



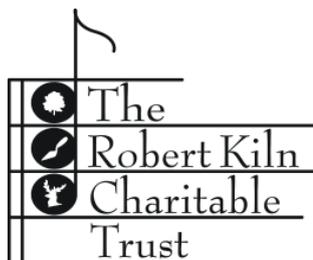
THE HIGH MORLAGGAN PROJECT

EXCAVATION REPORT



June 2011

Roderick Regan



Summary

The second season of excavation at High Morlaggan has shed light on the earlier stages of the site's history. The excavation continued within Structures 2 and 3, while Structures 1 and 4 were also investigated. This phase of work uncovered what are likely the slight and disparate remnants of earlier structures and floors. Any earlier remains appear to have been badly disturbed during what may have been a fairly substantial 'redevelopment' of the settlement in the late 18th or perhaps early 19th century, perhaps reflecting broader developments within agricultural improvement across the west of Scotland. It is to this period that the surviving buildings within the settlement appear to belong. Within the excavated structures investigations have shown a fairly fluid development of space within the buildings with internal areas and sometimes the buildings themselves changing use. This period also sees a major change of the material culture within the settlement with the arrival of mass produced objects, reflecting that from the mid 19th century the people of High Morlaggan were well connected to the wider Scottish markets in terms of goods and objects arriving on the site.



Acknowledgements

The High Morlaggan Project would like to thank the Heritage Lottery Fund, the Argyll and the Islands LEADER and Robert Kiln Trust for providing the generous funding for the project and for their help in clearing the site. The Project would also like to thank the Luss Estate for granting permission to undertake the excavation on their land. Again special mention must go to the many volunteers, too numerous to list here, who helped throughout the excavation.

Contents	Page
<u>Introduction</u>	1
1.1 The Project Circumstances	1
1.2 The High Morlaggan Project	1
<u>2. Site Background</u>	2
2.1 Location and Topography	2
2.2 Archaeological and Historical Background	3
<u>3. Excavation Results</u>	6
<u>4. The Artefacts</u>	24
<u>5. Conclusion</u>	25
<u>6. References</u>	25
Ceramic Assemblage, G. Haggarty	26
Clay Tobacco Pipes, D. Gallagher	30
Glass Report, R. Murdoch	34
Metal and Associated Objects, D. McLaren	49
Leather Report, Clare Thomas	54
Dendrochronology of Rowan and Hawthorn, C. Mills	57
Notes on the Woodland at High Morlaggan, Peter Quelch	74

1. Introduction

1.1 The Project Circumstances

This Data Structure Report (DSR) has been prepared with respect to the second phase of excavation undertaken at the deserted settlement site of High Morlaggan, Arrochar Parish, Argyll. The results of the first phase of excavation were outlined in a previous DSR (Regan 2010). Permission to carry out a survey and excavation of the site has been granted by Luss Estates (the current owner). Funding for the second phase of excavation was provided by the Heritage Lottery Fund, Argyll and the Islands LEADER and the Robert Kiln Trust.

1.2 The High Morlaggan Project: Shadow People – Our Community’s Heritage (Continues)

The project has of course continued between the two excavation phases and several pieces of work by the High Morlaggan Rural Settlement Group (MRSG) deserve mention. The first is the creation of a project website highmorlaggan.co.uk where the project can be followed. An exhibition and series of talks were undertaken in March 2010 within the Three Villages Hall and later in the year a presentation was given to HRH the Prince of Wales, while the MRSG has presented its findings at a number of national and local conferences. The project has also received wider recognition by winning the Robert Kiln Trust Award for community archaeology in 2010, and was Highly Commended in the British Archaeology Awards for community archaeology. Survey work around the main settlement was undertaken by ACFA (the Association of Certificated Field Archaeologists), using an electronic distance-measuring device (EDM) and several new features were documented. One newly uncovered feature a possible building (Structure 6), was cleared of undergrowth prior to excavation by a group from Loch Lomond and the Trossachs National Park. Other survey work has recorded the position of a sheiling group that may have been utilised by the Morlaggan residents. Outreach projects to schools have been undertaken by Kilmartin House Museum and Scotland’s Rural Past.

As with the 2009 excavation, the 2011 excavation provided an opportunity for the local community to get involved in the archaeological process. School groups participated in the excavation under the auspices of Kilmartin House Museum’s education, the children’s experience on site linked to existing education programmes. Other groups also participated in the excavation, including the Stirling Young Archaeologist’s Club, the Princes Trust and members of Scotland’s Rural Past. Several events were held on site, including traditional crafts undertaken by Clanscape and a clay tobacco pipe workshop supervised by local potter Tom Butcher. Beyond this, local volunteers, many returning from the previous excavation, became involved in excavation and post-excavation work (the latter including finds processing). The substantial assemblage of pottery has been examined by George Haggerty of the National Museum of Scotland, with the production of a Ceramic Resource Disc. The disc and the assemblage will become available for future study. The project will be presented through an interpretative exhibition, which will be held at the Three Villages Community Hall in Arrochar.

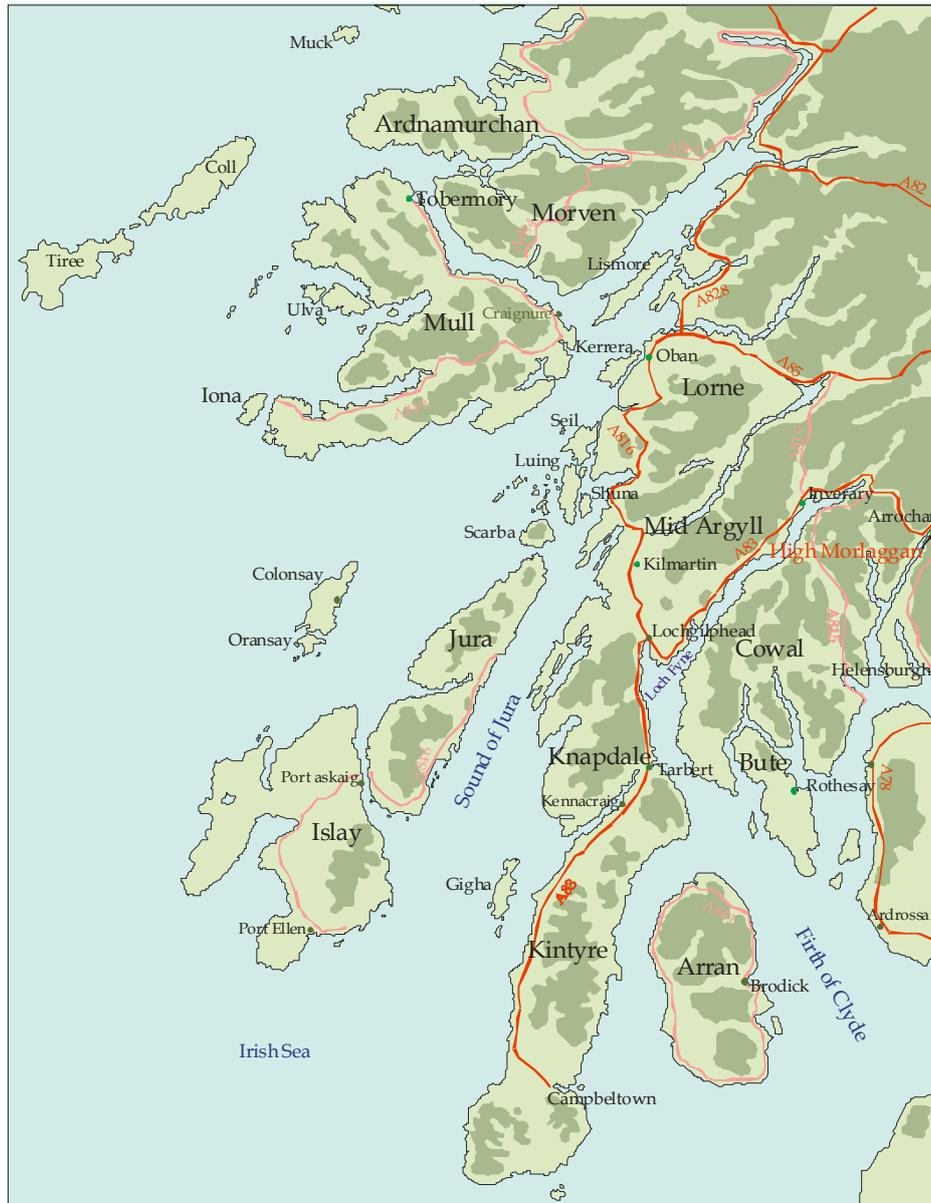


Figure 1: Argyll

2. Site Background

2.1 Location and Topography

The settlement of High Morlaggan (centred NN 27730 01630, Figures 1 & 2), lies within the Parish of Arrochar, Argyll. The settlement is one of several, strung along the eastern side of Loch Long, south of Arrochar village. The underlying geology consists of banded epidote-chlorite schist covered by peat and clay-based soils. The settlement is located on an elevated terrace, one of a series of such terraces lying between steep crags to the east and the shores of Loch Long to the west. The main ground cover is thick bracken with underlying grasses and moss (the former almost totally obscuring the site in the summer months). More established undergrowth of trees and scrub, including rowan, hawthorn and birch, lies within and around some of the buildings.

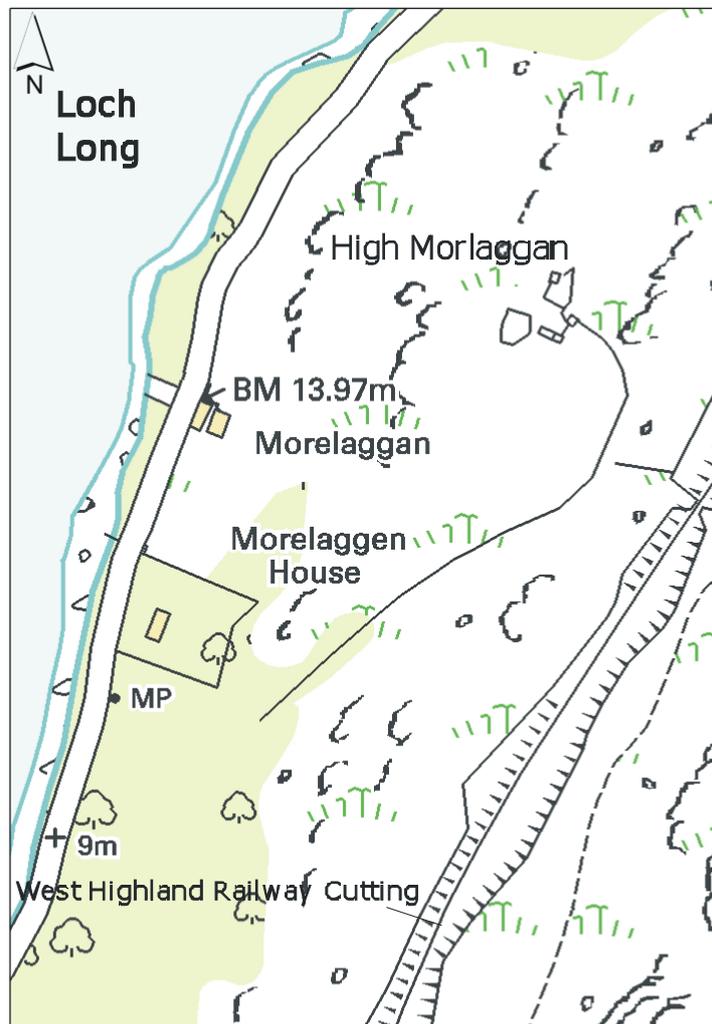


Figure 2: Location of High Morlaggan

2.2 Archaeological and Historical Background

A field survey, including a photographic record of the site, was undertaken by members of the High Morlaggan Project and members from the Association of Certificated Field Archaeologists and 8 structures have now been identified, all in a ruinous state of preservation (Figure 3). The structures would appear to represent both byres and domestic buildings. It was postulated that Structures 2 and 3 being the longest buildings may represent the main domestic structures, possibly byre buildings. The earliest mention of the site has now been traced back to documentary evidence suggesting that the site dates back to at least the late 15th Century, when it is mentioned in a document relating to a land dispute of 1514. This and the broader history of the settlement were fully outlined in the Project Design (Regan 2010).



Figure 3: Settlement Layout

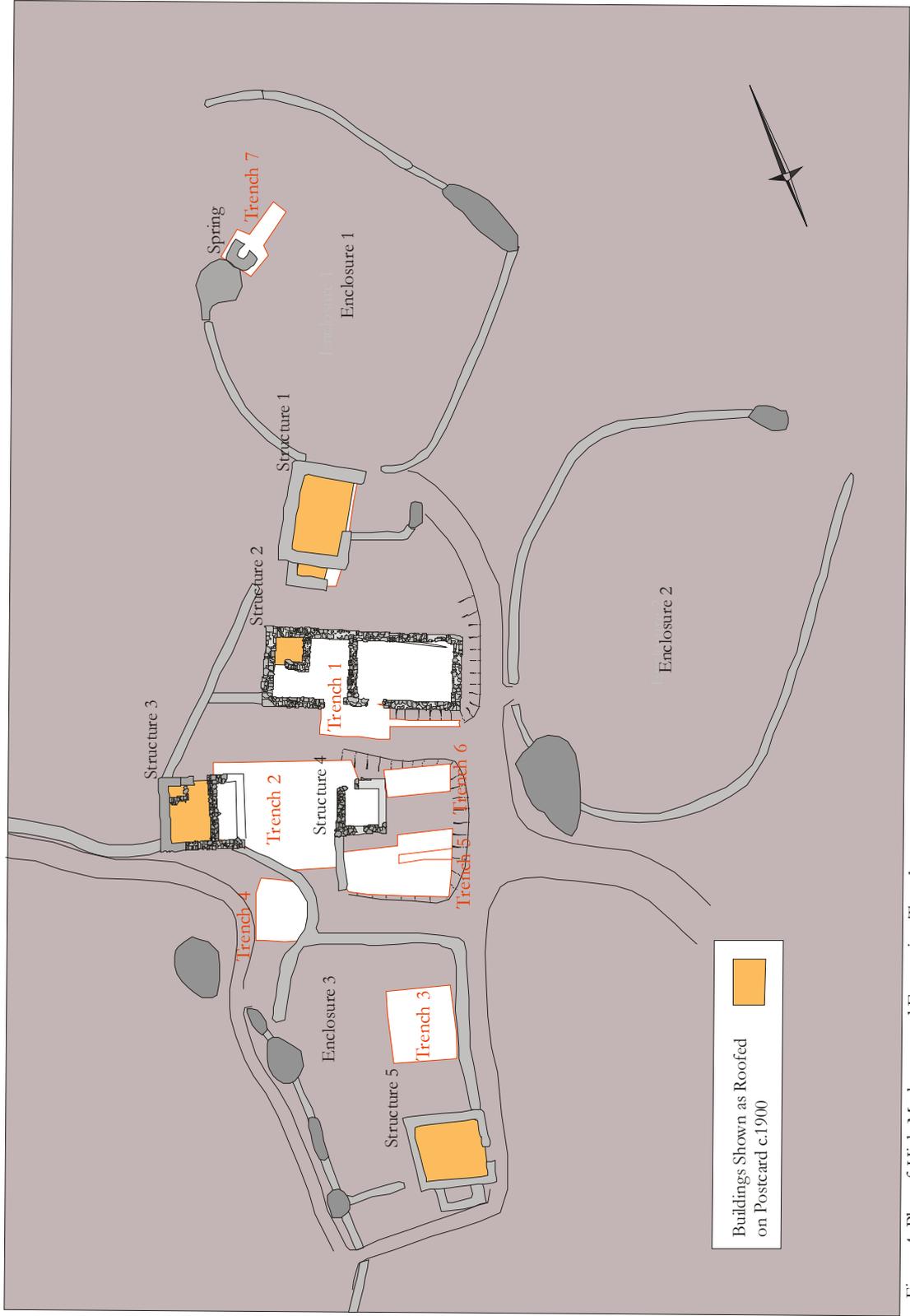


Figure 4: Plan of High Morlaggan and Excavation Trenches

3 Excavation Results

The second phase of excavation took place over 4 weeks in April-May 2011 and the site code used was MOR 11. The weather for the first two weeks was some of the finest experienced in Argyll for many years, although the second two weeks was rather more mixed (or typical). This however, was great improvement on the almost continuous deluge we encountered during the previous excavation phase. The Appendices from the previous excavation phase have been updated and full lists of the excavated contexts are listed in Appendices 1 & 2. Appendix 3 lists the recovered finds, while Appendix 4 lists the excavation photographs. An EDM survey was conducted on the main structures and enclosures and the results have been incorporated into Figure 3.

Excavation continued within Trenches 1-4, although Trench 3 was extended to the E and W, incorporating Structure 4. Trenches 5 and 6 were respectively opened to the N and W of Structure 4, with Trench 7 based around Structure 1 (Figure 4). Trenches 8-9 were excavated over putative Structure 6, lying W and below the main settlement area.

Trench 1, Structure 2

This rectangular building measured 14.6m by 5.6m externally and was oriented WNW-ESE, with two possible entrances on the N side, with a third entrance (now blocked) in the SE corner. The walls [025], [028], [029] and [030], [032] respectively formed the E, N, S and W sides of the building, measuring up to 0.8m in width.

The building is constructed on a natural terrace of bedrock and glacial till. It is likely any natural slope had been levelled prior to the construction of the building as the walls of the building cut into the naturally sloping ground on the NW side, as seen with cut [164]. The slope of the ground on which the building was constructed, however, was not totally level, and where exposed the foundations stepped down from E to W. This may have been a deliberate technique given the lack of drainage associated with the initial construction: a slope allowing any ground water to drain in that direction. Any subsoil or turf appears to have been removed during the construction of the building and the natural subsoil formed the earliest floors of the building, this likely trampled or compacted prior to use.

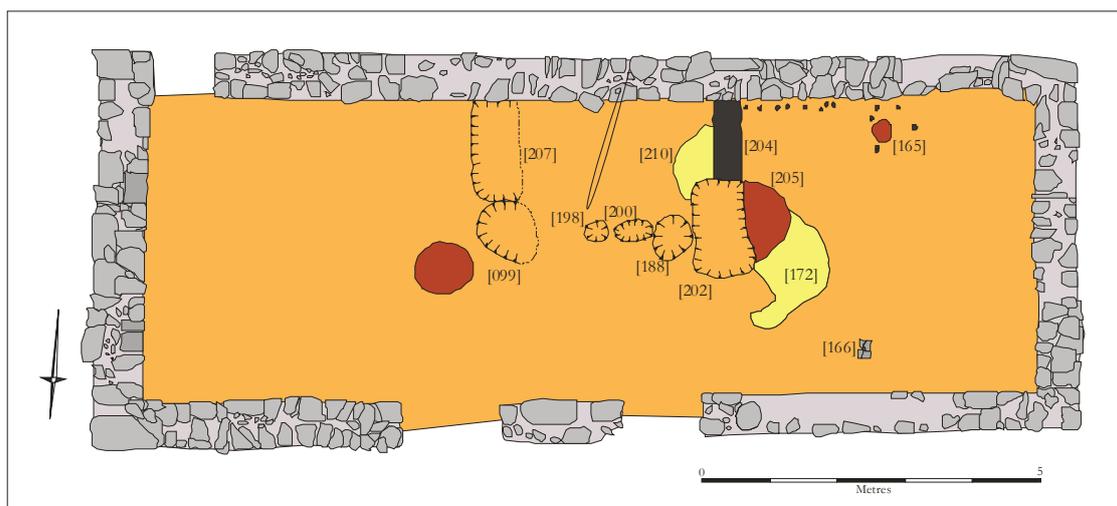


Figure 5: Structure 2 Phase 1

Structure 2: Phase 1

A series of posts [099], [188], [198], [200] and beam slots [204] & [207] belonging to the earliest phase, suggests a series of internal sub-divisions, possibly by wooden partitions. A stone post pad [166] may also belong to this early phase, again indicating the presence of internal wooden supports. Two main hearth areas [205] & [208] also point to the building being divided at this early stage. Both these hearth positions were indicated by areas of reddened clay hearth. Cut [202] truncated hearth [205] and the presence of this cut perhaps indicates that part of the hearth originally had a stone base, subsequently robbed. Patches of yellow clay flooring [178]/[210] also appear to belong to the early phase, these being either remains of floors subsequently worn away, or levelling material used to even out any of the more uneven areas of the natural subsoil. Also associated with the early floor was a burnt area [165] or possible hearth position located at the SW, surrounded by a group of stake-holes that may have acted as a hurdle baffle or hearth surround. Around the hearths were thin patches or spreads of darker grey ash/charcoal [139]. Over the remaining floor area was a layer of ashy humic silt [167] that likely represented an occupation accumulation (mainly ash and degraded straw?) related to the first phase of occupation. This was deeper at the W end of the building and was recorded as deposits [193] and [194].

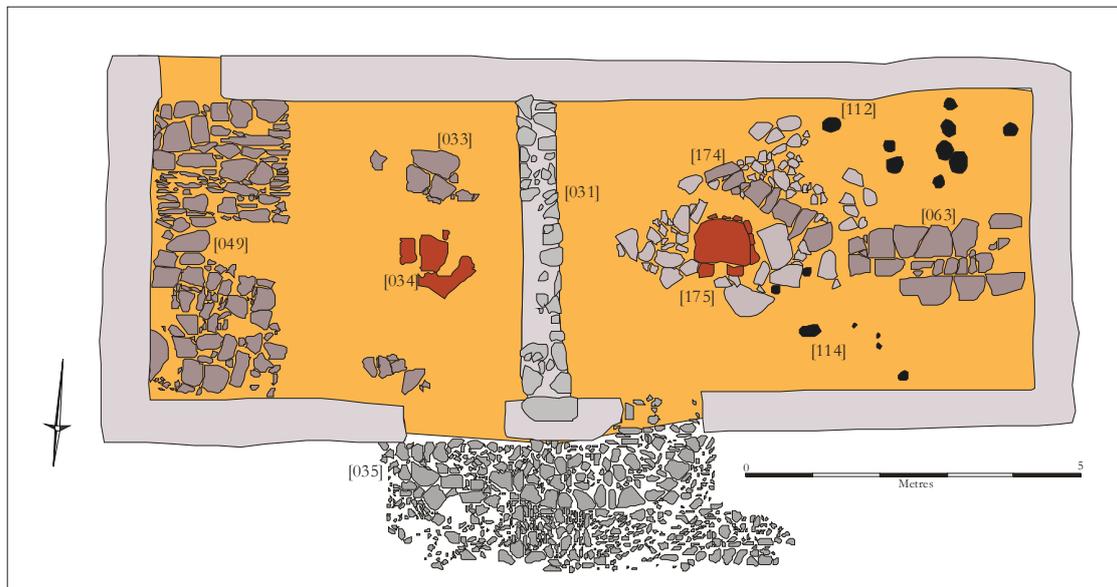


Figure 6: Structure 2 Phase 2

Structure 2: Phase 2

It is still not clear whether the well-made cobbled surface [035] belongs to Phase 1 or 2. Here it has been placed within the later phase of occupation, although it is equally possible that it might belong to the earlier phase. Internally, the building now undergoes a major modification with the addition of wall [031] that creates two distinct rooms or bays. The E bay or room measured 5.8m by 4.4m internally with doorways at the SE and NW. Lying above the earlier hearth were flagstones [034] that likely represent a later hearth, although there was no obvious trace of burning, for example reddening of the upper surface. To the W part of the room was a well-laid cobbled surface [049] above which lay two niches [026] & [027] constructed [within the E gable, these likely used for storage. Floor [049] had been subjected to later robbing and it is difficult to be sure where its original W edge lay. It is possible that the whole bay was originally flag-covered, as other isolated areas of horizontally laid flags [033] lay within the W part of the room. Suggesting that this may not have been the case were

deposits [055], [056] and [058]/[097], which appear to be remnants of occupation deposits that did not seal any flag surface within the E part of the bay. It is possible then that this E bay was subdivided as the floor level at the E end of the bay was distinctly higher than that at the W, although apart from this difference in floor heights no definite formal division was seen.



Structure 2 Flags and Hearth E Bay



Structure 2 W Bay

The W bay measured 6.70m by 4.10 internally and the space appears to have been subdivided into a byre at the W end and another hearth area at the E. In the W part of the bay the earlier occupation level was sealed by a levelling deposit [138] and floor [137], the latter comprising of re-deposited natural, this again trampled or compacted, effectively levelling or raising of the floor level. This was associated with the construction of a stone-lined drain [063] that led to an outlet constructed within the W wall of the building. The presence of the drain indicates that this end of the structure was used as a byre. A series of stake holes and post holes located within the floor either side of the drain are also indicative of this use as these are likely stall or manger divisions, any uprights now having rotted ([142], [144], [146], [148], [150], [152], [154], [156], [158], [160], [162]).



Line of Internal Posts

At the E of the byre area were two postholes ([112], [114]) that may indicate an internal partition between the byre and the E area of the bay. Sealing the earlier hearth and associated floor was a levelling deposit of yellow clay [140]/[172], which must have been sourced close by, given that similar clay subsoil was seen within Trench 6. This clay floor deposit also acted as a preparation make-up for a stone hearth setting [174], which occupied the same area of the building as the earlier hearth setting. Likely constructed at the same time was a stone-sided culvert [175] that ran through the clay floor and into drain [063] at the W. This was capped by a series of horizontally lain schist flags forming the floor on the S side of the hearth. The nature of this feature is not yet clear and it is possible it is a drain, although this area does not particularly appear one that was wet in the past. It is more likely that this feature was a flue that fed air to the hearth and a similar feature is in evidence within a reconstructed building at the Highland Folk Museum at Newtonmore.

The presence of a stone hearth in the E part of the room suggests this may have been utilised as a kitchen. The floors within the bay are then subject to a series of repairs to counteract slumping and/or wear seen with deposit [135] at the W and a second clay floor [115] was used to level up the area around the hearth.

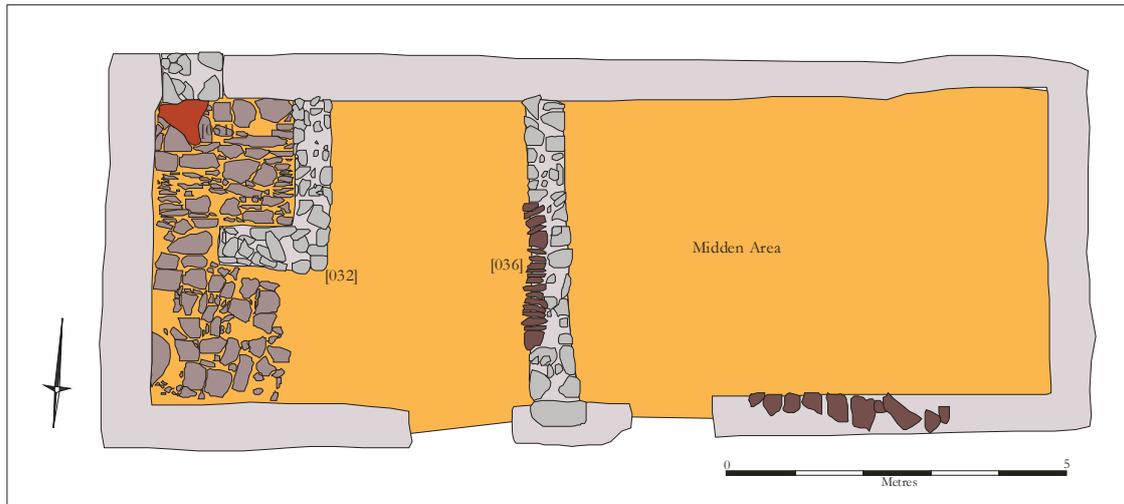


Figure 7: Structure 2 Phase 3

Structure 2: Phase 3 and Abandonment

In this phase the drain at the W goes out of use and appears to have been partially robbed, (as seen with cut [104]) and the area levelled with a mixture of rubble and silt and sealed by a deposit of yellow clay [090], suggesting the building was still being used in some form. At the E end of the building continued effort seems to have been made to maintain a level surface as represented by a rough rubble/cobble deposit [078].



Floor [049] with Iron Objects

The majority of the building would then appear to have gone out of use, although a small rectangular structure [032] is now constructed within the SE corner partially utilising the cobbled floor within the eastern part of the building. The doorway at the SE was also probably blocked at this time. The stones used within this structure may have come from the robbing of nearby walls as the longer sides of the building and the internal partition wall appear much reduced from what would have been their original height. This small structure however, would not account for all the absent stones and, given the lack of collapse or rubble deposits around the central part of the building, the stones must have been used elsewhere. This small structure is shown with a sloping thatched roof on an 1890-1900 postcard, although what material was used in the thatch is not clear. A heavily burnt deposit [051] on the floor within the SE corner of the room contained many corroded metal fragments and might suggest that small scale metal working was being undertaken although no slag was present. Thereafter there is a thick build up of organic material [038], possibly suggesting the presence of animals or perhaps the storage of organic material, such as fuel, fodder or roofing material.

Within the rest of the building humic deposit [024] formed over the now-robbed floor within the W part of the E bay. The W side of the building is now utilised as a midden, given the amount of artefacts recovered from deposits [005], [022], [037] and [050] that filled this room/space. It is possible that the growth of the midden may account for additions to the surrounding walls seen with a row of coping stones [036] to add height to the (now reduced) dividing wall [031], as well as large boulders placed along the original N wall of the W room with the same effect of raising its height.

Eventually the settlement was entirely abandoned and the gable ends of the structure and the small rectangular structure were left to decline, the rubble from this later collapse/demolition recorded as [004] at the E and [003] at the W ends of the building.

The building would appear to have gone out of use after 1860 when it was shown as roofed on the Ordnance Survey map and before 1890-1900, when it was photographed in its ruined but modified state. .

Trench 2

Earliest Deposits

Evidence of the earliest occupation encountered, while patchy, possibly points to an earlier structure occupying the area lying between the current remains of Structures 3 and 4. The evidence for this was confined to the much disturbed remains of an E/W oriented wall [054] and a possibly associated hearth [062]. If the burnt area represented an internal hearth, then any floor to the putative structure would have consisted of trampled or compacted natural possibly seen with re-deposited or trampled natural deposit [020]. This possible floor surface was traced 2m E of the hearth area, possibly indicating the extent of any building. A slightly darker deposit [077] lay to the S of wall [054] and this may be the remnants of a contemporary soil deposit. Lying over this deposit was a line of stones [076] oriented SE/NW, embedded into [077] and the natural subsoil below. What these represent is open to question, but they may represent the remains of a retaining structure along the side of the slope to prevent soil slippage/erosion down the slope. No direct dating evidence was retrieved from either of these features or the floor deposit, however late medieval pottery was recovered from the subsoil [067] within a sondage lying W of Structure 4. This subsoil occurred at a similar (if not contemporary) archaeological horizon as the hearth and it may be this is evidence from this period of occupation.

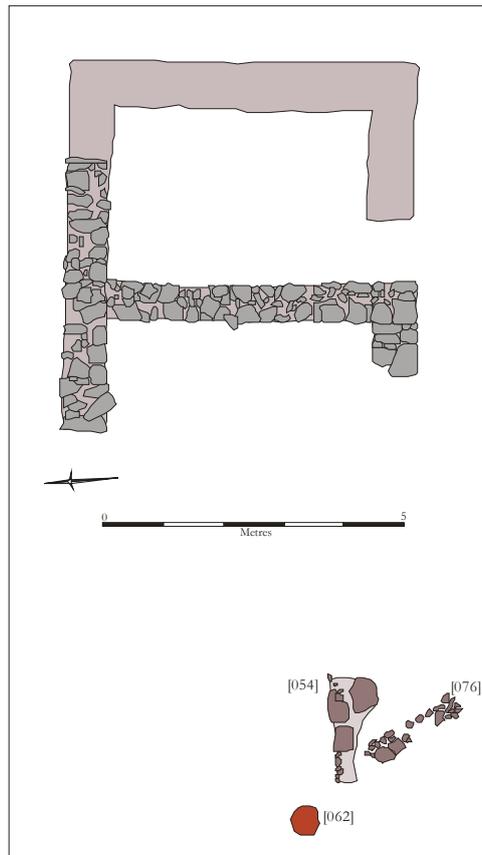


Figure 8: Early Features in Relationship to Structure 3

Structure 3: Phase 1

Walls [010], [011] and [012] formed the original W, N and S walls, respectively, of this E/W-oriented rectangular structure. The original door of the building lay within the S wall, this 2.0m wide, with the base of a splayed window in the N wall.

It was apparent from the excavations in 2009 that the original gable-end of the building extended further W than the present W upstanding wall. As such it was thought that traces of the original footings of the W gable lay within a rubble spread at the W. The excavation of this rubble proved this not to be the case, and no solid evidence for the original W wall was uncovered, this likely having been completely robbed. It is now thought that the original W end of the building may have been attached to the W end of wall [011], and the reasons for this speculation will be outlined below.

The original elements within the structure were a series of floors and a related drain. The floors consisted of several different elements of cobbling, flags and compacted re-deposited natural. The main area of cobbling [093] was confined to a rectangular area at the NE, this lying E of and above what was likely a drain [106] constructed of schist flags. To the S of [093] lay surface [131] and a raised flagstone area [046]. These flagstones appeared to be contemporary with floor [095] within which was set an area of cobbles [048]. To the W of these floors was a disturbed area as represented by floor [125]. The disturbance of this area may have been caused by the combination of wear and possibly robbing near the original entrance. The possibility of robbing is suggested by cut [127] and a horizontally-laid flagstone [126], which may be part of an original floor that may have covered the whole area.

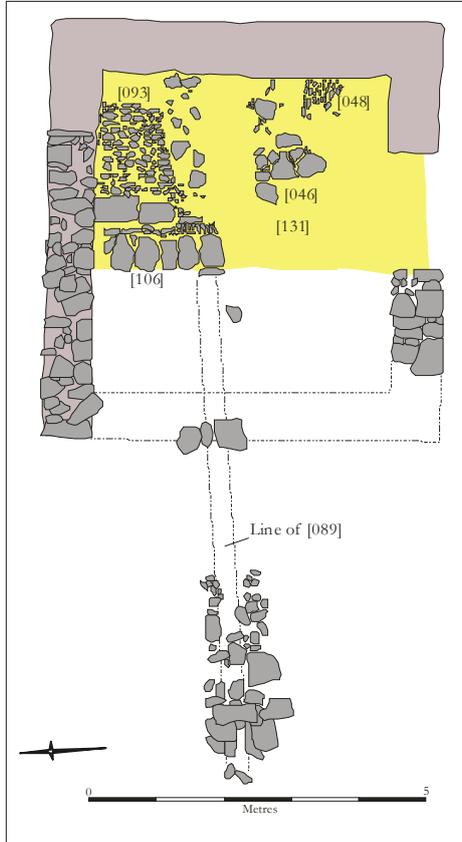


Figure 9: Structure 3 Phase 1



Cobbles [093] and Drain [106]

It is speculated that drain [106] would have been positioned in the centre of the original room, and if that was the case then the original building would have to the W the original W gable of the building coinciding with the surviving E end of wall [011]. It is also likely that this drain fed into robbed drain [089] uncovered further to the W this likely contemporary with the original structure.

Structure 3: Phase 2

Within this phase, the W wall of the structure was dismantled and rebuilt to the E as wall [015]. The reasons for this are not clear, but it is possible that the original W wall had become unstable or perhaps collapsed. After this rebuild, the room measured 5.4m by 4.6m externally (4.3m by 3m internally) and a new drain [072] was now constructed running E/W down the centre of the room. Possibly in use with the drain were a series of floors laid at the N of the area successively [092] and [091]. The rebuilding of Structure 3 may have been part of a wider reorganisation of the site, with the backfilling of drain [089] and its replacement by a 'catch-water' in the form of a sunken bucket [041] located W of rebuilt wall [015] beneath a drain outlet. Likely associated with the use of the sunken bucket is an area of rough cobbling [070] that immediately surrounded it.

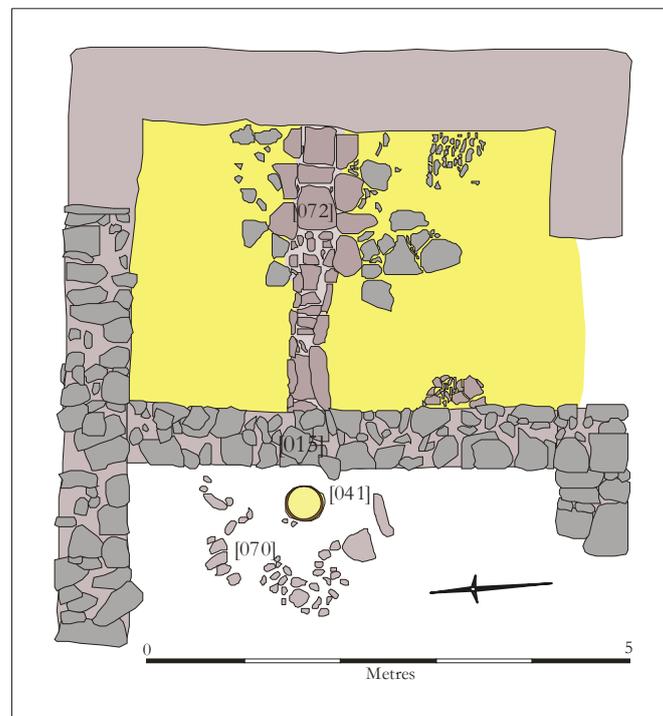


Figure 10: Structure 3 Phase 2

Structure 3: Phase 3 and Abandonment

The presence of a drain within the earlier and later phases of the structure suggests the building was still used as a byre. This use however may have changed as the drain is subsequently backfilled with rubble [074] and capped with schist slabs [173]. This is likely contemporary with floor [047] that had a semi-circular patch of cobbling [190] lying against the W wall. Also suggesting that the building ceases to be a byre is the narrowing of the entrance at the east and the construction of threshold [189]. It is possible that the building had now become a household although no obvious sign of a hearth could be traced. The latest-use deposits were represented by a mixed accumulation of organic silt [045]. On the postcard c.1890-1900, the structure is shown with a pitched thatch roof.

The latest addition to the building was a roughly constructed internal partition wall [014] in the SE corner of the structure measuring 1.0m by 1.6 m, which is likely a twinning pen

After this period the building declined with the partial collapse/demolition of this part of the structure recorded as rubble [013]/[016]/[023].

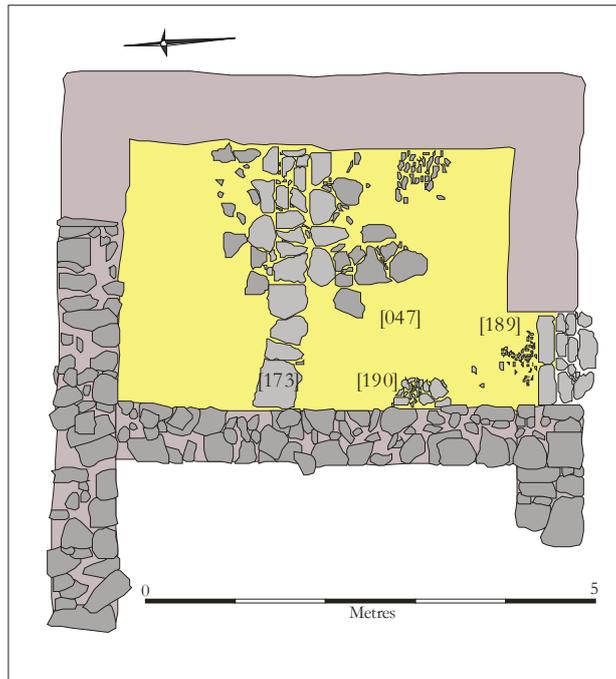


Figure 11: Structure 3 Phase 3



Capped Drain Structure 3

External Dumps

As stated above, the drain to the W of Structure 3 ceased to be function, after which it was partially robbed and the area levelled with a mixture of rubble and dumped soil [060]. This dump deposit is likely to correspond to similar dumps [059] and [066] (see Trenches 6 & 7 below) that effectively created a rectangular platform at the W of the excavated area. Over this was constructed Structure 4.

Structure 4

This slightly irregularly-shaped building measured 4m by 3.8m externally and was oriented N-S. The stone work is of poorer quality, compared with other buildings and the ESE wall is slightly longer than the opposite WNW wall, with corners not at right angles. The walls are about 0.6m thick. There is an entrance in the SSW corner. The building appeared to consist of a single room and was cleared of rubble down to a fairly well-constructed cobbled floor [169]. Within the SW corner of the room was a raised bench constructed of four large stones [170]. These stones overlaid a drain outlet [171] constructed within the S corner of the W wall. Another feature of the room was a rectangular raised area within the floor situated within the NW corner. No definitive evidence of a hearth or fire place was identified, but it is likely this building represented a small dwelling or bothy. Later, the building may have been abandoned or given over as an animal pen or store, this perhaps evidenced by the accumulation of humic deposit [101] over the floors and the addition of inferior walling to the upstanding walls.



Structure 4

External Midden

To the E of Structure 4 there is the build up of deposit [021], mainly a dump of smaller stone rubble that incorporated a significant amount of pottery, glass etc., suggesting that midden material was being deliberately dumped in this area. The relatively crushed/broken appearance of the pottery fragments in this and similar deposit [017] suggest that the area was also used as an access past this E side of Structure 4.

Trench 3

This trench was opened within Enclosure 3 to test the soil accumulation within this presumed 'kaleyard'. The trench contained a relatively uniform and homogenous deposit of brown humic silt [008], becoming lighter towards the base. This deposit was up to 0.22m deep and lay over natural subsoil. The presence of pottery and glass fragments suggested some midden material had been the spread over the area.

Trench 4

This trench was opened within a distinct 'dip' that respected by a distinct curve within the enclosure wall circuit, raising the possibility of a well or spring. The removal of the collapsed wall-derived material from within the 'dip' revealed a spread of rubble or small rounded cobbles mixed with midden dumping, deposit [006]. The removal of the wall material also revealed an entranceway within the curving wall giving access to the drove surrounding the settlement, and the presence of this 'gate' likely explains why so much midden material lay at this spot (nearby but lying outwith the 'kaleyard' of Structure 5). The Trench was excavated down to the natural subsoil, with no evidence of a spring or watercourse.



Trenches 5 & 6

These trenches were opened in order to investigate the level area or possible terrace that lay to the N and E of Structure 4. Excavation revealed that the 'terrace' was indeed an artificial construction, comprising of a rubble dump [059] in Trench 6 corresponding to a similar dump [066] in Trench 7. Onto the S end of this dumped material was constructed Structure 4 with wall [044] and related cobbled surface [168] lying to the N. The well constructed surface surrounded a rectangular area of redeposited gravel on the N and W sides with the wall on the E side, this possibly supporting a lean-to structure, although there was no evidence of walls of posts on the 'open' sides.



Figure 12: Structure 4 with Lean-too and Terrace



Surface [168]

Trench 7: Structure 1

This building measured 7.2m by 5m externally and was oriented SSW-NNE with a doorway facing WNW. There appears to be a cobbled area outside the doorway. Its external walls were about 0.7m thick and there is evidence of cement rendering on the outside of the walls. There is a small rectangular addition on the outside of the NNE wall measuring 1.8m by 2.8m. The walls of the building [117] had been heavily robbed.

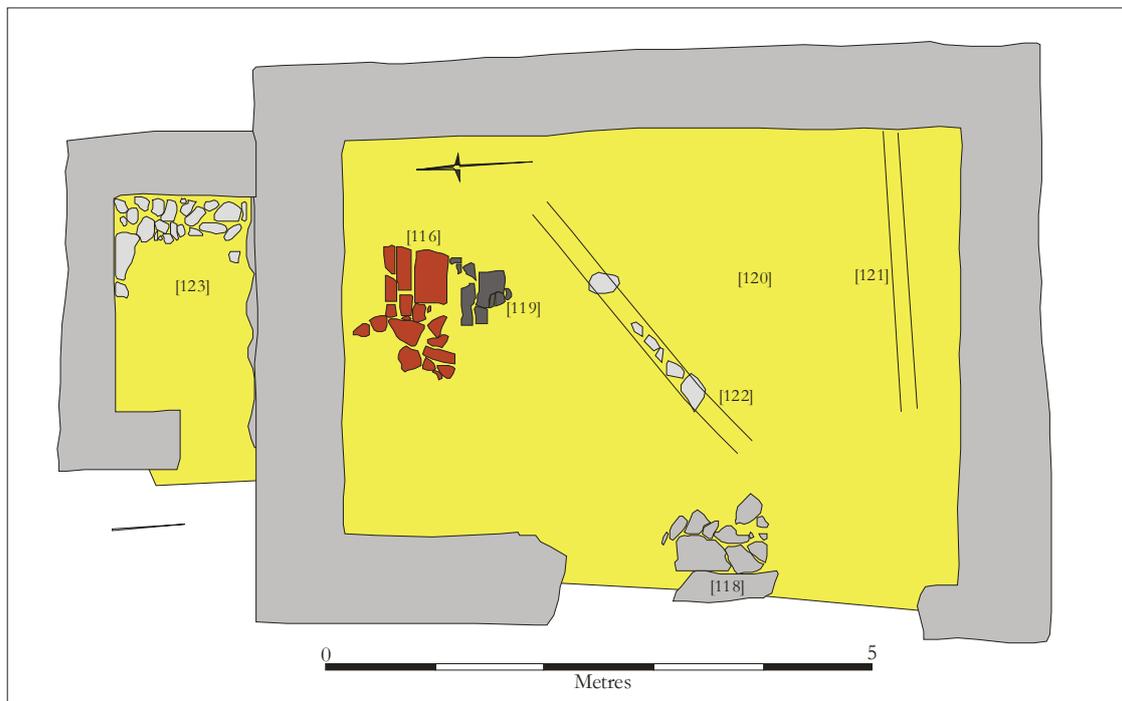


Figure 13: Structure 1



Structure 1

This structure had little in the way of internal features or evidence of more than one phase of occupation. These were limited to a stone and brick hearth setting [116], and the remnants of a flagstone threshold [118] that would have lain in the S wall, the later almost completely robbed out. No floor surfaces were in evidence, beyond trampled natural [120]. It is possible that the natural subsoil supported a flagstone floor, which along with much of the rest of the building had been robbed. The only evidence to suggest this was that part of the hearth also appeared to have been robbed and the remaining stones along with the surviving threshold lay at a height above the natural. There were also the remnants of burnt wooden planking [119] lying near to the hearth which could represent burnt flooring, or more likely the collapsed remnants of a fire hood or surround. Shallow linear cuts within the floor [121] and [122] suggest an attempt at drainage across the floor area.

A small rectangular annexe was added to the N end of Structure 1. The excavation of the building revealed that the walls of the annexe structure overlaid a stone lined drain [132]. This is likely to have been constructed to drain the area N of Structure 1 and was sealed by a dump of rubble [123] material onto which the walls of the annexe structure were built. This rubble was capped by some re-deposited natural that also formed the floor of the annexe. Over this formed a dark grey brown humic deposit [100], which possibly indicates its use as an animal pen. The recovery of two complete and adjacent ceramic eggs suggests its use as a chicken coop.

Thereafter Structure 1 fell out of use and was demolished with its stone reused elsewhere. The post-use/demolition deposits recorded as [057], [103] and [103]

Trench 8

This trench was opened because of the chance discovery of a structure situated within the SE side of Enclosure 1. The structure turned out to be the remains of a well constructed spring head [109]. The main fabric of the structure formed an arc built against the S face of a natural knoll and partially cut down into the natural subsoil. The wall was formed around an internal area that would have given access to the spring from the S. A large flag lay at the entrance to the spring under which was a drain hole which fed into a stone-lined drain leading off to the SW.

Trenches 9, 10 & 11 Structure 6

This appeared to be a rectangular structure constructed over a level terrace below the main settlement area. The level area appeared to be contained within three banks on the S, W and N sides, with a linear depression running on the E side of the W bank. The E side of the enclosure was formed by a steep-sided natural scarp. The bank on the W was 1.60m wide and stood to height of 0.60m, comprising of a mounded re-deposited natural [087]. At the S, the bank turned E and here its make up [080] contained more stone inclusions, with the larger stones forming a rough revetment to the looser soil behind. Along the E side of the enclosed area was a rough cobbled surface [082] constructed from small to medium stones, with a possible drain [083] running down its E side. The material for the bank was likely obtained from levelling the upslope terrace or from a linear depression seen along the W side of the bank, possibly resulting from excavation of the soil along this side to form the bank. There was evidence for the remains of a possible superstructure or a fence along the top of the bank, represented by the remnants of a driven post [086]. Two other possible posts were located along the S upper side of the structure and these again may represent a fence or some form of superstructure. If a superstructure did exist over the bank then it is likely to have been wholly constructed of timber, given the lack of evidence for any other construction materials. Evidence for the age and use of this putative structure was lacking given the absence of any formal floors or compacted flooring materials. This may suggest that it was used for 'lighter' activities such as storage, or perhaps the building was not used for any great length of time. A later intrusion over the building was the construction of a fire setting [081], formed on three sides by upright stones from surface [082]. The setting contained a deposit of charcoal along with broken bottle fragments suggesting it was of no great age.

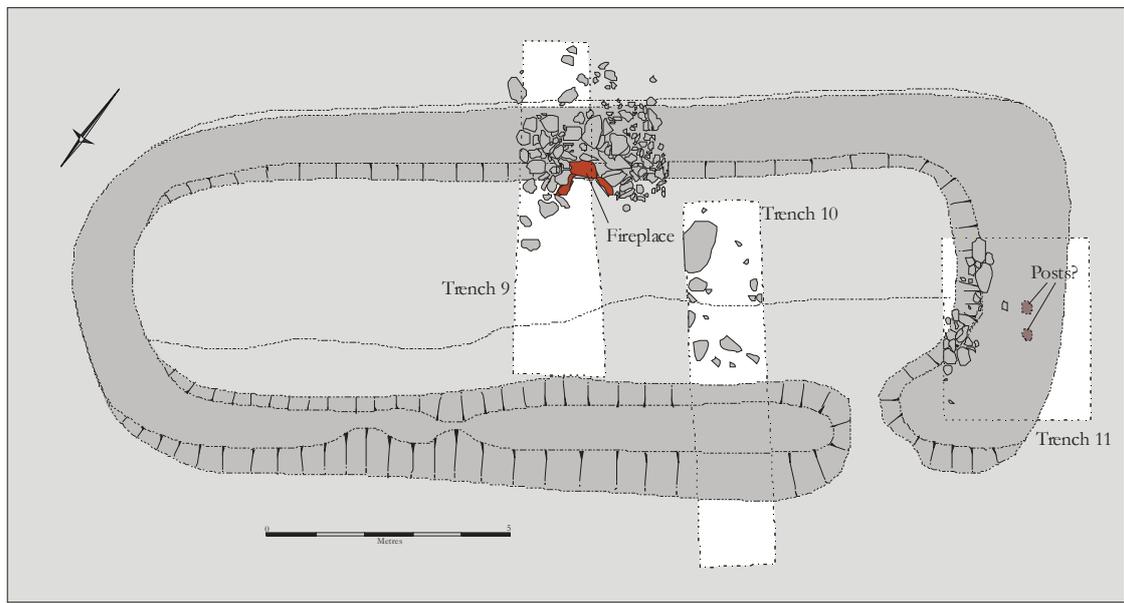


Figure 14: Structure 6

Structure 7

This building lay uphill and E of the main group of buildings and appears to be the remains of a rectangular structure attached to the dyke surrounding the settlement. Badly tumbled/robbed the building measured approximately 4m wide by at least 5m long externally, although no SE gable end can be definitely established and the building could have been longer.

Structure 8

As with Structure 7 this building lay outside the main settlement grouping, this time lying some way down the slope to the S. The building occupies what appears to be a natural knoll, this possibly structurally enhanced. The rectangular building measured 6.5m by 4.5m externally and appears to have an open NE end, although this might be due to later robbing. The remains of wooden structural material lying inside the structure suggest it was possibly modified in its later use.

Morlaggan Shieling Site

This shieling group lay on the high ground E of the main settlement (NN 2834 0133, c.220m AOD). It consisted of at least 9, possibly 10, circular and sub rectangular structures mainly spread along the north side of a burn junction, with one structure lying to the south. The burn forms the boundary between the parishes of Arrochar and Luss and the structure on the southern site is shown as a sheepfold on the 1st Edition Ordnance Survey Map (1864). This boundary is likely to have demarcated the limits of the township and many shieling groups are located along such boundaries, suggesting the shieling group belonged to Morlaggan.

4. The Artefacts

The majority of finds recovered from the excavation consisted of pottery and glass fragments, with lesser quantities of metal objects, leather and rare bone. The reports on the ceramics, clay pipes, glass and metal objects can be found below. Reports are being prepared on the main artefact groupings and will appear in the final report although some comments from the specialist reports have been included in the text below.

Pottery

10,578 sherds of pottery were recovered from this phase of excavation, compared to 2,603 sherds from the first phase of excavation. Of particular interest was the recovery of several sherds of glazed pottery dating from at least the 14th century. Earlier settlement activity was also in evidence with the recovery of a handful of green glazed pottery dating to before 1750. The majority of the assemblage (85%) however came from 3 midden dumps that formed in and around the settlement structures most of the pot dating between 1870 and 1900. One of the middens accumulated to the E of Structure 4 and produced 4,409 sherds (33.4% of the total assemblage, with 1,122 sherds from context [002], and 3,287 from [021]). Another midden formed within the abandoned W end of Structure 2 and this produced 5,461 sherds of pottery (41.3%, 641 from [005], 466 from [022], 3,021 from [037] and 1,333 from [050]) A third midden situated to the E of Enclosure 3 produce 1,378 sherds (10.4%). The break down of the pottery types as far as we can tell at this stage is similar to those outlined in report on the first phase of excavation. The majority of the pottery is again represented by glazed white earthenware most likely deriving from the Clydeside industrial potteries. Many displayed some signs of decoration these mostly sponge decorated or transfer printed wares. Numerous types of vessel appear to be present including plates, dishes, chamber pots, jars, bowls and cups. Few makers' marks or back-stamps were present but those identifiable were 'Cochran & Co' Robert Cochran of Glasgow (c.1846-1921), 'C.P Co' Clyde pottery Greenock (c.1850-1905), 'JB' Bell's Glasgow Pottery (c.1842-1928), and 'I & Co' possibly Millar's North British pottery Glasgow (c.1869-75). John Thompson's Annfield pottery (1816-66). The next most

abundant fabric type came from redware sherds most with internal and external (lead) glaze and some with internal white slip trail decoration. Forms include dairy bowls and crocks although a few other forms may be present. Other distinguishing fabrics included Rockingham type ware, mostly teapots, Salt glazed stoneware representing mainly storage vessels most probably used for foodstuffs or drinks.

Glass

As with the pottery the bulk of the 2,023 recovered glass fragments came from midden deposits and mainly represented bottles and phials, and window and lantern glass. Most of the glass is clear or green coloured (the latter mostly bottles), with a few vessels of brown, blue, pink and opaque glass. There are quite a number of shards which are worthy of some further comment. There are several glass bottles which are earlier than the main bulk of the assemblage and a few could date back to the late 17th century. Two wine bottles are slightly out of the ordinary being much paler in colour and the neck and lip shape differ from the typical British and these bottles may be French. There are quite a number of shards of drinking vessels, stemmed varieties and tumblers. These appear to be typically 18th/19th century types although there is one fragment with raspberry shaped 'prunts' (small blobs of glass added to the vessel for decoration and sometimes to improve grip) called brambleknoppen and typically from Holland.

Clay Tobacco Pipes

Compared to the last phase of work where only 11 fragments of clay tobacco pipe were recovered, this year, 105 fragments were recovered in 2011. Both stems and bowls were represented and several of these had decoration and makers stamps. The pipes from Morlaggan represent range of 19th century products, mainly from the factories of Glasgow. During the 18th snuff was the usual way of consuming tobacco century in Scotland, but pipes became popular again after c 1800. In the 19th century Glasgow became a major centre of the tobacco pipe industry, overtaking Edinburgh. This small group from Morlaggan includes an interesting range of designs and pipes from a range of Glasgow makers, including some unusual examples from small makers.

Several bowls had decoration, these including an eagle? claw, a bearded head and rope decoration along with rilled, fluted and ribbed bowls. Several bowls had wording including the city of Glasgow motto 'Let Glasgow Flourish' and one had 'Cutty' written on a small bowl, a 'cutty' being the name for a small pipe. Several makers' stamps were recognisable, the most common were from Alexander Coghill's Glasgow factory (1826-1904), one stem had 'A Coghill' and 'Jackson Street' stamped on the stem. Other makers included; 'T.W' (Thomas White, Edinburgh), 'W. White' (William White Glasgow), 'MACDOU(GALL)' (Duncan MacDougall, Glasgow 1847-1968), '(MCLAC)HLIN' (T. McLachlin), 'D. Arnot', and R. Douga(l), with Glasgow and Greenock the two named places of manufacture.

Metal Objects

A total of 1289 fragments of metal and associated materials (104 kg) were recovered from the 2009-2011 excavations of a deserted 16th to 20th century settlement at High Morlaggan, Argyll. The assemblage is dominated by iron objects but also includes a small number of copper alloy and lead finds, as well as leather, brick, glass, Bakelite and other synthetic materials.

Visual analysis of the metal objects confirms that the majority of fragments derive from structural fittings (e.g. brackets, hinges and bolts), tools (e.g. axes, chisels and blades) and household fixtures (e.g. cooking pot fragments, chains and locks). Very few decorative or personal objects were identified but a small number of brass buttons and buckles and leather/synthetic boot sole fragments were present. Most finds cannot be closely dated. Those that can indicate a date range between the eighteenth and twentieth century with the majority of datable finds suggesting a late date (19th to 20th century). Immediately identifiable objects were cauldron or iron vessel

fragments, barrel staves, a shovel head, a ring and chain, a chisel, a scythe blade along with nails hinges of various sizes. Apart from the coins (see below) the most common copper alloy objects were clothes buttons, of which were 8 recovered from the excavation (one with an embossed goat). Other objects included clock sprockets, a nail, a thimble fragment and a circular decorated object that may be part of a uniform decoration.

Bone

As in 2009, little bone was recovered from the site due to the degradation in the relatively acidic soils. Surviving fragments included sheep teeth, possibly cattle ribs and two horncores one of these showing signs of a worked end. The broken remains of a pierced bone button was also recovered.

Worked Stone Artefacts

There appeared to be a remarkable similarity between the recovered worked stone artefacts from both excavation phases. Amongst the recovered artefacts was a hone or whetstone and a pivot stone for a door post. Two worked slate fragments with incised lines these likely writing tablets and a possibly related graphite pencil were also recovered. A dark blue or black perforated bead and was also recovered and this may be some form of volcanic basalt, but need identification.

Leather

The majority of recovered leather object appeared to be the degraded remains of shoes or boots with some other unidentified off cuts or fragments.

Fabric

Several pieces of woven fabric were recovered with coarse and more finely woven articles present, although as yet none are identifiable as to what clothing article they may represent.

Shell

One shell button and a small perforated bead appeared to be made from shell but these will need further identification. The degraded remains of several mussel and oyster shell were also recovered.

Coins

Four coins were recovered from the site, one particularly corroded coin was recovered from the early levels in Structure 2, but no date has yet been obtained. A worn silver shilling dating to 1884 and a similarly worn penny of 1888 were also recovered. Less easy to explain was the recovery of a three pence piece dating to 1944 when as far as we are aware the site was abandoned, but may be the casual loss of a visiting shepherd.

5. Conclusion

The recovery of one shard of 14th century pottery and several late 15th early 16th century pottery fragments places the settlement at High Morlaggan within the late medieval period, which predates the earliest documentary evidence for the settlement and is a significant result on a Highland site. While it has been suspected for some years that medieval settlement evidence must be located near later settlement, few excavated sites have so far returned any definitive evidence for this assumption. Without the early pottery it would have been almost impossible to tease out earlier occupation activity and even then evidence, so far, for any structures dating to these earlier periods were limited to a possible wall and an associated hearth. Dating the construction of the present upstanding buildings has been equally problematic, with few artefacts recovered from the earlier phases of Structures 2 and 3 and the bulk of the associated recovered artefacts date to their abandonment phases belonging to post-use middens. The vast majority of the recovered artefacts date to this much later period and reflect that the settlement was well connected to lowland markets and goods by the mid 19th century. The size, quality and variety of the late pottery assemblage in particular is of some interest and perhaps suggests the later inhabitants of Morlaggan enjoyed a relatively prosperous existence in comparison to other Highland settlements. This conclusion however must be treated with some caution as few settlements have been extensively excavated and the relatively large quantity of recovered artefacts at High Morlaggan may reflect the near total excavation of several extensive midden deposits.

6 References

Regan, R. 2009 The High Morlaggan Project, Desk Based Assessment & Excavation Project Design.

Regan, R. 2009 The High Morlaggan Project, Data Structure Report.

Excluding production sites or their associated dumps, the High Morlaggan ceramic assemblage, (13,181 shards) is almost certainly the largest group of industrially-produced wares recovered from any archaeological excavation in Scotland to date. The vast majority of this extremely interesting assemblage is part of one large, somewhat dispersed, midden dump, dating from c.1870–c.1900, but including a few shards which may date to as late as c.1910. The finds from the midden, which at first seemed to consist of contexts [005], [022], [037] and [050], were given the prefix (G.1). It later became obvious that many of the ceramic shards from contexts [006] and [021] conjoined to numerous vessels from within the main midden, as did a number of shards from contexts [002] and [038]. Indeed, as we worked through the assemblage, it became obvious that at least a few shards from most contexts also conjoined with vessels from the large midden dump.

Due to the usual limits of time and money, as well as logistical problems, the author adopted a strategy aimed at getting as much information as possible from the assemblage. This involved ignoring or restricting the amount of work undertaken on some ceramic groups. This included the large shard assemblages of undecorated standard white earthenwares, red earthenware flower pots, coarse redwares (word file 14), Rockingham glazed wares (word file 15) and common transfer patterns, such as willow and fibre (word files 24 and 25). Despite this, the volunteers and author could easily have spent another six months working through the material. One example of the difficulties faced involved dealing with the standard willow-decorated-ware shards. With its many transfer variants, this was easily the most common printed pattern produced during the 19th century, with hundreds of makers and thousands of different copper plates being used, re-cut and used again. It therefore becomes obvious that, unless a vessel is marked, it is very difficult to identify a manufacturer based on the shards alone.

By far the largest group of wares recovered consisted of standard white earthenware, in a variety of forms. As one might expect for this period, these were often decorated, with a predominance of cut sponging and transfer printing. A number of white-slipped and lead-glazed vessels, including dairy bowls and crocks, were identified (word file 14). There were also a number of stoneware vessels in various forms, including blacking bottles, the contents of which were used to blacken fire-grates, and three or four salt-glazed stoneware spirit crocks (word file 17). The other large group of shards was derived from Rockingham glazed vessels, mainly teapots, representing the remains of at least twenty two such vessels (word file 15).

Shards of medieval redware, probably dating from at least the 14th century, were recovered from contexts [039], [066], [135] and [misaid], along with a few body shards of post-medieval reduced and oxidised wares from contexts [021], [037], [039], [075] and [194] (word file 09). These suggest a lengthy period of occupation. The small number of late-medieval and post-medieval shards recovered is not unusual from Scottish rural sites. A large Historic Scotland-funded project to determine the sources of ceramics based on chemical analysis using inductively-coupled plasma mass spectrometry (ICP-MS) has recently been undertaken on wares of this type (Haggarty et al., 2011), and it would be useful to have the High Morlaggan shards analysed.

Identified within the midden material was a small group of mainly pearlware shards, obtained principally from bowls (word file 01). These were often frost-damaged, suggesting that they had been lying around for some time, and almost certainly date from the first half of the 19th century. Indeed a few of these shards, such as the hand-painted example illustrated in (word file 10, H MV 190), may date from the last decade of the 18th century. The total lack of tin-glazed earthenware is interesting,

as this is relatively common in Scotland during the first half of the 18th century and was produced in Glasgow from 1748 (Kinghorn and Quail, 1986). Also lacking in the assemblage were shards of white salt-glazed stoneware and creamware, both produced in Scotland from 1750 (Haggarty, 2007c, 218-230), and somewhat earlier in Staffordshire, of which at least some 'background noise' might have been expected. This could suggest that the occupants of the site in the 18th century had relatively low status.

Even now, we have no real idea why the late-Victorian High Morlaggan ceramic assemblage should be so large. Several hypotheses have been put forward, including the possibility that the inhabitants were trading ceramics. However, the author has largely discounted this theory based on the presence of wear on the reverse of the plates. The existence of a tavern or inn is another possibility, although one might then have expected to have recovered more shards of a particular pattern. The fact that High Morlaggan was accessible by boat and relatively near to Greenock, where most of the small boats trading around the Highlands and Islands were based, gives the site a different socio-economic dynamic from excavated, inland rural sites.

Whatever the reason for the substantial assemblage, the large amounts of pottery recovered suggest that, although small, the settlement was generating enough wealth during this period to allow at least some of the residents to enjoy a reasonable standard of living. The High Morlaggan ceramic material does not include any fine quality porcelain etc., and very little of it is purely decorative, except for the head from a possible flat-back (word file 26, HMV 179). The material is generally functional, though both the range of designs and the quantities recovered are large, including numerous transfer-printed tea sets (word file 20), flower-pot holders (word file 08) and punch bowls (word file 23), suggesting something approaching a middle-class lifestyle. What is certain is that the inhabitants had something to trade or exchange, whether in the form of cash or barter.

Limited evidence from other excavated rural settlements, such as Ben Lawers (Haggarty, work in progress), suggests that Scottish hamlets generally only began to acquire industrial pottery from around 1780–90. However, this was generally limited in quantity and was probably supplied by packmen/tinkers, possibly in exchange for rags, skins etc. This pottery often comprised seconds and odd pieces purchased at the door of the potteries.

Not surprisingly, most of the identifiable ceramic material from High Morlaggan derives from potteries within the Clyde littoral region (Excel document 27), with the Clyde pottery in Greenock supplying the largest number (fourteen) of identifiable patterns. All but one of these patterns dates from the period 1857–1904. This was followed by eleven patterns from the large pottery of J & M P Bell in Glasgow (1841–1912). Of the smaller groups identified from other Glasgow potteries, the most diagnostic in terms of dates are probably the two patterns from the Glasgow factory of Alexander Balfour (1874–1904). Patterns have also been identified from the Glasgow potteries of Britannia (1850–1939), Verreville (1820–1919), and the Lockhart & Co period of the Victoria Pottery (1865–1876).

Dissemination of a number of new patterns identified amongst the Morlaggan shard material is already in hand. These will be included in a forthcoming book on Scottish transfer-printed marks, to be published by the Scottish Pottery Society.

Of the 10–20 transfer-printed cup and saucer sets recovered, only one could be identified as not emanating from a Clydeside pottery. This exception was 'Shanghae', a pattern produced by the firm of Thomas Till and Sons at the Sytch pottery, Burslem (1861–1928) (word file 20). The register design for these cups and saucers tells us that it was registered in March 1869, but common patterns often had a long lifespan. Interestingly, no tea plates were recovered with any of these sets,

suggesting that for some reason the residents preferred to use the heavier, moulded, undecorated side plates illustrated in (word file 11).

Shards from a number of children's mugs and plates were identified (word file 04). The two mugs are almost certainly Glasgow products, as are some of the plates. Two of the plates based on published borders (Riley 1991) and marked examples in a Scottish private collection are from Bo'ness, and one comes from the pottery of George Gordon near Prestonpans (Haggarty, 2010) (word files 02 and 03). These mugs and plates were normally given to children as presents, possibly suggesting family connections in the east of Scotland.

Considerable effort was invested in trying to reconstruct the cut-sponge-decorated vessels (word files 05, 06 and 07), of which bowls were far the most common. These wares were almost certainly one of the mainstays of the Scottish ceramic industries during the second half of the 19th century, being produced in their millions and exported worldwide (Kelly, 1993). The excavations and publication of a number of large assemblages from Glasgow kiln sites, especially Verreville (Kelly, 2005; Haggarty, 2007a and 2007b), are allowing us to slowly get to grips with these wares. Examples are very rarely marked, but we were fortunate in being able to identify two of the patterns as products of the Clyde pottery (word file 05, HMV 3 and 9).

The large assemblage of Rockingham glazed shards, almost exclusively from teapots, are extremely interesting. Those that can be identified by marks or published patterns (Haggarty, 2010) are products of the Belfield pottery in Prestonpans, despite the fact that similar wares were being produced by potteries in the Glasgow area. We know that Belfield's teapots were held in high esteem and traded widely, which again suggests that some people were prepared to pay a premium.

Amongst the odd shards recovered from the site was a small stoneware eye ointment pot (word file 17, HMV 150), decorated with a stamped and printed "S. Green 2 Union Place Lambeth" mark, in dark blue. These pots are interesting in that they were produced at the Buchan's stoneware pottery in Portobello (Haggarty, 2008) (word file 91) for Stephen Green, 2, Union Place, Lambeth who, through marriage, was a purveyor of patent medicines. Also marked Buchan's Portobello is a plain stoneware preserve jar (word file 17, NMV. 172). The shard from a painted Chinese porcelain ginger jar may be unusual in a rural context (word file 26, HMV 163), although surviving examples in antique shops are common, suggesting a wide distribution.

Possibly the most interesting ceramic fragment recovered is part of a tile (word file 13), which the author has suggested came from the floor of a late grain-drying kiln. An almost complete example of this type of tile has recently been recovered by AOC Archaeology during an excavation in the Glasgow Gallowgate, on the site of an 18th century redware pottery (Haggarty, CD in preparation). Although the author has been told that his identification is controversial, he awaits an alternative explanation.

It will only be as a result of future excavations of similar sites that this assemblage will take on a wider significance, as we currently have little to compare it with. The trading patterns, especially of ceramics, within the West Highlands during the post-medieval/industrial period are presently little studied and poorly understood, and to this end the work carried out at High Morlaggan is a beacon of light in a dark room.

Acknowledgments

Cataloguing of the High Morlaggan ceramic assemblage was carried out with the help of my friends Jim Gray, Robert Stenhouse, Francis McLaren and Sheila Forbes, all National Museums Scotland volunteers. I am extremely grateful to all of them, as the catalogue would be so much less without

their efforts. I am also deeply indebted to a number of people at AOC Archaeology, including Andy Heald and Pieta Graves. I would also like to thank Roddy Regan, Sharon Webb and all those at Kilmartin House Museum who made my short stay enjoyable. When the whole assemblage was brought through to Edinburgh my heart sank and I tried to talk my way out of cataloguing it. However, Fiona Jackson and Sue Furness were having none of it and who can refuse them anything. Now to be honest, I am very glad that I took on the task, which has given me the opportunity to handle so much Glasgow ceramic material, so girls, my special thanks.

References

Bayne, S & Spreul J S A 1986 'A Guide to the identifying of unmarked Punch Bowls' Scottish Pottery Historical Review No 10 4-22.

Coysh, AW & Henrywood, R K 1982 'The Dictionary of Blue and White Printed Pottery 1780 -1800 Vol 1. Antique Collectors' Club

Haggarty, G 2007a 'The Verreville pottery Glasgow: Ceramic Resource Disk' The Northern Ceramic Society Journal 23 (2006-7).

Haggarty, G 2007b 'Lancefield Quay Verreville Glasgow: Ceramic Resource Disk: Published and Distributed by the "National Museums Scotland & FIRAT Archaeological Services"'.
(Haggarty forthcoming 2012, Verreville pottery from a riverside dump at the Broomielaw Glasgow.

Haggarty, G 2007c 'The evidence for 18th century Creamware and Pearlware production in the Forth littoral' in Creamware and Pearlware Re-Examined' A collection of papers presented at a Colloquium held by the English Ceramic Circle at the Victoria and Albert Museum, Kensington 4th and 5th June 2005, 218-230.

Haggarty, G 2008 'Portobello Potteries' A Ceramic Resource Disk in' The Northern Ceramic Society Journal 24 (2007-8).

Haggarty, G 2010 'The Belfield Pottery Production Site Ceramic Resource Disk: The Northern Ceramic Society Journal Vol 26 (2009-10), 142-3 + CD ROM.

(Haggarty forthcoming 2012, Verreville pottery from a riverside dump at the Broomielaw Glasgow.

Haggarty, G R Hall, D & Chenery, S 2011 'Sourcing Scottish redwares' Medieval Pottery Research Group, Occasional Paper 5

Kelly, H E 1993 Scottish Sponge Printed Pottery. Glasgow.

Kelly, H E & Leishman, D A 1999 Scottish Ceramics. Atglen USA.

Kelly, H E 2005, Shards from Verreville Pottery' Scottish Pottery Historical Review Vol 23 (2005)

Kinghorn, J & Quail, J 1986 'Delftfield A Glasgow Pottery 1848-1823'. Glasgow Museums and Art Galleries.

Riley, N 1991 Gifts For Good Children-The History of Children's China 190-1890. Somerset.

Clay Tobacco Pipes

Dennis Gallagher

The pipes from Morlaggan represent a range of 19th century products, mainly from the factories of Glasgow. During the 18th century, snuff was the usual way of consuming tobacco in Scotland, but pipes became popular again after c 1800. In the 19th century Glasgow became a major centre of the tobacco pipe industry, overtaking Edinburgh. This small group from Morlaggan includes an interesting range of designs and pipes from a range of Glasgow makers, including some unusual examples from small makers.

THE PIPE DESIGNS

The North Country Head pipe

Bowl (No 1) is a design that is described in the pipe catalogues as a North Country Head. The term 'North Country' may apply to the bowl form; in this case decorated with a head. A variant appears in the catalogue of Davidson Jun & Co of Glasgow described as a 'Faced R Head' (Gallagher and Price 1987, 122). While some pipes are decorated with portraits, this pipe is a more generic design based not on a particular person. The rather benign image of a man with a curling moustache and strange head gear is probably derived from that of the Turk's Head. The motif of the Turk's or Saracen's head with a turban and prominent moustache is a frequent occurrence in popular art. Found on pipes throughout western Europe, it occurs on Hungarian pipes where the Turk was closely associated with smoking and later occurs on pipes through Britain. The motif also gave its name to numerous Turk's Head or Saracen's Head public houses. It has been suggested that the pipes may have been produced for the taverns, but it is more likely that both were making use of the same popular motif. The image of the Turk's head, long popular in folk art, may have its origin in the court art of the 16th century, where demonic masks of Turks were used in pageants and mock battles. These have turbans, curling moustaches and glaring eyes. Fine examples of these survive in the former Habsburg collections in the Golden Roof museum and Ambras Castle, Innsbruck.

Let Glasgow Flourish

Pipes No 2 and 3 bear the arms of Glasgow, a tree with bird, fish and bell and the motto 'Let Glasgow Flourish'. Pipes with this motif were produced by various Glasgow pipemakers as well as some from outside the city.

The Rifle Pipe

The Rifle pipe (No 4) has its origins in the aftermath of the Crimean War. The first major war for half a century had produced strains on the armed forces and in 1859 the decision was taken to boost home defence with the creation of the volunteer rifle corps (Hammond 1985, 36). The National Rifle Association was inaugurated in July 1860, with strong support from the Queen. The movement proved popular; its patriotic fervour was given expression in a poem published by Tennyson:

THERE is a sound of thunder afar,
Storm in the south that darkens the day,
Storm of battle and thunder of war,
Well, if it do not roll our way.
Form! form! Riflemen form!
Ready, be ready to meet the storm!
Riflemen, riflemen, riflemen form!

Various makers produced Rifle Pipes to cater for the enthusiasm of the volunteers. The Rifle Pipe (No 4), whose maker is unknown, is one example.

The TW pipe

There are two examples of a TW pipe (No.'s 5 and 6), with the initials TW facing the smoker. These were an extremely popular type and were produced by most makers. The meaning of the letters is unknown, although it may originally been used by the early 19th century Edinburgh maker, Thomas White, who was renowned for his high quality pipes.

Rope Pipe

There are several fragments of bowls decorated with horizontal bands of rope in high relief (No.10). A similar example is illustrated in a 19th catalogue from the factory of Duncan McDougall, Glasgow where it is described as 'Rope' (inf P Hammond).

Jubilee Pipe

There is one small body sherd of a bowl with 18.. and JUB in relief lettering (no 15). This pipe was produced to commemorate Queen Victoria's Golden Jubilee in 1887. Many such pipes carried often portrayed the Queen; this particular pipe may have had her portrait in low relief on the other side of the bowl.

THE MARKED STEMS

The stems show pipes from a range of Glasgow makers. Some are from the large factories that produced pipes both for the home market and for export, mainly to North America and Australia. Most prominent of these was that of William White which continued from 1805 to 1955. Another of the larger factories represented in the assemblage is that of Alexander Coghill who was in business from 1826 until his death in 1860, other members of the family continuing until 1898.

The presence of stems marked with the marks of much smaller pipe making workshops shows that, despite the competition of large factories, these small makers were successful in selling their pipes to the home market. The improvement of transport, including more efficient steam shipping, must have helped the distribution of pipes.

The stems include some very short-lived businesses. No.'s 25-6 are the products of two short partnerships of the pipemaker McLuckie. The first (No 25) is that of his partnership with Thomas Prentice, recorded in the Glasgow trade directories for 1873-5. This was followed by a partnership with Thomas Fenton, represented by stem No. 26. Fenton was one of a number of inventors around this time who tried to introduce a more mechanised means of making clay pipes. On 11 June 1874 he registered a patent, 'for improvements in making tobacco pipes, and in the apparatus thereof' (Patent no 2036).

The second half of the 19th century saw the establishment of smaller makers away from the main manufacturing centres. The group includes a fragment from the workshop of Thomas McDonald, active in King Street, Alloa 1882-1900. There is also a pipe marked D ARNOTT/GREENOCK. Arnott is recorded as active in Greenock between 1900 and 1903. There is also a pipe marked GREENOCK and this could have been produced by a number of makers who occupied the same premises, in succession, in Market Street. The first was William Christie active there 1884-90, then David Arnott, followed by the Downs brothers. Christie's bankruptcy in Greenock may have been caused by the high rate of criminality amongst his employees. Christie moved on to found a successful business in Leith.

One exotic pipe (no 16) is marked ...UMERIL/ ...EURS/ T O. This is a French pipe, a product of the factory of Duménil-Leurs of St Omer. Audomarois Dumeril was producing pipes in St Omer between c 1844 and c 1895. There is no indication of the form of the pipe many such French pipes were figural, often enhanced with paint. These were available in centres such as Glasgow. 203/120

MOUTHPIECES

A large proportion of the fragments from context 037 are mouthpieces. While these may be merely the result of accidental breakages, it is possible that some were discarded from pipes that were deliberately broken at that place. This was a common practice among the working class in the 19th and early 20th centuries, producing a more compact object that would easily fit into a waistcoat pocket.

References

- Gallagher, D. B. and R. Price 1987 'Thomas Davidson & Co, Glasgow', in Davey, P. (ed) *The Archaeology of the Clay Tobacco Pipe* 10, 110-138
 Hammond, P. J. 1985 'Registered and Patented Clay Tobacco Pipes', in Davey, P (ed) *The Archaeology of the Clay Tobacco Pipe* 9, 30-156

Catalogue of diagnostic items

1. Bowl and part of stem. The bowl is in the shape of a Turk's head with upturned moustache, early 19th century. 186/159.
2. Pipe bowl with the arms of Glasgow/ and the motto LET GLASGOW FLOURISH. Stem marked 68. 173/[022].
3. Bowl with motto LET GLASGOW FLOURISH, other side of bowl missing. 176/037.
4. Small bowl and part of stem. The bowl has RIFLE CUTTY and a crown on one side and hatched heart on the other/ 179/064
5. Bowl fragment with TW in oval facing smoker. 176/037.
6. Bowl fragment with TW in oval facing smoker. 178/050.
7. Bowl with oak leaf in relief on each side and acorn in high relief on seam. 190/022
8. Tall undecorated bowl. 184/091.
9. Fragment of a spurred bowl with hatched motif, probably Hand of Ulster. 176/037.
10. Three fragments of a bowl completely covered with wide horizontal bands of rope twist in relief. 176/037.
11. Stem fragment of a claw pipe with scales and a collar, and bowl fragments with claws in relief. 180/066.
12. Bowl fragment of a claw pipe with part of two claws in relief. 177/038
13. Fragment of small bowl with fluting, spur missing, early 19th century. 176/037
14. Bowl fragment, base missing, in off-white clay. This bowl is heavily stained through frequent use. 198/ 051.
15. Bowl fragment with 18.. and JUB. This pipe commemorates Queen Victoria's Golden Jubilee in 1887. 195/037
16. Pipe stem in fine clay, marked ...UMERIL/ ...EURS/ .T O.. . A product of the factory of Duménil-Leurs of St Omer, France. 203/120
17. W.WHITE/ GLASGOW. 176/037
18. 318 W [WHITE]/ [GLASG]OW
19. Lower part of a spurred bowl with stem fragment, the latter marked A.COGHILL/ JACKSON ST. 178/050
20. COGHILL/GLASGOW. 176/037
21. COG[HILL]/ [GLA]SGOW. 176/037
22. [CO]OGHILL/ GLAS[OW] 176/037
23. COGHILL on one side of stem. 178/050.
24. ALEX.../{GLASG]OW. 176/037

25. Stem marked ...L&P. McLuckie and Prentice, 1873-5. 189/020.
26. Stem marked MCL&F/ GLASGOW. McLuckie and Fenton, 1875-7 at 65 Cumberland Street , Calton, Glasgow. 176/037
27. Stem fragment marked FERON/ GLASG[OW]. The factory of F E Feron was in operation in varios locations in Glasgow from 1869 to 1912. 194/ 021
28. Stem with mouthpiece and GLA[SGOW]/ [McLA]CLIN in a rope twist frame. Probably Thomas McLachlan, active 1887-1927
29. Stem marked GLA[SGOW]. 177/038
30. Stem with an indecipherable maker's mark/GREENOCK. 192/024.
31. Stem marked D.ARNOTT/ GREENOCK. Arnott is recorded as a pipemaker in Greenock 1900-03. 200/057
32. Stem marked MCDONALD/ALLOA. Thomas McDonald was active in King Street, Alloa 1882-1900. 176/037

Glass Report

Robin Murdoch

Introduction:

Well over 2000 shards of bottle, vessel and window glass were recovered from excavations at High Morlaggan. The great majority of these were typical of mid 19th to early 20th century date and would be found on most sites of that era. Consequently most of the glass finds will be collected under general headings and only given brief comment. It should be assumed that all references are to shards unless otherwise stated. Again where items have not been given specific dates it should be assumed that they are mid 19th to early 20th century.

Items outwith the 19th/early 20th century date window will be mentioned separately as will any items of particular interest or with a story to tell, irrespective of date.

The glass catalogue is arranged in site catalogue number order irrespective of context number.

As part of an ongoing research project with Historic Scotland, eight shards of window glass were selected for analysis to determine their composition. The project is to assess window glass used in Scotland and to see if interesting results from similar research by English Heritage can be replicated here.

The eight shards were selected on their physical appearance and should represent most of the varieties of window glass recovered. However without testing literally every shard of window glass we can not be sure all varieties have been covered.

Discussion

As already mentioned the great majority of the glass finds from High Morlaggan date to the latter part of the occupation of the site, from the mid 19th century to its abandonment in the early 20th. This however should not be interpreted as an indication that there was little or no occupation before that. A rapid expansion in the use of glass for utilitarian containers with the exception of wine bottles did not occur until the 19th century and as the century progressed all sorts of products found bottles/jars being developed to accommodate them. For thousands of years pottery had been the mainstay but once glass was available cheaply enough, it rapidly took the place of pottery for many uses. One obvious advantage was that cleanliness and lack of contamination of the contents could be more easily assessed. The High Morlaggan assemblage contains most of the usual suspects that would be expected from a rural township site and indicates a supply arrangement with the 'outside world'.

There are quite a number of artefacts or more accurately shards there from which are worthy of some further comment.

Starting with wine bottles, these first appeared in glass in the middle of the 17th century but are not common in Scotland, other than on prestigious sites, until the 18th. Although generally described as wine bottles, some of the shards could derive from beer or ale bottles. They were made in very similar shapes to wine bottles from the mid 18th to early 19th centuries. The glass wine/beer bottle underwent quite a radical shape evolution from the mid 17th century to the mid 19th and is relatively easy to date (Van den Bossche 2001). Body, neck and lip shapes all changed with time. There are several which are earlier than the main bulk of the assemblage and a few could date back to the late 17th century. Two wine bottles in **Cat 108 bag 5** are slightly out of the ordinary. They are much

paler in colour and the neck and lip shape differ from the typical British product. The glass is very seedy (small gas bubbles) and these bottles may be French. The French continued to fire some of their furnaces with wood, rather than the coal used here, into the 19th century and the lower temperature resulted in seedier glass. Reference is also made in the catalogue to reverse kick, this is a mid 19th century feature of some wine bottles. Although the kick is pushed in as usual, the centre reverses direction and projects down towards the base, quite what the purpose of this was is unknown.

Quite a lot can be learned from how bottles were moulded. Early wine bottles were free blown and hand finished. About 1740 the main body of the bottle started to be blown into a cylinder mould and then was removed and attached to a pontil rod to finish the neck and lip. The pontil rod was attached to the base of the bottle and pushed in to form the indent or kick in the base. Because the bottle was no longer restrained by the mould some of the energy forced the base of the bottle outwards making it wider there than further up the body. This feature is called *bellling* and can be seen on most wine/beer bottles between about 1740 and 1840. A semi automatic moulding machine was patented by Henry Ricketts of Bristol in 1821 and *bellling* disappeared in bottles made using this. There is an embossed base shard from a bottle moulded by Ricketts machine in **Cat 095**. Allowing a few years for the new technology to spread, *bellling* disappeared about 1840. Ricketts mould was three-piece, a solid slightly tapered (for ease of removal) lower section and two hinged upper parts. These bottles have a characteristic horizontal mould mark at shoulder level. As the 19th century progressed the desire increased to emboss more of the body of the bottle, not possible with the Ricketts mould. Although they had been around for many years, particularly for square section bottles, the two piece hinged moulds came into general use c 1870-80. Lips of bottles continued to be added by hand until the early 20th century. Reference to 'pimple' kicks appear frequently in the assemblage. This refers to a small raised 'pimple' in the centre of the kick in the underside of the base of the bottle and was common during the mid 19th century and gradually phased out later in that same century.

Around the middle of the 19th century some cheap bottles had completely unfinished lips, shear lips, where the blowpipe was wetted off and the lip left as a sharp edge. Corks could be either internal or oversize and simply jammed on. Shear lips were probably the cheapest glass bottles available at the time and small square section ink bottles were a favourite, there are several in the High Morlaggan assemblage. A square section probable whisky bottle from **Cat 092** carries a six digit number 239655 which may be a registered design number. If it is then we can date the design to 1894.

There are quite a number of shards of drinking vessels, stemmed varieties and tumblers. These appear to be typically 18th/19th century types although there is one enigmatic fragment. It is the prunted vessel from **Cat 072**. Prunts are small blobs of glass added to the vessel for decoration and sometimes to improve grip. In this case the prunts are moulded in the form of raspberry fruits and they are normally found on imports, typically from Holland where this type of prunt is called *brambleknoppen*. This style of decoration was very popular on Dutch drinking vessels even up to the early 19th century (Henkes 1994, 305). There are also fragments of stemmed drinking glasses with bucket shaped bowls and angular knobs in the stems. Knobs are local thickenings of the stem and can occur in a number of shapes. Some of the drinking glass bowls have been facet ground and one example has a foliate decoration wheel ground into the surface. It is possible that the latter could have been made by John Ford's Holyrood glassworks in Edinburgh. They were renowned for wheel ground foliate decoration although that was carried out by an independent engraver. All these features could be late 18th to early 19th century (**Ash 1962, 174**). It is very likely that fine tableware would have been looked after and could have been in the family for many years prior to its demise.

Of later date are shards of press-moulded glass vessels some of which are represented over several contexts. Press-moulded glass was introduced into Britain in the early 1840s from America and

enabled quite ornate tableware to be made much cheaper than by the traditional hand blown methods (Thompson 1996). It is easily recognizable because the inner non-moulded surface is perfectly smooth. The moulding was formed by a plunger which pressed the glass into the mould. Where a vessel has been blown into a mould an impression of the mould can be seen on the inner surface as well as the outer. Pressed glass can carry pattern numbers but none were found here. The milk glass jug dates from the second half of the 19th century but was quite crudely made. The use of a 3-section mould allowed the handle to be moulded at the same time as the rest of the vessel. No parallels were found but the late 19th century was the most prolific period for this type of ware.

Several of the clear glass shards have solarisation, a distinct purple pink tinge, caused by lengthy exposure to ultra-violet light, ie sunlight. It is caused by the effect of ultra-violet light on Manganese Oxide used as a decolourant in the manufacture of the raw glass. Most glass has a trace of iron in it which imparts a greenish tinge and the Manganese offsets that. Without going into great detail solarisation occurs when Manganese and Iron oxides exchange ions and the valence of the former increases. (Shelby 1997, p208) Manganese was used as a decolourant up to the start of the First World War (Ibid)

Another decorative technique present was flashed glass, again shards of probably the same vessel being found in several contexts. It appears to have been a small lipped pouring jug with a handle and was coloured red/pink. Red glass was often very intense in colour and thin layers were 'flashed' on to clear glass to give more subtle shades while retaining the required thickness. The flashing in this case was on both inner and outer surfaces, however the handle which had been applied separately was clear glass.

A significant number of the shards/bottles in the assemblage carry embossing and that can be quite informative and helpful for dating. Since most of the lip apertures in the assemblage are small diameter it may be presumed that they predominantly stored contents of a liquid nature or possibly sauces. However, there were shards from Kilner jars present, one of the earliest dedicated storage jars. John Kilner started up in Castleford, Yorkshire, in 1842 and several generations of the family continued up until 1937. The examples here are from the mid to later 19th century.

Goodall, Backhouse & Co are also represented with their 'Yorkshire Relish' bottles having started up in Leeds in 1837 although the examples here are later 19th century.

A complete rectangular section bottle with indented sides **Cat 074** is embossed Bathgate & Burns, Edinburgh. According to the Post Office directories (Edinburgh PO directories) Bathgate, Burns & Learmonth are recorded as wholesale coffee, spice and fruit dealers at Gayfield Square, Edinburgh, in 1879-80.

Bathgate & Burns first appear on their own in 1885-86 and remain under that designation till 1902-1903 at which point Bathgate & Co appears. The contents of the bottle was probably coffee and chicory essence and this seems to have been a High Morlaggan favourite since Symington's and T & H Smith bottles for the same product were also found.

The most impressive of the embossed bottles however is the complete globe-stoppered bottle from **Cat 076**. These bottles are generally referred to as 'Codd' bottles after Hiram Codd, their inventor, who took out his first patent in 1870. Codd bottles were one of a whole range of bottles designed to keep the fizz in aerated waters. Many interesting and sometimes bizarre methods of closing such bottles were invented in the 19th century and the Codd bottle was as long lived as any, remaining popular for around 60 years.

The idea behind the Codd bottle was that it was filled with a carbonated liquid in an inverted position and the pressure of the gas pushed the glass marble against the internal rubber ring creating an

efficient seal even when the bottle was turned upright. To gain access to the contents the glass marble would be pushed down and sideways into the recess in the neck thereby allowing pouring. Although Codd bottles were made in huge numbers their survival was somewhat limited, children would break them to recover the glass marbles!

The example recovered from High Morlaggan is a fine specimen in both condition and in the information it can provide. Besides carrying information on the chemist, J.A Reid, in Helensburgh, who sold the bottle with its probable soda contents, it also carries details of the bottle manufacturer Dan Rylands. Ben Rylands was making bottles for Codd as early as 1874 (Talbot 1974) and went into partnership with him in 1877. Rylands son Dan, who made the High Morlaggan bottle went into partnership with Codd on his father's death in 1881 till that arrangement ended in 1884, after that only the name Dan Rylands appeared on the bottles. Rylands patented his 'Reliance' bottle (of which this is an example) in 1885. Dan Rylands went Ltd in 1888 making that year the earliest the High Morlaggan bottle could have been made. Rylands resigned from the company in 1892 and the company name was changed in 1897 as was the name format on the bottles. We can therefore date this bottle to between 1888 and 1897. Another example of 19th century aereated water bottle was recovered from **Cat 082 bag 1** in the form of 'egg' bottles. These had pointed bases so they could not be stored upright and the corks therefore remained wet and swollen maintaining a good seal.

The small glass bead **Cat 121** could be late 18th/early 19th century. Cheap glass beads were available at many markets around the country at that time and seem to have been popular with the rural population. Difficult to be certain but being made of glass it would probably have some surface denaturing if it was much older. One possibility is that it is a piece of mourning jewellery (Dr S Kirk, pers comm.) although that was normally intricately decorated. However given the social status of the site it is not impossible. Looking at its composition (**Table 1**) it appears to have been made using a plant ash for the source of the fluxing alkali, this would account for the 2.5% Potassium Oxide (K₂O) and the presence of c2.8% (Magnesium MgO). The black colour comes from the 5% Manganese MnO. Manganese could be used to colour or decolour depending on the quantity used and the furnace conditions, ie oxidizing or reducing.

Table 1: pXRF analysis of glass bead Cat 121

Sample	MgO	Al ₂ O ₃	SiO ₂	P ₂ O ₅	SO ₃	Cl	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	CoO	NiO	CuO	ZnO	As ₂ O ₃	BaO	PbO	SrO	ZrO ₂
Bead 121	2.83	2.18	55.48		0.48	0.29	2.58	9.60	0.25	4.99	0.83		0.01	0.02	0.02	0.01	0.20	0.02	0.06	0.01
Bead 121	2.77	2.27	55.61		0.46	0.31	2.55	9.36	0.24	4.97	0.84		0.02	0.02	0.03	0.01	0.27	0.02	0.06	0.01

As already mentioned in the introduction the opportunity arose to have eight shards of window glass analysed as part of a current research project on the dating of such glass by its composition. The results of these tests appear in **Table 2**

Window glass type description (thicknesses are given for the shards tested although there could be considerable variation within the type).

- A** Firebright pale blue tinge, 1.6mm thick
- B** Firebright pale blue green tinge, 2-2.2mm thick
- C** Firebright similar to type B, 1-1.1mm thick
- D** Slightly dulled pale blue green tinge, 2.2-2.3mm thick
- E** Firebright very pale yellow green tinge, 3.1mm thick (plate?)
- F** Firebright no discernable tinge, 1.4mm thick
- G** Firebright no discernible tinge, 6.2mm thick plate.

H Firebright very slight grey green tinge, 2mm thick

Table 2: pXRF analysis of window glass

Note: There are two readings for each sample, one for either face.

Ref	Type	MgO	Al ₂ O ₃	SiO ₂	P ₂ O ₅	SO ₃	Cl	K ₂ O	CaO	TiO ₂	MnO	Fe ₂ O ₃	As ₂ O ₃	BaO	PbO	SrO	ZrO ₂
HM068-1	A	3.90	0.96	56.81	1.43	0.05	0.67	4.55	12.18	0.09		0.52				0.47	
HM068-1	A	4.08	1.03	58.24	1.45	0.06	0.63	4.54	12.11	0.09		0.55				0.47	
HM068-2	B	3.61	1.08	56.54	1.13	0.29	0.53	3.64	10.71	0.09		0.70				0.42	
HM068-2	B	3.85	1.16	57.37	1.14	0.28	0.59	3.74	10.79	0.09		0.68				0.42	
HM095-2	C	3.30	1.40	67.38	0.69	0.71	0.36	2.50	11.65	0.11		0.67			0.01	0.33	
HM095-2	C	3.04	1.36	67.30	0.72	0.63	0.36	2.50	11.57	0.11		0.66			0.01	0.32	
HM020-1	D	3.52	1.37	58.98	1.07	0.26	0.56	3.70	9.98	0.11		0.61				0.38	0.01
HM020-1	D	3.14	1.28	58.25	1.05	0.31	0.53	3.61	9.94	0.11		0.62				0.39	0.01
HM095-1	E	0.42	1.17	64.10		0.78	0.10	0.59	13.60	0.06		0.36	0.50			0.01	
HM095-1	E		1.11	64.63		0.82	0.10	0.57	13.65	0.06		0.35	0.50			0.01	
HM112-1	F		0.77	66.34		0.72	0.49	0.49	15.75	0.05	0.50	0.13				0.03	
HM112-1	F		0.79	67.11		0.78	0.47	0.49	15.87	0.05	0.53	0.13				0.03	
HM112-2	G			58.68		0.91	0.04	0.03	14.72	0.04		0.05	0.04		0.01	0.01	0.01
HM112-2	G			58.97		0.96	0.04	0.04	14.75	0.04		0.05	0.04		0.01	0.01	0.01
HM068-3	H		0.22	65.72		0.58	0.09	0.04	12.92	0.04	0.08	0.17	0.08			0.02	
HM068-3	H		0.14	65.48		0.59	0.09	0.04	12.84	0.04	0.07	0.17	0.08			0.02	

Window Glass Interpretation

The window glass from High Morlaggan can be divided into three date periods based on the model devised by English Heritage (Dungworth 2011). While this model is based on English research there is no reason why it should differ radically from the Scottish scenario, the glass industries in both countries were influenced by similar sources.

Types A to D are what is known as kelp-fluxed glasses which have used kelp derived from sea-plants as the source of the fluxing alkali. This was used to lower the temperature at which the silica sand would vitrify and remain workable. The chemical signature for kelp-fluxed glass contains significant Magnesium, Phosphorus and Potassium oxides indicating a plant ash source plus a tell-tale marker of Strontium which identifies marine plants. The English findings were that kelp was used as the fluxing alkali there between about 1700 and 1835 but these termini may need adjusted slightly for Scotland as more is learned. However it is unlikely that the kelp-fluxed window glass at High Morlaggan dates to earlier than the second half of the 18th century. Evidence being gathered from similar rural sites is indicating that windows were simply not glazed in typical dwellings before that, in fact it was the early 19th century before it became more common.

In the early 1820s a synthetic soda, sal alkali, was patented for use in soap and glass manufacture and it gradually replaced kelp as the source of alkali. The first generation of synthetic soda glasses had arsenic added to assist in purging gas bubbles from the raw glass. This type of glass was made from around 1835-1870 (Dungworth *ibid*) and type E glass from High Morlaggan has 0.5% Arsenic present. Type E glass is quite thick and has very good optical surfaces and it may be what was called patent plate, a blown glass but ground and polished.

Finally types F to H are synthetic soda glasses of post c1870, arsenic levels are very low to negligible and there is no Magnesium, that was re-introduced around 1930 to assist with problems in the automated production of glass.

Type F is a very clear glass with no visible tinting due to the use of Manganese MnO as a decolourant especially considering the Iron Fe₂O₃ was very low in the first place. It is possible that this glass may have been made for use in furniture.

Type G is a plate glass over 6mm thick which may have had a special purpose, possibly even window glass in a moving vehicle.

Table 3: Distribution of Glass types by Catalogue number (note the count is merely of number of shards, it does not relate to size of shards)

Cat No	A	B	C	D	E	F	G	H
047						8		11
053		1				1		
056						1		1
058						2		
061								1
062	2		1		2	2		8
065		1	2			1		2
068	6				6	2	2	94
069							1?	
070								3
071			2			1		
072	4	1			1	1		9
073						1		
077		2				1		
079			2					1
080			1	1				
081				2				
082				15				2
083	1							1
084						4		
085	1					1		
086		6	4		4	4		1
087		2	12		12	2		
089						21		
091		1				7		1
094		1	3		3			
095			15		15	22		13
098			17		17			
101						3		
102						4		
103						27		
104						2		
107			3		3			
112	5	2	3	2	3	14		126

References

- Ash, D 1962 *How to identify English drinking Glasses & Decanters, 1680-1830*, London.
- Dungworth, D. 2011 and B. Girbal *Walmer Castle, Deal, Kent, Analysis of Window Glass*, Research Dept Report series no 2-2011, English Heritage.
- Henkes, H. 1994 *Glas zonder glans, glass without gloss*, Rotterdam Papers 9, Rotterdam.
- Shelby, J. 1997 *Introduction to Glass Science and Technology*, Royal Society of Chemistry, Cambridge
- Talbot, O. 1974 *The Evolution of Glass Bottles for Carbonated Drinks*, Post-Medieval Archaeology, Vol 8.
- Thompson, J. 1996 *The Identification of English Pressed Glass, 1842-1908*, Cumbria ?
- Van den Bossche 2001 *Antique Glass Bottles, their History and Evolution (1500-1850)*, Suffolk
- 1874-5 to 1909-10 *Edinburgh Post Office Directories*

Main Catalogue

Cat <062> [001]

Moulded glass stopper, aqua
Mid to late 19th century

Cat <06>3 [001]

3 pimple kicks, dark olive, dull green and pale green, mid to later 19th century
Two bases pale aqua, square section, round kick, possibly whisky, late 19th century.
Whisky flask
Storage jar
3 piece mould
Various shards aqua and pale copper blue
Thick walled tumbler clear, slightly solarised, mid to late 19th century
Coffee and chicory

Cat <064> [002]

Moulded aqua glass stopper, embossed 'patent' plus indecipherable
Mid to later 19th century

Cat <065> [002]

Various dark olive green shards, belling on one, late 18th/early 19th century
Enhanced lip similar
Wine/ale base with belling. Late 18th/early 19th century
Shoulder 3 piece mould
Whisky flask
Whisky flask clear, slightly solarised
Pale copper blue medicine
Drinking glass base clear (stemmed)
Clear, probably early 20th century shards

Cat <066> [005]

Lamp glass

Cat <067> [005]

Small phial in clear, two piece mould, external screw neck, appears to have been in fire, medicine/perfume

Probably early 20th century

Cat <068> [005]

Whisky flask, aqua

Two upright lips

3 pimple kicks in aqua, one embossed 'W.A Gilbey Ltd, 24', port bottle?

Flat sided shard embossed '---sterclark & c-' ' Maidstone'

Cobalt blue ink

Dull blue shearlip

Lamp glass rim

Pressed glass

Moulded tumbler base, mid to late 19th century

Cat <069> [007]

Lamp glass

Clear bucket bowl from stemmed drinking glass, octagonal ground facet cut (see discussion)

Cat <070> [008]

Upright lip, aqua, mid 19th century

Cat <071> [021]

19th century bottle shards including one with glass gall.

Cat <072> [022]

Whisky flasks x 2

Whisky square section with round kick

Clear shards modern soft drink

External screw jar clear

Wine glass base, stemmed, clear with slight solarisation, ground faceted bowl. (see discussion)

Lamp glass

Pressed glass bowl

Shard clear vessel with two raspberry prunts, slightly iridescent surface, probable import, (see discussion)

Cat <073> [023]

Pimple kick dark beer

Pimple kick aqua, embossed 'E.B & Co, 6627'

Whisky flask

Storage jar clear, ground lip, late 19th/early 20th century

Upright lips, one dark olive, one aqua

Amber indented side bottle

Cat <074> recovered from rock cave

Complete indented side rectangular section bottle, two piece mould, added upright lip, pale aqua, some seed, some internal iridescence, embossed 'Bathgate & Burns, Edinburgh' (see discussion)

Cat <075> recovered from rock cave

Complete small medicine bottle, clear, two piece mould with everted lip
Late 19th to early 20th century

Cat <076> recovered from rock cave

Complete globe-stoppered bottle (Codd bottle) in pale aqua, embossed 'J.A.Reid, Chemist, Helensburgh' and carrying Reid's Pure as a lily trademark. This has probably been a soda water bottle and was made by Ryland's of Barnsley, information on whom is also embossed on the bottle: 'Reliance patent 4, Dan Rylands Ld, Barnsley'
Late 19th century

Cat <077> bag 1 [002]

Wine/ale bottle base possibly early 19th century
Whisky flask aqua late 19th century

Cat <077> bag 2 [002]

Wine/ale bottle slightly belled early 19th possibly late 18th century
Pale aqua 19th century

Cat <078> [003]

Pimple kick mid 19th century
Various 19th century shards

Cat <079> [006]

Various 19th to early 20th century shards, aqua, clear, pale copper blue, apple green.
3 piece moulded
Possible Kilner jar base
Yorkshire relish
Whisky flask
Coffee essence
Square and oval section bottles
Two late 18th/early 19th century wine/ale bottles
Two shards rich green wine bottle, early 18th possibly late 17th century

Cat <080> [008]

19th century shards

Cat <082> bag 1 [021]

Mixed bag with probably late 18th to early 19th century wine/beer bottle bases, all dark, some with beelling
4 pre mould necks, one aqua
Drinking glass, clear, ground facets, stem has rounded knob.
6 shards pressed glass
Two egg bottles, mid 19th century (see discussion)
Rolled rough plate glass, late 19th century
Various body shards 19th century

Cat <082> bag 2 [021]

Neck and lip wine bottle in dark olive, enhanced lip over downturned string ring
Post c1760 but probably still late 18th century
Further shards possibly same bottle

6 amber shards probably 19th century

Cat <083> [022]

Cobalt blue ink shear lip
Clear bottle, fruit embossing
Various 19th to possibly early 20th century shards
Symington's

Cat <086> bag 1 [037]

Two dark pimple kicks embossed '6 to the gallon', different moulds
Dark plain conical kick
Dark plain conical kick embossed 'S & GS'
Square section coffee and chicory
Various clear jars and bottles late 19th to early 20th century
Cobalt and copper blue
Flashed red/pink
White 'milk' glass handle
Upright lip
Aqua whisky flask
Clear whisky flask
All mid 19th to early 20th century

Drinking glass base, clear, smoothed pontil, 1780 onwards.

Cat <086> bag 2 [037]

Reverse kick wine
Lamp glass
Flashed red/pink two shards, one pouring rim, one base (unfinished pontil) (see discussion)
10 shards pressed glass
Ricketts type lip (see discussion)
Pimple kick
Late 18th/early 19th century wine/ale with belling
Shear lip ink
Base for stemmed dish?
Whisky flask

Cat <086> bag 3 [037]

4 upright lips, 3 aqua one clear
Whisky flask clear
Drinking glass, round bucket bowl, clear,
Shear lip copper blue
Two inks, aqua
Various bottle shards, aqua and dark olive
Cobalt blue
Two wine/beer bottle bases
5 shards pressed glass
Stemmed bowl
Milk glass handle
Lamp glass shards

Cat <087> [038]

Two black beer bottle bases moulded kicks mid 19th century
Shard wine bottle with bellings, early 19th century
Various colours 19th century bottles including two piece mould (see discussion)
Part wine glass stem with angular knob (see discussion)

Cat <088> [039]

Two upper neck and lip shards wine bottle, triangular string ring, significant splay, probably 1st half 18th century (see discussion)
Further shards with bellings possibly also 18th century
Other shards look to be 19th century

Cat <091> [050]

Shard Wine bottle with bellings, late 18th/early 19th century
3 shear lips mid cobalt blue inks (see discussion)
Shards lamp glass
Shards two bucket bowl drinking glasses (see discussion)
Various shards medicines
Coffee essence
Small size Kilner jar lid embossed 'John Kilner, Wakefield' (see discussion)
Upright lip bottles
Clear strap handle from flashed red/pink vessel (see discussion)

Mostly mid to late 19th century

Cat <091> Bag 2 [050]

5 shards press moulded dish, hexagonal with handles (see discussion)
Lamp glass shards
Moulded glass stopper
Early crown closure neck, post 1892, (see discussion)
Shear lip ink
Various bottle shards mid 19th to possibly early 20th century

Cat <092> [052]

Part base square section bottle, round kick, clear glass, possible Reg No 239655, embossed anchor

Late 19th century

Cat <094> [056]

Whisky flask in greenish aqua

Cat <095> [057]

Beer or ale bottle bases
Fluted clear press moulded bowl (see discussion)
Small shards lamp glass?
Pale aqua upright lip.

Mid to late 19th century

Cat <098> [058]

Upright lip bottle in brownish olive
Sauce? Bottle in greenish aqua
Clear bottle embossed 'Bonhill'

Late 19th century

Cat 099 066

4 shards including part base, beer/wine, dark olive, heavy base ring wear, possible slight belling (see discussion)

Early 19th century?

Cat 100 068

Whisky flask, pale aqua

Late 19th century

Cat <101> [078]

Greenish aqua storage jar lid embossed 'Kilner Brothers, Dewsbury and London' (see discussion)

Part lip from second storage jar

Shard from clear Vaseline jar

Two upright lips in dark olive

Base from clear jar/bottle

Mid 19th century

Cat <102> [079]

10 shards clear, blow moulded vessel, purpose unknown, very seedy metal.

12 shards amber bottle

Two upright lips. might be 2nd qtr 19th century

Whisky flask

Three piece moulded bottle dark olive

Cat <103> [080]

Three-piece moulded bottle mid to late 19th century

Cat <104> [082]

Whisky flask, pale aqua

Upright bottle lip

Mid to late 19th century

Cat <105> [091]

Pimple kick beer, black glass, 'S90' embossed in kick

Wine bottle kick, small reverse dimple

Copper blue medicine

Olive green body shards

Mid to later 19th century

Cat <106> [100]

4 beer or ale bottles, pimple kick, one embossed '6 to the gallon'

Symington's coffee and chicory essence bottle

Small whisky flask

Pale aqua bottle upright lip

Mid to later 19th century

Cat <107> [101]

Strap handle from large jug, clear but solarised (see discussion)
Clear moulded dish
Upright lip
Whisky flask
Mid to late 19th century

Cat <108> bag 1 [108]

5 pimple kicks, one pale aqua
3 upright lips
Distorted reverse kick from wine bottle.
Multi sided clear bottle part anchor motif in kick, very slightly solarised
Press moulded dish
Part bucket bowl drinking glass and stem with angular knob, wheel engraved foliate design (see discussion)

Cat <108> bag 2 [108]

Three pimple kick bases one embossed 'S90', one pale aqua 'C.S & Co 781'
Upright lip with flats section string ring

Cat <108> bag 3 [108]

Two bottles, 3-piece moulds, pimple kicks mid 19th century
Square section Coffee and Chicory essence probably Symington's Late 19th/Early 20th century

Cat <108> bag 4 [108]

Mainly mid to late 19th century bottle shards various colours
Pale aqua pimple kick
Three upright lips
Symingtons bottle
Medicine embossed ---tocher (Duntocher?)

Cat <108> bag 5 [108]

Two complete wine bottles? unusual pale yellowish olive. Blown in two piece moulds with added string ring. Both bottles are slightly tapered and one has flattened base ring with pimple in the kick, diameter 76-82.5mm, very seedy glass with quite large bubbles and the lip is flared out above the string ring.
Bottle shape suggests it may be French.
The second bottle tapers from 73-79.5mm and has a conical kick with small central flat, kick 23.5mm
May also be import
Probably 19th century

Cat <108> bag 6 [108]

Two shards wine bottle base in mid rich green, original diameter c140mm, gentle curve through base ring, 53mm pontil, 29mm kick early 18th century at latest possibly late 17th. (see discussion)
Fairly complete T & H Smiths essence of coffee with chicory (Edinburgh and London) late 19th/early 20th century
Very dark olive bottle neck with upright lip 19th century

Cat <109> [123]

4 shards, two embossed aqua
Late 19th/early 20th century

Cat <110> [211]

Body of small Yorkshire Relish bottle, two piece mould embossed 'Goodall, Backhouse & Co'
Late 19th/early 20th century

Cat <110> bag 1 [211]

3 pimple kicks, two dark, one greenish aqua
Reverse pimple wine
Dark conical kick
All look mid 19th century, the aqua pimple kick may have been a spirit bottle

Cat <110> bag 2 [211]

Almost complete whisky flask, pale bluish aqua, some large seed, capacity half imperial pint
Mid to late 19th century

Cat <110> bag 4 [211]

Whisky flask embossed 'W.T'
Aqua base embossed '1047'
Two shoulder shards three piece moulds
Two upright necks and lips
All mid to later 19th century

Cat <110> bag 5 [211]

Two dark pimple kicks, one '6 to the gallon'
Neck and part lip very dark brownish olive, possibly 1st half 19th century
Various 19th century shards
Fairly deep wine bottle kick, pale yellow green some large seed, import?

All 19th century

Cat <110> bag 6 [211]

4 dark pimple kicks mid 19th century, one '6 to the gallon'
Pale amber shard

Cat <111> [059]

Two piece mould ink in pale copper blue
Possible early 19th century wine bottle
Various 19th century shards

Cat <112> [005]

2 small beers
1 wine
square section fruit juice?
pale aqua stopper
moulded tumbler base plus two body shards, slightly solarised (see discussion)
amber wide mouthed bottle
several shards clear white bottle
several shards cobalt blue bottle
3 shards flashed red/pink glass (see discussion)
All look to be 19th century

Cat <113> [006]

Whisky flask, late 19th century

10 shards clear bottle, same type as **Cat 118**, post occupation c1950

Cat <114> [009]

Probable beer bottle dark olive, mid to later 19th century

Cat <115> [020]

3-piece mould, mid to later 19th century

Cat <116> [021]

Wine bottle, pale dull olive, pontil kick?, base ring wear

Early 19th possibly late 18th century

Cat <117> [023]

Bottle dark olive, 19th century

Cat <118> bracken

Complete 'lemonade' bottle in clear, embossed 'Garvie, Milngavie', internal screw thread with ceramic stopper.

Post occupation c1950

Cat <119> [005]

Two small shards similar colour and condition to Cat 120. Probably part of same item, original diameter c13mm

Cat <120> [037]

Small shard possibly part of bead or marble, slightly greenish blue, moderate to heavy denaturing.

Date ?

Cat <121> [193]

Black glass bead, good condition, slightly misshapen rounded cylindrical shape, maximum length 13mm, maximum diameter 13mm, offset hole c2.5mm diameter (see discussion)

Cat <172>

Probable lamp glass, pale green tinge, some small seed

Cat ?

Substantial part of milk glass press-moulded jug with short stem. The main body carries a moulding of a vine with grapes. Quite crudely made with prominent mould lines, 3-piece mould with integral handle (see discussion)

Six further shards from same, including four of foot.

17 shards milk glass from one or more other vessels.

5 bottle shards dark olive, one with 3-piece mould shoulder line, mid to later 19th century.

The Metal and Associated Objects

Dawn McLaren

Overview

A total of 1289 fragments of metal and associated materials (104 kg) were recovered from the 2009-2011 excavations of a deserted 16th to 20th century settlement at High Morlaggan, Argyll. The assemblage is dominated by iron objects but also includes a small number of copper alloy and lead finds, as well as leather, brick, glass, Bakelite and other synthetic materials.

Visual analysis of the metal objects confirms that the majority of fragments derive from structural fittings (e.g. brackets, hinges and bolts), tools (e.g. axes, chisels and blades) and household fixtures (e.g. cooking pot fragments, chains and locks). Very few decorative or personal objects were identified but a small number of brass buttons and buckles and leather/synthetic boot sole fragments were present. Most finds cannot be closely dated. Those that can indicate a date range between the eighteenth and twentieth century with the majority of datable finds suggesting a late date (19th to 20th century).

Although metal finds were recovered throughout the excavated area, the vast majority of objects (76%) derive from contexts associated with structure 2. These are predominantly from abandonment/collapse deposits or deliberate dumps/accumulations of midden material. The condition of the objects concurs well with these secondary contexts: most are incomplete or damaged, suggesting deliberate disposal. The vast quantity of iron in particular is unexpected from a rural post-medieval settlement context. The fragmentary, damaged condition of most of the objects and their recovery from residual contexts suggests that most of the material had been deliberately dumped at the site after its abandonment in the twentieth century, perhaps from elsewhere such as nearby Morelaggan House.

Methodology

Due to constraints on funding, it was only possible to undertake a rapid visual examination of the finds with a view to providing spot identifications. This assessment focused particularly on identifying the function, condition and potential date of individual objects and the assemblage as a whole. Due to the vast size of the assemblage and limitations on funding, only a small selection of the finds were x-rayed. As such, a large proportion of the iron is unidentifiable due to the heavy surface corrosion.

Each object was examined, identified where possible and assigned an individual catalogue number. No measurements were taken. Objects of the same form (e.g. nails) within the same context were catalogued together. As such, over 670 individual objects were identified amongst the fragments. A full catalogue list is provided in the archive.

Contextual analysis

Stone-built spring (context 108)

A minimum of ten iron objects were identified including fragments of a sheet metal vessel with footed base, a complete knife blade, a damaged hafted toothed agricultural tool, a damaged and

highly corroded flat circular object which may be a cast iron lid, and six nails. The majority of nails had wood adhering to the shanks suggesting that they had been deposited within their wooden fixtures. None of the finds are closely datable.

Structure 1

Forty-two metal objects were recovered from this structure; the majority derive from abandonment and post-abandonment deposits. Only three objects come from well-stratified contexts and appear to relate to the use of the building. These comprise two fragments of robust flat rectangular plates of cast iron (Cat. 155) which are from an early trampled floor (context 120). One face of each of the fragments has an equidistant grid of shallow circular hollows (Diam 13 mm) which do not perforate the thickness of the plate. In both cases, little of the original edges remain, making it difficult to determine how the plates may have been assembled. It is possible that they are treads from an iron step. These fragmentary objects are not closely datable but the large quantity of cast iron that they represent suggests that they are unlikely to be earlier than 18th century in date. A single nail shank was associated with the building's later use as an animal pen (context 100).

The remaining thirty-nine objects come from collapse/post-abandonment contexts (contexts 57 & 64). Structural fittings dominate the finds from these contexts (13 examples) and include three complete pivoting door hinge brackets, two still interconnected (Cat 144 A), suggesting they rotted in situ attached to their timber fixtures. Also present are nine nail fragments, two possible tool fragments, an iron key and several unidentified pieces of iron. Three small copper alloy pieces include a late 19th/early 20th century glass and copper alloy button or cuff-link and a mass-produced, machine-made four-holed brass button of similar date (Cuddeford 1994, 15, no 29). This button has the maker's mark "WINSA.... GLASGOW" stamped on one face.

Structure 2 and associated contexts

The majority of the metal finds from the excavated area, representing a minimum of 512 objects, derived from the interior and immediate exterior of Structure 2. As with structure 1, only a small proportion come from contexts associated with the occupation of the building (11 objects).

A total of seven iron objects were recovered from Phase 1. None of the finds, which include nails, the pegged heel of a leather work-boot, a possible barrel stave fragment and various fittings, are closely datable but they are consistent with the 18th/19th century date suggested from the historical record.

Phase 2 deposits contain a single metal find: a fragment of a 19th/20th century brass thimble (Cat 163) with out-turned round rim and well-machined dimples (Cuddeford 1994, 48, no.9). This came from a possible occupation deposit (context 056). In phase 3, a small number (3) of finds came from a heavily burnt deposit (context 051) thought to be the residues from small-scale metalworking. These consisted of a complete but heavily damaged shovel head (Cat 142), a nail shank and an unidentified, heavily corroded fragmentary object. No blacksmithing waste in the form of vitrified slag or hammerscale was identified to substantiate use as a smithy. Overlying this deposit was a build-up of organic material (context 038) suggesting the presence of animals or use as a store-room. This context was rich in fragmentary iron objects (75). The presence of so much fragmentary iron makes it unlikely to have functioned as an animal pen due to the danger the sharp fractured objects would have posed to the animals. Looking more closely at the range of objects represented within this deposit proves fruitful: the majority of finds appear to be nails (approximately 40 examples) and structural fixtures (8) such as robust bolts, a possible joist bracket and perforated and imperforate strap fragments, representing possible collapsed roofing material. Also present are a piece of scrap lead sheet (Cat 137 N), a tool shaft fragment (Cat 137 R), a fragment of the rim from a metal pail or bucket (Cat 137 H), multiple fragments of copper alloy strip adhering to wood (Cat 137 E, L, S) and a fragment of a 19th/20th century cast four-holed brass button (Cat 137 X).

The bulk of the metal finds from this structure come from post-abandonment deposits, representing accumulations of collapsed rubble and deliberate midden dumps and do not relate directly to the occupation of the building. From Structure 2 alone, over 500 fragmentary metal objects were recovered from post-abandonment deposits within concentrations of midden material accumulating at the west side of the building, particularly from contexts 005 (over 90 objects), 037 (over 180 objects) and 050 (over 65 objects). These are dominated by nail shank fragments (minimum of 140 examples), various fittings, damaged tools, cooking vessel fragments and leather/synthetic soles from men and women's shoes.

The tools tend to be substantially complete but appear damaged beyond the point of use at the time of deposition. These include a pitchfork (Cat 129 B), a sledgehammer head (Cat 136 CQ), axe-heads (Cat 125 V & 129 F), a hoe blade (Cat 125 Y), a complete tanged file (Cat 125 AU) and various fine files, chisels and punches. Less common within these deposits are structural fittings although screw-tipped carriage-type bolts, L-shaped brackets, pivoting hinges and robust strap fragments are present.

Fragments of cooking pot, including 18th/19th century cast, ribbed, camp-kettle styles (Schiffer *et al* 1979, 219) and larger, rounded cauldron-type sheet vessels are present, as well as various pails of rolled, tinned iron (*ibid*, 215) and cylindrical tins. Possible pot lids and wooden barrel stave fragments are also prevalent.

Domestic fittings have been identified in the form of fragmentary door handles (Cat 125 BA, 141 R), composite locks (Cat 125, 133 K, 141 W) and a possible letter-box plate (Cat 133 G). Internal fixtures are also present such as non-joining fragments of a cast iron decorative fire-grate (Cat 127 C). Here, portions of the relief cast decoration are visible. The lower portion features alternate bands of cross hatching and parallel vertical lines. The upper panel shows some form of foliage decorative scheme (thistles?).

Amongst the more prosaic elements of the assemblage are a few more unusual objects including a substantially complete but damaged late 19th century cap gun (Cat 125 H), the brass nozzle gauge for a late 19th century gunpowder flask (Cat 125 I) and the brass telescopic sight from a shotgun (Cat 125 BJ). Decorative objects such as an 18th/19th century stamped tinned or silvered copper alloy button (Cat 162 B), a pre-1850 gilt domed brass button (Cat 160 E) and a four-holed machine-made cast brass button of 19th/20th century date are also present.

Due to the severe corrosion of much of the iron, it has not been possible to identify joining fragments of objects from distinct midden dumps. In only one case was this possible, where two joining fragments of an early 20th century green Bakelite plinth or box (Cat 133 C & 136 CL) were found in different contexts (022 & 037).

The assemblage of finds from these post-abandonment deposits includes a wide date range of objects, from 18/19th century cooking vessels and brass buttons, to objects of mid-20th century date such as a folding umbrella frame (Cat 136 H, BG, BO) and a petrol cap from a tractor or generator (Cat 136 E). These later items confirm that the majority of finds from midden deposits and deliberate dumps accumulated during the early to mid-20th century.

Structure 3 and associated contexts

Despite the quantity of finds from this building (minimum 44), very few can be related to its use. Two nail fragments came from phase 1 and 2 floor levels (context 095 and 091). A later surface, possibly a floor (context 045), was associated with a small quantity of iron objects consisting of a riveted horn-plated tool handle and blade fragment, three nails and an L-shaped bracket. A further

eight objects, including a possible knife blade, three fittings (e.g. loop-headed fitting & strap fragments) and three nail fragments were associated with a drain (context 061).

The remaining twenty-eight objects from this structure came from post-abandonment collapse and topsoil (contexts 002, 016, 023, 047, 052, 068). Broken and damaged tools are numerous here and include an auger for boring holes in timber (Cat 135 B), a chisel (Cat 122 D), three substantial sickle blades (Cat 123 B & C, 146) and a galvanized steel hacksaw frame (Cat 122 B). The latter tool is suggestive of a late 19th/20th century date which corresponds well with the historical record that suggests that the building was still in use at c.1890-1900. Fittings, including substantial structural fixtures carriage-bolt-type bolts, and a fragmentary door-hinge bracket, are also frequent within these contexts. Only one domestic fitting was identified: a small broken copper alloy coat hook (Cat 159).

Early structure between buildings 3 & 4

Only two metal objects were associated with these ephemeral structural remains (context 020): a thin flat rectangular copper alloy strip and a small brass tack. Both are damaged and distorted from removal from their timber fixtures, likely to be from an item of household furniture.

Structure 4 and associated deposits

A total of twenty objects came from the interior of structure 4, fifteen of which were recovered from context 101. This context has been interpreted as a layer of possible occupation or midden build-up, making it unclear whether the finds relate directly to the use of the structure or were deposited there after abandonment. With the exception of a hoe or mattock blade (Cat 153 A) which is damaged but largely complete, the other iron items from this layer are heavily fractured. These include curving iron staves from a wooden bucket (Cat 153 C), a possible fragment of bucket handle (Cat 153 D) and nails.

Overlying this layer is a mixed deposit of rubble and midden material (context 035). Only five objects were recovered, most being severely fractured and corroded preventing identification. One complete 19th/20th century cast machine-made brass button was found with the makers mark "TURNER & Co PATENT" (Cuddeford 1994, 15, no 29).

To the east of structure 4 was a deliberate dump of midden material (context 021) which included a minimum of thirty-four metal objects. These comprise fragments of structural fittings including fragments of complex hinges (Cat 132 G) and brackets (Cat 132 C). Also present were further possible bucket or barrel staves, multiple nails (13), a fragment from a triangular-sectioned tanged file or rasp (Cat 132 M) and pieces of pegged leather boot soles (Cat 132 A). Such boots have a long chronology of use, being manufactured up until the mid-twentieth century (Stuart Campbell, *pers comm.*). In addition to the iron were three copper alloy objects: two cast utility buckles of 19th/20th century date (Cat 166 B) and a damaged and distorted domed circular mount, probably for furniture (Cat 165). The domed face, decorated with a repeating motif of raised dots, bars and crescents.

Structure 6

A total of eight iron objects were recovered from this structure, which was located below the main settlement area. These consisted of five nail fragments and two pieces of galvanised steel fence wire suggestive of a 19th/20th century date. A further fragmentary iron object could not be identified due to the level of surface corrosion.

Enclosure 3

A single small sheet fragment of copper alloy was the only metal find from this area. No original edges were preserved and identification of function and date are unknown.

'Cave'

Only one find came from this feature: a rim fragment from a cauldron-type iron vessel. Such vessels were in use throughout post-medieval times and continued in use until the mid-20th century.

Conclusions

Very few metal objects within the assemblage can be confidently associated with the use of the individual buildings. Those that are associated assist little with confirming either the date of occupation or the possible function of the structures during their use. The vast majority of the iron finds derive from post-abandonment deposits, namely deliberate dumps of midden material introduced into and around the structural remains probably during the early to mid-20th century.

Acknowledgements

I am very grateful to Stuart Campbell for many useful discussions of this assemblage and for his advice, particularly on the leather boot fragments. I am also grateful to Fraser Hunter for reading and commenting on an earlier draft of this paper.

References

- Cuddeford, M J 1994 *Identifying metallic small finds*. Ipswich: Anglia Publishing.
Schiffer, H, Schiffer, P, & Schiffer, N 1979 *Antique Iron*. Pennsylvania: Schiffer Publishing Ltd.

1. Introduction

The leather (seen by specialist) consists of 259 fragments, and comprises 178 shoe parts, one belt, 61 scraps and 19 miscellaneous pieces. The shoes are all of riveted construction and most probably date from 1850 onwards. Only a very basic catalogue has been made; measurements and detailed descriptions have only been included for complete soles, foreparts and a few fragments of upper.

2. Shoes

The shoe parts include 112 sole fragments and 66 upper parts. Only four soles are whole, or nearly complete. The uppers are very fragmentary.

2.1. Construction

The shoes are of riveted construction, where rivets have been used to secure together upper, insole, midsole and outer sole. Upper components have been stitched together by machine, using lapped seams.

2.2 Soles

The soles are of multiple layer construction, with insoles, middle soles and outer soles. In a few examples, details of the middle sole are visible. Furthermore, most of the soles have had hobnails attached. The soles also had separate heels. These consisted of several layers or 'lifts' and were nailed to the outer sole.

2.3 Uppers

No complete uppers survive, only small fragments. However, it is clear that these were boots made up of several pieces; double stitching channels, with very tightly spaced stitching, indicate that uppers were stitched together by machine. Some quarters have been reinforced with heel stiffeners; one example also has a semi-circular counter and a vertical strip. (MOR 11 <210> [037]) Strips with lace holes, reinforced with metal eyelets, indicate that these boots had a central fastening. One example has two metal hooks above the lace holes. (MOR 11 <210> [037]) A few lace hole facings also survive. A short length of leather thong survives in situ on one example (MOR 11 <210> [037]) At least one example demonstrates how the upper was nailed to the sole. (MOR 11 <210> [037])

2.4 Shoe Styles

The soles have been divided into three groups, based on the shape of their foreparts, especially their toes. The most numerous (Toe Shape 1) consisted of 14 examples of slender foreparts with blunt, square toes. The next most common shape, with 8 examples, had a broad, rounded toe. (Toe Shape 2). Only two soles had an oval toe. (Toe Shape 2) As no complete uppers survive, identification of styles is very difficult. The fragments with lace holes, for example no. 129 (<210> [037]), where one side of the front of the quarters with 16 lace holes is still attached to the sole unit, show that these were boots with central lacing. The presence of backseams shows that the quarters consisted of two pieces. (<281> [005] & <210> [037]).

2.5 Wear and Repair

The shoe components are all very worn. Only three complete or nearly complete soles survive; the remainder of the sole pieces are fragments of foreparts, waists or seats, or separate heels. Several of the foreparts consist only of the outer, nailed edge. Two clump, or repair soles, survive, one with the sole it had been added to. (MOR 09 <209> [023])

2.6 Sizes

Only four soles are complete enough for shoe sizes to be identified, and even these are approximate. Three of these were children's, ranging from a Child's 3 or 4 (Continental 19 or 20 ½) to a child's 8 or 9 (Continental 26 or 27). The fourth was an Adult 5 ½, (Continental 39) (MOR 09 <277> [002]; MOR 11 <210> [037] x4)

However, where possible, a distinction has been made between children's [Size (a)], youths' or small women's [Size (b)] or women's and men's shoes [Size (c)]. Thus, 16 sole fragments or top pieces have been assumed to have been children's. (MOR 09 <275>; <277> [002]; MOR 11 <210> [037] x 11; <212> [050] x 3) Similarly, six pieces might have belonged to youths or women with smallish feet. (MOR 09 <208> [022]; MOR 11 <210> [037] x 2; <212> [050] ; <211> [045] x 2) Fifteen items might have been adult women's or men's. (MOR 09 <208> [022] x2; <281> [005]; <280> [005]; MOR 11 <210> [037] x10; <212> [050]). Another item might have belonged to either youths or adults.

A comparison of Toe Shapes (see above) and size groups, shows that Toe Shape 1 was most commonly found in women's and men's sizes (11 examples), with only three from youths'/small women's. Toe Shape 2 occurred most frequently in children's sizes (6 examples), with only two instances in youths'/small women's. Toe Shape 3 only occurred in youths'/small women's sizes.

Toe Shape	Size (a)	Size (b)	Size ©
Shape 1		3	11
Shape 2		2	
Shape 3	6	2	

3. Belt

A short fragment of a belt or strap survives. (MOR 09 <206> [002]). It consists of a strip of leather, of single thickness, with cut edges, and with a single hole for the pin of a buckle.

4. Scraps

Approximately 61 fragments have neither cut edges nor stitching. These are probably remnants of shoes.

5. Miscellanea

Another 19 items have traces of stitching but have no recognisable features which would indicate their use. Again, they may be from shoes.

6. Date

Riveted shoes are of 19th -20th century date. Brunel attempted this type of manufacture 1810 – 1815, but failed. The method was revived in Cricke's patent of 1853. Huge quantities of cheap working wear were produced from the late 1850's, and especially from the 1860's when there were machines to drive them, until the early 1920's, although some were made until the early 1950's. They were at their most popular from the 1880's until about 1920. (Information from Miss June Swann, 1989) .

7. Origin

The shoes were riveted and sewn by machines. They were probably made in a factory. However, it is possible that they may have been made by a local shoemaker. For example, Singer treadles for sewing cloth were strengthened to sew leather by 1857. Such machines were operated by the late 19th century by any shoemaker or repairer. (Information from Miss June Swann, 1989). The repair referred to above was almost certainly made locally, as only a small portion was patched.

8. Conclusion

This assemblage represents the remains of sturdy working shoes, worn by children, women and men. They almost certainly date from the mid 19th century onwards, and were probably made in a factory.

9. Glossary

Clump or clump sole – a half-sole added to a shoe, usually as a repair.

Forepart – the front of a sole.

Heel – a component added to the rear or seat end of the sole, originally for utility but then as fashion. It may consist of separate lifts. The bottom section which rests on the ground is called the 'top piece'.

Insole – the inside bottom part of a shoe on which the foot rests.

Lapped seam – two upper sections are overlapped and stitched together right through the full substance of both sections.

Middle or middle sole- an additional section placed between sole and insole.

Quarters – the sides of a shoe upper joining on to the vamp at the front and meeting each other at the back of the heel.

Seat – the rear end of insole or sole on which the heel of the foot rests.

Vamp – the front section of a shoe upper covering the toes and part of the instep.

Waist – the narrow part of the sole or insole under the arch of the foot.

10. References

Swann, J. 1989 Information on riveted shoe construction in letter to Clare Thomas

1. Introduction

1.1 Fiona Jackson and Sue Furness of the Morlaggan Rural Settlement Group commissioned this dendrochronological work to establish the age of some of the culturally-meaningful trees which grow on the site of a former farming settlement at High Morlaggan, near Arrochar in Argyll & Bute. This decision followed a historic-tree survey and recommendations by native woodlands consultant Peter Quelch. The settlement has been the subject of a community-led historical and archaeological investigation supported by HLF, Argyll and the Islands LEADER, Loch Lomond and the Trossachs National Park, Kilmartin House Museum and Scotland's Rural Past, amongst others. Dendrochronology is a means of providing additional chronological control in wooded cultural landscapes, and hence its use here. The project leaders would have liked to apply the technique more widely, but were of course constrained by funding. The author has contributed some of her own time to allow some extra work to be undertaken, but there could be much wider applications in this relatively well-wooded relict landscape. The selected trees for this study were a row of hawthorns (Plate 1) which grow around the area known as the 'kailyard' very close to the archaeological remains of the High Morlaggan farming settlement and a large hollow rowan of possible pollard form which is associated with an area of old cultivation traces near the settlement. The rowan was recently felled by a power company (Plate 2), apparently because it is under the way-leave of an electricity pylon line. A nearby living rowan tree was sampled to allow comparison.



Plate 1 Hawthorns in a row at the edge of the 'kailyard' enclosure, Loch Long in background; From R to L HMH1, HMH2 & HMH3 *Photo: C Mills Aug 2011*



Plate 2 The rowan (HMR1), after felling by the power line company.
Photo C Mills Aug 2011

2. Methods

2.1 Sampling was undertaken by the author on 23 August 2011 in the company of Sue Furness and with the prior permission of the landowner. The samples from living trees were taken using Swedish increment corers which had been sterilised beforehand. The rowan of pollard form had been felled by a power line company in around March-May 2010, and its main stem was hollow. Thus slice samples were taken; including a partial slice low down the stem, capturing the wood which survives around the hollow centre, plus slices at the point where the main branches emerge from the top of the stem where there was a more complete cross-section available. The slices were taken by Peter Quelch (the low sample) and by the High Morlaggan project team (the higher branch emergence samples). Tree location and other key attributes, such as stem girth, sample height and core direction were recorded for each sample (Table 1). Tree location was recorded as 10 figure NGR using a GPS handheld device, model Garmin GPSMAP 60CSx, which works especially well under tree canopy. The NGR for the felled rowan was provided by Sue Furness. Each tree was given a unique analytical number and each individual sample or radius measured was given a suffix letter. Preparation and analysis of samples was undertaken between August and October 2011.

2.2 Standard dendrochronological techniques were employed in the analytical work. The cores were gently dried under weights to prevent warping then mounted in routed wooden holders. The surfaces of the samples were prepared for measurement by gentle sanding, using sequentially finer grades of sandpaper. The tree-ring width sequences were measured on a Heidenhain measuring table, under a low-power microscope, linked to a P.C. Data capture, analysis and plotting were undertaken using the 'Dendro' suite of programs (Tyers 1999). The program produces 't' values as a measure of the degree of correlation between sequences, and as a general rule of thumb values above 3.5 are considered to be significant, although the length of overlap also has to be taken into account. Visual cross-matching of the graphed tree-ring width sequences is undertaken to seek statistical positions of match, and thus to provide an absolute calendrical date span to the sample. This cross-matching process helps to eliminate potential inaccuracies caused by breaks in cores or very compressed bands of growth, and provides a much more reliable result than simple counting of rings. However, neither hawthorn (*Crataegus monogyna* Jacq.) nor rowan (*Sorbus aucuparia* L.) are commonly used in dendrochronological dating, and furthermore they are diffuse porous species which means they have rather unclear ring patterns compared to ring-porous species like oak and ash. Therefore, this work was rather experimental and apart from the uncertainty over whether these species are reliable candidates for cross-dating, there is no other Scottish reference data against which to check their measured tree-ring patterns. Thus, High Morlaggan represents the start of the development of tree-ring chronologies for these two native species in Scotland. Given their common occurrence in Scottish semi-natural woodlands and historic cultural landscapes, this is an important area for development.

2.3 Where cores do not reach centre, an estimate of the number of rings missed is made using the pith offset method, which involves overlying a transparent template with several sets of concentric circles, each at different 'ring width' intervals. Matching the width and curvature of the inner rings of the sample to the most similar set of concentric circles on the template allows one to estimate the number of rings missing to centre, assuming a constant interval. This, together with an estimate used for the number of years it would take for a stem to reach core sampling height, allows allocation of estimated 'birth' date or sprouting date for the tree. It is not feasible to take core samples at ground level because (a) room is needed to turn the corer handle and (b) ring patterns become distorted if too near the root plate. Thus samples were taken at a low but workable height (Table 1).

3. Results

3.1 Samples were obtained from three hawthorns and from two rowans. The details of the sample types and locations are given Tables 1 (hawthorn) & 3 (rowan) and the sampled trees are shown in Plates 3-7. The dendro results are summarised in Tables 2 (hawthorn) and 4 (rowan)

Table 1 Key attributes of the High Morlaggan sampled hawthorn trees

Tree	Sample type	Sample name	NGR	Sample: direction core taken from	Stem girth(m) at sample height	Sample height (m)
Hawthorn 1	Core	HMH1a	NN 27722 01615	Multi-stemmed specimen: Sampled Westernmost large stem from the NNW	1.38	0.60
Hawthorn 2	Core	HMH2a	NN 27707 01607	NNW	1.06	0.55
Hawthorn 3	Core	HMH3b	NN 27730 01606	ENE	0.93	0.35

Table 2 Ring-counts and other dendro-data for High Morlaggan hawthorn samples.

Sample	No. of measured rings	Dendro-date of measured tree-ring sequence	Inner end - pith offset	Inferred date of central ring at sample ht	Outer edge: No. Sapwood rings,	Average annual tree-ring width increment mm	Estimated sprouting date, assuming vertical growth rate of 10cm pa (and in brackets assuming 1.92 cm p.a. see text.)
HMH1a (cross-matches with HMH3b)	76	Spans relative years 8 to 83 of HMH3b; if assume outer ring=2011 (based on outer core fragment examination) measured sequence spans 1936-2011	4	1932	A few rings under bark fragmented on coring but can see how they join up under microscope, believe measured to bark-edge, ie to Ring for 2011 inclusive	2.17	c.1926 (or c. 1901 using the slower growth rate estimate)
HMH2a	76	Not matching 1a & 3b: Inferred span 1919-1994 based on the best visual match (t=1.78) where HMH2a ends at 1994 against Master HMHMx2	4	1915	Est. loss of approx 15 rings in outer unmeasured fragments – can see 15 or so narrow rings in broken fragments at outer edge and can see bark edge on the outer fragment, could easily be 17 lost rings as would be indicated by best visual match with HMHMx2	1.38	c.1909 (or c. 1886 using the slower growth rate estimate)
HMH3b– (cross-matches with HMH1a)	76	Spans relative years 1- 76 of HMH1a's end of relative year 83 (=2011) so this measured sequence would span 1929-2004 when HMH1a ends 2011	10	1919	At least 6 rings lost under bark as detached fragments have 6 rings; this tallies with position of match against HMH1a which indicates there are 7 missing outer rings on HMH1a	1.35	c.1915 (or c. 1901 using the slower growth rate estimate)
Hawthorn Master HMHMx2 – mean of HMH1a & HMH3b	83	AD1929-2011 INFERRED SEQUENCE SPAN, BASED ON BARK EDGE OF COMPONENT HMH1a	10	c.1919	Bark Edge on HMH1a – so final ring = AD 2011	1.71	

3.2 The three sampled living hawthorns were from a clear linear alignment (Plate 1), and there was a further dead specimen at the south eastern end of the same alignment; the sampled trees and that dead specimen were equidistant, at 6 of the author's paces apart, and clearly originate as a planted feature. Furthermore Hawthorn 1 is multi-stemmed (Plate 3), with the stems in the same alignment as the feature as a whole. The strong impression is of an out-grown hawthorn hedge



Plate 3: HMH1 multi-stemmed hawthorn, pink string marks sample location *Photo: C Mills Aug2011*



Plate 4: Hawthorn HMH2 *Photo: C Mills Aug2011*



Plate 5 Hawthorn HMM3 Photo: C Mills Aug2011

3.3 The three hawthorn dendro-samples were measured and the tree-ring width sequences compared visually and statistically with each other. Measurement was not easy because as diffuse porous species, the ring pattern and the boundaries between rings are rather unclear and so it was possible that measurement errors were made. However, two of the sequences (HMH1a and HMH3b) matched each other well visually and statistically, which tends to confirm the measurements, and helpfully one of these two samples extended to bark edge (HMH1a, Tables 1 & 2). This allowed a master to be formed of the two sequences and an absolute date span to be applied (AD1929-2011), despite the lack of any pre-existing reference chronologies for hawthorn (Table 2, Figure 1).

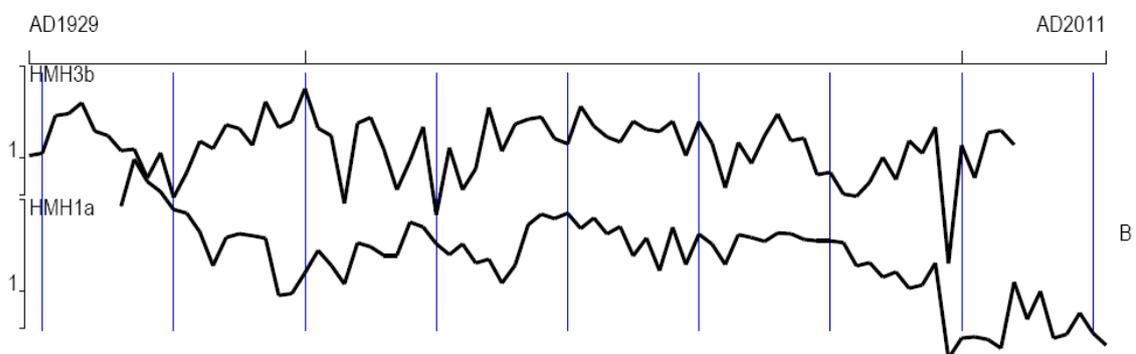


Figure 1 The visual match and date spans of samples HMH1a (from Hawthorn 1) and HMH3b (from Hawthorn 3). Statistical match is $t=4.81$ with a 69 year overlap. Based on the sample from

Hawthorn 1 extending to bark edge, together the two matching ring sequences span AD1919-2011. A further allowance needs to be made to interpolate the sprouting date (see text).

3.4 The remaining hawthorn sample, HMH2a, did not yield a significant t-value against either of the other two hawthorn samples. This may be due to undetected ring measurement errors, although the sample was re-checked and no obvious points of error could be located. Of course, hawthorn is an untried species for dendrochronology, and it may simply be that it can display quite

ring patterns even when growing within a short distance. The forms of the trees were complex and may have involved hedge trimming or other interventions which may have differed between individual trees, one possible cause of varying ring patterns. Like HMH3b, the outer rings of HMH2a had fragmented on coring; hawthorn proved a very hard and difficult wood to core and the degree of muscle power needed to get the corer to penetrate the thick fibrous bark meant a lot of pressure and fragmentation of the outer wood zone immediately under the bark. However, it was possible to see that on core sample HMH2a there were at least 15 mostly very narrow rings in the small fragments of core extracted from the outer wood, in separate small sections. They could not be measured as it was uncertain whether they were continuous but this allowed a potential visual matching position to be sought against master sequence HMHMx2 at around 15 rings in from the bark edge. In fact the best visual match at around that position is where HMH2a ends 17 years earlier than HMHMx2, at AD1994 (Figure 2, Table 2), where the t-value is 1.78. While not sufficiently convincing to allow HMH2a to be admitted to the site hawthorn chronology, this is good evidence for the likely date span of the sample. There could be undetected errors but assuming they would at most affect the date span by a couple of years either way, this would not make much difference to the interpretation of the hawthorn dates overall.

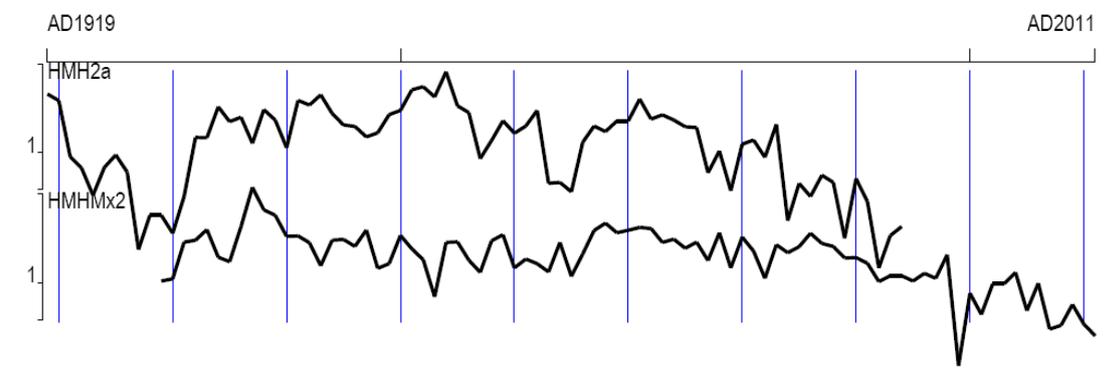


Figure 2 Hawthorn 2 sample HMH2a compared to the 2-sequence master HMHMx2 (made of samples from Hawthorn 1 and Hawthorn 3), at the best visual matching position which is consistent with the estimated number of missing outer rings on HMH2a. This indicates a likely date span of AD1919 to AD1994 for the measured section of HMH2a; if the outer rings had been intact then the sample would have spanned AD1919 to 2011. Of course, a further allowance has to be made to interpolate the sprouting date (see text) given that the core samples have to be taken above ground level (see Table 1 for sampling heights).

3.5 Having obtained date spans for the three measured hawthorn sequences (Table 2), it remains to calculate likely sprouting dates from them. There are two stages of estimating to be undertaken, first to work out the date of the central ring at sampling height and then to allow for time for the stem to grow to sampling height. No cores quite hit centre, though they were close (Table 2). Therefore the pith offset figure first needs to be added to the inner end of the dated sequence to obtain the

probable date of the central ring at sampling height. This gives central ring dates of 1932, 1915 and 1919 for Hawthorns 1, 2 and 3 respectively (Table 2). They were cored at different heights (60cm, 55cm and 35 cm respectively, Table 1) and have variable forms and girths (Plates 3-5, Table 1), so a difference of central ring date at coring height is not surprising. The most difficult estimate to make is the vertical growth rate, as this can be so dependent on individual site conditions, species, management history and relative exposure to grazing (Mills 2011). Despite the thorny characteristics of hawthorn, making it a favoured hedging barrier, its soft young shoots may apparently be eaten (Rackham 1976, 158). One might assume a generalised vertical growth rate of 10 cm per annum, as has been inferred for oak coppice (Mills 2011) for example, or we might try to deduce a growth rate from the limited site data available here. If we assumed for one moment that these three hawthorns would grow at roughly the same vertical rate when young, then we could look at the difference between the central ring dates at each sample height to gain an idea of a general vertical growth rate for hawthorn here. The greatest height difference is between Samples HMH1a and HMH3b, the two samples which match each other. HMH3b is the lowest of all the samples and had reached 35cm above ground level by 1919 while HMH1a had reached 60cm by 1932, with the difference between them indicating the possibility that it could take 13 years for one hawthorn stem to grow 25cm vertically, a vertical growth rate of 1.92 cm per annum. This seems very slow in light of the fact that hawthorn hedging is usually thought to have been planted for its quick growing properties (its English vernacular name is 'Quickthorn', Rackham 1976, 34) and that much faster vertical growth rates are seen in other deciduous species (Mills 2011). We might reflect however on the multi-stem form of HMH1 and wonder if it was cut back at some point after planting and that we are looking at re-growth of a slightly later phase than the original hedge planting. This would make that derived vertical growth rate artificially slow. The other feasible comparison is between HMH3b (sampled at 35cm height) and HMH2a (at 55cm height), but the central ring dates confuse the issue as HMH2a appears to have reached 55cm by AD1915 while it took until AD1919 for HMH3b to reach 35cm in height. Therefore this comparison does not really help, except perhaps to indicate that Hawthorn 3 was especially slow growing.

3.6 It seems likely the truth lies somewhere between the 10cm pa figure used for oak coppice and other vigorous tree species (Mills 2011) and the much slower rate of 1.92 cm pa derived from the age/height differences of HMH1a and HMH3b. Table 2 shows both versions of calculation, using 10cm pa and 1.92 cm pa. The results indicate stem origin dates of between AD1901 and 1926 for Hawthorn 1, between AD1886 and 1909 for Hawthorn 2 and between AD 1901 and 1915 for Hawthorn 3. However, it is suggested that we can refine this further by making the assumption that the hedge was planted as a single feature in a single phase; the equidistant nature of the aligned trees indicates this. Thus we should consider the common overlap periods between the origin dates of the samples, which is AD1901-1909 when all three samples considered. If we exclude Hawthorn 1 because of its multi-stem form (suggesting it could have been cut back and re-grown since planting), then the common period of interpolated sprouting dates still falls between AD1901 and 1909 when only Hawthorns 2 and 3 are considered. This seems consistent with some other observations. The first extant ring on any of the samples is 1919 on Hawthorn 2 (at 55cm above ground and not quite at centre), while the sample which was taken closest to ground level, Hawthorn 3, had a first measured ring at 1929 and an inferred central ring date (at 35cm sample height) of 1919. Thus the interpolated sprouting date in a range of AD1901-1909 seems entirely reasonable, implying a vertical growth rate between 1.94 and 3.5 cm pa for Hawthorn 3 to reach 35cm by 1919, consistent with the earlier observations on likely vertical growth rates.

3.7 Finally, one must consider whether the hawthorn hedge would have been grown from seed *in situ*, or planted out as saplings. It is not possible to tell from the dendro evidence, but the possibility of planting out saplings could obviously make it a slightly later feature. It is highly feasible to grow hawthorn hedges from seed (Rackham 1976, 34), and even if planted out as saplings it seems likely these would be as very small young plants. Therefore it is suggested on a combination of the dendro

results and common sense that the hedge feature is very likely to have been planted in one year within the period AD1901-1909.



Plate 6 Rowan 1 in c 2009, prior to felling by power company in 2010. It grows from a large rock which appears to be incorporated within the enclosure dyke around the cultivated area. *Photo provided by Fiona Jackson & Sue Furness*

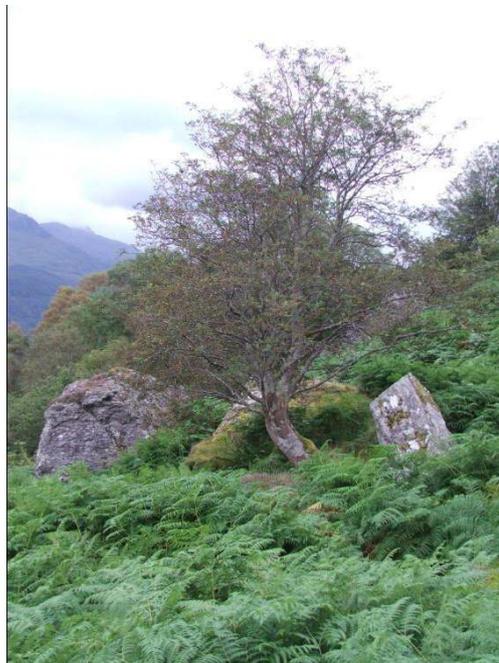


Plate 7: Rowan 2 *Photo C Mills Aug 2011*

3.8 The two sampled rowans were from rather different tree forms. The key objective was to obtain information about the felled rowan (HMR1) which had been described by Peter Quelch (2011) as having a pollard form and which is on the edge of a once cultivated area (Plate 6), apparently growing from the old field dyke. When the High Morlaggan project started, this was a living tree (Plate 6) but unbeknownst to the project, was felled (Plate 2) in 2010 by the power company maintaining the pylon line above it, sometime between March and May (Fiona Jackson pers comm). Apart from flagging up the lack of protection for historic tree features in the landscape, this is important information as it allows the bark edge date of the samples to be determined and thus helps in calculating date of origin. The last complete ring under the bark would be for the growing season 2009, and indeed there was very little to see of the beginnings of a 2010 ring on the sample and this partial narrow ring of spring vessels only was not measured (Table 2). Samples were taken as slices from the rowan, at the top of the 'pollard' stem where the crown branches emerged, and from quite near the base of the hollow stem where only the outer part of the stem cross-section survived (Tables 1 and 2). Despite rot, the upper sample retains the central rings and a complete cross-section for the two largest branches, and so come closer to date of origin than the hollow near-base sample. Furthermore, the upper sample facilitates examination of the branch emergence dates; a formal pollard should have common ages for the main branches if the entire crown was cut back in one episode. Another living rowan in the same general area of the site was sampled as a comparison (Rowan 2; Tables 1 & 2; Plate 7), to cross-check the data from Rowan 1 and to deduce whether other rowan trees might be contemporary with the occupation of the old settlement.

Table 3 Key attributes of the High Morlaggan sampled rowans

Tree	Sample type	Sample name	NGR	Sample: direction core taken from	Stem girth(m) at sample height	Sample height (m):
Rowan 1 (felled)	Slice (sequence is from largest branch at conjoined emergence of 3 branches)	HMR1a	NN 2769 0174	N.A.	0.90	c.2.5
Rowan 1 (felled)	Slice (smaller branch conjoined with sample 'a')	HMR1b	NN 2769 0174	N.A.	0.75	c.2.5
Rowan 1 (felled)	Partial slice near felled base of tree	HMR1c	NN 2769 0174	N.A.	2.4	0.5
Rowan 2 (living)	Core	HMR2	NN 27752 01893	SSW	1.43	1m up leaning trunk but 0.5m above ground

Table 4 Ring-counts and other dendro-data for High Morlaggan rowan samples.

Sample	No. of measured rings	Dendro-date of measured tree-ring sequence	Inner end - pith offset	Inferred date of central ring at sample ht	Outer edge +½B = unmeasured final partial ring under bark	Average annual tree-ring width increment mm	Estimated date of origin, assuming vertical growth rate of 10cm pa
HMR1a largest BRANCH at point of conjoined emergence of 3 branches	116	INFERRED DATES 1894-2009 (not cross-matching with HMHR2) felled early in 2010 growing season; so assume measured sequence spans 1894-2009	Centre	1894	Bark +½B	0.85	c.1869 for branch emergence date
HMHR1b another smaller branch - conjoined sample with 1a	Est 93 (rings counted but not measured)	INFERRED if assume bark at 2009, then spans 1917-2009 (rings counted but not measured, v unclear pattern due to rot)	Centre	1917	Bark +½B	NA	c.1892 for branch emergence date
HMR1c Partial SLICE near felled base of tree	58	INFERRED if assume last entire ring is 2009, measured sequence covers AD1952-2009	>>10	Has to pre-date HMR1a, which has centre at 1894	Bark +½B	2.95	Use info from HMR1a: infer stem origin before c.1869
HMR2 CORE	64	INFERRED (not cross-matching) AD1948-2011	4	1944	Bark	2.99	c.1934

3.9 Pollarding is where a tree is cut back high every few years, so that re-growth is protected from grazing damage and to provide a sustainable supply of poles and other woodland products, while allowing grazing to continue in the vicinity. This is as opposed to coppicing, where the tree is cut back to near ground level, and where the re-growing stools have to be enclosed and stock kept out for several years. Peter Quelch (2011) noted possible evidence for this particular rowan tree (HM Rowan 1) having been cut back rather low at c 1m at some point in its earlier history, and having re-grown above that subsequently. However, the branch emergence height of the felled tree is around 2.5m up the stem, a more usual level for pollarding. The only samples available were from 0.5 m up the stem where Peter obtained a sliver of the 'rim' wood around the hollow centre (HMR1c, Tables 3 & 4) and a conjoined branch slice taken by Mr Jackson from c 2.5m up the stem, at the general level where multiple branches emerged (HMR1a and 1b, Tables 3 & 4,



Plate 8 The slice sample from Rowan 1, from the point at which the branches emerged, c 2.5m up the stem. Despite rot, it was possible to measure a ring pattern on the largest central branch (with scale) to give sequence HMR1a which runs from centre to bark edge. The branch to its right (HMR1b), despite being intact from centre to bark edge had been too far decomposed by rot to render a measurable ring pattern, the wood structure being too degraded to surface properly on sanding or razor-blading. However, it was possible to obtain a close estimate of its ring count, important for testing the pollarding theory. The remains of a third rotted branch base can be seen to the left of HMR1a.

3.10 One very noticeable difference between the slice samples from near the base of the tree (HMR1c) and from the branch emergence point (HMR1a & b), apart from the hollow nature of the base, is that the growth rate is much faster in the basal sample than in the branches. The branches are slow grown and some are intact to centre (Plate 8) and therefore useful in capturing a longer tree-ring sequence than the hollow base. Some rotted wood from near the centre of the base was collected by CM during the Aug 2011 field visit, and examination under the microscope confirmed that in its earlier years the main stem had also grown much more slowly. The fragments were too small and rotten to measure. Our samples therefore do not allow us to get a very precise handle on the age of the tree, but the oldest branch sample (HMR1a) has a central ring at AD 1894. Given this sample was taken roughly 2.5 m above ground, and given the slow growth rates seen in the rotted fragments of the centre of the stem lower down, one can argue that the rowan must be at least mid 19th Century in origin if not earlier. If we applied a vertical growth rate of 10 cm per annum, then it would take 25 years to reach 2.5m height, indicating an origin around 1870, but a slower vertical rate seems likely given the narrow rings observed in centre of the tree low down, and given Peter Quelch's observation that the tree may have been cut back at c 1m high at some point in time. It seems reasonable to suggest this tree must pre-date 1850 in origin, and could be even older.

3.11 Regarding its pollarding history, unfortunately the stem is so hollow that we cannot address the issue through looking for cyclic ring patterns indicative of repeated pollarding (Mills *et al* 2009) of the crown. Neither are we able to address the issue of a possible cutting back at c 1m high, for the same reason. However, the branch slice sample (Plate 8) does give us useful information with respect to the possibility raised by Peter Quelch that the branch formation, as seen prior to felling (Plate 6), could have resulted from pollarding (Quelch 2011). If all the branches had been cut back in a pollarding episode then one would expect their re-emergence to be even aged. However, the results from HMR1a and HMR1b, from a cross-section through two adjacent branch bases at the same level, very close to where they emerged (Table 4, Plate 8) show there is a large age gap between them. The larger middle branch has a central ring at 1894 (HMR1a) while the adjacent slightly smaller branch (HMR1b) has a central ring at 1917. The latter is based on a ring count rather than ring measurements because the wood fabric here was too rotted to achieve a good surface. Rowan is a diffuse porous species so its ring pattern is quite feint even with a good surface. Thus the ring count and inferred central ring date for HMR1b is an estimate, but unlikely to be out by more than a couple of years either way. So there is a real difference between the branch ages of about 23 years, too much to be accounted for by measurement error. Therefore the tree-ring evidence does not support the idea of these branches being the result of a pollarding episode which removed the entire crown. One cannot of course eliminate the possibility of individual branches having been cut *ad hoc* and re-grown at different times. However, it does seem possible, given the apparent proximity of the tree to a high flat-topped boulder (Plate 6), with the branches emerging not too much above that level, that the tree-form may have been influenced by grazing damage. Repeated nibbling by wild animals or stock from that high boulder could have encouraged a sort of pseudo-pollard form by stimulating and then checking back re-growth. Given the 1894 date for the central ring of branch HMR1a then we are potentially looking at its emergence in the late 19th C, potentially within a few years before that date, when High Morlaggan was still settled and when sheep farming is likely to be the main economic activity.

3.12 Finally, we turn our attention to the core from the living rowan taken as a comparison, HMR2 (Tables 3 & 4, Plate 7) and the attempted cross-matching between the rowan samples. Obtaining cross-matching was not crucial to the archaeological interpretation as it was really the tree-ages and management history that were central to the objectives. However, this was an opportunity to explore the dendro-potential of rowan and to seek corroboration of the ageing results through any cross-matching that might be obtained. The first thing to note is the ease of coring rowan compared to the dense and difficult hawthorn stems. Rowan 2 was delightfully easy to core, the smooth bark making a big difference to getting the corer to 'purchase' into the surface of the tree and allowing an intact

core to be removed. However, this is where the advantages over hawthorn ended; the rowan ring patterns were even more difficult to measure than the hawthorn. Rowan is another diffuse porous species which has not been explored previously for its dendrochronological potential, at least not in Scotland. It proved to have some rings with very unclear ring boundaries and, to further complicate matters, it also has banding within rings, a sort of ‘false ring’ effect reflecting variations in cell size within a ring, which could easily be mistaken for real rings. This especially occurs in wider rings, ie in good growing seasons and may reflect fluctuations in conditions within the growing season.

3.13 The core from Rowan 2 was intact and easy to surface, but it did have a rather unclear ring pattern in places, and apart from the within-ring banding described above, it also had some bands of discolouration due probably to zones of rot. It was quite fast grown, at an average 3 mm ring width increment per annum (Table 4), and so there were more tricky banded wide rings to contend with. The core contained 64 rings, with intact bark edge at 2011, and so the measured ring pattern spans AD 1948-2011 assuming the rings were accurately identified. The core came close to centre, with a pith offset of -4 indicating a central ring at AD 1944, at 1m up the stem, or 60cm above ground as the stem is leaning (Tables 3 & 4). If one assumed a growth rate of 10cm per annum, then the sprouting date is estimated at around AD 1934, though this is not precise; it could be several years either way, but it certainly has to pre-date 1944 by at least a few years. An origin in the 1930s seems highly likely.

3.14 Given the ring measurement difficulties encountered in these rowan samples, combined with the very narrow ring patterns obtained from the branch sample, which were also obscured by rot, expectations were low regarding cross-matching. The relative chronological positions are based on the known bark-edge dates with Rowan 1 having a last complete ring in 2009, under a partial unmeasured ring for the beginning of the 2010 growing season just prior to felling, and with living Rowan 2 having a final measured ring of 2011; it was cored in late August so this would be a near-complete ring and was included. Given the measurement difficulties, it was not a huge surprise to find that none of the samples produced a significant t-value (ie above 3.5) at the expected positions of match. However, the visual comparisons of the ring-width graphs do help to provide some comfort. There is a good visual similarity (Figure 3) between the graphs for same-tree samples HMR1a (oldest branch) and HMR1c (partial near-base stem sample) where both have their last complete ring in 2009 as expected. The t-value at this position is 2.94 (for a 58 year overlap), which is not far short of the usual 3.5 t value threshold for significance. This was taken as confirmation of these two ring patterns having been measured at least consistently and potentially correctly. Consequently a new tree-master sequence HMR1 was made by averaging these two sequences together; this helps to iron out some of the individual sample noise.

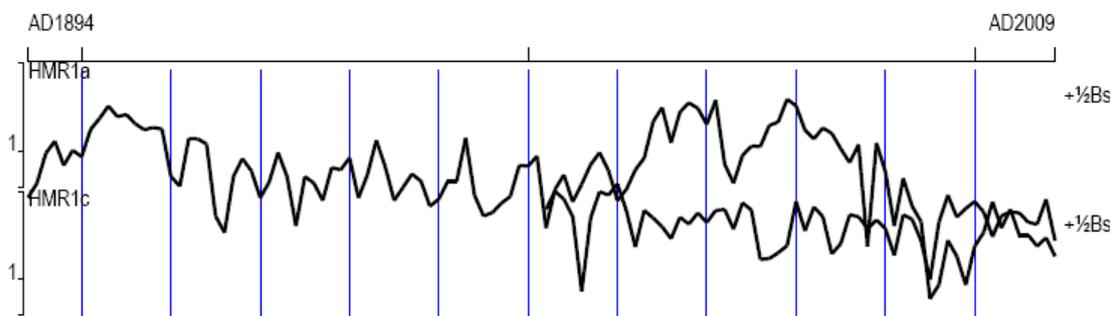


Figure 3 Rowan 1, tree-ring width graphs for branch sample HMR1a and stem base sample HMR1c. The visual match is good, the troughs and peaks synchronise in most areas, and despite the t value being a little low at 2.94 this match, where the bark edges line up as expected, is regarded as correct.

3.15 The resultant Rowan 1 tree-master HMR1 was then compared with the core sequence HMR2 from Rowan 2, at the expected position of match (Figure 4). The t value for this comparison is only 0.69 and the visual match is poor. This led to careful re-examination of sample HMR2, and given how unclear it is in places, there are various locations where rings could have been misinterpreted, either by measuring false rings, or by mistakenly conjoining feint real rings. Temporary altered versions of the sequence HMR2 were made for various possible ‘corrections’ but none improved the visual match or the t-value, in fact they made the comparisons worse. There may be undetected ring errors in HMR2 but it is also possible that the two trees just do not match each other very well, because of their different ages and growth responses, with HMR1 being much older and slower grown and perhaps subject to more grazing damage in the past.

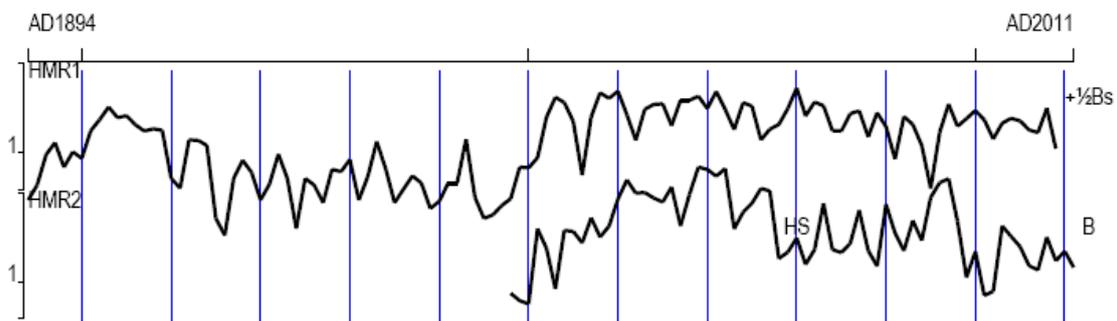


Figure 4 Comparison between tree-ring width graphs for Rowan 1 (an average of 2 slice samples) and Rowan 2 (from a single core) at the expected position of match based on known bark edge dates. The visual comparison is very poor, yielding a t-value of only 0.69 and there may be undetected ring errors. HMR1 is more likely to be correct, given that it is the product of two matching sub-samples. HMR2 was very unclear in places. However, the rowan analysis has provided useful tree age and management history information, and shows there is a potential for finding long-lived rowan in historic landscapes.

4. Discussion

4.1 The analysis of previously unexplored species for Scottish dendrochronology, hawthorn and rowan, has provided information relevant to understanding the development of the landscape at High Morlaggan. It has been possible to provide a closely defined date of origin for the hawthorns and a useful *terminus ante quem* date for the felled rowan, despite its hollow stem. The work also provides some management history information and shows there is great potential for using these species more widely in landscape history work.

4.2 This investigation indicates the strong probability that the sampled hawthorns at the High Morlaggan ‘kailyard’ originate from a deliberately created hedge, supported by the observations of their clear alignment and their equidistant spacing. The dendrochronological analysis has provided absolute dendro-dates for two of the three sampled hawthorns, by cross-matching them with each other and relating their dates to bark edge, and has provided a closely defined inferred date-span for the third. The issue of deriving a creation date for the hedge is complicated by the need to estimate sprouting dates from samples taken part-way up the stem, and further by not knowing whether the hedge was planted from seed *in situ* or created by transplanting saplings. However, it is argued that if the latter, small young plants would have been used and that it makes little difference to the interpolated bracket of between AD1901 and AD1909 for the initial hawthorn hedge planting. The possibility of some early hedge-cutting is raised by the multi-stem form of Hawthorn 1, and if this is the cause (rather than planting multiple seeds or early grazing damage) this must have happened quite

early in the life of the hedge, certainly well before 1932 by which time the sampled stem had re-grown to 60cm height .



Plate 9 Historic Valentine's hand-tinted post-card view over High Morlaggan.

By this time the settlement appears semi-ruinous but is probably still inhabited, with an apparently intact roofed building to the LHS, middle ground. The Valentine image numbering (27335), if genuinely a negative view number, indicates a likely date of between 1890 and 1900 (Jackson 1999), most probably in the mid-late 1890s, for the original photograph based on the published number runs. The likelihood that the photograph was taken from near the West Highland Railway above the site, and the mention of the line in the caption, may help to refine the date further. Construction began on the West Highland line in 1889 and the line to Fort William was opened to passengers in Aug 1894, which is a likely *terminus post quem* for this photograph if we assume the photographer travelled by train (ref for dating of the railway line: Wiki on West Highland Railway http://en.wikipedia.org/wiki/West_Highland_Railway). Thus it seems the photograph was most probably taken between 1894 and 1900. However, the dating of Valentines images is complicated by the constant recycling of original negatives in later post-cards, meaning this may not be the original caption, and by issues over the numbering and renumbering of images in their archives through time. The Valentines archive is now held by the University of St Andrews Library, and further research there could provide closer dating of the image.

Image provided by Fiona Jackson and Sue Furness.

4.3 The dendro-results for the hawthorn hedge make an interesting comparison with another source of landscape history evidence, an early post-card view over High Morlaggan (Plate 9). As detailed in the caption, this photograph was most probably taken between 1894 and 1900. The image shows that the settlement is slipping into a semi-ruinous state by this time, but at least one building is apparently still roofed. There is a linear green feature behind and to the left of that roofed building, to the LHS of the image, but it is not at all clear that it is a hedge; it could be a bank. None of the trees in this image can be the same ones as now seen in the overgrown hawthorn hedge as the analysis indicates the hedge was planted after 1901; even if the analyst has assumed too fast an establishment rate for the sampled hawthorns, they would have been very small at the time of the photograph, in the unlikely event of them pre-dating 1901. The dendro evidence for the hedge's origins strongly

suggests that it has to post-date this image, a creation date between 1901 and 1909 indicated. It would now be worthwhile to explore the documentary records in detail for the period 1901-1909 to see who might have been working the land or living at the site then, as they probably planted the hedge. Interestingly the Ordnance Survey 2nd edition map of 1896 shows three roofed buildings and the 3rd edition of 1907 shows two (according to the High Morlaggan website timeline). This map evidence seems to be reflecting the slow decay and abandonment process captured in the post-card. The careful planting of a hedge therefore seems to go against the grain, and shows that someone still felt the site to be worthy of care and development in the early 20th Century. The planting of hawthorn seems to be a practical initiative, rather than a landscape statement, and it is presumed that a thorny hedge was desired to keep stock or other animals out of the enclosed area, which has been interpreted by the project directors as a kailyard. There is also a spring just within this enclosure, with a carefully constructed corbelled stone cover over it, and it would be worth investigating whether this was another similarly late development of the site. Keeping the stock out of the water supply would seem a sensible thing to do. The survival of two roofed structures to 1907, as indicated on the OS mapping, maintains the possibility that there were still inhabitants here to plant the hedge sometime between 1901 and 1909. By 1916 it is thought that the site was occupied by a shepherd, Donald Grant, who appears in a 1915/16 census record for Morlaggan though he was not listed in 1914/15 (Fiona Jackson *pers comm*). The hedge is very likely to pre-date Donald Grant and post-date the Valentine's post-card view.

4.4 The dendro-results for the felled Rowan 1 reveal it to be rather older than the hawthorn hedge, with the oldest branch having a central ring at AD1894. Given that sample is about 2.5m above ground, and given a likely slow vertical growth rate in the tree's early years, it seems likely that this rowan dates to the mid 19th C at latest and could be much older. Its hollow stem defies closer dating. Given the location of the tree on the remains of a substantial wall next to an old cultivation area, it seems appropriate to consider its relationship to the farming history of the site in the early to mid 19th C. Of course, a tree growing out of a working dyke is possible, its location does not necessarily imply the dyke or the cultivation had gone out of use when it became established. However, it is tempting to consider whether there was some dislocation or change in land management at the time. Wider changes to a sheep farming economy (in place by 1815), the sale of the land to the Luss estate in 1821, and the presence of 5 roofed buildings and a shepherd in 1860 OS records reflect the persistence of this settlement through the early to mid-19th C, and of course the settlement has medieval origins (High Morlaggan website timeline). So this rowan did not establish itself in a deserted landscape, whether or not the field beside it was being cultivated at the time. Perhaps the really interesting implication is that rowan can be a long lived species, and if intact older specimens can be found, they could help provide a chronological framework for Scottish cultural landscapes especially as they often seed in old stone ruins.

4.5 There is no tree-ring evidence for Rowan 1 having been pollarded; the two largest branches aged show they emerged around 23 years apart, with central rings in 1894 and 1917, and this is strong evidence that the form of the tree seen before felling in 2010 was not the consequence of pollarding that crown. The tree's form was probably more influenced by grazing damage, assuming access to the crown by stock or wild animals was feasible from the adjacent tall flat-topped rock (Plate 6). There is no way of assessing whether individual branches in this crown may have been cut *ad hoc*, or indeed whether the tree was pollarded earlier in its life at c 1m height as suggested by Peter Quelch (2011). Unfortunately the hollow nature of the main stem means that there is no opportunity to seek the cyclic ring-patterns which can represent a pollarding history (Mills *et al* 2009). It is interesting though that a branch as high as 2.5m above ground could have started forming in 1895, it implies relatively little change in the overall form of the tree for over a century. It also shows how useful branch samples can be for obtaining a minimum tree age when an intact stem sample is not available.

4.6 The second rowan sampled, Rowan 2, proved to be much younger, and faster grown, originating probably in the 1930s, some 20 years after High Morlaggan ceased to be occupied. It probably self-seeded and got away in that rocky area under arguably reduced grazing pressure by then.

4.7 The species and sample numbers employed in this small study are not conducive to climatic reconstruction; Scots pine is really the only Scottish species which allows a meaningful climate reconstruction. However, thinking about the idea of good years and bad years for growth, whatever the cause, Rowan 1 does appear to have experienced some bad years in the first half of the 20th C generally and with especially narrow rings in 1910/11, 1915/16, 1924 and 1945. Its growth rate is better in the second half of the 20th C generally. The cause of such variation in a single tree is entirely speculative, but rather than climate, one might in this case infer changes in grazing pressure with perhaps the tree growing tall enough to evade most nibbling mouths by the 2nd half of the 20th C, by which time the branch structure (Plate 6) was well established, having largely formed in the late 19th and early 20th C. The hawthorn show a slightly different picture with the mean HMHMx2 (Figure 2) showing a gradual trend towards reducing growth-rate, quite possibly an age-related decline in vigour, and with a particularly bad year in 1999. Differential grazing pressure should not be a significant factor for such a thorny species, and there is probably less relationship between its ring-pattern and the surrounding land management history than would be the case for other less browse-tolerant species. However, as we have seen, the hawthorn is especially important as a datable planted feature in this interesting cultural landscape, one in which people continued to invest until the very last stages of occupation.

5. Acknowledgements

The author would like to thank Fiona Jackson and Sue Furness for commissioning this analysis, and for the opportunity to be part of their excellent High Morlaggan project. I am also extremely grateful to Peter Quelch for his keen observations of the wooded landscape here and for suggesting that tree-ring analysis might be useful.

6. References

- Jackson, C. 1999 *University of St Andrews, Valentine Collection*. St Andrews University Library booklet.
- Mills C.M. 2011 '*Old oak coppices, South Loch Katrine: their dendrochronology and history*'. Report for FCS (Cowal and Trossachs Forest District) & Loch Lomond & Trossachs National Park Authority.
- Mills, C.M., P. Quelch, & M. Stewart, 2009 *The evidence of tree forms, tree-rings and documented history around Bealach nam Bo, Loch Katrine*. Client report for FCS (Cowal and Trossachs District).
- Quelch, P. 2011 *Diary of Peter Quelch, Independent Historic Woodland Specialist. Sat 4 June 2011: High Morlaggan, Loch Long, near Arrochar*. Unpublished report for High Morlaggan Project.
- Rackham, O. 1976 *Trees and Woodland in the British Landscape*. London: Dent & Sons.
- Tyers, I. *Dendro for Windows Program Guide 2nd edition*. ARCUS Report 50

Notes on the Woodland at High Morlaggan

Peter Quelch

I was asked by Fiona Jackson and Sue Furness to visit the abandoned settlement above Morelaggan Cottage which is an active SRP project. I had first heard about the project during a talk at an early SRP conference. The aim of the visit was to comment on any remarkable trees and woods connected with the township of High Morlaggan.



Natural oak and ash woodland beyond and below the spring.

Unusually for me this is a site which has already had a lot of attention in terms of old map and documentary research, and so there is no point me duplicating any of that work. So instead I will restrict my comments to the various tree features that we observed during a 2 hour walk over the site. I will attach however my glossary and notes on tree form so that if I use words like pollard you know what I mean.

Murlagan Placename

I said that we had worked at a late 18th C farm at east end of Loch Katrine called Murlagan, and a Gaelic place name scholar Peter McNiven gave his view on translations for all our farm names on Loch Katrine: “Murlagan derives from Gaelic *muirbhalgan*, a diminutive of *muirbholg*, *muirbhalg*, lit ‘sea-bag’, denoting a bay in the sea shore but also applied to inland lochside sites. Also found at Loch Voil and Loch Rannoch.” This agrees well with the second translation you have on the cover of your history leaflet.

Hazel bush on a steep bank just above the cottage

This hazel stool, which may perhaps be 2 or 3 individuals, had the look of having been a utilised hazel coppice stool for a long time. Hazel is very useful mainly for thatching and hurdle making, and we could see from an early photo that hazel rods and ‘staples’ were holding down the straw thatch roofs of several buildings around 1900. Hazel would have been very prized by rural people of the township for many tasks on the land, but also at sea as creels and baskets were also made from it. It

would be normal to have hazel on steep, fertile, but otherwise unusable land, and to protect it from livestock by some sort of fencing.

Wooded knoll with open-sided building

Several oak trees surrounded the flat knoll which contains the relatively recent ruins of an open sided cart shed or similar. The knoll also had clearance stones around its edge and looked as if it might have had an earlier building too. The views in each direction along Loch Long reminded the author of a similarly spectacular open knoll on Glenfalloch Estate with the faint remains of an old settlement, and a natural spring, overlooking the north end of Loch Lomond at Upper Blarstainge. The maiden or single stemmed oak trees were not large in diameter, but could be older than they looked, but probably no more than a hundred years. The adjacent Sitka spruce trees seemed to be self seeded and are probably less than 40 years old.



Maiden oaks on the knoll with the open sided building looking south along Loch Long

The pieces of wood in the base of the hut were interesting, and seemed to be the remains of round pine logs which had been employed as roof supports. During the rotting process the resinous pine knots and branch stubs had remained intact and now looked like the pointed tips of stakes. However they are probably just pine knots. One in the house was quite different however, as it was a hollow pointed piece of wood which had been bored through the side and used as a weaving shuttle or net maker's needle. I explained that these pine knots had value as firelighters when resinous and dry, but these ones just seemed to be left over after rotting and weathering of logs. However one further idea is that they were relatively long stubs perhaps because they came from round upright knotty pine posts of the sort which were common on Edwardian buildings in Scotland usually seen supporting a porch. That would explain the longish weathered stubs which remain, rather than the smaller knots one would expect from a log pruned flush? When the building part collapsed (and it was seen as intact as late as the 1946 aerial photo) these log pillars were thrown inside to rot, hence their current unexpectedly neat position.

Sub rectangular platform with earth banking, stone hearth and nearby spring.

This interesting structure at the top of a steep partly-wooded bank is now more or less within woodland or scrub, though as the whole site is slowly scrubbing over due to lack of farm livestock, no doubt it was much more open when last in use. It did seem to be an animal enclosure or pen and perhaps the hearth was used in connection with animals, like boiling tar or sheep wool treatment of some sort. I do know that many old sheep fanks have heated iron tubs in them for this purpose. The fascinating thing about this feature is the way in which a good quality stone cobbled track led down to a watering place in the nearby burn which was emerging right there from deep underground as a spring. The track stopped at the spring and did not go further downhill due to the very rough terrain below. Maybe the track and the spring were much older than the sheep pen, if that is what it is, and this spring was always an important water supply for the township, or for the township livestock. An oak tree had fallen over the cave entrance some time ago and partly dislodged the spring's entrance stones.



Platform

Woodland north of the spring

The end of the township fields and the beginning of the old woodland to the north is marked by a substantial head dyke which curves around the township in a semicircle. This head dyke uphill of the spring thus also acts as a wood bank, joining up between the many large boulders. The woodland just beyond the dyke is very rough and rocky terrain, fairly wet near the spring and dominated by ash and hazel (NVC community W9), and the ground flora reflects this with Yellow Pimpernel, Wild Garlic and Sanicle all seen here. Further north the woodland soil is not so wet and oak is more frequent, with some large mature single stemmed specimens (see the first photo above). These oaks are close to the cave with stonework which may have housed the whisky still, which the history leaflet says was worked by MacIntyre in 1850. There was norunning water in the cave, but it was noted that many natural burns and springs were perhaps affected or diverted due to the construction of the railway during the 1890s.

This woodland is extensive and is shown on Roy's map in 1750, and has every appearance of being true ancient woodland, partly because the rough terrain would not allow any other land use. We did

not see oaks older than 200 years or so, neither did we see many multi-stemmed trees derived from previous coppice, nor charcoal hearths, nor pony-tracks. However we didn't walk far in the woodland and these would be features to look for in another visit.

Small field outside the head dyke

While examining a few hawthorn bushes on the edge of the wood, it became apparent that these were indeed part of an old hedgerow and were not within the woodland itself. A faint bank could be traced linking them, thus forming the boundary of a small steep field lying between the head dyke and the woodland. The head dyke itself is visible in one stretch between large rocks as a low earth bank, just before we descended to the felled rowan pollard.

Rowan Pollard

A Rowan of large diameter, nearly a meter at the base, and growing between large rocks, has been felled by contractors recently since it is under a powerline. It is massively hollow and has a bundle of roots descending down the hollow stem to the ground. These seemed to be its own internal roots rather than the roots of epiphytic air trees. There was some evidence of past pollarding low down the stem at about a meter up (not measured) and then free re-growth not cut again until the recent felling. Most main branches are hollow but one was fairly solid and could yield a slice which would give the date of last pollarding, but not the tree age of course. I took a small wedge from the base of the tree, which had about 60 rings but did not even reach the hollow. I have sliced and planed it and posted to Coralie Mills to examine. I would estimate a minimum of 200 years for the whole tree's age on account of the extent of hollowing. The tree was probably naturally seeded amongst natural rocks and clearance stones. It is now throwing up many new young shoots from the base and with a little protection might continue to live, though in future it would be a multi-stemmed stool (and is still under the power-line!).



Felled rowan pollard from above



Top of the tree with solid branch suitable for ring counting

Village ruins

We then inspected the village ruins which are impressive and very visible after excavation of the building floors and cobbled yards. An old postcard around the turn of the century (?) shows a small hawthorn bush beside a small square cottage which was thatched at the time. The bush hardly seems to have changed, which indicates something of the longevity of hawthorn. Some rowans can also be seen in that photo and might be checked against standing ones today.

Kailyard hedge trees

A large hollow rowan still stands at the south edge of the village. It is not as large as the felled one described above, and does not have internal roots, but it looks contemporary with the village, at least during the late 19th C. It can also be seen to be on the edge of a large kailyard which would have been used for growing vegetable crops. Around the kailyard are a number of tall hawthorns, some multi-stemmed in a line, and these are clearly the remains of an old hawthorn hedge around that yard.



Kailyard rowan, with hawthorns in the background



Close up of the group of hawthorn stems from a previous hedge, also visible in the photo above

Within the kailyard is a recently excavated well and drain. At present it is quite dry yet it seems can have no other purpose. The water supply to it may have dried up due to the railway construction as described above. Outside the kailyard is what looks like a small corn-kiln, and a little below the village by an old track are a group of levelled stances for corn ricks forming a sort of stack-yard.

Oakwood to south of Morelaggan cottage

Finally we inspected a small oakwood adjoining the upper garden of Morelagan House, a house which is shown on the 1st Edition OS map. The oaks included several which show signs of having been singled from previous multi-stem coppice stools. An old enclosing dyke around the oakwood is still visible either side of a natural oak tree corner strainer, and this fence is visible on the 1960 aerial photo.

It is interesting that this small oakwood is actually within the township head dyke, though one wonders if this gave tenants the right to utilise the oak trees – probably not as they would have been reserved to the estate. The oak planting may well be contemporary with the building of that house, and that land removed from the township tenancy. Only documentary research can shed light on this sort of detail.

It would be interesting to date these oaks, and also the few tapered maiden oaks at the extreme corner of that stand. Many birch trees on the slopes above are of much more recent origin, and the sequence of aerial photos show that the site in general is gradually developing scrub cover, and will continue to do so in the absence of livestock grazing.