

Loch Eck Bloomeries Project Data Structure Report Project 4105

Loch Eck Bloomeries Project Data Structure Report

On behalf of: Forestry Commission Scotland

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Project Number: 4105

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*This document has been prepared in accordance
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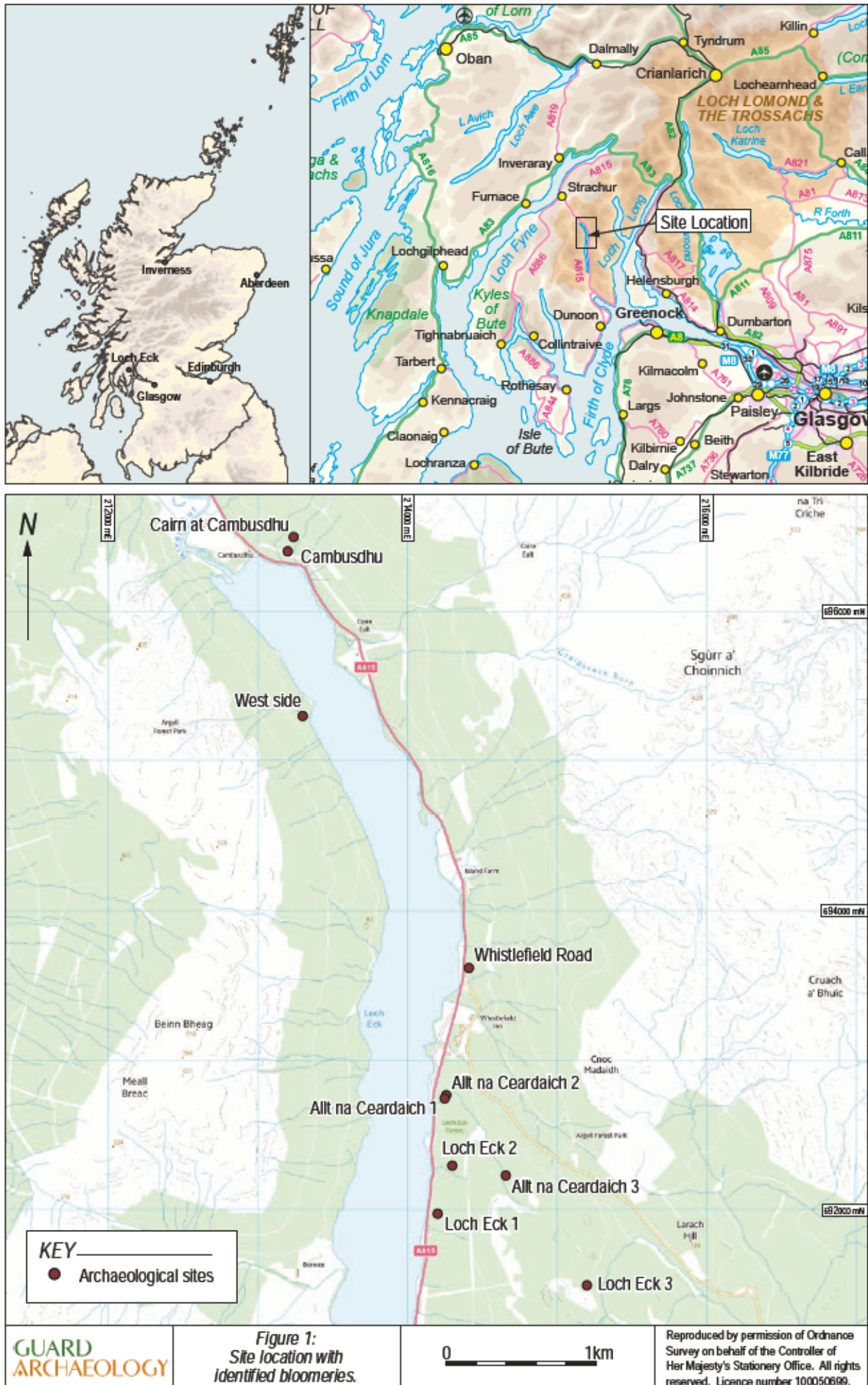
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Executive Summary

- 1.1 Guard Archaeology Limited were commissioned by Forestry Commission Scotland to establish a research project on the shores of Loch Eck, Argyll to investigate the presence of up to nine bloomery mounds in relatively close proximity. The project, known as the Eck Bloomeries Project was based around four phases of activity, each with particular goals. Phase 1 involved a programme of walkover survey to confirm or refute the presence of the sites at locations suggested by previous investigators. This work was undertaken between 11th and 13th May 2015 and identified three of the nine potential sites. Phase 2 involved trial trench evaluation of two sites (Whistlefield Road and Allt na Ceardaich 2) with the aim of recovering secure datable material. This work was conducted between 14 and 16 June 2015. Phase 3 involved the partial excavation of Allt na Ceardaich 1, previously investigated as part of the Scottish Bloomeries Project. This work was conducted between 22 and 24 September 2015. The results of the first three phases will inform the fourth and final phase of the project: post-excavation analysis and publication.

Introduction

- 2.1 This report sets out the results of the first three phases of the Loch Eck Bloomeries Project conducted between the middle of May and late September 2015. Phase 1 was based on walkover survey to identify the exact location of as many of the nine sites previously identified by members of Cowal Archaeological and Historical Society as possible. The three sites (Whistlefield Road, Allt na Ceardaich 1 and Allt na Ceardaich 2) positively identified formed the basis of phase 2 and 3 of the project, including basic survey of the remains, trial trench evaluation of the mounds, sampling of the industrial waste and recovery of secure dating samples from basal deposits at the three sites investigated. In addition to this a series of auger samples were recovered from Allt na Ceardaich 1 to test for the presence of a charcoal store adjacent to the furnace. The projects acted as a training opportunity for younger graduates and members of the local community.

Site Location and Archaeological Background *(Figure 1)*

- 3.1 Allt na Ceardaich 1 (AnC1) is located in Forestry Commission Scotland's (FCS) National Forest Estate and on the lower west facing slopes of Beinn Ruadh on the banks of the river of the same name. Positioned to the south-east of the old road leading from Whistlefield Inn, the bloomery sits behind the crest of a small hillock at around 40 m AOD.
- 3.2 The site was initially reported by members of the Cowal Archaeological and Historical Society, together with a number of other sites in the area (see Table 1 below). It was subsequently chosen for initial investigation by the Scottish Bloomeries Project in 1995 (Atkinson & Photos Jones 1995; Photos-Jones et al 1998) and part excavated in 1996 (Atkinson & Photos-Jones 1999). AnC1 is substantially larger than the other bloomery sites in Cowal, which are generally noted to have a small conical or elongated slag mounds, rather than the large U-shaped slag mound present at this location.
- 3.3 A search of CANMORE and the local Sites and Monuments Record provides only two examples of bloomery along the loch side (AnC1 and Cambusdhu). However information provided by the late Betty Rennie from the Cowal Archaeology Society archives, to the Scottish Bloomeries Project, suggested that as many as nine sites may be present along the shores of Loch Eck. Table 1 summarises this information and acted as the basis for further investigation during the current project (see also Figure 1).
- 3.4 This grouping of bloomery mound sites is notable, particularly within the Loch Eck Forest where up to six mounds are noted, three of which being located along the Allt na Ceardaich 1 itself. This is of especial interest as the place name evidence suggests that this 'river of the smith' must have been an important place during the later medieval period. Assessment of these sites offers the opportunity to firmly locate, partially excavate and date a number of potentially contemporary sites and could expand our understanding of the bloomery tradition in the Highlands as a whole.

Table 1: Bloomery sites on Loch Eckside, Argyll

Site	Site Name	NGR	Description	Dimensions
Allt na Ceardaich 1		NS 1425 9275	Large horseshoe mound and stone structure	12 m by 10 m by 1 m
Allt na Ceardaich 2		NS 1426 9277	Conical mound part truncated by ditch	5 m dia by 0.5 m high
Allt na Ceardaich 3		NS 143 923	Slag heap 155 m above loch	-
Cambusdhu		NS 132 964	Slag heap below forest road	-
Loch Eck 1		NS 142 920	Slag heap 60 m from burn on 30 m contour	-
Loch Eck 2		NS 143 923	Slag heap 30 m from burn on 70 m contour	-
Loch Eck 3		NS 152 915	Slag on forestry track at 310 m contour	-
West side		NS 133 953	Slag on Rubha na Seamraig	-
Whistlefield Road		NS 144 936	Sub-circular shaped mound	5 m by 4 m by 0.5 m

Aims and Objectives

4.1 The aims of the Loch Eck Bloomeries Project were as follows:

Phase 1

- locate and survey the sites previously reported by Cowal Archaeological and Historical Society.

Phase 2

- conduct limited trenching and recording of a number of the Loch Eck sites, so that secure charcoal samples can be recovered.

Phase 3

- excavate two hand dug trenches to reveal in situ deposits associated with bloomery activity at AnC1.
- determine the character, extent and date of any archaeological deposits encountered within those trenches.

Phase 4

- undertake post-excavation analysis and radiocarbon dating of the recovered samples from all trenches.
- publish a short article on the findings of the project together with the previous part excavation results from AnC1.

4.2 In addition to the above key aims above the project will have additional objectives:

- assess the damage caused by afforestation and harvesting to bloomery sites.
- provision of CPD opportunities for junior members of staff.
- create placements for ClfA (Scottish Group) volunteers and local members of the community linked to the BAJR Skills Passport.

Methodology

5.1 The programme of archaeological works described here is based around three phases of fieldwork. This will be followed by a phase of post-excavation analysis (including radiocarbon dating of secure deposits from all sites sampled) and final publication:

Phase 1: Site Location and Survey

- 5.2 This phase of work included visits to the nine potential sites along the shores of the loch (details as per Table 1). Work conducted during this phase included accurately locating sites and basic surveying of mounds and any associated features by sketch, notes and digital photography.

Phase 2: Limited Excavation and Sampling of Loch Eck Sites

- 5.3 This phase of work was based on the results of phase 1 and included the limited excavation and sampling of two bloomery mound sites. Excavation included digging of slot trenches into the centre of each mound and recording appropriate sections by drawing, photography and proforma context sheet. Once the recording was complete charcoal samples from basal layers was retrieved together with representative slag, ore and furnace lining samples.

Phase 3: Excavation of AnC1 Trenches

- 5.4 Two trenches were excavated at the large U-shaped bloomery of AnC1 to complement and enhance the results of the 1996 excavation (Atkinson & Photos-Jones 1999). Trench 5 was located over the western portion of the mound and was 2 m by 2 m in extent. Trench 6 was located on the eastern portion of the mound and was 2 m by 1 m in extent. Both trenches allowed recovery of charcoal, slag and furnace lining samples to be achieved.
- 5.5 All trenches were excavated by hand and the archaeological team removed all turf, topsoil and overburden separately. Each trench was excavated down to basal archaeological horizons or subsoil (whichever was located first). The depth of stratigraphy apparent in all trenches was recorded.
- 5.6 Once the deposits have been cleaned by hand each trench was recorded in plan at a scale of 1:20. All finds were recovered and a bulk charcoal soil sampling strategy was adopted for significant layers. All on-site recording, written, drawn and photographic, was conducted in line with the Chartered Institute for Archaeologists (CIfA) standards and guidelines.
- 5.7 On completion of the trench excavations, each trench was backfilled by hand.

Results

Phase 1

- 6.1 The results of the Phase 1 Site Location and Survey work are set out below. Mounds were identified at three sites at Whistlefield Road and Allt na Ceardaich 1 and 2; these appear to correlate quite accurately with grid references previously supplied. Two sites at West Side and Loch Eck 3 were deemed inaccessible and attempts to reach these sites were abandoned. The remaining sites were visited but mounds were not identified (Figure 2).
- 6.2 Allt na Ceardaich 1 (*Plate 1*)



Plate 1: Allt na Ceardaich 1 from the north-east.



- 6.2.1 The site was located up slope from a forestry track running parallel with the main A815 from the Whistlefield-Ardentinny road, just beyond the Whistlefield Inn. A section of fairly steep slope was traversed and the site was located within an area of young dense woodland just beyond this. The mound was located close to the bank of the Allt na Ceardaich burn and was heavily planted with young trees. These were cleared from the immediate area of the mound and the associated visible stone walling so that the full extent of the features could be recorded.
- 6.2.2 The previous excavation work on the site identified this as a large horse-shoe shaped slag mound of around 0.6 m in height made up of a series of deposition events, in effect a series of smaller mounds. These measured 6 m, 12 m and 9 m in length and between 4 m – 6 m in width (Lelong & Donnelly, 1999; 104-122). A complex of associated features were also investigated during this work, including a central furnace area, stone set hearth and a series of stake and post-hole features.
- 6.2.3 Stones currently visible at ground level to the north-east interior of the mound appear to be part of the central drystone structure which partially enclose the furnace area. The mound stands to an exterior height of 0.8 m and an interior height of 0.55 m. Vegetation obscures the extent to the south-east, particularly towards the bank of the burn where some erosion may have occurred.
- 6.3 Allt na Ceardaich 2 (*Plate 2*)



Plate 2: Allt na Ceardaich 2 from the south-west.

- 6.3.1 The site was located further north up the burn, through dense tree and overgrowth. The mound is located along the northern bank of the burn, with a steep drop to the water itself. Again, the site was very overgrown with some young trees cleared directly over the feature itself to define its extent.
- 6.3.2 The mound is elongated and slightly curved in shape, measuring 9 m in length by 2.9 m in width although this tapers towards the south-west. The mound stands to 0.35 m in height, and a water affected hollow in the central area beneath a tree stump reveals a further depth here of around 0.4 m. Slag fragments were occasionally visible on the surface of the mound, disturbed by overgrowth.
- 6.3.3 The feature is truncated by a roughly north-east/south-west orientated ditch which cuts through the mound and down into the bank of the burn, presumably for channelling water here. This post-dates the feature and any connection with activity around the mound itself is presently unclear.
- 6.4 Allt na Ceardaich 3
- 6.4.1 The site at Allt na Ceardaich 3 has previously been identified by the CAHS as a slag heap lying 155 m above the loch to the south-east of the first two sites on the Allt na Ceardaich burn, closer to the sites at Loch Eck. An attempt to reach the site was made using forestry roads as access, and then burns marked on topographic maps as a guide towards the location itself as GPS signal was too poor due to the surrounding forestry coverage.

6.4.2 Unfortunately the site was not able to be reached and was deemed inaccessible due to the dense tree planting and overgrowth. The mound was therefore not located.

6.5 Cambusdhu

6.5.1 The site at Cambusdhu was identified by the CAHS as a slag heap below the forest road, located at the north extent of the loch. An attempt was made to reach the site using the forestry road for access and then walking an area to either side of the burn the site has been identified on across the area between the upper forestry road and the main A815 on the shore of the loch. The forestry here was more mature and less dense, however overgrowth and moss coverage were still thick and the upper slopes below the road were steep. The mound was not located within the area.

6.5.2 However, a separate unrelated feature was encountered in this area by chance on the return walk through woodland to the west of the road. This consisted of a ring of at least 7 visible small upstanding stones or monolith bases measuring 6.5 m by 6.4 m across, with what appeared to be a central mound of likely cairn material. The stones and central cobble material were covered in a thick layer of mossy overgrowth, and surrounded by mature tree planting with a tree stump located within the ring to the north-east. As GPS was again unavailable, a rough location was measured in from the nearby forestry road (NS 1324 9650, see Figure 2). A search of the NMRS and local HER suggests that this site may be previously unidentified.

6.6 Loch Eck 1

6.6.1 The Loch Eck 1 site was documented as being no more than 100 m east of the A815. The bloomery mound had previously been located near the 30 meter contour within the vicinity of the tree line of the Argyll Forest Park. This area was traversed however the mound was not detected during this search, possibly due to the dense overgrowth which was present across the extent of the area. Much of the area consisted of steeply sloping ground with some forestry cover.

6.7 Loch Eck 2

6.7.1 The Loch Eck 2 site was documented as being no more than 100 m east of the A815 to the north of Loch Eck 1, around 30 m from a burn on the 70 meter contour. Much of the ground here was covered by dense young tree planting. The area was traversed however the bloomery mound was not located during this search, likely due to dense overgrowth and tree planting which was present across the extent of the searched area. The area was on a steep inclination and this presented problems when trying to gain access.

6.8 Loch Eck 3

6.8.1 The Lock Eck 3 site was documented as being east of the summit of Beinn Ruadh. Due to the very dense vegetation and undergrowth on the slopes leading to this area access was not possible and the site was deemed inaccessible.

6.9 West Side

6.9.1 The West Side site was documented as being no more than 100 m from the Western bank of Loch Eck at Rubha Na Seamraig. Access by the forestry road to the north was not possible and the slopes to the west were very steep with dense forestry and overgrowth. Given that the spread of slag was suggested to have been heavily disturbed by the laying of the forestry track, the attempt to locate the site was abandoned.

6.10 Whistlefield Road (*Plate 3*)

6.10.1 The Whistlefield Road site was documented as being no more than 100 m East of the A815 and North of Whistlefield Road and was located approximately 61 m North-West of the A815/ Whistlefield Road junction on a hillock within the forest. The mound was covered in moss and had three large trees planted on top and a further tree stump. Photographs and measurements

of the mound were taken. The mound itself extended 4.1 m in length and 3.5 m in width and had a height from the surface of 0.4 m, suggesting an approximate volume of 1.5 cubic m.



Plate 3: Whistlefield Road mound from the south-east.

Phase 2

6.11 Phase 2 of the project focused on trial trench evaluation of two sites on the eastern shores of Loch Eck: Allt na Ceardaich 2 and Whistlefield Road.

6.12 Allt na Ceardaich 2

6.12.1 The site of Allt Na Ceardaich 2 was difficult to access on foot and was situated in the Loch Eck Forest Park on the eastern side of Loch Eck adjacent to a small tributary burn (Allt na Ceardaich) feeding into the loch. It was situated 40 m above the A815 which runs adjacent to the loch and was located upslope at circa 60 m above sea level in a small valley.

6.12.2 It was apparent that the site had been heavily affected by recent forestry work, with a number of plantings on top, within and around the features present. The immediate area around the burn was covered by dense trees and undergrowth with significant dead fall part covering the features. A series of clearance works defined the extent of the site but it was apparent that heavy truncation of the features had occurred.

6.12.3 The site consisted of a single large mound, 8.5 m in length by 2.9 m at its widest point tapering towards the south-west, elongated and curving along the upper banks of the Allt Na Ceardaich burn. Situated 10 m from the waters edge the mound appeared truncated by a forestry drainage furrow running in an east-west orientation and a number of large trees and root systems impacted both sides of the mound in various places.

6.12.4 An initial clearing of a dense carpet of pine needles, undergrowth and dead fall from the site indicated the extent of truncation with a large area of disturbance at the eastern end of the mound - possibly from water ingress around the tree roots and action from the forestry furrow. This revealed a pre-cut section containing slag and waste eroding from below a large tree stump. The western portion of the site appeared relatively intact with a large tree planted directly on the centre of the mound. A thin layer of topsoil was visible across the site, comprising of a dark brown loam which displayed a significantly high organic content, 1001. This extended to a depth between 0.1 m and 0.2 m with deeper deposits near the base of the slope. Directly below this, a clay silty subsoil, 1002 was again visible across site. This comprised of a light grey/orange silt.

6.12.5 A trench was excavated through the eastern portion of the mound, measuring 0.4 m in width extending downslope by 4 m terminating at the forestry furrow (Trench 1). The trenches position was off-centre due to the presence of a series of large roots and a tree stump. The mound itself appeared to consist of a single charcoal and slag-rich deposit, 1003. This dark grey/black silt and charcoal contained significant quantities of burnt stone, slag inclusions and charcoal. It was visible in section extending to a depth of 0.6 m. No other finds were recovered from the deposit, with no visible laminations or bedding within the stratigraphy visible in section. A series of large angular schist stones were apparent cutting the slot in an east-west direction and appeared regular in plan with two and three courses, 1004 evident. The function of the slabs

remained unclear. The concentration of stones appeared to extend below the large tree stump visible in the centre of the mound. A number of bulk soil samples were recovered from the upper and lower levels of the deposit to aid dating and interpretation.

6.12.6 A second trench was recorded through the western portion of the mound, measuring 3 m in length (Trench 2). This trench incorporated a naturally eroded area below a large tree stump, which was situated on top of this portion of the mound. The section revealed a relatively disturbed layer of charcoal, burnt stone and slag-rich deposit, 2005. This consisted of a dark grey/black silt and charcoal matrix again displaying significant quantities of burnt stone, charcoal and slag inclusions. The deposit extended to a depth of 0.4 m and again yielded no other significant artefacts. As before, a number of bulk samples were recovered securely from the upper and lower levels of the deposit. No visible signs of banding of the deposit were apparent.

6.12.7 It is unclear whether the two concentrations or mounds of slag material (1003 and 2005) are that of the same feature due to the presence of the forestry furrow, however the inference is that they may well be related. The single visible deposit in both sections of the features suggest a single event or episode of creation with no obvious re-visiting of the site over time. The sheer size and scale of the deposit however would suggest that this may have been a drawn out event producing a considerable amount of waste material.

6.12.8 No obvious hearth, furnace or charcoal storage area was visible during the excavations with only the presence of a large slag disposal area. It is likely that these features may survive in the close vicinity and are currently obscured by immature tree growth.

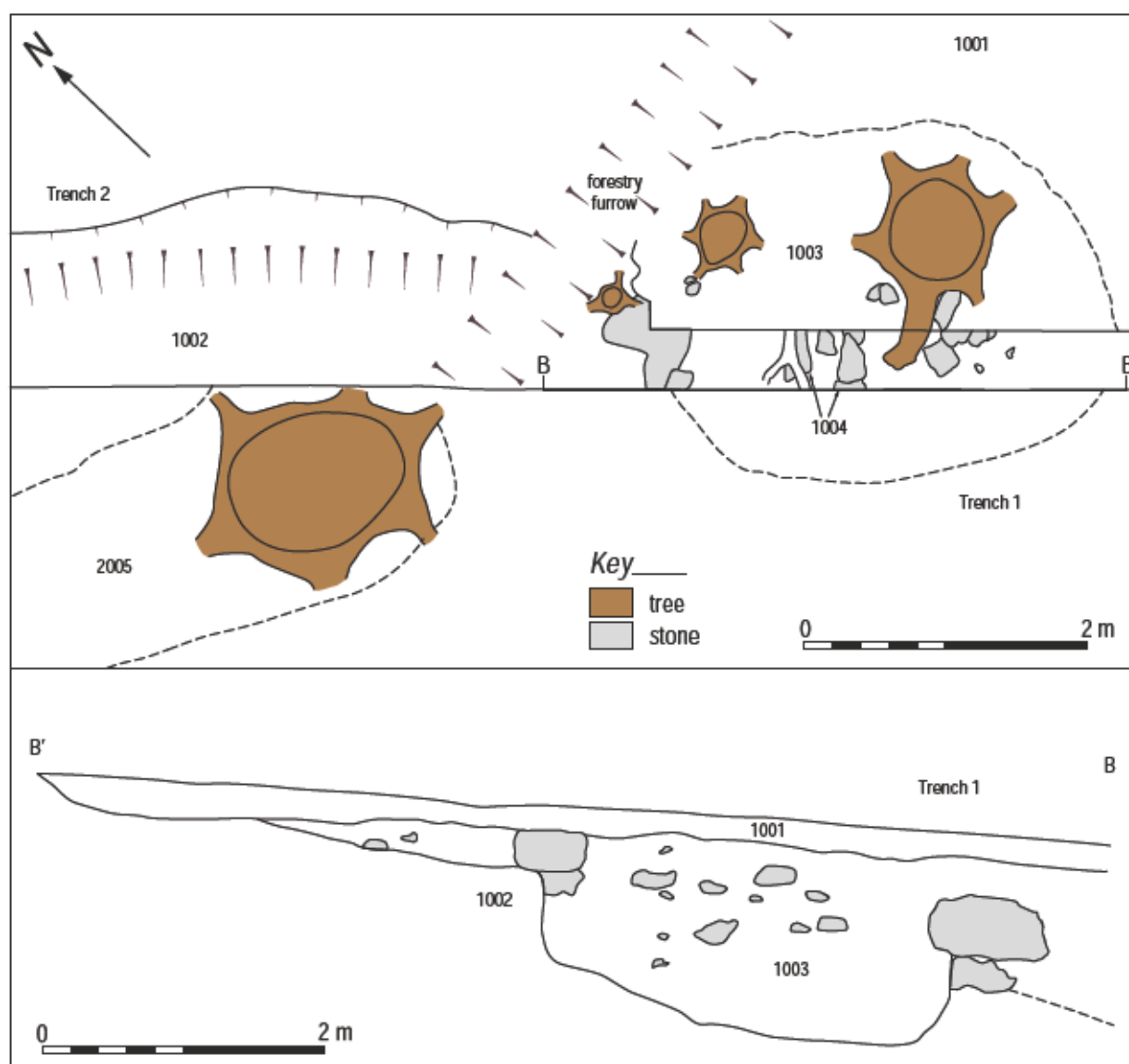


Figure 3 : Site plan of Allt Na Ceardaich 2 and section through mound.

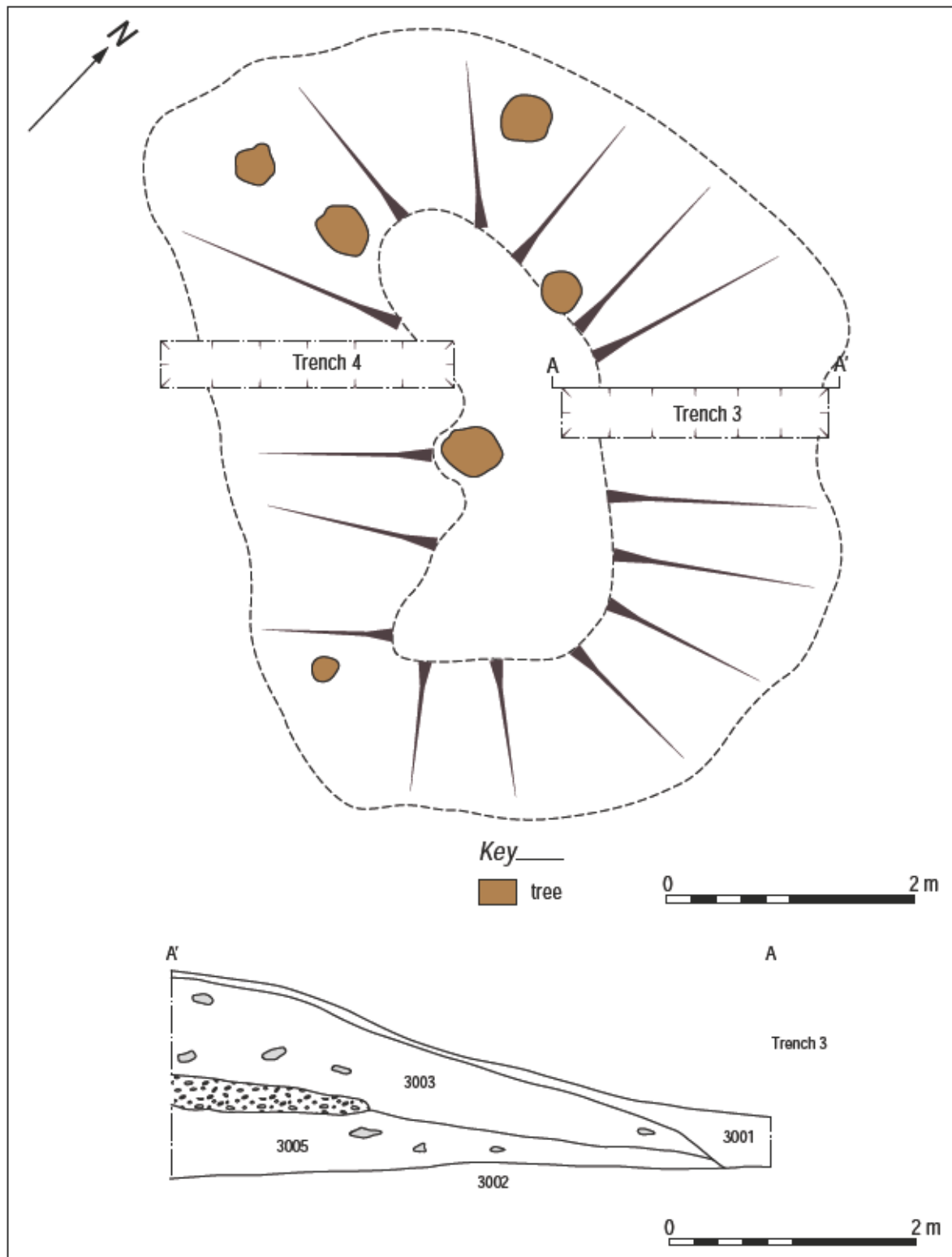


Figure 4: Site plan of Whistlefield Road and section through mound.

6.13 Whistlefield Road

6.13.1 The site at Whistlefield Road was more accessible on foot than both the Allt na Ceardaich sites and was located close by the junction with the A815 on the eastern side of Loch Eck. The mound was situated on a prominent location on the crest of an undulation on the hillside overlooking a small tributary burn feeding into lock Eck.

6.13.2 An initial clean of the mound, removal of dead fall and moss and general forest floor covering revealed the overall extent of the feature. The mound appeared to be 4.1 m in length with a

width of 3.5 m extending to a height of 0.4 m. A number of trees had previously been planted on and around the mound itself, which provided an added degree of complexity to the excavation of a representative cross sections through the feature.

- 6.13.3 Two trenches (Trench 3 and 4) were excavated across the central portion on the mound allowing a general cross section of the feature to be ascertained. Trench 4 located on the north-west side of the mound displayed a series of distinct deposits. The lower deposit or basal layer, 4006, was a heavily compacted dark grey brown silty deposit. The deposit displayed an extremely high organic content with frequent stones and slag components throughout. The deposit extended to a depth of 0.23 m from which bulk samples were recovered.
- 6.13.4 Directly above this deposit, a similar but extremely slag heavy deposit, 4008, was visible. This again had a heavy compaction and consisted of a mid grey brown silty matrix with frequent slag and some stone inclusions throughout. This deposit extended to a more substantial depth of 0.4 m, however did not appear to extend the full width of the mound itself. Bulk samples were again recovered from this deposit.
- 6.13.5 The upper deposit, 4004, appeared to be the remains of the final firing of the furnace at this location. This again displayed the same characteristics, a heavily compacted black-brown silt rich deposit. Frequent slag and stone inclusions were visible throughout with a high organic content. This upper deposit extended to a depth of 0.3 m. Bulk samples were again recovered from this layer, however the presence of large trees growing on the mound itself may have affected the security of this upper deposit.
- 6.13.6 Trench 3 was excavated on the north-east of the mound and again displayed the same multiple deposits as that seen in the previous slot. The lower deposit or basal layer, 3005, was a heavily compacted dark grey brown silt and organic rich deposit. This contained frequent fragments of slag and burnt stone throughout and extended to a depth of 0.3 m.
- 6.13.7 Directly above this deposit, a similar heavily compacted deposit, 3007, existed. This appeared as a mid grey brown silty and organic rich deposit but displayed a significantly higher slag content than previous and extended to a maximum depth of 0.13 m.
- 6.13.8 The upper deposit, 3003, again appeared to be the final firing deposit of the furnace itself. This was again a heavily compacted black-brown charcoal and organic rich deposit. This contained frequent slag and stone inclusions.
- 6.13.9 Bulk samples were again recovered from all contexts and it is likely that these relate to the corresponding contexts seen in Trench 4.

Phase 3

- 6.14 The site of Allt Na Ceardaich 1 was first revisited in May 2015 and was subsequently excavated in September 2015. The site itself was fairly easy to access on foot via the original old A815 road (now considerably overgrown), situated on the eastern side of Loch Eck adjacent to the burn of the same name that feeds into the loch. It was located 40 m above the A815 which ran adjacent to the loch and was situated up slope circa 45 m above sea level in a small valley on the outer edge of a meander.
- 6.15 It was apparent that the site had been heavily impacted upon by recent forestry planting and self seeding trees (Silver Birch), with a number of plantings on top, within and around the features present. Previous excavation work in 1995-6 had concentrated on the furnace location and within the central rectangular sunken depression delineated by the extensive u-shaped slag heaps. A single trench had been excavated through the southern slag heap at this time. A series of clearance works defined the extent of the site in June 2015.
- 6.16 The excavation targeted the western (Trench 5) and eastern (Trench 6) arms of the slag heap during this season, with a third exploratory trench (Trench 7) excavated to define the extent of the western slag heap. The aim of this seasons work was to address the longevity of the mound

and the process and direction of slag disposal practices at the site. The hope being that suitable datable material could be recovered from each trench to ascertain more about the history of iron working at this location.

- 6.17 The immediate area surrounding the mound was once again cleared of deadfall and saplings from the central area and across the sides of the mound as a whole, allowing for positioning of trenches to occur.
- 6.18 Trench 5 was positioned on the western portion of the site, which incorporated previously unbroken ground to the west across what was believed to be the western arm of the slag heap and into the centre of the site, which had previously been part excavated in 1996.
- 6.19 The trench itself was a rectangle 1.8 m by 2.4 m and was positioned across what was believed to be the terminus end of the arc of the bloomery mound itself. It was apparent from the outset that this original belief that the terminus extended this far was incorrect.
- 6.20 The deposits encountered on the eastern portion of the trench were mixed with modern contamination within the shallow deposits. Thus supporting the view that backfill of the original 1996 trench was present here. It soon became apparent that the cut for the 1996 trench was visible within the section face.
- 6.21 No large mound terminus was visible in the trench or in the trench sections, however slag was present in small accumulations (5003 and 5007) visible in the north-western section of the trench. A heavily compacted dark grey silt contained a significant quantity of slag and extended to a depth of between 40 mm and 0.13 m was encountered. This lay directly on top of what appeared to be a series of shallow occupation deposits. These charcoal-rich deposits (5004, 5005 and 5008) appeared as a series of dark brown and dark grey/black organic and charcoal-rich compacted deposits. The maximum extent for these deposits lay between 50 mm and 70 mm and it is likely that they relate to activity in an around the working area of the mound. A number of samples were recovered from across the base of this deposit.
- 6.22 Trench 6 was positioned on the eastern portion of the mound. Excavation of a rectangle trench 2.4 m by 0.9 m running through the slag heap was pursued.
- 6.23 The deposits visible within this second trench were substantial due to its location across the slag heap itself. The lower fill or basal deposit, 6004, appeared as a medium compact dark brown/grey with frequent black/charcoal inclusions. This extended to a depth of 0.43 m in places with a distinct lack of slag present within the matrix. A series of bulk samples were recovered across the face of the section at 70 mm intervals.
- 6.24 Directly above this deposit lay 6003, a more heavily compacted dark brown ashy/silt deposit. This appeared to have a particularly high organic content with a considerable quantity of slag present within the matrix. This deposit extended to a maximum depth of 0.55 m, tapering towards the edge of the slope. A representative sample of the slag present in the section was recovered for analysis.
- 6.25 The uppermost deposit, 6002, appeared as a shallow band of dark grey/brown ash/silt. This deposit only extended to a maximum depth of 80 mm in places and appeared relatively ephemeral across the top of the mound. It is possible that this was a transitional layer between the topsoil above.
- 6.26 Trench 7 was the final trench to be excavated on site. This was introduced to establish the true terminus of the eastern mound that was not apparent in the original Trench 5. This small trench measured 0.5 m square and was located to the north of a large tree stump which seemed to mark the terminus of the mound.
- 6.27 The trench itself extended to a depth of 0.46 m from which two distinct deposits were visible. The lower deposit, 7001, appeared as a charcoal-rich medium compact deposit extending to a depth of 0.16 m. This contained few inclusions of stone or slag. Directly above this deposit,

7003, was present which appeared to be a shallow charcoal-rich topsoil deposit. This deposit was visible across most of the mound, so it is likely that this lower deposit marks the terminus of the mound itself.

- 6.28 Prior to backfilling, a series of seven auger samples were taken across the centre of the site between Trench 5 and 6. These auger samples, spaced 0.5 m apart will hopefully provide further information on the types of deposit across the central portion of the site and cast light on whether particular types of charcoal were being stored in different locations.

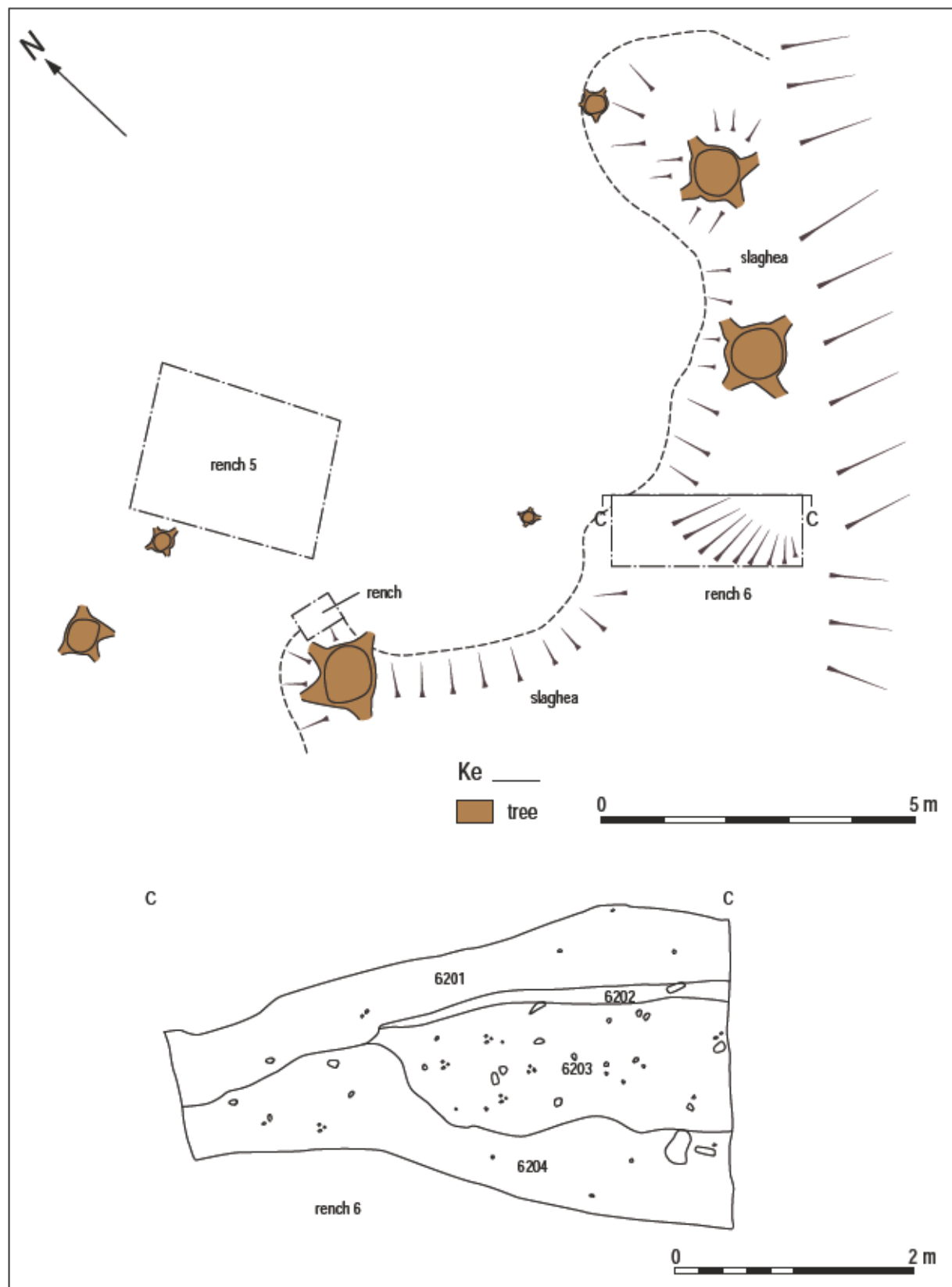


Figure : Site plan of Letha eardaich 1 and section through mound.

Discussion

- 7.1 Accessibility and some possible discrepancies in the locations of previously identified sites made identifying five of the mound sites impossible. This is probably in part due to the lack of accurate GPS currently available beneath the forest canopy, as well as the fact that many of these sites were last identified in the 1960s and 70s when GPS technology was not available. This is also likely confounded further by the fact that these sites may have been heavily disturbed by forestry activities since they were first identified.
- 7.2 However the three sites which were located during the Phase 1 works all held potential to be further understood through the recovery of stratified datable material (Figure 3). Further to this, the sites at Allt na Ceardaich 1 and 2 and Whistlefield Road have mounds of fairly large proportions, which when cleared of planting appear to have survived to their original extent although are somewhat disturbed. Excavations carried out previously at Allt na Ceardaich 1 raise related questions of the scale of operations around the mounds, making all of these sites of interest to understanding the nature and complexity of the industry in this part of Argyll and by extension nationwide.
- 7.3 The evaluation of Allt na Ceardaich 2 and Whistlefield Road has led to the recovery of suitable samples to securely date the start of metal working at both locations and may also offer the potential to date the end of that process too. In addition to this a range of samples of various slags and vitrified materials were also recovered for further study from both sites that will add to the general understanding of the process at both sites. In addition to this it is worth noting that the both locations may also offer the opportunity to conduct further investigations in their vicinity, which will add to our appreciation of the geography and architecture of each site and highlight the location of bloomery furnaces, smithing hearths, charcoal stores and other aspects of the industry.
- 7.4 Part-excavation of the bloomery furnace and complex at Allt na Ceardaich 1 during the 1995 and 1996 seasons of the Scottish Bloomeries Project (Atkinson & Photos-Jones 1995; Photos-Jones et al 1998; Atkinson & Photos-Jones 1999) provided concrete evidence of the metallurgical processes and evidence for smelting techniques at the site and elsewhere in Scotland. This seasons work has added to that technical information by excavating trenches specifically designed to cast light on the longevity of use of the site, how its architecture evolved through time and how it was used during smelting. The resultant analysis phase of work will permit the archaeology of the original investigations to be more fully explored and presented.

Conclusions

- 8.1 To date the Loch Eck project has proved a successful collaboration between GUARD Archaeology and Forestry Commission Scotland. Although it was not possible to locate as many of the sites previously noted by the Cowal Archaeology Society as we would have liked, the partial excavation of three sites on the Allt na Ceardaich and at Whistlefield Road will allow further analysis of the processes and industrial activities undertaken on Loch Eckside in the late Medieval period to be further assessed. It will also permit questions related to the dating and contemporaneity of these installations to be posed and answered and throw much needed light on the complexity of a system that we know little about. In addition to this it is hoped that further post-excavation analysis and radiocarbon dating of the recovered samples from all trenches will add to the 1996 excavation results and provide a clearer understanding of the history of metalworking in this part of Argyll that can be utilised by researchers elsewhere in Scotland as a case study.

Acknowledgements

- 9.1 GUARD Archaeology would like to thank Forestry Commission Scotland and Matt Ritchie in particular for their assistance and support. A great deal of appreciation also shown to the volunteers who gave up valuable time to help with excavations – Fiona Campbell, Susan Gaffney, Ellie McCulloch, John McFadyen and Jane Stewart. Fieldwork was undertaken by

GUARD Archaeology staff John Atkinson, John-James Atkinson, Kevin Mooney and Beth Spence. Technical support was from Aileen Maule and Jen Cochrane. The illustrations were produced by Gillian McSwan and Diarmuid O Conner. The report was desk top published by Gillian McSwan. The project was managed for GUARD Archaeology Limited by John Atkinson.

**Loch Eck Bloomeries Project
Data Structure Report**

Section 2: Appendices



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Appendices

Appendix A: Bibliography

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Appendix B: List of Contexts

Context No.	Site	Description	Interpretation
1001	Allt Na Ceardaich 2	Very loosely compacted dark brown black loam with very frequent roots. Visible across the site and 0.05m to 0.20m in depth. Heavily forested ground.	Shallow forest topsoil deposit - very disturbed and mixed deposit
1002	Allt Na Ceardaich 2	Medium to firmly compacted light yellow grey orange silty clay with no inclusions. Extends across the site with an unknown depth.	Silty clay sterile natural subsoil
1003	Allt Na Ceardaich 2	Medium to loosely compacted dark grey black silt charcoal deposit with many burnt stones and slag inclusions. Visible up to 0.60m in depth.	Slag mound deposit
1004	Allt Na Ceardaich 2	Stone schist structure that does not appear to be bounded and appears linear across excavation slot. The size of the components are 0.35m x 0.20m max by 0.10m x 0.15m min and are subangular in shape. This is only part visible across slot as it was not been fully exposed. Possible truncated by bioturbation.	Stone structure - possibly relating to bloomery mound.
2005	Allt Na Ceardaich 2	Medium to loosely compacted dark grey black silt charcoal deposit with many burnt stones and slag inclusions. Visible in section - 0.30m to 0.40m in depth.	Slag mound deposit
3001	Whistlefield Road	Very loosely compacted dark brown black loam with very frequent roots. Visible across the site and 0.05m to 0.20m in depth. Heavily forested ground.	Shallow forest topsoil deposit - very disturbed and mixed deposit
3002	Whistlefield Road	Medium to firmly compacted light yellow grey orange silty clay with no inclusions. Extends across the site with an unknown depth.	Silty clay sterile natural subsoil
3003	Whistlefield Road	Mid to heavily compacted blackish brown silt, high in charcoal with frequent slag throughout, occasional small stones and roots. Extends 2.20m (width) x 0.40m (depth) in section but could possibly extend across the extent of the bloomery mound - 5m (width) x 6.4m (length). Same as (004). This deposit appears in 'Slot 2'.	This appears to be a bloomery mound with carbon and metallurgical waste deposits. The top layer of this is bloomery mound is a CV rich silt deposit with slag throughout and may represent the residue of the final firing event. Tree roots have caused extensive bioturbation.

Context No.	Site	Description	Interpretation
3005	Whistlefield Road	Mid to heavily compacted dark greyish brown silt, high in charcoal with frequent slag throughout, occasional small stones and roots. Extends 2.25m (width) x 0.30m (depth) in section but could possibly extend across the extent of the bloomery mound - 5m (width) x 6.4m (length). Same as (006). This deposit appears in 'Slot 2'.	This appears to be a bloomery mound with carbon and metallurgical waste deposits. The base layer of this bloomery mound is a CV rich silt deposit with slag throughout and may represent the residue of the initial firing event. Tree roots have caused bioturbation.
3007	Whistlefield Road	Heavily compacted mid grey brown silty slag deposit with occasional small stones and roots. Extends 0.80m (width) and 0.13m (depth) in section but could extend across the extent of the bloomery mound - 3.16m (width) x 6m (length). Same as (008). This deposit appears in 'Slot 2'.	This appears to be a bloomery mound with carbon and metallurgical waste deposits. This intermediate layer of the bloomery mound is a silty slag deposit and may represent the cleaning of a hearth of metallurgical waste or a change in the metallurgical method which resulted in the production of more slag.
4004	Whistlefield Road	Mid to heavily compacted blackish brown silt, high in charcoal with frequent slag throughout, occasional small stones and roots. Extends 1.97m (width) x 0.30m (depth) in section but could possibly extend across the extent of the bloomery mound - 5m (width) x 6.4m (length). Same as (003). This deposit appears in 'Slot 1'.	This appears to be a bloomery mound with carbon and metallurgical waste deposits. The top layer of this is bloomery mound is a CV rich silt deposit with slag throughout and may represent the residue of the final firing event. Tree roots have caused extensive bioturbation.
4006	Whistlefield Road	Mid to heavily compacted dark greyish brown silt, high in charcoal with very frequent slag throughout, occasional small stones and roots. Extends 1.97m (width) x 0.23m (depth) in section but could possibly extend across the extent of the bloomery mound - 5m (width) x 6.4m (length). Same as (005). This deposit appears in 'Slot 1'.	This appears to be a bloomery mound with carbon and metallurgical waste deposits. The base layer of this bloomery mound is a CV rich silt deposit with very frequent slag throughout and may represent the residue of the initial firing event. Tree roots have caused bioturbation.
4008	Whistlefield Road	Heavily compacted mid grey brown silty slag deposit with occasional small stones and roots. Extends 1.46m (width) and 0.35m (depth) in section but could extend across the extent of the bloomery mound - 3.16m (width) x 6.4m (length). Same as (007). This deposit appears in 'Slot 1'.	This appears to be a bloomery mound with carbon and metallurgical waste deposits. This intermediate layer of the bloomery mound is a silty slag deposit and may represent the cleaning of a hearth of metallurgical waste or a change in the metallurgical method which resulted in the production of more slag.
5001	Allt Na Ceardaich 1	Friable dark brown silt, CV rich with fragments of slag with width 1.65 m and depths of up to 0.16 m. Possibly same as 6001 and 7002	Shallow topsoil deposits
5002	Allt Na Ceardaich 1	Loose mid brown black to light brown yellow sandy silt. Charcoal, slag and clay visible inclusions. Extends 2 m by 1 m with depths ranging between 0.05 m and 0.15 m.	Silty deposit containing refuse/slag below topsoil
5003	Allt Na Ceardaich 1	Heavily compact dark grey beige silt. High CV concentration with slag present. Extends to 0.43 m with a maximum depth of 0.13 m. Possibly same as context 5007	Compacted deposit of concentrated slag
5004	Allt Na Ceardaich 1	Medium dark brown grey with frequent black charcoal deposit. High CV content with infrequent slag content. Extends to 1.63 m in width with a maximum depth of 0.07 m. Possibly same context as 105 and 108.	Charcoal deposit at base of occupation layer
5005	Allt Na Ceardaich 1	Medium compact dark brown grey with frequent black inclusions. Charcoal rich deposit with high CV content and infrequent slag inclusions. 0.50 m in extent with a maximum depth of 0.06 m. Possibly same context as 5004 and 5008.	Charcoal deposit below 102 and above 107
5007	Allt Na Ceardaich 1	Heavily compact dark grey beige silt with high CV and slag content. 0.58 m in extent with a maximum depth of 0.04 m. Possibly same context as 5003.	Silt deposit containing slag
5008	Allt Na Ceardaich 1	Medium compact dark brown grey with frequent black inclusions. Charcoal rich deposit with high CV content and infrequent slag inclusions. 0.35 m in extent with a maximum depth of 0.05 m. Possibly same context as 5004 and 5008.	Charcoal deposit below 107

Context No.	Site	Description	Interpretation
5009	Allt Na Ceardaich 1	Medium compact dark grey beige silt deposit with medium CV content. Extends to 0.44 m with a maximum depth of 0.04 m. Appears truncated by 1996 trench.	Ashy silt deposit
5010	Allt Na Ceardaich 1	Medium dark grey brown beige silt deposit with frequent slag and CV throughout. Extends to 0.9 m with a maximum depth of 0.12 m.	Silty charcoal deposit containing slag
5011	Allt Na Ceardaich 1	Heavily compact light to dark beige clay. Visible across site. Possibly same as 7003 and 6005	Clay subsoil
6001	Allt Na Ceardaich 1	Friable dark brown silt deposit with high CV content and infrequent slag inclusions. 2.4 m in extent with a maximum depth of 0.35 m. CV rich topsoil extending across site, possibly same as 7002 and 5001.	CV rich topsoil deposits
6002	Allt Na Ceardaich 1	Friable dark grey brown ash silt with infrequent CV and slag. Extends to 1.5 m with a maximum depth of 0.08 m.	Ashy silt deposit
6003	Allt Na Ceardaich 1	Heavily compacted dark grey brown ash/silt with high slag content and CV content. Extends to 1.55 m with a maximum depth of 0.55 m. Samples of slag taken for analysis.	Ashy silt, CV rich with high slag content
6004	Allt Na Ceardaich 1	Medium dark brown grey charcoal deposit with frequent black inclusions. High CV content with infrequent slag inclusions. Extends to 2.35 m with a maximum depth of 0.43 m. Possibly same as context 7001.	Charcoal deposit
6005	Allt Na Ceardaich 1	Heavily compact light to dark beige clay. Visible across site. Possibly same as 7003 and 5011	Clay subsoil deposit
7001	Allt Na Ceardaich 1	Medium compact dark brown grey with frequent black inclusions. High CV content with infrequent slag content. Charcoal rich deposit extends to a depth of 0.16 m with a width of 0.32 m. Possibly same context as 6004.	CV rich deposit within mound
7002	Allt Na Ceardaich 1	Friable dark brown silt deposit rich in CV and containing infrequent slag. Extends 0.57 m with a maximum depth of 0.3 . Possibly same context as 6001	CV rich topsoil deposit that extends across the surface of the bloomery mound.
7003	Allt Na Ceardaich 1	Heavily compact light to dark beige clay. Visible across site. Possibly same as 5011 and 6005	Clay subsoil

Appendix C: List of Finds

Find No.	Area	Trench No.	Context No.	No. of Pieces	Material	Description
1	Whistlefield Road	Trench 3	-	10	Industrial Waste - Slag	10 small fragments of slag
2	Whistlefield Road	Trench 3	-	1	Industrial Waste - Slag	1 large chunk of slag
3	Whistlefield Road	Trench 3	-	1	Industrial Waste - Slag	1 large chunk of slag
4	Whistlefield Road	Trench 3	-	1	Industrial Waste - Slag	1 large chunk of slag
5	Whistlefield Road	Trench 3	-	1	Industrial Waste - Slag	1 medium sized subcylindrical chunk of slag
6	Whistlefield Road	Trench 3	-	1	Industrial Waste - Slag	1 medium sized subcylindrical chunk of slag
7	Whistlefield Road	Trench 3	-	1	Industrial Waste - Slag	1 small flat fragment of slag with a rim
8	Whistlefield Road	Trench 4	-	1	Industrial Waste - Slag	1 large chunk of slag
9	Whistlefield Road	Trench 4	-	1	Industrial Waste - Stone / Slag	1 large piece of stone with possible metallurgical waste partially bonded
10	Whistlefield Road	Trench 4	-	6	Industrial Waste - Slag	6 fragments of slag
11	Whistlefield Road	Trench 4	-	6	Industrial Waste - Slag	6 fragments of slag
1	Allt Na Ceardaich 2	Trench 1	1003	1	Slag	Small frag of slag
2	Allt Na Ceardaich 2	Trench 1	1003	1	Slag	Rounded fragment

Find No.	Area	Trench No.	Context No.	No. of Pieces	Material	Description
3	Allt Na Ceardaich 2	Trench 1	1003	1	Slag	Stone with concretion
1	Allt Na Ceardaich 1	Trench 6	6003	Metal	FE/Slag	Slag or FE object
2	Allt Na Ceardaich 1	Trench 6	6003	Metal	FE/Slag	Slag or FE object

Appendix D: List of Samples

Sample No.	Area	Context No.	Size	Reason for Sampling				Application/Comments
				Pot	Bone	Lithics	Botanics	
1	Whistlefield Road	3003	1 X M				x	Final firing deposit – Tr 3
2	Whistlefield Road	3005	1 X M				x	Base fill – Tr 3
3	Whistlefield Road	4004	1 X M				x	Final firing deposit – Tr 4
4	Whistlefield Road	4006	1 X M				x	Base fill – Tr 4
1	Allt Na Ceardaich 2	1003	1 X L				x	Upper layers – Tr 1
2	Allt Na Ceardaich 2	1003	1 X L				x	Lower layers – Tr 1
3	Allt Na Ceardaich 2	2005	1 X L				x	Upper layers – Tr 2
4	Allt Na Ceardaich 2	2005	1 X L				x	Lower layers – Tr 2
1	Allt Na Ceardaich 1	5003	M				x	VOIDED
2	Allt Na Ceardaich 1	7001	M				x	High charcoal content
3	Allt Na Ceardaich 1	6004	M				x	High charcoal content
4	Allt Na Ceardaich 1	6003	M				x	Slag fragment
5	Allt Na Ceardaich 1	6003	M				x	Slag fragment
6	Allt Na Ceardaich 1	6003	M				x	Clay fragment
7	Allt Na Ceardaich 1	6004	M				x	High charcoal content
8	Allt Na Ceardaich 1	6004	M				x	High charcoal content
9	Allt Na Ceardaich 1	6004	M				x	High charcoal content
10	Allt Na Ceardaich 1	6004	M				x	High charcoal content
11	Allt Na Ceardaich 1	5001	M				x	High charcoal content
12	Allt Na Ceardaich 1	5001	M				x	High charcoal content
13	Allt Na Ceardaich 1	General	M				x	Auger Sample
14	Allt Na Ceardaich 1	General	M				x	Auger Sample
15	Allt Na Ceardaich 1	General	M				x	Auger Sample
16	Allt Na Ceardaich 1	General	M				x	Auger Sample
17	Allt Na Ceardaich 1	General	M				x	Auger Sample
18	Allt Na Ceardaich 1	General	M				x	Auger Sample
19	Allt Na Ceardaich 1	General	M				x	Auger Sample

Appendix E: List of Drawings

Drawing No.	Area	Sheet No.	Subject	Scale
1	Whistlefield Road	1	Pre-ex of bloomery mound	1:20
2	Whistlefield Road	2	Post-ex of bloomery mound	1:20
3	Whistlefield Road	2	North-West facing section	1:10
4	Whistlefield Road	3	South-East facing section	1:10
1	Allt Na Ceardaich 2	1	Pre-ex plan of site	1:20
2	Allt Na Ceardaich 2	2	Post-ex overlay of the site showing trenches	1:20
3	Allt Na Ceardaich 2	3	North-East facing section of trench	1:10
4	Allt Na Ceardaich 2	3	North-East facing section of trench	1:10
1	Allt Na Ceardaich 1	1	Mid-ex plan of Trench 5	1:20
2	Allt Na Ceardaich 1	1	North-East facing section of Trench 5	1:10
3	Allt Na Ceardaich 1	1	North-West facing section of Trench 5	1:10
4	Allt Na Ceardaich 1	2	South facing section of Trench 6	1:10
5	Allt Na Ceardaich 1	3	Plan of site showing Trench locations	1:20
6	Allt Na Ceardaich 1	4	Plan of site showing Trench locations	1:20

Appendix F: List of Photographs

Allt Na Ceardaich 1

Frame	Area	Context No.	Subject	Taken from
1	-	-	ID SHOT	-
2	Allt Na Ceardaich 1	-	Plan shot of 5002	SE
3	Allt Na Ceardaich 1	-	Plan shot of 5002	SE
4	Allt Na Ceardaich 1	-	Plan shot of 5002	SW
5	Allt Na Ceardaich 1	-	Plan shot of 5002	SW
6	Allt Na Ceardaich 1	Gen	General shot of trench, topsoil removed	W
7	Allt Na Ceardaich 1	Gen	Detail of trench, topsoil removed	W
8	Allt Na Ceardaich 1	Gen	Detail of trench, topsoil removed	W
9	Allt Na Ceardaich 1	Gen	Detail of trench, topsoil removed	W
10	Allt Na Ceardaich 1	Gen	Detail of trench, topsoil removed	W
11	Allt Na Ceardaich 1	Gen	General working shots of site	E
12	Allt Na Ceardaich 1	Gen	General working shots of site	N
13	Allt Na Ceardaich 1	Gen	General working shots of site	SE
14	Allt Na Ceardaich 1	Gen	General working shots of site	S
15	Allt Na Ceardaich 1	5004,5005	Pre ex plan shot of posthole	SW
16	Allt Na Ceardaich 1	5004,5005	Pre ex plan shot of posthole	SW
17	Allt Na Ceardaich 1	5003,5004,5005	Plan shot of trench	SW
18	Allt Na Ceardaich 1	5003,5004,5005	Plan shot of trench	SW
19	Allt Na Ceardaich 1	5003,5004,5005	Plan shot of trench	SE
20	Allt Na Ceardaich 1	5003,5004,5005	Plan shot of trench	SE
21	Allt Na Ceardaich 1	Gen	General mid ex shot of site	W
22	Allt Na Ceardaich 1	Gen	Detail shot of trench	S
23	Allt Na Ceardaich 1	Gen	Detail shot of trench	S
24	Allt Na Ceardaich 1	-	Plan of stone scatter 5006	NE
25	Allt Na Ceardaich 1	-	Plan of stone scatter 5006	NE
26	Allt Na Ceardaich 1	Gen	Plan shot of trench	SW
27	Allt Na Ceardaich 1	Gen	Plan shot of trench	SW
28	Allt Na Ceardaich 1	5001,5002,5003	NE facing section	SW
29	Allt Na Ceardaich 1	5001,5002,5003	NE facing section	SW
30	Allt Na Ceardaich 1	5001,5002	NW facing section	SW
31	Allt Na Ceardaich 1	5001,5002	NW facing section	SE

Allt Na Ceardaich 2

Frame	Area	Context No.	Subject	Taken from
1	-	-	ID SHOT	-
2	Allt Na Ceardaich 2	Gen	General shot of site post clearance	E
3	Allt Na Ceardaich 2	Gen	General shot of site post clearance	E
4	Allt Na Ceardaich 2	Gen	General shot of site post clearance	E
5	Allt Na Ceardaich 2	Gen	General shot of site post clearance	E
6	Allt Na Ceardaich 2	Gen	General shot of site post clearance	E
7	Allt Na Ceardaich 2	Gen	General shot of site post clearance	ENE
8	Allt Na Ceardaich 2	Gen	General shot of site post clearance	ENE
9	Allt Na Ceardaich 2	Gen	General shot of site post clearance	ENE
10	Allt Na Ceardaich 2	Gen	General working shots during excavations	E
11	Allt Na Ceardaich 2	Gen	General working shots during excavations	E
12	Allt Na Ceardaich 2	Gen	General working shots during excavations	E
13	Allt Na Ceardaich 2	Gen	General working shots during excavations	E
14	Allt Na Ceardaich 2	Gen	General working shots during excavations	E
15	Allt Na Ceardaich 2	Gen	General working shots during excavations	E
16	Allt Na Ceardaich 2	Gen	General working shots during excavations	E
17	Allt Na Ceardaich 2	2005	Shot of lower section	NE

Frame	Area	Context No.	Subject	Taken from
18	Allt Na Ceardaich 2	2005	Shot of lower section	NE
19	Allt Na Ceardaich 2	2005	Shot of lower section	N
20	Allt Na Ceardaich 2	2005	Shot of lower section	NW
21	Allt Na Ceardaich 2	Gen	General shots of site during excavations	W
22	Allt Na Ceardaich 2	Gen	General shots of site during excavations	W
23	Allt Na Ceardaich 2	Gen	General shots of site during excavations	W
24	Allt Na Ceardaich 2	Gen	General shots of site during excavations	W
25	Allt Na Ceardaich 2	Gen	General shots of site during excavations	W
26	Allt Na Ceardaich 2	1003	General shots of section	N
27	Allt Na Ceardaich 2	1003	General shots of section	N
28	Allt Na Ceardaich 2	1003	General shots of section	N
29	Allt Na Ceardaich 2	1003	General shots of section	N
30	Allt Na Ceardaich 2	1003	General shots of section	E
31	Allt Na Ceardaich 2	1003	General shots of section	E
32	Allt Na Ceardaich 2	1003	General shots of section	NE
33	Allt Na Ceardaich 2	1003	General shots of section	NE
34	Allt Na Ceardaich 2	1003	General shots of section	NE
35	Allt Na Ceardaich 2	1004	Detail of stones	W
36	Allt Na Ceardaich 2	1004	Detail of stones	W
37	Allt Na Ceardaich 2	1004	Detail of stones	W
38	Allt Na Ceardaich 2	1004	Detail of stones	W
39	Allt Na Ceardaich 2	1004	Detail of stones	E
40	Allt Na Ceardaich 2	1004	Detail of stones	E

Whistlefield Road

Frame	Area	Context No.	Subject	Taken from
1	Whistlefield Road	Gen	Pre Excavation record shots of site	Various
2	Whistlefield Road	Gen	Pre Excavation record shots of site	Various
3	Whistlefield Road	Gen	Pre Excavation record shots of site	Various
4	Whistlefield Road	Gen	Pre Excavation record shots of site	Various
5	Whistlefield Road	Gen	Pre Excavation record shots of site	Various
6	Whistlefield Road	Gen	Pre Excavation record shots of site	Various
7	Whistlefield Road	Gen	Pre Excavation record shots of site	Various
8	Whistlefield Road	Gen	Pre Excavation record shots of site	Various
9	Whistlefield Road	Gen	Pre Excavation record shots of site	Various
10	Whistlefield Road	Gen	Pre Excavation record shots of site	Various
11	Whistlefield Road	Gen	Pre Excavation record shots of site	Various
12	Whistlefield Road	Gen	General shots of excavations	Various
13	Whistlefield Road	Gen	General shots of excavations	Various
14	Whistlefield Road	Gen	General shots of excavations	Various
15	Whistlefield Road	Gen	General shots of excavations	Various
16	Whistlefield Road	Gen	General shots of excavations	Various
17	Whistlefield Road	Gen	General shots of excavations	Various
18	Whistlefield Road	Gen	General shots of excavations	Various
19	Whistlefield Road	Gen	General shots of excavations	Various
20	Whistlefield Road	Gen	General shots of excavations	Various
21	Whistlefield Road	Gen	General shots of excavations	Various
22	Whistlefield Road	Gen	General shots of excavations	Various
23	Whistlefield Road	Gen	General shots of excavations	Various
24	Whistlefield Road	Gen	General shots of excavations	Various
25	Whistlefield Road	Gen	General shots of excavations	Various
26	Whistlefield Road	Gen	General shots of excavations	Various
27	Whistlefield Road	Gen	General shots of excavations	Various
28	Whistlefield Road	Gen	General shots of excavations	Various

Frame	Area	Context No.	Subject	Taken from
29	Whistlefield Road	Gen	General shots of excavations	Various
30	Whistlefield Road	Gen	General shots of excavations	Various
31	Whistlefield Road	Gen	General shots of excavations	Various
32	Whistlefield Road	Gen	General shots of excavations	Various
33	Whistlefield Road	Gen	General shots of excavations	Various
34	Whistlefield Road	Gen	General shots of excavations	Various
35	Whistlefield Road	Gen	General shots of excavations	Various
36	Whistlefield Road	Gen	General shots of excavations	Various
37	Whistlefield Road	Gen	General shots of excavations	Various
38	Whistlefield Road	Gen	General shots of excavations	Various
39	Whistlefield Road	Gen	General shots of excavations	Various
40	Whistlefield Road	Gen	General shots of excavations	Various
41	Whistlefield Road	Gen	General shots of excavations	Various
42	Whistlefield Road	Gen	General shots of excavations	Various
43	Whistlefield Road	Gen	NW Facing section of Trench 4	W
44	Whistlefield Road	Gen	SE Facing section of Trench 3	SE
45	Whistlefield Road	Gen	SE Facing section of Trench 3	SE
46	Whistlefield Road	Gen	SE Facing section of Trench 3	SE
47	Whistlefield Road	Gen	SE Facing section of Trench 3	E
48	Whistlefield Road	Gen	SE Facing section of Trench 3	E
49	Whistlefield Road	Gen	SE Facing section of Trench 3	S
50	Whistlefield Road	Gen	NE Facing section of Trench 3	SW

Appendix G: Discovery and Excavation Scotland Entry

LOCAL AUTHORITY:	Argyll and Bute Council
PROJECT TITLE/SITE NAME:	Loch Eck Bloomeries Project
PROJECT CODE:	4105
PARISH:	Strachur and Dunnon and Kilmun
NAME OF CONTRIBUTOR(S):	John Atkinson, Kevin Mooney, Beth Spence and John James Atkinson
NAME OF ORGANISATION:	Guard Archaeology Ltd
TYPE(S) OF PROJECT:	Walkover Survey and Trial Trench Excavation
NMRS NO(S):	--
SITE/MONUMENT TYPE(S):	Bloomery Mounds
SIGNIFICANT FINDS:	Bloomery Slag
NGR (2 letters, 6 figures)	NS 1425 9275; NS 1426 9277; NS 144 936
START DATE (this season)	11th May 2015
END DATE (this season)	24th September 2015
PREVIOUS WORK (incl. DES ref.)	Archaeological Excavation (GUARD Project 268.2)
MAIN (NARRATIVE) DESCRIPTION: (May include information from other fields)	Guard Archaeology Limited were commissioned by Forestry Commission Scotland to establish a research project on the shores of Loch Eck, Argyll to investigate the presence of up to nine bloomery mounds in relatively close proximity. The project, known as the Eck Bloomeries Project was based around four phases of activity, each with particular goals. Phase 1 involved a programme of walkover survey to confirm or refute the presence of the sites at locations suggested by previous investigators. This work was undertaken between 11th and 13th May 2015 and identified three of the nine potential sites. Phase 2 involved trial trench evaluation of two sites (Whistlefield Road and Allt na Ceardaich II) with the aim of recovering secure datable material. This work was conducted between 14 and 16 June 2015. Phase 3 involved the partial excavation of Allt na Ceardaich I, previously investigated as part of the Scottish Bloomeries Project. This work was conducted between 22 and 24 September 2015. The results of the first three phases will inform the fourth and final phase of the project: post-excavation analysis and publication.
PROPOSED FUTURE WORK:	Post-Excavation Analysis and Publication
SPONSOR OR FUNDING BODY:	Forestry Commission Scotland and GUARD Archaeology
CAPTION(S) FOR ILLUSTRS:	--
ADDRESS OF MAIN CONTRIBUTOR:	GUARD Archaeology, Unit 52 Elderpark Workspace, 100 Elderpark Street, Glasgow, G51 3TR
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ARCHIVE LOCATION (intended/deposited)	NMRS intended

Appendix H: Project Design**LOCH ECK BLOOMERIES, ARGYLL****ARCHAEOLOGICAL INVESTIGATIONS****PROJECT DESIGN****PROJECT 4105**

Introduction

- 1.1 This document sets out a Project Design for the partial re-excavation of a site known as Allt na Ceardaich, Loch Eck, Argyll (NGR NS 1425 9275) and a programme of investigation, sampling and dating of up to eight other bloomery sites surrounding the Loch. Archaeological work will include the excavation of two trenches at Allt na Ceardaich I (AnC1) with the aim of better understanding the date, function, significance and extent of the monument and a series of sample trenches at each bloomery mound located by the project to provide a greater contextual understanding of the early iron working industry along the lochside.
- 1.2 This project design outlines the entirety of the programme of archaeological works that may be needed to excavate, record, analyse and publish the results of the investigations. It details the methodology to be employed in implementing the archaeological excavations and the post-excavation analysis and publication methodology for this group of sites.

Site Location and Archaeological Background

- 2.1 AnC1 is located in Forestry Commission Scotland's (FCS) National Forest Estate and on the lower west facing slopes of Beinn Ruadh on the banks of the river of the same name. Positioned to the south-east of the old road leading from Whistlefield Inn, the bloomery sits behind the crest of a small hillock at around 40 m AOD.
- 2.2 The site was initially reported by members of Cowal Archaeological Society, together with a number of other sites in the area (see Table 1 below). It was subsequently chosen for initial investigation by the Scottish Bloomeries Project in 1995 (Atkinson & Photos Jones 1995; Photos-Jones et al 1998) and part excavated in 1996 (Atkinson & Photos-Jones 1999). AnC1 is substantially larger than the other bloomery sites in Cowal, which are generally noted to have a small conical slag mounds, rather than the large horseshoe slag mound present at this location.
- 2.3 A search of CANMORE and the local Sites and Monuments Record provides only two examples of bloomery sites along the lochside (AnC1 and Cambusdhu). However information provided by the late Betty Rennie from the Cowal Archaeology Society archives, to the Scottish Bloomeries Project, suggests that as many as nine sites are present along the shores of Loch Eck. Table 1 summarises this information and will act as the basis for further investigation during the current project.
- 2.4 This grouping of bloomery mound sites is notable, particularly within the Loch Eck Forest where up to six mounds are noted, three of which being located along the Allt na Ceardaich itself. This is of especial interest as the placename evidence suggests that this 'river of the smith' must have been an important place during the later medieval period. Assessment of these sites offers the opportunity to firmly locate, partially excavate and date a number of potentially contemporary sites and could expand our understanding of the bloomery tradition in the Highlands as a whole.

Aims

- 3.1 The aims and objectives of archaeological works are as follows:
 - excavate two hand dug trenches to reveal in situ deposits associated with bloomery activity at AnC1.
 - determine the character, extent and date of any archaeological deposits encountered within those trenches.
 - locate and survey the sites previously reported by Cowal Archaeology Society.
 - conduct limited trenching and recording of a number of the Loch Eck sites, so that secure charcoal samples can be recovered.
 - undertake post-excavation analysis and radiocarbon dating of the recovered samples from all trenches.
 - publish a short article on the findings of the project together with the previous part excavation results from AnC1.

3.2 In addition to the above key aims above the project will permit additional outcomes:

- assessment of the damage caused by afforestation and harvesting to bloomery sites.
- provision of CPD opportunities for junior members of staff.
- create placements for ClfA (Scottish Group) volunteers linked to the BAJR Skills Passport.

Methodology

4.1 The programme of archaeological works will be based around three phases of fieldwork followed by a phase of post-excavation analysis (including radiocarbon dating of secure deposits from all sites sampled) and final publication:

Phase 1: Site Location and Survey

4.2 This phase of work will include visits to the nine potential sites along the shores of the loch (details as per Table 1). Work conducted during this phase will include accurate locating of the sites and basic surveying of the mounds and any associated features by sketch, notes and digital photography.

Phase 2: Limited Excavation and Sampling of Loch Eck Sites

4.3 This phase of work will be based on the results of phase 1 and include the limited excavation and sampling of any slag mounds encountered. Excavation will include digging of a slot trench into the centre of the mound and recording of a section by drawing, photography and proforma context sheet. Once the recording is complete charcoal samples from basal layers and secure upper layers will be retrieved together with representative slag, ore and furnace lining samples.

Phase 3: Excavation of AnC1 Trenches

- 4.4 Two trenches will be excavated at the large horseshoe bloomery of AnC1 to complement and enhance the results of the 1996 excavation (Atkinson & Photos-Jones 1999). Trench 1 will be targeted on a stone structure to the south of the mound exterior (noted as C6 on Figure 5 in Atkinson & Photos-Jones 1999, 14) and run into the mound. This will be 5 m by 1 m long and is aimed at clarifying the function of C6 and allowing recovery of secure charcoal, slag, ore and furnace lining samples from basal layers.
- 4.5 Trench 2 will be located on the north-east exterior of the mound and targeted on another cluster of stones (as C7 on figure 5 in Atkinson & Photos-Jones 1999, 14) and run south-west for 5 m by 1 m into the mound. Once again the aim of this trench will be to clarify the function of C7 and allow recovery of secure charcoal, slag, ore and furnace lining samples from basal layers.
- 4.6 All trenches will be excavated by hand and the archaeological team will remove and store all turf, topsoil and overburden separately. Each trench will be excavated down to basal archaeological horizons or subsoil (whichever is located first). The depth of stratigraphy apparent in all trenches will be recorded.
- 4.7 Once the deposits have been cleaned by hand each trench will be recorded in plan at a scale of 1:20. All finds will be recovered and a bulk soil sampling strategy will be adopted for discrete features or structures exposed within the trenches. All on-site recording, written, drawn and photographic, will be conducted in line with the Chartered Institute for Archaeologists (CIfA) standards and guidelines.
- 4.8 On completion of the trench excavations, each trench will be backfilled by hand.

Phase 4: Post-Excavation Analysis and Publication

4.9 A phase of post-excavation analysis will be agreed and specified with a Post-Excavation Research Design (PERD) on completion of the fieldwork phases and the production of a Data Structures Report (see below).

Table 1: Bloomery sites on Loch Eckside, Argyll

Site Name	NGR	Description	Dimensions
Allt na Ceardaich 1	NS 1425 9275	Large horseshoe mound and stone structure	12 m by 10 m by 1 m
Allt na Ceardaich 2	NS 1426 9277	Conical mound part truncated by ditch	5 m dia by 0.5 m high
Allt na Ceardaich 3	NS 143 923	Slag heap 155 m above loch	-
Cambusdhu	NS 132 964	Slag heap below forest road	-
Loch Eck 1	NS 142 920	Slag heap 60 m from burn on 30 m contour	-
Loch Eck 2	NS 143 923	Slag heap 30 m from burn on 70 m contour	-
Loch Eck 3	NS 152 915	Slag on forestry track at 310 m contour	-
West side	NS 133 953	Slag on Rubha na Seamraig	-
Whistlefield Road	NS 144 936	Sub-circular shaped mound	5 m by 4 m by 0.5 m

Reporting

- 5.1 Following the completion of the fieldwork, a summary report will be submitted for comment. This report will detail the results of the fieldwork and including recommendations for post-excavation and analysis and publication. Hard and digital copies of the report will be produced and copies lodged, as a minimum, with the Forestry Commission Scotland, West of Scotland Archaeology Service (WoSAS) and the NMRS.
- 5.2 The standards and requirements of the Archaeological Standard Protocol for the Integrated Reporting of Events (ASPIRE) and the Online Access to the Index of Archaeological Investigations (OASIS) will be implemented. A short note on the work will be published in *Discovery and Excavation in Scotland*.

Post-Excavation Analysis and Publication

- 6.1 On completion for the summary excavation report, a PERD will be produced for consideration. This design will identify the materials recovered and the types of analysis that can be pursued. It will also identify the costs associated with this work, so that the project can be brought forward to full publication. At the moment this is envisaged as a paper in a traditional journal (such as Proceedings of the Society of Antiquaries of Scotland) or an online open access journal (such as Archaeology Reports Online or Scottish Archaeology Internet Reports).
- 6.2 Historic Scotland have kindly offered to consider funding the radiocarbon dates for the project and are currently considering support towards a publication grant. The Society of Antiquaries of Scotland have also indicated that they will consider an application to support specialist analysis as part of the project. The remainder of the post-excavation costs will be split between GUARD Archaeology Limited (GAL) and FCS.

Archive, Small Finds and Human Remains

- 7.1 The resultant site archive will be deposited with the NMRS within six months of the completion of all work. Any small finds recovered will be declared to the Crown Agent in accordance with Scots Law, and if claimed, will be transferred to the appointed museum. In the unlikely event that human remains are encountered during the excavation, the local police and FCS will be notified immediately and no further work will take place on site until agreement on how to proceed has been reached with all parties.

Timetable and Staffing

- 8.1 Provisional dates for the fieldwork are as follows:
 Phase 1 - 11 to 13 May 2015 (3 days)
 Phase 2 - 22 to 24 June 2015 (3 days)
 Phase 3 - 14 to 16 September 2015 (3 days)
- 8.2 The precise dates will be agreed between the Forestry Commission and GUARD Archaeology and notified to WoSAS prior to work beginning on site.
- 8.3 The project team will consist of members of staff from FCS, 2 GAL archaeologists and 4 ClfA volunteers under the supervision of John Atkinson, Managing Director at GAL. A CV for John Atkinson can be supplied if required.

Costing

- 9.1 The cost for the fieldwork and initial reporting project is laid out within the price schedule presented at the end of the document. FCS will provide 85% percent of the project budget and GAL will provide an in-kind contribution of 15% staff time (to include all project management and administration time). All ClfA, FCS or GAL staff volunteers will be expected to cover their own travel (to and from the project) and accommodation/subsistence expenses, however GAL will provide transportation to and from site each day in company vehicles.

Health & Safety

- 10.1 GAL will conduct the excavation in accordance with Health and Safety legislation and with the guidelines and standards governing archaeological fieldwork set down in the ClfA approved Health and Safety in Archaeological Fieldwork document. Prior to fieldwork commencing a risk assessment of the project will be undertaken, giving rise to a project-specific safety plan.

Bibliography

Atkinson, J A & Photos-Jones E 1995 *Medieval Metallurgical Waste and the Preservation of Bloomery Sites: A Feasibility Study*. Unpublished Interim Report, University of Glasgow.

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