlement during the period of occupation of the fort (Chiverrell *et al* 2008). Stallibrass (2018, 45) has shown that the Roman forces in the north-west were supplied with cattle by local farmers. Excavations of the building to the south of the fort in 2011 uncovered the remains of two cow mandibles (jaw bones) and another in 2012 all with knife marks consistent with domestic butchery. A further cow scapula (shoulder blade) was found in 2012 with extensive chop marks on it. These resulted from the removal and trimming of the edge of the bone indicating dismemberment and filleting associated with the salting and cold smoking of beef (Hamilton-Gibney 2012, 20). While it is probable, however, no direct evidence has been found that the meat was supplied from the High Carlingill settlement.

Two post-Roman dates were obtained from the settlement. Radiocarbon dating from Structure 1 in Trench 1 returned a date between 480–600 AD (SUERC-85830; Table 1) and a sample from between Structure 6 and the enclosure bank gave a date range between 440–580 AD (SUERC-90253; Table 1). These may illustrate continued occupation into the Early Medieval period, re-occupation during this period, or episodic/transhumant use of the site. A later cobbled trackway cut through the larger northern enclosure bank. No datable evidence was recovered from the trackway, but it was considered likely that the track was used during later quarrying for stone that appears to have taken place on the site (Williams 2020).

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