



3. THE DUNYVAIG AND HINTERLAND ASSESSMENT PROJECT (DHAP 2018/19)

Interim Report

QUESTIONS

The Dunyvaig and Hinterland Assessment Project 2018/19 (DHAP2018/19) aimed to answer five questions:

1. Can survey and excavations at Dunyvaig Castle and at sites within its hinterland locate stratified deposits, structures and finds to address the research questions identified in the Dunyvaig Strategic Plan?
2. Are there suitable sedimentary deposits within the Dunyvaig hinterland to reconstruct the palaeoenvironments and land management during the last millennium?
3. Are there suitable sedimentary deposits within Dunyvaig Castle for micromorphological analysis to identify past activities and site formation processes?
4. Can Dunyvaig provide an appropriate range of fieldwork opportunities and experiences for a field school to train undergraduates and early career professionals in archaeological field methods?
5. What opportunities can Dunyvaig provide for increasing the amount, and enhancing the diversity and quality of community engagement with the Historic Environment?

These questions are inter-linked: suitable deposits for addressing research questions are most likely to provide opportunities for a field school and community engagement. To address these questions, two field seasons each of three weeks duration were undertaken in the summers of 2018 and 2019. The field team consisted of 10 staff and 30 students, early career professionals and volunteers. Fieldwork proposals were submitted to Historic Environment Scotland together with the Scheduled Monument Consent applications, which were granted without conditions (2018 season, Maričević 2018: case ID 300026824; 2019 season, Maričević 2019: case ID 300038059).

Here we give a summary of the main findings of the evaluation prior to completing a full Data Structure Report by December 2019.

1. Can survey and excavation at Dunyvaig Castle and at sites within its hinterland recover stratified deposits, structures and finds to address the research questions identified in the Dunyvaig strategic plan?

Archaeological evaluation of Dunyvaig Castle was undertaken by earthwork survey, geophysical survey and trial trenching, as summarised in Figure 1, and an assessment of two classes of finds, ceramics and faunal remains.



Figure 1. Aerial view of Dunyvaig and the environs showing DHAP 2018/19 evaluation trenches, surveyed earthworks and intertidal features. Scheduled area is shown encircled in red.

Archaeological earthwork survey

In 2017 Islay Heritage commissioned a terrestrial laser scan survey of the upstanding architecture of the castle (Fry et al. 2018), which also captured the topography of the courtyard and the littoral exposed at low tide (Figure 2). The terrestrial laser scan survey was limited in its ability to capture topographic detail outside the castle walls, although generic topography was captured as a bi-product of the survey. During DHAP 2018/19, a broader topographic survey of the castle environs was carried out with the Leica GPS rover, but also a more interpretive earthwork survey of the castle courtyard and the range of features in the environs of the castle (Figure 3).



Figure 2. Left: Orthographic view of the terrestrial 3D laser scan showing the topography of the Dunyvaig Castle and the immediate surrounding. Right: Still image of the laser scan survey of the upstanding tower of the castle.

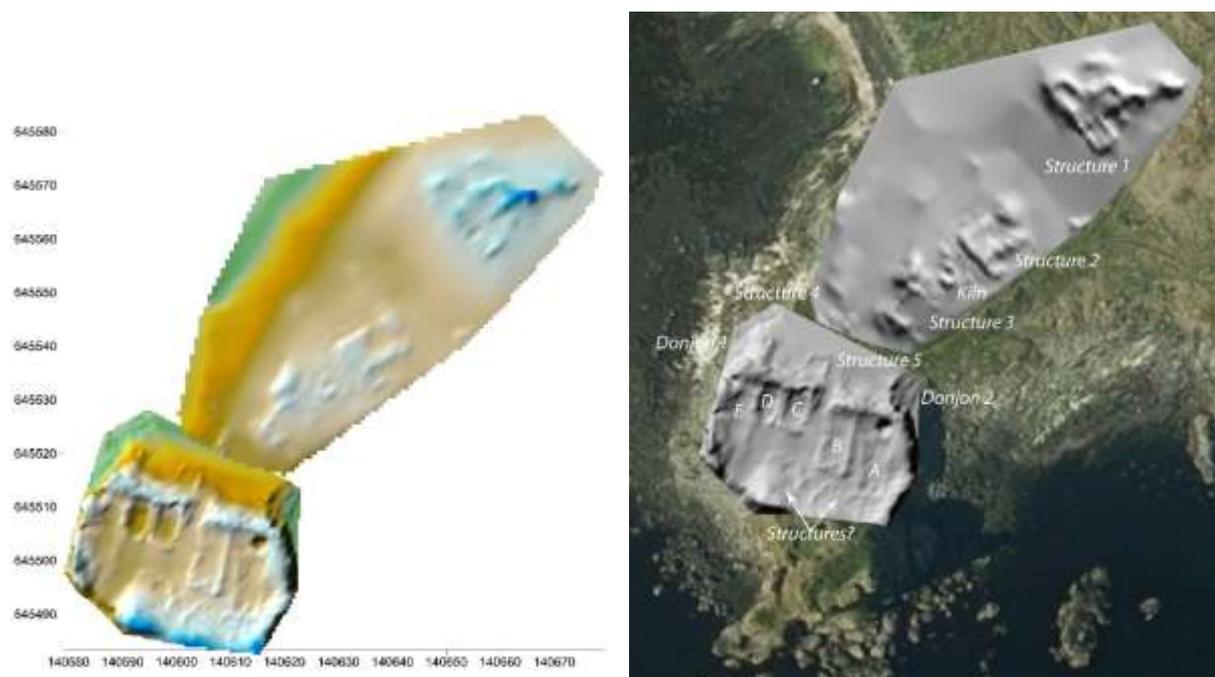


Figure 3. Topographic earthwork survey shown as colour surface models (left) and a shaded relief with marked structures identified inside and outside the castle courtyard.

All of the identified structures were visible during the Royal Commission's survey in the 1970s and to a much greater degree due to the site and the environs being grazed at the time (RCAHMS 1984:269A), but their mention was minimal and regarded as 18th century or later in date (RCAHMS 1984:274). The current survey depended on grass cutting before which the earthworks were almost invisible and it is highly likely that the same treatment would uncover further earthworks in the area further north from the castle. In the time available during the DHAP fieldwork, the survey focused on the structures visible in the immediate vicinity of the castle. Structure 1 was evaluated by trenching in both seasons of fieldwork. Structures 2, 3 and 4 and a probable kiln are situated within the scheduled area of the site outside the courtyard (Figure 3). The 2019 survey has also plotted the foundations of a possible gate tower (Structure 5), which Commission's account lists in reference to its historic mention in the description of the 1615 siege. However, the structure does not appear on the published plan of the castle (Figure 4). A stump of a wall on the opposite side of the gate may represent the remains of the opposing gate tower or accompanying gateway structure.

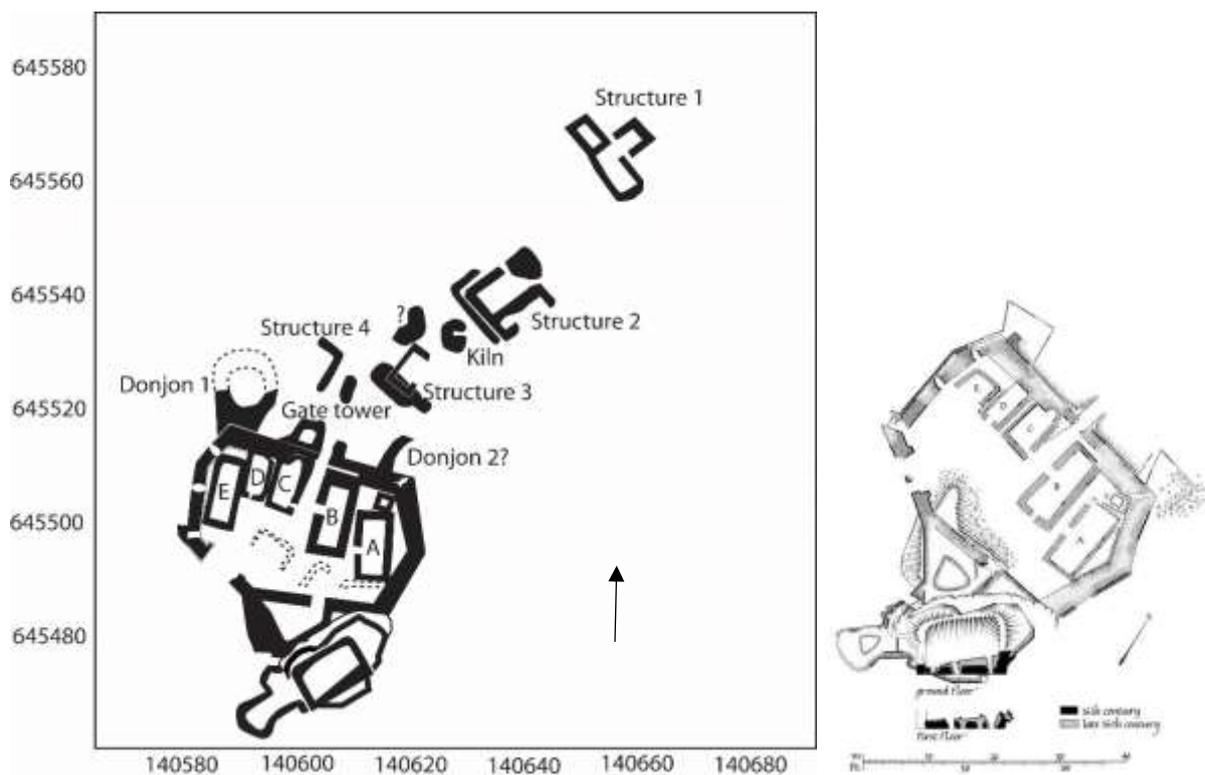


Figure 4 Plan of the castle and the structures identified by DHAP 2018/19 (left) and the RCAHMS plan of the castle (1984, right).

Another important difference between the RCAHMS' plan and that drawn from our survey relates to the shape and the size of the corner towers or donjons, which were thought by the Royal Commission to be trapezoidal 'angle turrets or bastions, which were laid out but

probably never completed' (RCAHMS 1984:270). Perhaps as a result of the subsequent erosion by the sea the remains of the northwest donjon can now be traced on the shore at the high water mark, with at least two courses surviving in places. The western wall face of the structure stretches from the outer face of the courtyard wall in two visible courses, the lower of which is made from long straight slabs while the second course contains smaller less regular stones (Figures 5 and 6). The relationship between the courtyard wall and the donjon wall is obstructed by the fallen masonry. The internal face is curved suggesting a round interior, which when extrapolated suggests an internal diameter of c.5.5m. The north part of the structure is now completely lost to the sea and the exact shape of the tower cannot be determined, but it is certainly possible that it was rounded on the outside following the shape of the interior. At the northeast corner, the erosion and the multitude of collapsed rubble does not allow to extrapolate the shape of the other donjon. Only a short stretch of the western wall is now possible to trace, but if of similar size and shape it would also be on the high water mark and its foundations may still survive under the collapsed rubble and beach deposits. Whatever survives of both donjons is extremely vulnerable to further sea erosion.



Figure 5. View of the straight outer face (left) and curved inner face (right) of the western donjon wall looking north from the courtyard wall.



Figure 6. View of the coursing of the donjon wall: outer face (left) and inner face (right).

Remains of other structures, presumably sea defences, are visible at low tide on the foreshore to the west of the castle courtyard and have been surveyed and captured by drone photography. Finally, inside the courtyard itself and in addition to the five buildings (A-E) identified by the RCAHMS, it is possible to trace short stretches of walling in the southern part of the courtyard (Figure 4). These are ephemeral and partially obscured by the earthwork formed by the fallen masonry, but it is possible that some may be on a different orientation to buildings A-E, aligned perpendicular to the sea gate wall rather than the landward northern curtain wall of the courtyard.

Geophysical survey

Electrical resistance survey

Islay Heritage undertook the initial electrical resistance survey of the castle and its immediate landward approach in August 2017, the results of which have been used to inform the excavation strategy presented in the DHAP2018 Project Design (Maričević 2018). This survey has been continued in 2018 and these results have informed the Updated Project Design for 2019 season (Maričević 2019). The full extent of the electrical resistance survey can be seen in Figure 7. The survey has been conducted using *RM15 Geoscan* resistance meter with twin probe configuration, 0.5m traverse spacing and 1m interval readings. In addition to the electrical resistance survey a Ground Penetrating Radar survey was conducted comprised of two lines across the alleged siegeworks (RCAHMS 1984) situated at The Plateau and further four lines across the interior of the outer courtyard of the castle.

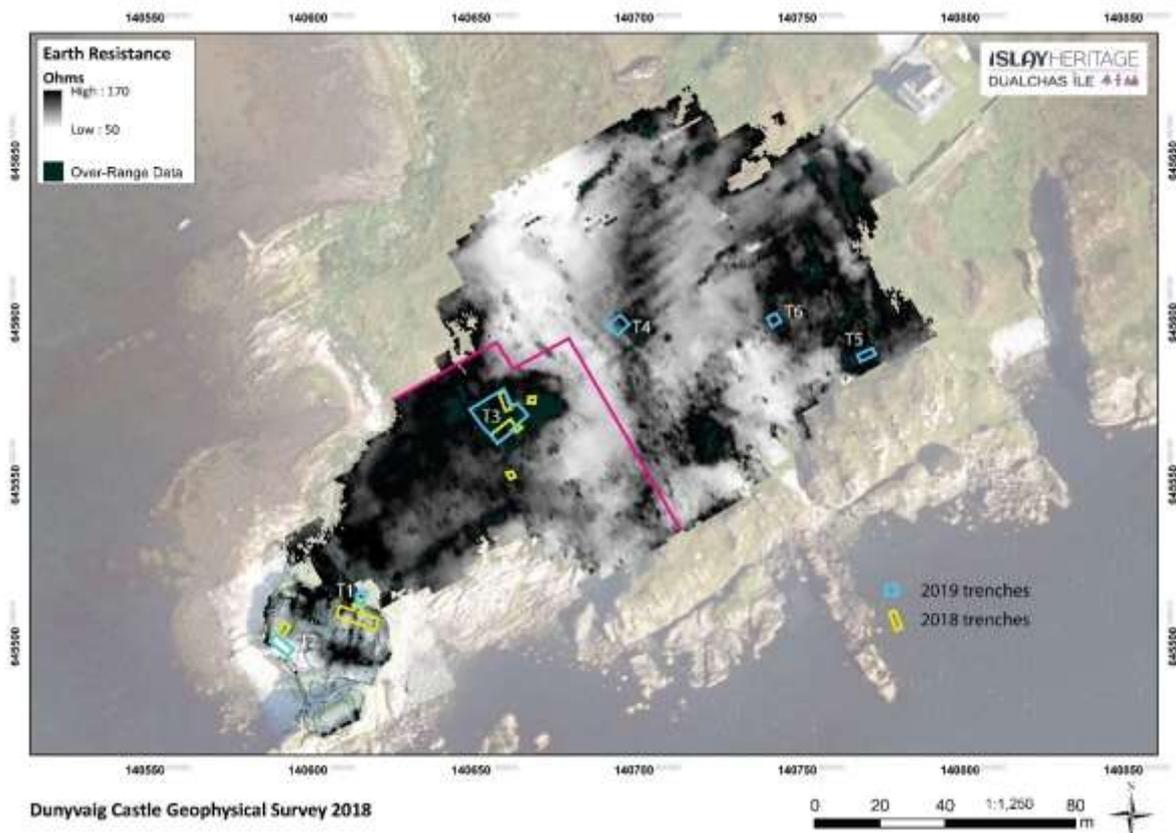


Figure 7. The extent of the electrical resistance survey showing the division between 2017 survey to the southwest and 2018 extension to the northeast and 2018 and 2019 evaluation trenches.

One of the main aspects of the 2017/18 resistivity survey was large areas of high resistance, which could not be assigned with confidence to either archaeology nor the geological background. The aim of Trench 3 in 2018 season and Trenches 4, 5 and 6 in 2019 was to target those areas of high resistance with most archaeological potential.

Probably the most striking electrical resistance anomaly was a long linear spread of high resistance on the N-S alignment across the middle of the image in Figure 7, which shows the striping characteristic of the rig and furrow agriculture. The rig and furrow anomalies can be seen running on the SW-NE alignment in the northernmost part of the geophysics plot and less obviously on the perpendicular NW-SE alignment immediately to the southwest of it in the area of generally low resistance. The fact that the rig and furrow were making an impact on the underlying high resistance and visibly cutting into and spreading this material is indicative that the linear high resistance anomaly in question was not related to the hard geology, although it was thought that it could relate to a natural beach gravel bar. Alternatively the linear anomaly could have been a manmade structure, such as a road or a long line of continuous structures, such as buildings and boundary walls, predating the rig and furrow cultivation. Consequently the anomaly was targeted in 2019 by Trench 4 proving the first of these hypothesis to be true.

Other high resistance anomalies in the northeast part of the survey extent were targeted by Trenches 5 and 6 where the excavation showed that they were similarly derived from either raised beach deposits (Trench 5) or possible storm beach events (Trench 6). The area outside the castle courtyard occupied by multiple structures identified by the earthwork survey is characterised by relatively lower resistance bounded by areas of very high resistance, but the individual structures can only sporadically be matched to the anomalies in the resistance data.

Ground Penetrating Radar survey

The GPR survey was comprised of seven transects across the site (Figure 8), two of which (Traverses 1 and 2) had as the starting point the elevated plateau to the northeast of the castle - the site of possible siegeworks (RCAHMS 1984). Traverse 1 extended for 199m in a straight line towards the castle, while Transect 2 was less than half that length. Traverse 3 ran from the outside of the castle, through the main gate and into the courtyard, while the remaining traverses were all located inside the courtyard of the castle. The results of the survey are complex and have been included in full in the Updated DSR (Maričević et al. 2019).

In summary, the GPR survey has identified large number of anomalies of potential archaeological interest. Traverses 1 and 2 targeted the site of possible siege-works, but the results were not conclusive in this respect. The existence of the level plateau before the construction of the modern house is not in question, however, because it has been depicted on the first edition OS map. Across the land heading towards the castle represented in Traverse 1, significant groups of high amplitude reflections were seen that indicate potential areas of building debris. These deposits appear to be around 0.5-1m below ground level. The traverses inside the courtyard indicate presence of structural remains other than those currently seen as earthworks and identified by the RCAHMS survey. Several strong, discrete anomalies at depths ranging from 0.5m – 1m can be seen indicating what appear to be potential stone deposits. Depths of these anomalies are based on a velocity analysis which must be viewed as an approximate guide, rather than the real depth. The results are based on the shape, form and strength of reflections along single transects and might benefit from the area survey in the courtyard of the castle.

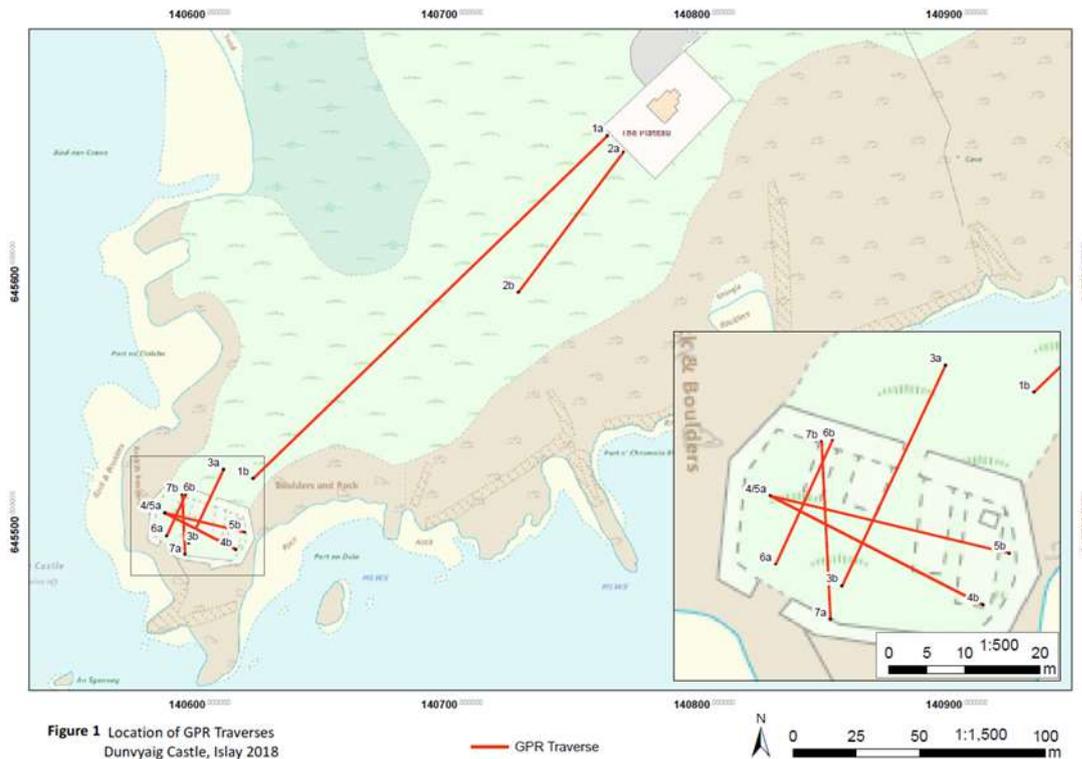


Figure 8. Location of GPR traverses across the site

Magnetic gradiometry survey

The site presented challenging conditions for magnetic survey due to shallow undulating (and sometimes magnetic) geology and vegetation cover (Figure 9). The magnetic survey has identified a range of features from a 60 million year old igneous dyke to a modern rubbish pit verified by local residents (Figure 10 and 11). The structures tend to be built of local stone and thus walls do not produce a high magnetic contrast. Nevertheless, the magnetic survey has been more successful in identifying those structures which can be seen as earthworks by distinguishing them from the surrounding geological background and in this regard it appears to be more useful than the resistivity survey, at least in those area where there are no strong igneous elements or substantial storm beach deposits in the background.

Thus data increased magnetic activity in the area of Structure 1-5 identified by the earthwork survey and supports the interpretation of a circular earthwork feature outside the castle walls as a kiln, due to the high magnetic field which is produced by burning. An area of multiple discrete magnetic anomalies may indicate possible pits to the north of Trench 3 (Figure 11)

An area to the east of the known igneous dyke has an enhanced magnetic field and could indicate further areas of archaeological interest. However, Trenches 5 and 6 positioned within the area suggest that the deposits responsible for both increased electrical resistance and high magnetic signal are derived by natural formation in the form of raised and storm beach gravels and concentration of boulders.



Figure 9. Bartington magnetic cart with six sensors and the hand-held dual sensor magnetic gradiometer during 2019 survey at Dunnyvaig.

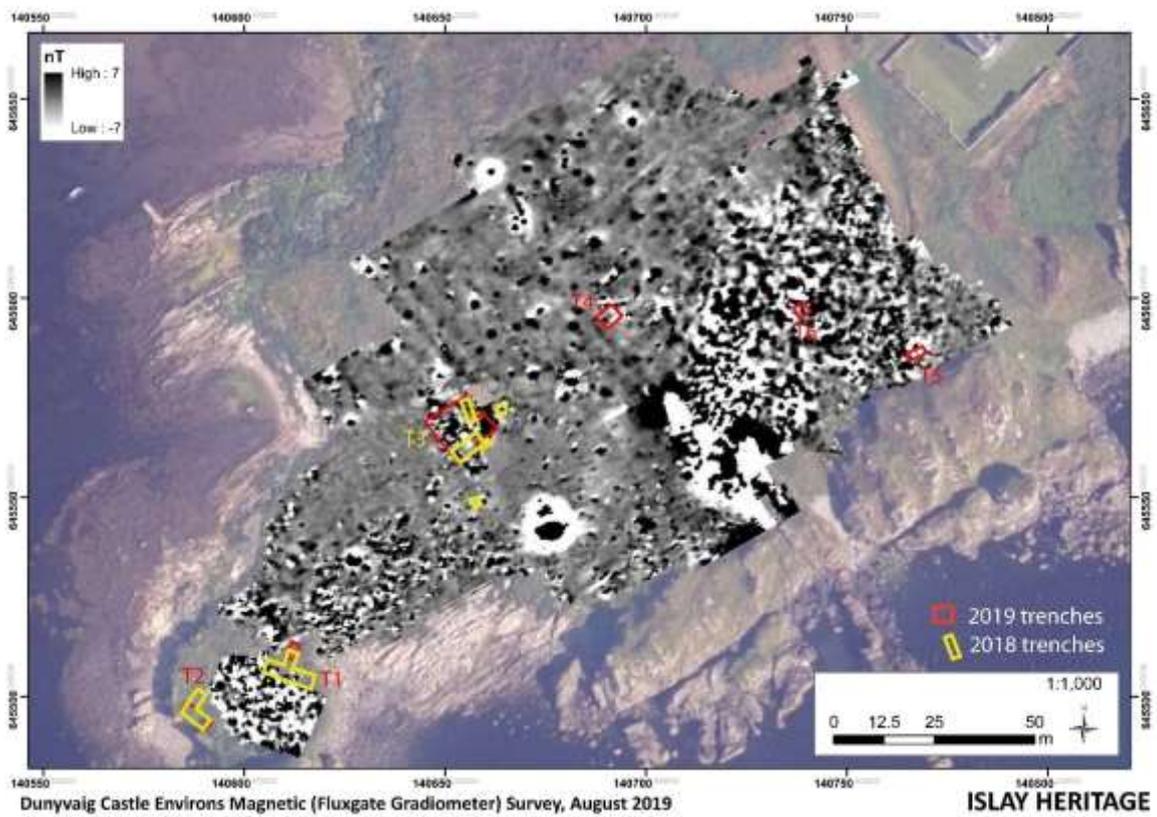


Figure 10. Magnetic gradiometry data plot with the indicated positions of the evaluation trenches.

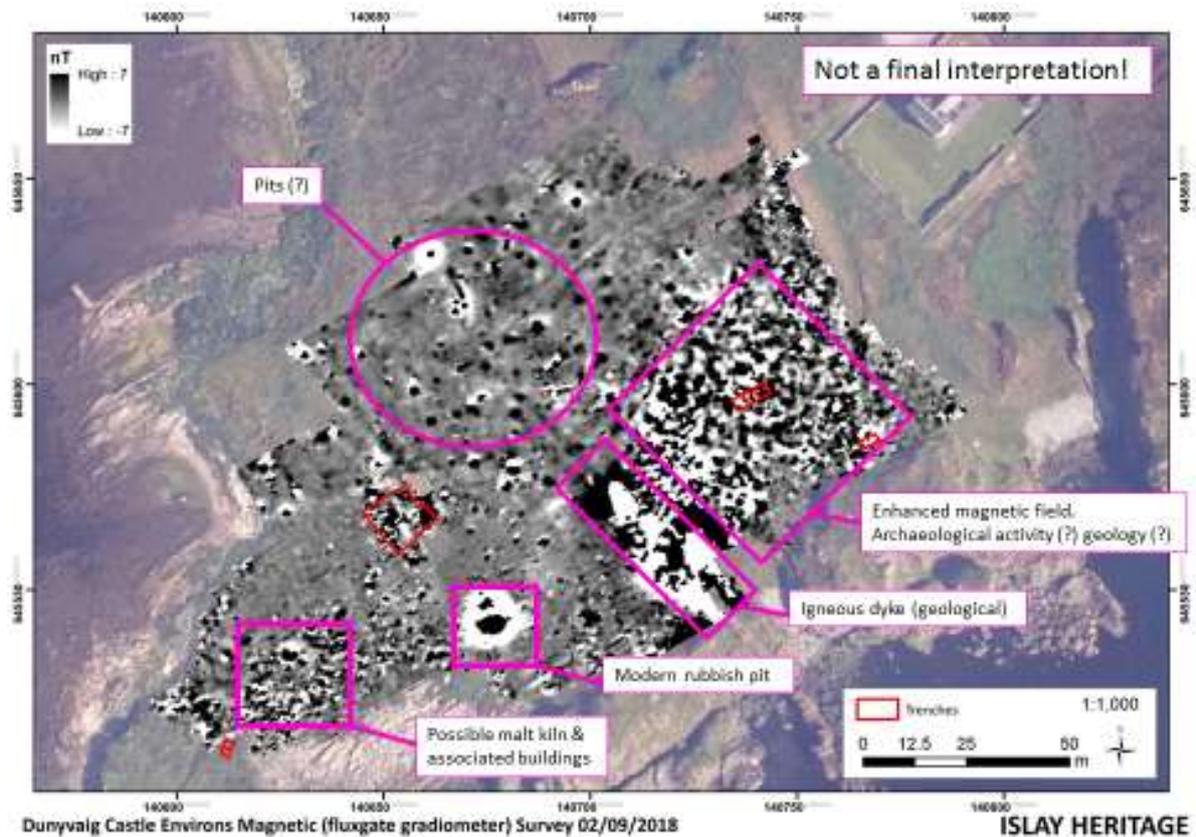


Figure 11. Magnetic gradiometry plot with interpretation of main geophysical anomalies

Archaeological evaluation by trenching

The results of the first season of evaluation conducted in 2018 have been provided in the Updated Data Structure Report (Maričević et al. 2019) submitted to the Historic Environment Scotland in March 2019. The second season of the evaluation took place in August and September 2019 and the results referring to this second stage of fieldwork are given here in their preliminary form followed by the conclusions drawn from both seasons of fieldwork. Figure 12 shows the location of the evaluation trenches from both seasons in relation to the surveyed earthworks and intertidal features.

Trench 1

Trench 1 of 2018 was located along the inner face of the courtyard wall and perpendicular to the axis of Building B (Figure 1). The northern end of Building B and its junction with the courtyard wall were located in the west end of the trench. The eastern end contained open remains of a subterranean structure usually referred to as a 'well'. A smaller projection to the north, Trench 1b, run across the courtyard wall (Figure 12).



Figure 12. Location of Trenches 1 and 2 in relation to the plan of the castle and the aerial photo. The extent of the 2018 trenches is shown in red and the 2019 trenches in yellow.

The excavation of the trench in 2018 showed that Building B abutted the courtyard wall with its gable end (Figure 13) which was built against the inner face of the courtyard wall. Both the rubble, related to the collapse of this building, and its walls were overlain by stepped turf construction, which was also overlying the entire length of the courtyard wall. This turf-built wall was interpreted as the refortification of the ruined castle walls at the point when Building B was already collapsed and it is the last stratigraphic unit prior to the grassing over and the formation of a thin topsoil.

Inside Building B, the initial rubble collapse was recorded and excavated to reveal a burnt layer of turf and clay, which was interpreted as collapsed roof, and was overlying more substantial rubble collapse, which was overlying burnt clay surface that may have been a rough floor. The floor was not excavated and there have not been many finds within the collapse layers up this point, but under the rubble and on the surface of the clay floor a remarkably well-preserved lead seal stamp of Sir John Campbell of Cawdor, dated 1593, was found near the gable wall of the building (Maričević et al. 2019). A midden deposit was excavated along the eastern exterior wall face of Building B (Figure 13) containing well-preserved animal bone, shell, charcoal, small iron objects (most likely nails), several pieces of worked flint and a well compressed musket ball.



Figure 13. Photogrammetric overhead shot of Trench 1 at the end of the season with interpretative labels.

The projection over the head of the wall sectioned turf deposits within a 1m wide slot to expose c.1m wide rubble-filled void (Figure 13) between the two inwards facing rendered skins of the wall, thus providing evidence for an intramural stairwell or a passage, as noted by the Royal Commission (RCAHMS 1984). On the outside of the courtyard wall, Trench 1b revealed badly eroded outer face of the courtyard wall (Figure 14) and series of stone collapse and mortar erosion tip lines. Underlying the base of the wall in the elevation were rough stone footings, which projected forward from the face of the wall. Below them was a layer of compact yellowish mortar and rubble (1021), which was at the time interpreted as a possible robbed out earlier structure, i.e. running underneath the footings of (1021). This interpretation provided the main reason for the reopening of Trench 1b, as this possible earlier structure did not have known limits within the confines of the trench and was difficult to interpret with any confidence. One possibility was that (1021) represented earlier phase of the courtyard wall or some other earlier structure.



Figure 14. Left: Compacted mortar and rubble deposit (1021) underlying the footings of curtain wall (1023) as seen at the end of 2018 season in Trench 1b. Right: Seal stamp of Sir John Campbell of Cawdor

In 2019 the outer part of Trench 1b was reopened from the outer face of the curtain wall and extended for 2m to the northeast (Figure 12). The extension and the old trench were excavated down to deposit (1021), which upon investigation proved not to be a structure, but variably compacted and dense mortar and rubble spread (Figure 15). The excavation thus proceeded beyond this horizon to reveal a sequence of animal bone-rich midden (1043, Figure 16), concentrated in the northern part of the trench and overlying fills (1047), (1048), (1049) and (1050) of a probable ditch [1052], running parallel with the line of the curtain wall. The northern edge of the ditch could not be seen within the limits of the trench so it is not certain whether the ditch was bottoming or whether the natural base reached below (1050) was a side step of a wider and deeper feature.



Figure 15. Mortar and rubble deposit (1021) in extended Trench 1b from above (left); View of the wall elevation and underlying deposits after the removal of (1021), showing hard core (1044) next to the wall and top fills of ditch [1052] in the foreground (right).



Figure 16. Some of the bone filled finds trays from midden (1043) and small piece of decorated glass SF181 from ditch fill (1049).

On the southern side, the ditch was cut through a very dense hard core levelling deposits (1044) and (1046), which were laid down in the part of the trench next to the curtain wall and may have acted as a levelling foundation material for the construction of the curtain wall. The original extent of the hard core material was truncated by the ditch and hence the current geometry that closely respects the line of the wall may be misleading (Figures 15 and 17).



Figure 17. West-facing section of Trench 1b showing the deposits mentioned in the text.

The difficulty in excavating deposits in Trench 1b was in establishing the relationships between the external deposits and the curtain wall without undermining the footings and destabilising the structure of the wall. Thus, deposit (1021), in particular, remains problematic as its general level is below the level of the footings, but it also abuts lower positioned footings on the western side of the exposed elevation and it appears to go under the higher positioned footings to the east. It was not possible to fully resolve this issue within the confines of the trench, primarily because the structural stability of the curtain wall was the paramount consideration. Thus, we are not sure whether (1021) represents collapse from the current curtain wall (1023) or a demolition deposit earlier than the construction of (1023).

It is clear, however, that the underlying deposits including midden (1043) and the fills of ditch [1052] predate the collapse of wall (1023). Further excavation is needed to establish the relationships more firmly and to establish the true extent and depth of ditch [1052], which could be a much more substantial defensive feature, potentially at one stage cutting off the entire peninsula on which the castle is situated.

Trench 2

Trench 2 was an L-shaped trench positioned across the mouth of the sea gate and projecting inwards into the courtyard of the castle (Figure 12). The positioning of the trench was partly led by the absence of any high resistance anomalies in the geophysical results posing the

question about possible use of this area as a midden. As it turned out the low resistance of the area came from a massive accumulation of turf, which has been brought in and built upwards across the sea gate opening (Maričević et al. 2019). A sondage aligned with the middle of the sea gate was excavated through the turf material providing a section through the entire turf construction which was sampled for micromorphological analysis. The sondage excavation revealed partially visible structure orientated perpendicularly to the sea gate and positioned centrally in relation to the sea gate opening (Figure 18). It was not possible to establish within the limits of the sondage whether this structure was a wall of a building, foundations of a larger structure or one side of a possible slipway, as its positioning in relation to the sea gate suggested.

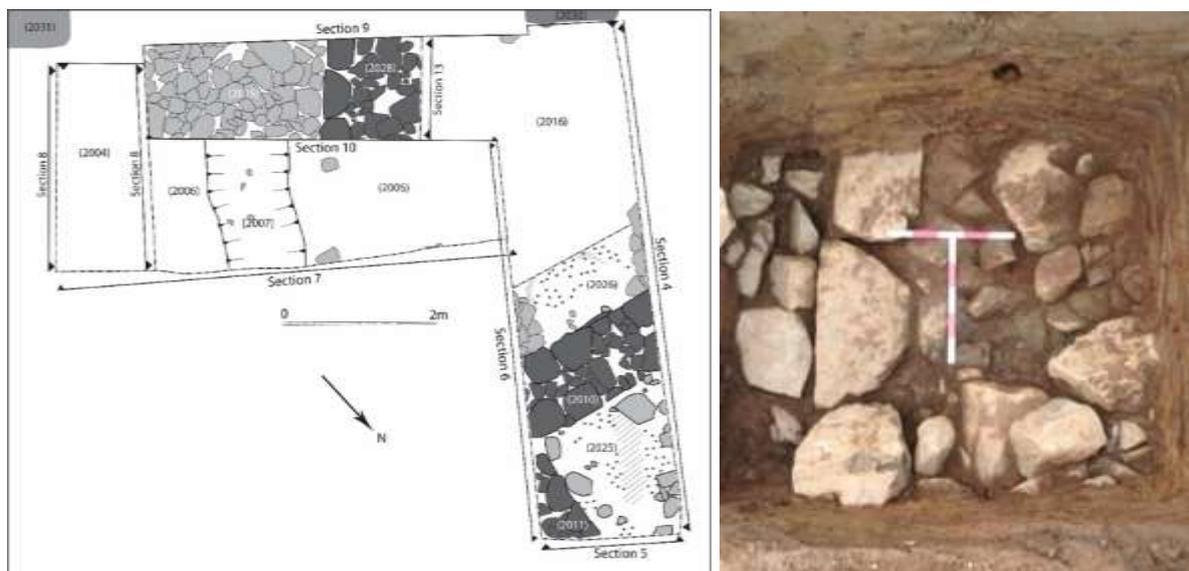


Figure 18. Plan of Trench 2 at the end of 2018 season (left) and detail of structure (2028).

In the northeast part of Trench 2 excavation revealed a corner of a burnt building, which by its alignment and location most likely represents the continuation of Building E (Figure 12), planned as open-ended structure by the Royal Commission (RCAHMS 1984). On the outside the collapsed rubble was overlying burnt layer (2027), which was sampled but remained unexcavated (Figure 19). The sampled burning had visible organics in the form of intertwined plant fibres, which were subsequently confirmed as being predominantly of cereal origin, namely barley and oat stems (Ruth Pelling, pers.com). It was not clear from the limited



Figure 19. Trench 2 at the end of 2018 season and a detail of burnt organic material (2027).

exposure in the evaluation trench whether this material was part of the collapsed roof or some kind of clay screen or surface with organic matting.

Considering the limited exposure of structure (2028) in 2018, the trench was reopened along its full width parallel to the sea gate in 2019 (Figures 12 and 20). The excavation proceeded through the stratigraphy largely established in 2018, updating the records throughout. Major burning event (2044) was identified across the northern half of the trench, overlying turf structure (2016). It is likely that this is the extension of the burning horizon (2027) associated with the destruction of structure (2010)/(2011), which may correspond to Building E. Similarly to deposit (2027), (2044) contained large amounts of charred organic remains. The burning was mainly evident along the northern part of the trench where it was overlying newly found structure (2034), (Figure 20). This was built of long thin slabs balanced on top of two possible line of stones to form a possible drain structure. However, very little of the structure was visible inside the trench to be able to say more about it.

The larger exposure of the archaeological deposits both in plan and sections resulted in better understanding of the turf structure (2016) and associated soft deposits, which were overlying the rubble and the remains of structures below. As evident from the photo of the northeast-facing section across the width of the sea gate (Figure 21), the striped turf construction did not extend across the full width of the sea gate, as it was thought in 2018. In fact the turfs were stacked only from the edge of underlying structure (2028) and up to the western sea gate wall (2030). The southeast half of the trench was occupied by rubble (2020), which postdates the turf construction and was overlain by deposit (2006), which effectively levelled the area of the sea gate up to the top level of the turf structure.



Figure 20. View of reopened Trench 2 from southeast, showing stone rubble (2020) in the foreground and structure (2028) across the middle of the trench.



Figure 21. Sea gate Trench 2 showing exposed rubble (2020) in the southeast half of the trench and structure (2028) in the northwest half. Note the limit of overlying turf structure (2016) in line with the face of (2028) and the angle of the cleared channel for boat landings on the shore in the background.

The excavation below turf structure (2016) revealed that structure (2028) had a return towards the northwest in form of wall face (2041), thus enclosing a substantial space across the northwest half of the trench, which was filled with rubble (2038) forming the core of a substantial filled in structure, such as a platform or a dock (Figure 22). Structure (2034), previously mentioned above was partly obscuring the corner where (2028) and (2041) met, but there is little doubt that they were part of the same build. In the southeast half of the trench the excavation of rubble (2020) determined that this deposit was later than the burning horizon (2044), thus proving that (2020) was later than turf structure (2016).

The burning was 'spilling' thinly over stairs (2048), which were being revealed simultaneously. The stairs were composed of eight visible steps built from flat long stone slabs (Figures 22 and 23). They were orientated at c.25° angle to the face of structure (2028), leaving a wedged space between them opening towards the sea, which could not be explored to any great extent due to its narrowness and the danger that the surrounding structures could be destabilised by further excavation. At this stage the entire workable space within Trench 2 was occupied by structures and the only remaining excavation proceeded in the southwest corner, next to sea gate wall (2030), where deposits (2043) and (2051) were excavated. Deposit (2043) was either a collapse or stony dump in which a decorated Cu alloy object SF177 was found that might be a brooch fragment (Figure 23). Underlying deposit (2051) contained animal bone, charred organic remains and possible iron slag, suggesting a possible domestic dump.



Figure 22. View from above facing southwest of the photogrammetry model of Trench 2 at the end of the excavation in 2019.



Figure 23. Steps (2048) with traces of burning (2044) on top (left) and a decorated Cu alloy fragment SF177 from deposit (2043)

Trench 3

Trenches 3, 3a, 3b and 3c excavated in 2018 were outside the scheduled area located in the area of high resistance, which also coincided with visible earthworks suggestive of one or more structures. The survey of the earthworks revealed that they represent a building or superimposed buildings forming a T-shaped complex grouped under name Structure 1 (Figure 24).

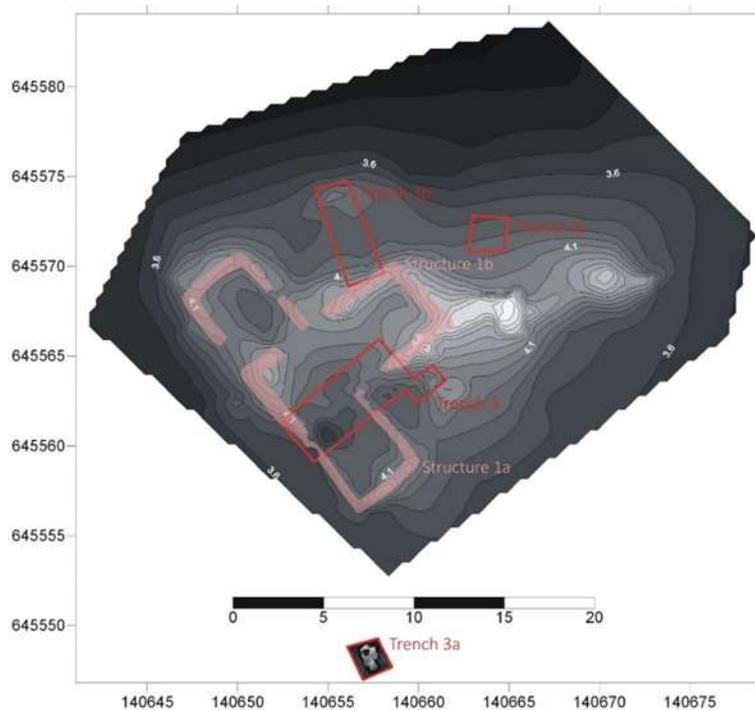


Figure 24. Location of 2018 Trenches 3, 3A, 3B and 3C in relation to the surveyed earthworks and the interpretative outline of Structures 1a and 1b as suggested in 2018.

In 2018 the excavation within Trench 3 revealed the remains of at least two phases of building Structure 1a and 1b. The deposits consisted of rubble collapse above what appeared to be the remnants of a burnt turf roof indicating that the building had been burnt down. Below this, there was a roughly cobbled gravelly floor surface with additional traces of burning. In the

southwest corner of the trench there was a clay-lined oven filled with burnt material. The interior rubble and underlying occupation produced many finds, including rotary quern fragments, that it was suggested indicated a domestic use for the building, with the artefacts indicating an occupation date no later than the 17th century.

In 2019 the area of excavation was expanded to incorporate the whole of Structure 1b and the possible western end of Structure 1a (Figure 25), thus encompassing 2018 Trenches 3 and 3b. This approach was adopted in order to gain the relationships between the walls by simply deturfing the structure, followed by selective evaluation of the different exterior and interior spaces.

The conclusion of the stratigraphic investigation of walls in plan is that the 2018 phasing hypothesis remains, i.e. that Structure 1a represents the earliest building of the group. The walls of Structure 1b lay over a dark grey occupation deposit which may be associated with this potentially earlier building, however the relationship of this occupation deposit vis a vis Structure 1a still remains unclear.



Figure 25. Overhead view of Trench 3 after deturfing and de-backfill of 2018 trenches

Previously it had been suggested the northwest-southeast oriented earthworks to the west of Structure 1b were a continuation of Structure 1a, however this proved not to be the case, this building, Structure 1c, being a later addition or annex attached to Structure 1b.

Currently the sequence of structures is that Structure 1a, a rectangular building, is at some point incorporated into Structure 1b, effectively forming an 'L' shaped building (Figure 26). Later an annex, Structure 1c, is added to the south west side of Structure 1b, creating a 'T' shaped grouping of buildings. What may be a wall-line, observed running below the western wall of Structure 1c' may belong to the earliest phase of occupation and thus associated with the use of Structure 1a.

As mentioned above it was speculated that the presence of a worn fragmented quern stone along with some burnt bone and pottery sherds indicated that the structures within Trench 3 were domestic in nature or at least had a domestic element. However, as yet, any features such as a hearth area, which would generally indicate domestic occupation, have not been uncovered. It is of course possible that such a feature is yet to be located within the unexcavated areas of the buildings, however the present evidence points to more specialised activities taking place within the buildings.

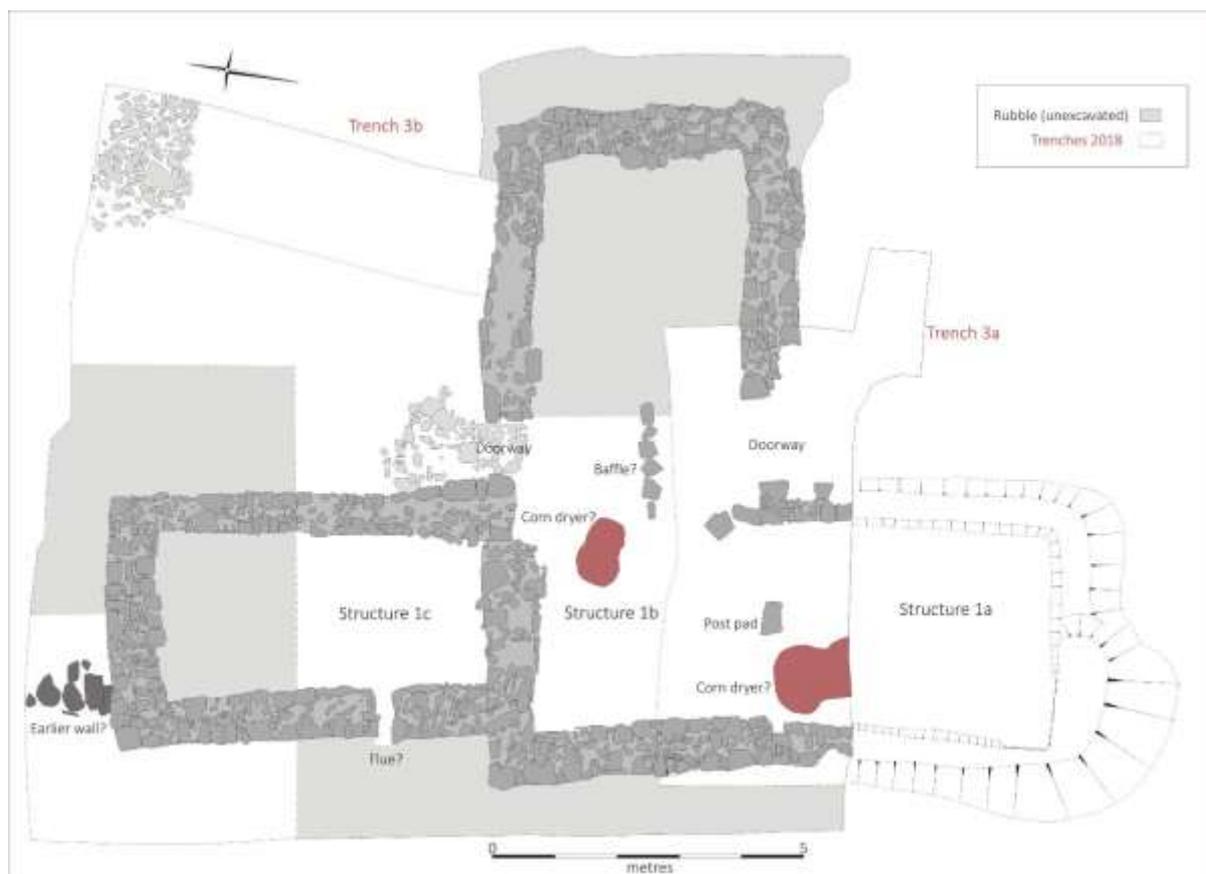


Figure 26. Plan of buildings forming Structure 1 and the features excavated in 2018 and 2019.

The opposing doors within Structure 1b likely indicates that this building was used as a barn, where cereal crops may have been processed. The presence of two small keyhole shaped

features that showed signs of indications of burning/scorching also indicate a specialist use taking place within the buildings. As yet we have no clear indication as to the use of these features although further analysis of the associated samples may shed more light on this. Small amounts of burnt cereal grain were recovered from the bulk sample associated with the keyhole shaped feature excavated last year, and this may point to their use as small corn dryers.

The recovery of slag and what are likely smithy bases indicate some iron working or iron production within the vicinity, but no feature as yet has been uncovered that we can directly associate with metal production of smithy activity.

As with Structure 1b the upper excavated deposits within Structure 1c showed signs of burning possibly indicating this building was burnt down at the same time. However, layers with much more intensive burning were observed lying below these upper burnt deposits. A small sondage excavated through these deposits showed as much as 0.30m of burnt material filling the building and lying above a heavily fire reddened gravel floor or surface. This undoubtedly represented multiple episodes of burning which appear to be related with what is likely a flue or vent along the south wall of this annex structure. While heavily burnt in part none of these deposits produced any firm evidence of what activity was taking place within Structure 1c, although by large they remain unexcavated.

The activity associated with the oven features, the burning activity, the occupation and midden deposits lying within and without the structures were comprehensively sampled for environmental processing and micromorphological analysis.

As mentioned above the burning seen within the upper deposits within the buildings appear to be associated with their last use and it was postulated that this might be associated with one of the recorded 17th century sieges of the castle. The recovery of three corroded coins (Figure 27), these possibly two pence pieces or turners dating to the reign of Charles I, likely indicate that the demise of the structures date to the last recorded siege in 1647. The recovery of several musket balls also underline that the buildings may have been slighted either by attacking troops or even by the defenders trying to deny cover to their attackers.



Figure 27. Some of the Small Finds from Trench 3: A – decorated pipe bowl; B – one of the Charles I coins; C – musket ball.

Trenches 4, 5 and 6

Trenches 4, 5 and 6 were all positioned with the aim to test particular high resistance anomalies in the northeast part of the environs area (Figures 1 and 28).

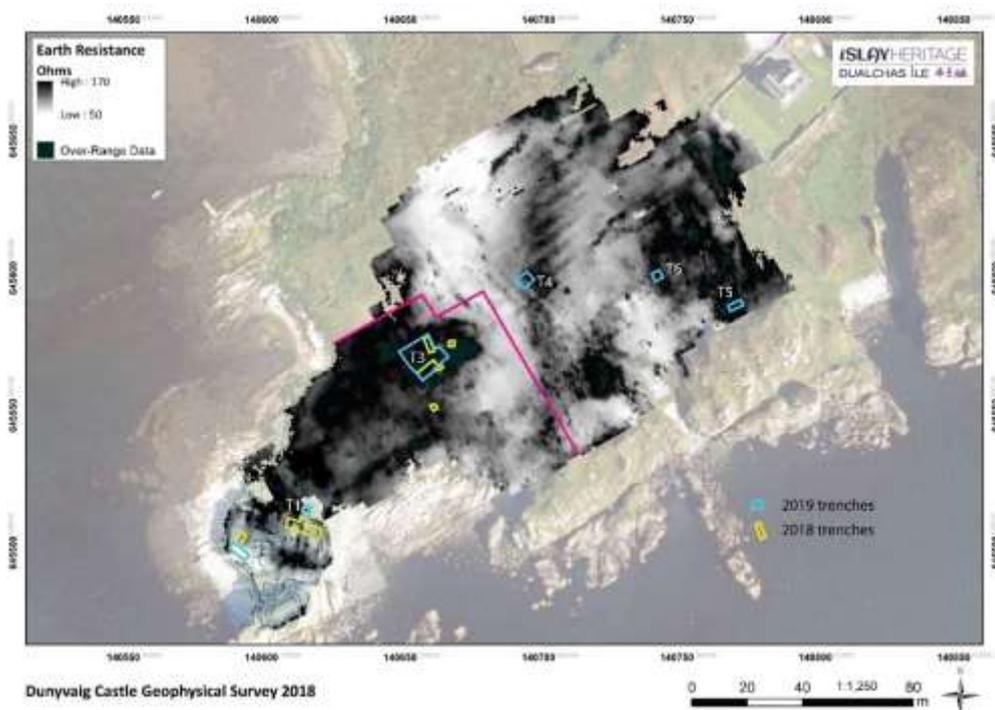


Figure 28. Location of the evaluation trenches 4, 5 and 6 in relation to the earth resistance data.

Earth resistance

Trench 4 was a 5m by 4m trench situated equidistantly between the castle and the plateau (Figures 5 and 8). Its aim was to evaluate a large linear high resistance anomaly running across the site on a N-S orientation. As mentioned in the geophysical survey section above, the interpretation of that anomaly was split between either a structural feature such as a road or a natural gravelly spread, such as a beach deposit. The trench excavation settled this issue by uncovering a natural gravelly deposit close to the surface, overlain by thin stony soil (Figure 29), which was cultivated as indicated by the traces of rig and furrow. The trench marked the position in the landscape where two different rig and furrow alignments were meeting up perpendicularly, a change perhaps influenced by the existence of the underlying beach ridge.



Figure 29. Trench 4 looking southeast towards the castle and the current shoreline.

Trench 5 was placed across N-S orientated linear earthwork which runs from the plateau in the north to the nearest coastal cliff outcrops in the south. The earthwork forms a boundary along the top of a ridge with sloping ground in two directions, to the east towards a narrow secluded sea inlet and to the west towards the castle (Figure 30). The boundary accompanies a track, which was at some point laid and can be still traced as it comes off the plateau.



Figure 30. Trench 5 from the northeast showing the tumble and the remains of the wall with exposed raised beach below.

The trench revealed a compact raised beach deposit, which makes up the ridge. On top of it was a ruined dry stone wall, which was built with the stones being laid on top of a stony bank. The wall was placed on the break of slope to the east and this is the direction to which it mainly tumbled. No other features of archaeological interest were found in the trench.

Trench 6 was a by 3m trench positioned to test a high resistance anomaly, which appeared to form a possible circular enclosure or a series of potentially complex archaeological features. Similar to the excavation in Trench 4, the investigation revealed high concentration of naturally occurring gravel and boulders to be the source of the geophysical anomaly. The top layer was a dark rich soil with evidence for rig and furrow on northeast=southwest alignment, i.e. down the slope (Figure 31). Underlying it was a mass of gravel with boulders, which was less well sorted than the beach deposits in Trenches 4 and 5 and may have been deposited by a high energy storm event that gathered this material in this particular area cornered between the cliffs to the southeast and the raised beach plateau to the northeast. Interestingly, the same area is characterised by highly magnetic noise seen in the magnetometry results (Figure 9).



Figure 31. View of the deturfed trench showing rig and furrow (left) and sectioned stony storm beach deposits (right).

Assessment of ceramics from the DHAP 2018/19, by Derek Hall

The DHAP produced an assemblage of 48 sherds of pottery ranging in date from the 13th to 19th centuries. All the sherds have been examined by eye and x10 hand lens and where possible assigned to a recognised fabric name.

Scottish Fabrics

‘Craggan Type’ Wares: There are four sherds of organic tempered ‘Craggan’ Type wares present from contexts 3003, 3004 and 3005 (DHAP18 season). This local hand-made pottery tradition is notoriously difficult to date when it is undecorated but is present in medieval and later deposits at other sites on the Scottish West Coast and Islands (Hall 2014).

Scottish Post Medieval Reduced Wares: There are seventeen sherds in this fabric from contexts 1011, 2020, 2043, 3004, 3005, 3006, 3007 and 3009 (DHAP18) and 3042 and 3050 (DHAP19) which would all seem to be from glazed jugs. This is liable to have been manufactured on the Scottish mainland and dates between the 16th and 18th centuries (Haggarty, Hall and Chenery 2011). Previous excavations at Baliscate on Mull have chemically sourced similar fabrics to the Clyde Valley (Hall, Haggarty and Jones 2017, 57).

Standard White Earthenwares: There are seven sherds from Contexts 2000, 4001, 6002 and Spoil which are from vessels in these 19th century fabrics which are liable to be from one of the Glasgow industrial potteries.

Imported Fabrics

Martincamp Type Ware (Figure 32): There are four sherds from Contexts 3002, 3003, 3005 and 3009 (DHAP18) in a hard-fired light red stoneware fabric which fit the parameters of Martincamp Type Ware from Northern France (Hurst 1986; Ickowicz 1993; Haggarty 2006). Two of these bodysherds from 3002 and 3003 have visible external throwing lines which suggest that they are from flasks and the sherd from 3009 has a possible flask neck junction. These very distinctive vessels date from the 17th and 18th centuries.

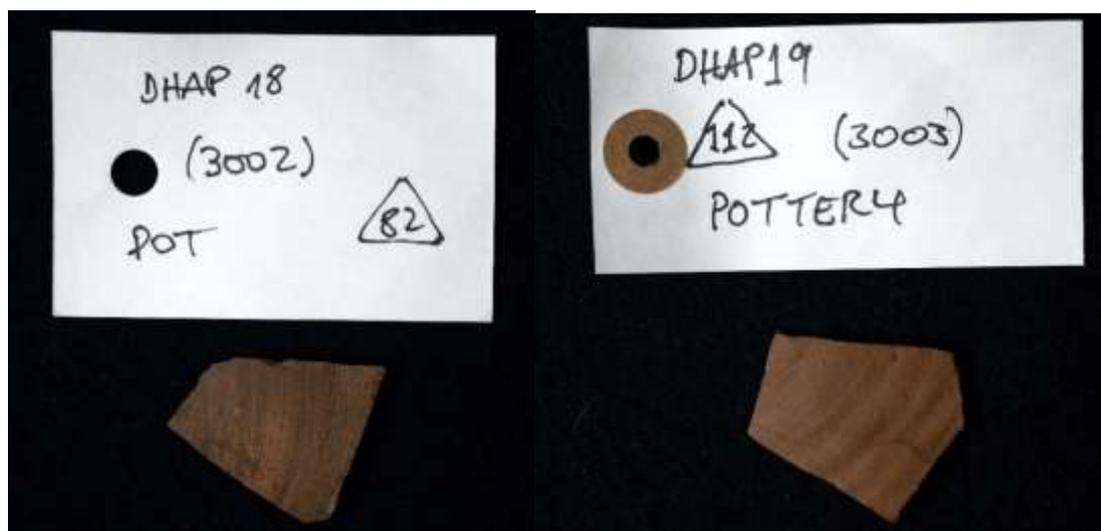


Figure 32. Sherds of Martincamp type ware from Trench 3

Tin Glazed Earthenwares: There are three very small sherds from Tin Glazed Earthenware vessels from contexts 1006 and 1028 (DHAP18) with visible cobalt blue decoration. These would appear to be of Anglo Dutch manufacture and may date to the 16th/17th centuries.

Un-provenanced fabrics

White slipped Redwares: There are two sherds of white slipped Redware from Contexts 3006 and 3008 which may be of Iberian origin.

Whitewares: There is a sherd from a rim and spout in a Whiteware fabric from Context 3009 (75) which is currently unprovenanced but maybe French. There is a rimsherd from 3054 (173) and a basesherd from 3050 (165) which would appear to date to the 13th/14th centuries and could be Scottish Whitewares.

Discussion

The small assemblage from the 2018 and 2019 seasons of excavation at Dunyvaig Castle contains pottery which would appear to be mostly of a 16th/17th century date, there are a couple of apparently residual sherds of an earlier 13th/14th century date. The presence of datable fabrics such as Martincamp Type Ware and Anglo Dutch Tin Glazed Earthenwares are very valuable for helping to confirm the date of the local Scottish Post Medieval Reduced Wares. At some future point in the project some targeted chemical analysis will prove beneficial to help identify the currently unprovenanced fabrics.

References

- Haggarty, G R 2006 'A gazetteer and summary of French pottery imported into Scotland c1150-1650: a ceramic contribution to Scotland's economic history' *Tayside Fife Archaeol J* 12. Vol 12, pp. 117-118.
- Haggarty, G R, Hall, D W and Chenery, S 2011 Sourcing Scottish Redwares, MPRG Occasional Paper no 5
- Hall, D W 2014 'Here be monstrous fabrics' ... Constructing a research agenda for the hand-made wares of the Scottish West Coast, Highlands and Islands' in Mytum, H and Davey, P *Medieval Ceramics* 34, 19–26.
- Hall, D W, Haggarty, G R and Jones, R 2017 'The Pottery' in Ellis, C 'Monks, Priests and Farmers: A Community Research Excavation at Baliscate, Isle of Mull' SAIR 68 <http://doi.org/10.9750/issn.2056-7421.2017.68>
- Hurst, J G, Neal, D S and Van Beuningen, H J E 1986 Pottery produced and traded in north-west Europe 1350-1650 Rotterdam Papers VI
- Ickowicz, P 1993 'Martincamp Ware: A Problem of Attribution' *Medieval Ceramics* 17 (1993), 51-60

Assessment of the faunal assemblages from the DHAP 2018-9, by Ingrid Mainland

An assessment was undertaken of the faunal assemblages recovered during the 2018 and 2019 excavations at Dunyvaig Castle to evaluate their suitability for further detailed analysis. This was based on the numbers of fragments per context together with observation of species present, bone preservation conditions and evidence for bone fragmentation, butchery and damage by carnivores. Appendix 1 presents the full data recorded.

Results

Trench 1 was located at the north end of the castle courtyard, along the inner face of the curtain wall (Maričević et al. 2019). Excavation was focused on Building B, revealing the northern end of this and deposits external to this structure adjacent to a possible well. A further area was excavated on the outside of the curtain wall. A total of 678 fragments of bone (mammal = 671, fish = 3, bird =4) were recovered from 14 of the trench 1 contexts. Most contexts only contained small amounts of bone. Larger concentrations were recovered from rubble layers within and likely associated with the demolition of Building B (1006, 1007) and from a midden layer (1011) adjacent to Building B. Bone preservation within these rubble layers and the midden was good, bone surface was hard with little evidence for weathering, surface exfoliation or erosion. These likely late to the early-mid 17th century AD, i.e. associated with the arrival of the Campbells and subsequent destruction of the castle by the MacDonalds (Maričević et al. 2019, 51-52). Bone condition was more variable in the more recent, upper layers of trench 1 with a greater prevalence of fragments exhibiting root etching and weathering. Species represented in trench 1 include cow, sheep/goat and rabbit, with most contexts dominated by cow.

Trench 2 was located within the courtyard walls of the castle in the area adjacent to the sea gate, revealing some structural remains, associated with Building E and layers representing a build-up of soil and turf across the width of the sea gate opening. A small assemblage of bone was recovered from this area of the site (mammal =197, bird = 5) with cow and sheep/goat observed. Most of the bone was derived from layers associated with the soil/turf 'build-up' across the width of the sea gate opening. This was generally poorly preserved, with evidence for weathering and with many rabbit bones, indicating the likelihood of bioturbation. Bone condition was better further down the sequence in layers both internal and external to structure 2012. However, there were altogether very few fragments in these deposits (n=15). A partial sheep skeleton was recovered from (2004). This exhibited bone surface exfoliation indicating likely exposure for some time prior to burial, suggestive of a fallen animal rather than a deliberate inclusion.

Very little bone was associated with the T-shaped building in Trench 3 (mammals). All fragments, with the exception of a few loose cattle teeth were calcined, i.e. burnt at very high temperatures. The teeth were poorly preserved, highly fragmented and with eroded dentine. This is indicative of acidic soil conditions under whereby only burnt bone and teeth have survived because of their higher mineral content (Campbell et al. 2011). The teeth were from cow but no further bones could be identified to species.

In 2019, further excavations in trenches 1-3 revealed additional bone. Only some of this, representing c. 80-90% of the total 2019 assemblage, was available for assessment at the time of writing due to ongoing post-excavation washing and archiving. In Trench 1, 609 fragments (mammal =607, fish=1, bird=5) were recovered from midden deposits underlying a

mortar and rubble layer to the north of the curtain wall, beneath its footings (Mithen and Maričević pers comm). These are assumed on stratigraphic grounds to date to the early 17th century AD and are likely to reflect one phase of activity. This bone is very well preserved, with little evidence of bioturbation in the form of rabbit bones, weathering or surface erosion. Butchery has taken place, and the bone are fragmented as a result but there are sufficient intact portions to enable biometrical analysis. This assemblage is dominated by cattle and sheep/goat but pig is also present. Several fragments of canid were noted in cxt 1043, including a humerus and mandible from a very large individual. Elements from smaller breeds are also present in this context, some of which may derive from fox. Other species represented include: horse, observed in cxt 1043, red deer in cxts 1043 and 1047; goat in 1042 and 1047. Most skeletal elements were noted but, comparatively, mandibles and skulls are under-represented.

A smaller assemblage (mammal=108; fish=1) was recovered from the sea-gate area of trench 2. A smaller suite of species were noted in this area of the site (cow, sheep/goat and rabbit). Again this was generally well preserved although the rabbit bones present in cxt 2016 were highly weathered and are likely intrusive. Bone from trench 3 was not available for assessment. However, very few, mostly burnt fragments were again recovered from this area in 2019 (Maričević pers comm.), confirming that soil conditions this area of the site are not conducive to bone survival.

Discussion

The 2018-9 excavations at Dunyvaig have recovered a small bone assemblage of c. 1800-2000 fragments. The assemblage is dominated by domesticates, in particular cattle (*Bos taurus*) and sheep/goat (*Ovis aries/Capra hircus*). Pig (*Sus domesticus*) is also present but in smaller numbers. Red deer (*Cervus elaphus*) was only observed in the middens recovered from 2019 which may imply some temporal or spatial variation in the assemblages. Red deer was not found at Dun Mhuirich on nearby Knapdale, and it was argued that access to this species may have been restricted to the nobility (Small 2015). Of interest also was the presence of a butchered humerus from a very large canid (*Canis* sp.), perhaps a hunting-dog, and of goat (*Capra hircus*) horn core and mandible within the midden layers to the north of the curtain wall. Very few bird and fish bones were present in the hand-recovered material, again suggesting an economy focused on domesticates. Most skeletal elements were observed, with concentrations of ribs and vertebrae noted in some contexts, raising the possibility of differential discard practices across the site and/or activity areas (eg kitchen vs. table waste, etc.). However, sample sizes by context or deposit types are currently too small to enable a detailed analysis of such variability. Cattle mandibles and skull fragments appear to be under-represented in the assemblage, a pattern which has also been observed elsewhere in the

West of Scotland at this date, where it is attributed to butchery customs, namely retention of the skull by the slaughterman (McCormick 1993).

Variation in bone preservation is observed across the site. Bone recovered from deposits within the castle and immediately adjacent to the curtain wall was in excellent condition and these are the areas which should be targeted for recovery of zooarchaeological data. Although rather small for detailed analysis, the existing assemblage from trenches 2 and 3 will allow insight into early 17th century dietary customs and some limited biometric information. Further excavation of the 17th century middens deposits revealed in these trenches is recommended to enable the larger sample size required for in depth analysis of animal husbandry, hunting, culling patterns, butchery practices and spatial variation in anatomical representation. The extra-mural building complexes (trench 3 area) are considered unlikely to reveal faunal material, unless micro-environments (e.g. anaerobic ditch/well deposits) are encountered.

Conclusions

Currently very little is known about medieval and Post-Medieval diet and animal husbandry in Argyll and the West Mainland of Scotland (Small 2015). As such, a full analysis of the Dunyvaig assemblage, as it stands, will add significantly to understanding of 17th century AD dietary customs, farming and hunting in this region and moreover, will enable the site to be placed within the wider context of medieval commensality, food customs and human-animal interactions for this period in Scotland as a whole (eg Mainland and Batey 2019). From the generally excellent bone preservation, the presence of large midden deposits and of well-preserved bone within floor layers in and adjacent to the castle walls it can be anticipated that further excavation at Dunyvaig will provide substantially larger post-medieval and potentially earlier 14-16th century bone assemblages of a high analytical quality. These would enable an unparalleled insight into the 14-17th century AD dietary customs at a high status, Highland chieftains' residence as well the provisioning strategies employed to supply the castle and its inhabitants. Larger assemblages would also provide an opportunity to explore questions relating to the nature of Medieval and Post-Medieval animal husbandry in the West of Scotland at a time immediately preceding significant agricultural changes, eg the expansion in cattle droving, the stock improvements of the 'Agricultural 'Revolution, and the Highland Clearances (eg Dodgshon 1998).

References

Campbell, G., Moffett, L. and Straker, V. 2011. *A Guide to the Theory and Practice of Methods, from Sampling and Recovery to Post-excavation* (second edition). Historic England. <https://historicenland.org.uk/images-books/publications/environmental-archaeology-2nd/>

Dodgshon, R.A. 1998. Livestock production in the Scottish Highlands before and after the Clearances. *Rural History* 9, 19-42.

McCormick, F. 1993. Excavations at Iona, 1988. *Ulster Journal of Archaeology* 56, 78-107.

McCormick, F. 1996. Faunal remains, in Ewart, G., and Triscott, J. Archaeological excavations at Castle Sween, Knapdale, Argyll & Bute, 1989-90, *Proceedings of the Society of Antiquaries of Scotland* 126, 553-555.

Mainland, I. and Batey, C. 2019. The nature of the feast: commensality and the politics of consumption in Viking Age and Early Medieval Northern Europe. *World Archaeology* doi. 10.1080/00438243.2019.1578260.

Maričević, D., Regan, R., Clarke, A., Waring, L., Fry, R., Banerjea, R., Batchelor, R., Hale, L., Thacker, M., Campos Blade, R., Lambert-gates, S., King, T. and Mither, S. 2019. *Dunyvaig and Hinterland Assessment Project 2018*. Updated Data structure Report.

Noddle, B. 2000. 'Animal bone', pp. 226-228 in Lane, A., and Campbell, E. (ed.) *Dunadd: an early Dalriadic capital*. Oxbow Books: Oxford.

Small, J. 2015. An analysis of the animal bone assemblage from Dun Mhuirich, North Knapdale. Unpublished MSc Dissertation. School of Geography, Archaeology and Palaeoecology, Queens University Belfast.

Archaeological evaluation of sites within Dunyvaig's Hinterland

Cill Mhoire geophysical and earthwork survey

Detailed topographic survey of the monument and its immediate surrounding was carried out in 2018, which demonstrated potentially complex nature of the earthworks, which probably represent additional structures (Figure 33).

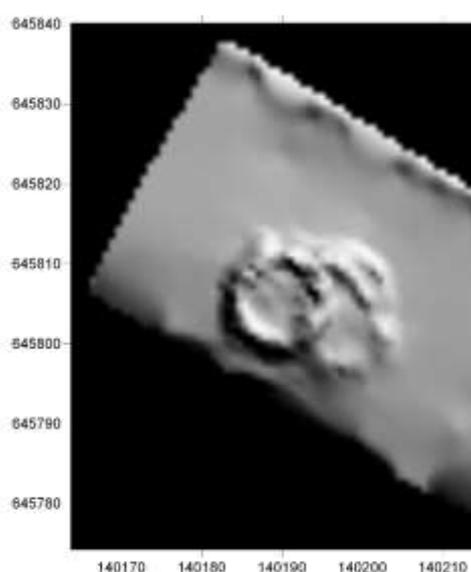
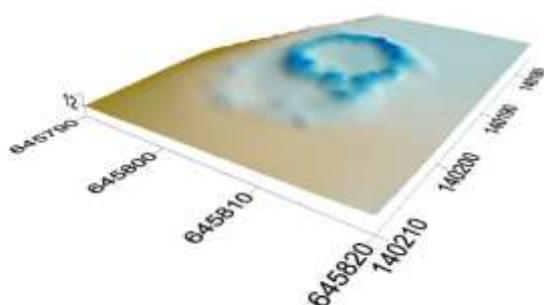


Figure 33. Shade relief and 3D surface model of the circular earthwork at Cill Mhoire



In addition to the circular earthworks, recorded by the RCAHMS (1984) as a burial ground, but which could well represent prehistoric roundhouse (Maričević et al. 2019), the electrical resistance survey carried out in 2018 revealed a presence of a possible larger enclosure to the northwest of the earthwork (Figure 34).

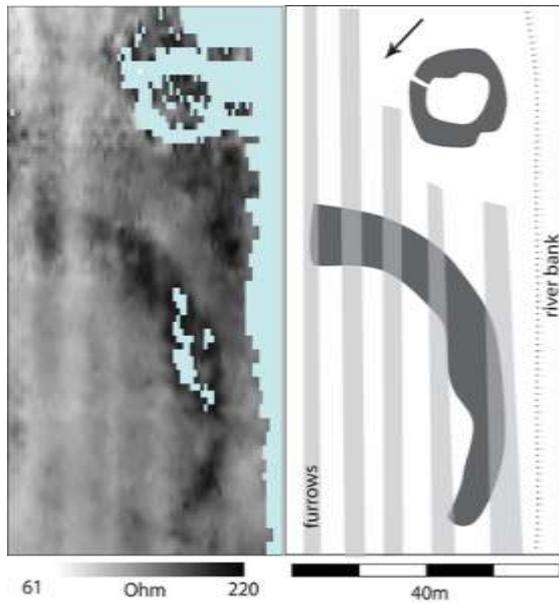
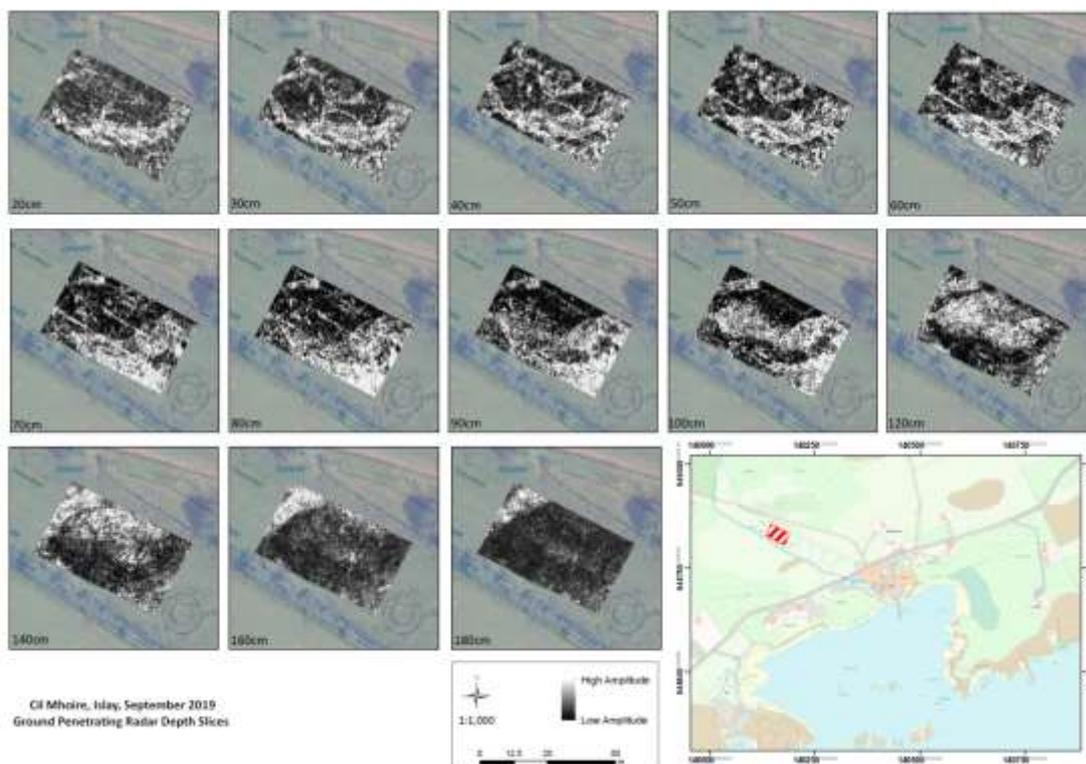


Figure 34. Cill Mhoire electrical resistance plot with the interpretation showing rig and furrow, the roundhouse and a possible enclosure.

A supplementary ground penetrating radar survey was carried out in 2019 in order to provide more evidence for the nature of this anomaly. This confirmed its presence and revealed several other possible features of interest including a possible building (Figure 35). Further analysis of the data are being carried out and will be reported on in the DHAP2019 Data Structure Report.



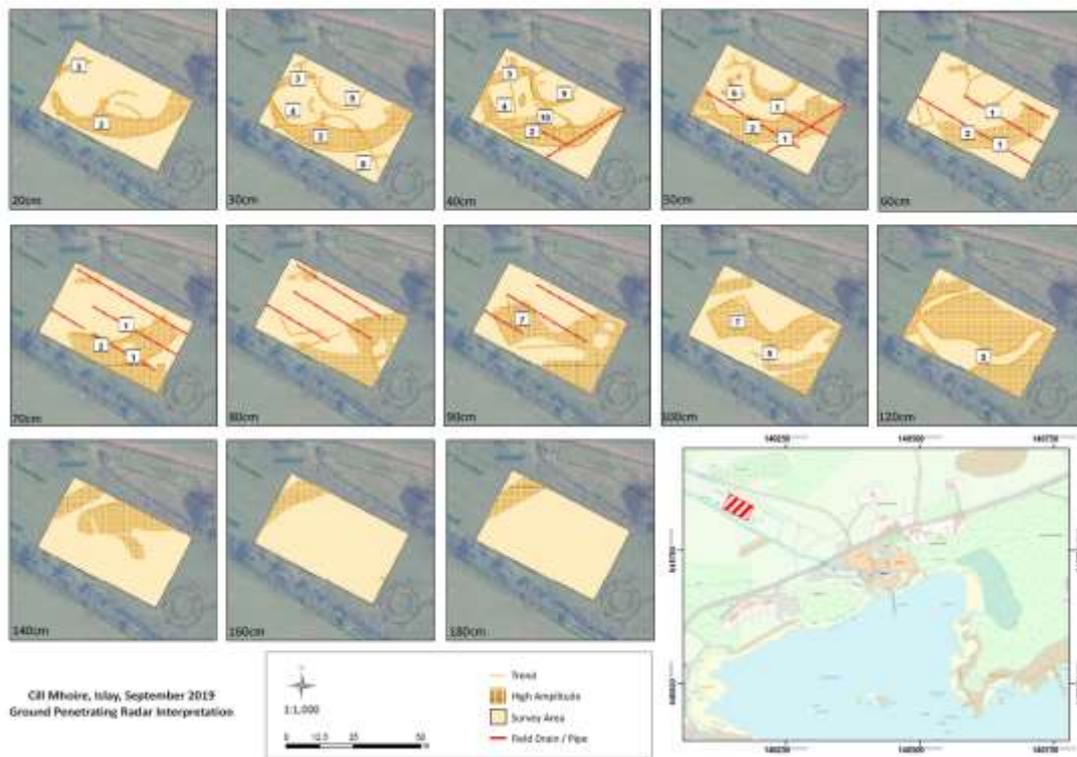


Figure 35. GPR data from Cill Mhoire showing the data (top) and the annotated features (bottom).

Barr an t-Seann Duine geophysical survey

The 2018 fieldwork at the site of the promontory fort at Barr an t-Seann Duine comprised the geophysical survey of the grassed level area at the east side of the fort, which was previously reported to have contained circular structure (RCAHMS 1984). A circular depression suggestive of a possible structure was observed in this area prior to the start of the survey.

Neither magnetic nor electrical resistance survey is conclusive about the presence of possible structures at this part of the fort. There is a possibility that the high magnetic and the high resistance anomalies around the perimeter of the circular depression may indicate stone walling.

Summary

Six week archaeological evaluation and survey work at Dunnyvaig Castle and its environs during two season of DHAP 2018/19 provided a large amount of information across several different datasets. These have demonstrated the remarkable opportunity at Dunnyvaig to address a range of research questions regarding the nature of the castle – its origin, development, architecture, and activities - and its role in the political, social, economic and

environmental history of the 11-17th centuries. The site contains well stratified deposits, with a wide range of finds, with good organic preservation and a substantial amount of structures and architecture relatively accessible below the surface.

2. Are there suitable sedimentary deposits within the Dunyvaig hinterland to reconstruct palaeoenvironments and land management during the last millennium?

The DHAP2018/19 evaluated the palaeoenvironmental potential of the immediate hinterland surrounding Dunyvaig Castle, by a walk-over and auger survey. This revealed a number of sequences (Figure 36) containing peat that is predominantly herbaceous in nature, together with wood and moss elements. Units of fine-grained mineral-rich silt and clay were recorded either within or towards the base of the sequences (e.g. Figure 37). At Cill Mhoire, an intercalated sequence of peat and mineral-rich deposits was recorded (Figure 38). These deposits were generally recorded within depressions in the present day topography above bedrock Quarzite, between outcrops of Amphibolite and reach to at least 4.5m (near Druim Mor), 1.9m (near Cill Mhoire), 3.3m (near Callumkill, Figure 39) and 2.5m (near Meall Aird). Sequences dominated by silts and clays were recorded in various locations, including along the course of existing river channels. Other deposits of interest recorded during the evaluation include coastal sands with lenses of peat at Port na Sroine Gairbhe (Figures 40), and a thin peat sequence within a small basin at relatively high altitude, displaying probable evidence of burning in the basal 10cm of the unit (Figure 41). More distant locations from Dunyvaig with sequences containing peat and fine-grained mineral-rich deposits with good palaeoenvironmental potential included at Loch Larnan and Loch nan Dìgl both >2km away from the site; at the latter, a sequence exceeding 6m was recorded.



Figure 36. National Soils of Scotland map overlain with walkover survey and auger points from 2018 and 2019 evaluation



Figure 37:
Selected
sediments near
Druim Mor



Figure 38:
Selected
sediments near
Cill Mhoire



Figure 39. (a)
Coring with
students; (b)
select
sediments near
Callumkill



*Figure 40.
Coastal sand
and peat
deposits at
Port na Sroine
Gairbhe*



*Figure 41.
Possible burnt
horizons at
base of
probable
blanket peat
near Cnoc Mor*

Following completion of the 2018 field season, a laboratory-based assessment of samples collected from Cill Mhoire (1.9m sequence), Druim Mor (4.5m sequence), Callumkill (3.3m sequence), Meall Aird (2.5m sequence) and Cnoc Mor (0.6m sequence) was undertaken. The provisional results of this exercise have demonstrated: (1) further insights into the composition and depositional history of the sediments through detailed description and organic matter determinations; (2) the potential for a high resolution chronostratigraphic framework to be developed due to the extraction of suitable plant macrofossil for radiocarbon dating and the positive identification of tephra shards, and (3) the potential for detailed reconstruction of the former vegetation through low resolution assessment of the pollen content.

In summary, the hinterland was shown to have several locations where sedimentary deposits survive and appear suitable for analysis to undertake the palaeoenvironmental reconstruction proposed within the Dunyvaig Project.

3. Are their suitable sedimentary deposits within Dunyvaig Castle for micromorphological analysis to identify past activities and site formation processes?

Sampling in 2018 and 2019 explored whether deposits were available at Dunyvaig suitable for micromorphological analysis to inform our knowledge about the activities within the inner bailey and associated with buildings in the castle's outer ward, the development of occupation, hiatuses in use, abandonment processes, and post-abandonment processes. Where appropriate, the opportunity to secure additional samples for chemical and phytolith (and/or other microfossil) was evaluated.

Six micromorphology samples from the 2018 excavation were selected for inclusion with the 'All along the watchtowers: Balancing Heritage Protection, Development, and Scientific Research on Buried Archaeology at European Castles' project (PI Rowena Banerjea). These include three examples of turf architecture, degraded mortar lenses that intersperse soil units, floor material that includes charred matting or roofing, and a soil from is considered to be a post-abandonment soil. These samples are in preparation. The sample from the post-abandonment phase in Trench 2 was incredibly difficult to set in resin and the problems are thought to be caused by high salinity as they are comparable with the same issues that were experienced from working on samples from an Austrian salt mine. The sample's location is at the Seagate, in the closest proximity of all samples to the sea. The sample has now been stabilised and preparation of the slide can proceed. The effects of salinity on the sediment will be investigated further during the analysis stage. As well as affecting sample preparation, the increased salinity in sediments can also affect the preservation of materials such as bones, teeth, shells, organic materials and some metals (Kibblewhite *et al.* 2015) and is a cause for concern for areas subject to coastal erosion.

The geoarchaeology sampling programme for 2019 focussed on Trenches 1b, 2 and 3, and was conducted alongside the programme for wet-sieving and flotation.

Sample 86 (Fig. 42) was collected from Trench 1b, from midden material that was dumped directly outside the curtain wall of the castle. Micromorphological analysis will examine if there is animal waste and/or crop processing residues in the midden.



Figure 42. Micromorphology sampling of the midden, Trench 1b

Seven micromorphology samples were collected from Trench 2 (Figs. 43, 44, 45). All targeted different burnt horizons comprising rubified sediment and blackened layers, not all of which appear to be contemporary and their formation processes will be understood more clearly by micromorphological analysis: samples 69 and 70 were collected from (2037); 87, 88 and 89 from (2037), (2044), (2046), and (2049); samples 109 and 110 were collected from (2043), (2045) and (2050).



Figure 43. Samples 69 and 70.



Figure 44. Samples 87, 88, and 89.



Figure 45. Samples 109 and 110.

Sampling in Trench 3 focussed on sediments that are considered to represent occupation outside the building(s) and so, they will provide a valuable study of activities in comparison with samples collected inside the building in 2018. Three micromorphology samples were collected. Micromorphology samples were collected from spreads of midden material (Fig. 46), and small bags of material were collected across these deposits at 1m intervals (Fig. 47) for analysis of the soil chemistry, to identify the presence of coprophilous dung spores, parasite ova, and phytoliths to provide data about the range of activities taking place in and around this building. Figure 5 also shows clearly the large stones and pebbles at the base of the profile that represent the beach of former shoreline.

In summary, the assessment and sampling undertaken in 2018 and 2019 had demonstrated an outstanding opportunity for the use of micromorphology at Dunyvaig to identify on-site activities and site formation processes.



*Figure 46.
Micromorphology
sample 84.*



*Figure 47.
Samples collected
at 1m intervals for
analysis of the soil
chemistry,
coprophilous dung
spores, parasite
ova, and phytoliths*

4. Can Dunyvaig provide an appropriate range of fieldwork opportunities and experiences for a field school to train undergraduates and early career professionals in archaeological field methods?

The University of Reading trialled a field school at Dunyvaig in 2018 and 2109 prior to making a long-term commitment. Approximately 70 university students attended the fieldwork during the two seasons of fieldwork. For about half of the students, Dunyvaig was the first experience of the archaeological excavation having just completed their first year of study. The majority of the students were from the University of Reading with one fifth coming from other institutions, most notably the University of Highlands and Islands.

The staff from the University of Reading, and notably Amanda Clarke, Director of Field School Training, were assessing the suitability of Dunyvaig as a long-term Field School for the University. Three members of academic staff from UHI visited the excavation (Professor Downes, Dr Mainland and Dr Harding) and met with their students to discuss their experience and evaluate the suitability of Dunyvaig for a UHI field school.

The evaluation of both the UoR and UHI staff was that Dunyvaig provides an outstanding venue for the delivery of training modules for their students. Notable points about the site is that it provides:

- Archaeological stratigraphy of varying levels of complexity
- A range of context types requiring different methods of excavation
- Opportunities for all students to engage in drawing sections and planning
- A diverse range of finds (stone, ceramic, metal, bone, glass, etc.) requiring infield recording and processing
- Deposits requiring bulk sampling and in-field sieving and residue sorting
- Opportunities to take samples for a range of laboratory analysis, such as micromorphology
- Opportunities for geophysical survey and coring of sedimentary deposits
- Opportunities for in-field use of scientific techniques, such as pXRF
- All students could participate in public engagement by greeting and providing guided tours to visitors and participating in the community events

Around half of the students attending the Field School in 2018 and 2019 were 2nd and 3rd year students with previous fieldwork experience, who have been either given specific placements within the excavation framework as part of which they were able to gain further experience in excavation, geophysics, finds processing, archaeological science or public engagement, as guided by their particular interests. The Field School is designed with all university levels in mind, providing superb introduction to archaeological fieldwork, as well as continuing to develop older students and graduates and prepare them for careers in different sectors of archaeological and heritage industry or post-graduate academic study.



Figure 22. Amanda Clarke, University of Reading, providing in-field tuition to students on context recording



Figure 48. Archaeology students partaking in some of the many aspects of the archaeological fieldwork on offer at Dunnyvaig.

In addition to the qualities of the archaeological site and surrounding landscape themselves, the logistical arrangements of the project in terms of accommodation, catering and travel were also deemed as ideal for a field school. In addition, it was recognised that all students gained a broader student experience by the opportunities Islay provides for residential living together, visiting archaeological sites and areas of local interest during their days off, including distilleries, beaches, museums and nature reserves.

Student Feedback

'Islay had a small staff group which meant that the first years were the main body of the Field School and thus a strong priority. The communal living worked extremely well with the group of students becoming very close. This also extended to the students from UHI. Much of the training could be done one on one which had a strong benefit for the students. As the trenches on Islay were small, this meant group work was very important. I would also like to add that I think the community involvement in Islay was really important for the first years to see.' Megan Cameron-Heffer Part 3 student Islay 2018.

'Despite little cover from the elements, we had such a great team ethic, morale, and friendship that even the weather couldn't bring our mood down (or stop our singing). I learnt that things like that were more important than finding shiny coins.' Madison Hart, Part 2 Archaeology, Islay Field School

'Islay is great as a Field School as all the archaeological techniques are talked through and demonstrated. With Islay being a new project, it has a lot to offer as there is plenty of work to do! It also offers progression opportunities, with students being able to attend the project at the end of their 2 and 3rd years. This sets the students up with a greater understanding of different archaeological environments and also looks good on CVs for future employers! It is an all-round great experience.' Chloe Akhurst, 2018 graduate BA Archaeology who attended Islay as a Placement; currently employed by Border Archaeology commercial unit.

5. What opportunities can Dunnyvaig provide for enhancing the amount, diversity and quality of community engagement with the Historic Environment?

The DHAP2018/19 sought to evaluate the likely level of public interest in the Dunnyvaig Project and the types of engagement and outreach activities that would be of greatest interest and impact for the community-focussed aims of the Dunnyvaig Strategic Plan. Three strands of activity were developed and evaluated by: visitors and volunteers, schools engagement and community events. These were supplemented by a social media strategy involving at least

twice postings on Islay Heritage Facebook, instagram and Twitter, which increased the number of followers to over 1000, and regular features in the local newspaper, *The Illeach*.

Visitors and volunteers

A visitors' cabin (marquee in 2018) was set up with exhibition boards about the project and history of the site; as the excavation proceeded this was supplemented by displays of finds. This provided space for a visitors' book, donations bucket, comment book and leaflets about Islay Heritage and the project. This tent was continuously manned so that all visitors could be personally greeted and tours around the excavation organised.

The greeting and guiding was primarily undertaken by the students as part of their Field School assessed module, within which public engagement is a core skill. While conducting their tours, they were also encouraged to talk about their own personal experiences on the excavation. This system for managing and engaging site visitors worked well, with a considerable amount of positive feedback within the comment book. Although we had initially advertised two daily tours at specific times, we found this was not feasible because of the continuous flow of visitors throughout the day. High-profile visitors were given tours by the Project Director.

In 2018, over the 15 days that the excavation was open, there were 401 visitors, 82 local residents of Islay and 319 visitors to the island. The visitors came from a total of 20 countries, with largest numbers from Scotland (107), England (82), US (43), Canada (20), Germany (12) and Holland (11). One of the immediate lessons learned was that a much larger visitors' tent is required. That was provided in 2019 during which visitors exceed 600, coming from a similar range of countries.



Overseas visitors from Germany visiting the Dunyvaig excavation in 2018

With regard to volunteers, the project offered free travel to the site from key locations on Islay. Three local people volunteered throughout the excavation in 2018, and were supported by the provision of an Archaeological Skills passport with the expectation that will participate in the Dunnyvaig Project excavations. Two further local people participated regularly (perhaps on 5 days each) and a further five local people participated on single occasions. Similar numbers of local volunteers joined the project in 2019, with a further two volunteers coming to join the project from outside of Islay. Building a more substantial local volunteer force is a key aim of the Dunnyvaig Strategic Plan.

Schools engagement

Prior to the 2018 and 2019 field seasons, Dunnyvaig Staff liaised with Islay's primary schools and the High School to organise visits to Dunnyvaig at the beginning of their academic year, this acting as a hook for their history module on the Lord of the Isles in 2018 and their 2019 project, 'the world of work', which featured that of archaeology. In 2018 visits for three of the island's four primary schools were arranged, Bowmore, Port Ellen, Port Charlotte Schools, while in 2019 visits occurred for all four Islay Primary Schools and Jura's Small isles' school. During 2019 pre-visits were made to all of the primary schools to introduce archaeology and Dunnyvaig, and to ensure that the site visit would meet the schools' requirements and expectations. In 2018 total of 118 children and 18 staff members/supporting adults to the site, while in 2019 this increase to 135 children and 20 staff.



Children and teachers from Port Ellen primary School visiting the Dunnyvaig excavation in 2018

Each of the visits lasted for about two hours. The groups were given a tour of the site, showing them historical and archaeological features and the excavation methods being used. They were then given a handling session with some of the finds, being encouraged to reflect on what they were and what they were made, before thinking about what this evidence can tell us about the past. The school children were then divided into four groups and provided instruction in excavation, levelling, planning and find processing. Emphasis was placed on core skills of observation, measuring, recording and drawing.



In both 2018 and 2019, it was more difficult to engage the Islay High School with the project. Despite initially positive interactions with the teachers in 2018, the High School became unresponsive closer to the project until it was too late to be able to organise a visit. The teachers did, however, express an interest in any future excavation. Nevertheless, in 2018 a group from Islay High School's John Muir class visited the excavation. This is an outdoor learning class that focuses on practical life skills. These students had a range of additional learning or behavioural needs. The visit from this group followed the same structure as those from the primary school. The teacher noted that they are a difficult group to maintain engaged, but the visit was deemed to be successful and of value to the High School students. In 2019 two events were arranged with the High School: visit to the site by a higher-level Geography class to explore environmental history, and a visit by students from the site to the school to talk about studying archaeology and other subjects at University. In both cases, however, the events were cancelled at short notice.

Community events

On the evening before the excavation began in 2018, a **Public Lecture** was organised about the forthcoming work at Dunyvaig, delivered by Steven Mithen, the project director. This followed an event earlier in the year when the project had been presented and discussed in a public meeting. Approximately 40 people attended the public lecture, which was a reasonable number for such an event on Islay. In both 2018 and 2019 the forthcoming excavation was the main focus for the Islay Heritage marquee at the **Islay Show** (8th/9th August), providing information about the project to approximately 500 visits on both occasions.

In 2018, the **Breaking Ground** event on the 12 August started the excavation. We estimate 50 local people attended and joined a parade led by a piper to the excavation trenches. Approximately 30 then joined the archaeology team in beginning to de-turf the trenches, prior to enjoying tea and cakes. This was deemed to be a great success and gained coverage on the front page of the local newspaper the *leach*). In 2019 the excavation was also started by community event, within which c. 20 local people came to help de-turf the trenches.



Parade at the Breaking Ground event that began the excavation, 14 August 2018

Three 'special days' were organised to explore innovative ways for the local community to engage with Dunyvaig, notably those who have no interest in fieldwork or finds processing. The 2018 **Dunyvaig Bake-Off** day resulted in nine cakes being made by local people on the theme of the castle and excavation, which were then voted on (in a secret ballot) and eaten with a tea party. In both 2018 and 2019 a **Dunyvaig Artists'day** involved with local artist Dietmar Finger providing small group sessions sketching the castle and the excavations. We invited people to come along, provided some art materials and Dietmar gave expert advice. In 2018 this resulted in a group of 9 in the morning and 6 in the afternoon, while numbers were less in 2019 (ten overall). Thirdly, in 2018 we organised a **Dunyvaig Photography Day** with local photographer Ben Shakespeare. This was an opportunity for local photographers – or which there are several on Islay – to photograph the castle, excavation and finds, receiving expert advice from Ben and our project photographer, Sarah Lambert-Gates. Unfortunately, there was a huge gale on the specified day and it could not take place – the excavation as closed. Nevertheless, Ben took the opportunity to take some dramatic photographs of the castle in the gale, which demonstrated the risks arising from coastal erosion.



*The 2018 Dunnyvaig
Bake-Off event*



*2018 Dunnyvaig
Artists' Day with
Dietmar Finger*

In 2019 the excavated hosted the **Islay Chit-Chat strollers**, providing a site visit and an afternoon tea at the site. This is a group of long-term physically or mentally disadvantaged people, who regular meet for short walks, company and refreshments. They particularly enjoyed the picturesque setting, a relaxed opportunity for a social gathering and the afternoon tea refreshments. There was an opportunity for those who wanted to take a site tour to do so with assistance from some of the students on site. All but two of the group went on a site tour. The chit-chat striollers were able to handle some of the finds during an interactive session with one of the archaeology students which the group especially enjoyed.



Afternoon tea, site visit and a finds talk for the Islay Chit-Chat strollers in 2019

To reach out to other senior members of the Islay community who were unable to visit the excavation, a visit was made in 2019 to the **Port Mor lunch club**, where Steven Mithen and Tessa Blackie, a Dunyvaig Finds Assistant, provide a talk about the excavation and an opportunity to see and handle a selection of finds.



A visit to the Port Mor Lunch Club in 2019

The largest and most ambitious community event in 2019 was **the Dunyvaig Medieval Family Fun day**. This brought together a number of community organisations to help deliver events at Dunyvaig on the a medieval theme, including archery, spinning & weaving, using medieval seals, medieval food, and a range of other arts and crafts activities for children. Lagavulin distillery provided a room for some of the activities, while others took place on site, along with visits to the excavations and finds talks. Approximately 200 visits came to the Malt Mill activities and to the site (although whether the same or a different 200 remained unclear). This event was especially successful because it involved a range of Islay organisations Lagavulin Distillery, Islay Natural History Trust, The Museum of Islay Life / Tasgaidhh Muinntir Ile, Islay

Gaelic College/ Ionad Chaluim Chille Ìle, Susan Campbell / Snàth, Mary Bavin, Islay Archers, local artists, crafters, volunteers and local residents. 21 children between the ages of 2-16 entered the The Museum of Islay Life / Tasgaidh Muinntir Ìle Art Competition. Families had an opportunity to learn about the discovery during the 2018 excavations of Seal of Sir John Campbell of Cawdor which is now housed in the Museum on Islay.



Site tours led by Steven Mithen at the Dunyvaig medieval Family Fun Day 2019



Islay Archers provided archery at the Medieval Family Fun Day. They reported over 60 children and adults participated in the activity and their involvement at the event had generated significant interest for new members. The club owners were also encouraged by interest from Jura residents who had travelled over for the event. As a result they are now exploring options to offer classes and events on Jura.



Arts and crafts within the Lagavulin Hall during the Medieval Family Fund Day



Medieval costumes and demonstrations of spinning and medieval food



More than 60 children participated in the lino cut print making and art activities offered by local artist Jane Taylor.



The project's **Closing Event** in 2018 and 2019 was a public meeting held in Ramsay Hall, Port Ellen. On each occasion this provided a talk about the achievements of the excavation, an opportunity to see the finds, chat with all of the staff and students who participated in the excavation, and refreshments. In 2018 112 Islay local people attended – thought to be a record for such an event in Islay - joining the team of 40 archaeologists. Some of the interest had been developed by the recent discovery and announcement on twitter and Facebook of the seal of Sir John Campbell of Cawdor that was on display at the meeting and available for close inspection.

In summary, the school visits and community events trialled in 2018 and 2019 have demonstrated an outstanding opportunity to use Dunyvaig as a means to increase public engagement with the castle and with the historic environment in general. The Islay community has demonstrated a keen interest in participating within activities, with several local organisations wishing to provide their own events at Dunyvaig. The Artists' day and the Dunyvaig Bake-Off provided innovative ways for people to engage with the historic environment, bringing people to Dunyvaig for the first time. Opportunities were demonstrated to engage with the complete age-range, from the primary school children to the Port Mor lunch club, and for people of various physical capabilities. The Medieval Family Fun Day, provided great fun for hundreds of visitors as they learned about medieval lifeways and the excavation. A strong partnership has now developed with the primary schools on Islay and Jura, with the teachers drawing on the archaeological excavations and finds to support various subjects within the classroom.



Islay residents gathering in Ramsay hall for the Dunyvaig Closing Event, 30 August 2018



Steven Mithen talking about the discovery and significance of the seal of Sir John Campbell of Cawdor, discovered during the excavation



Islay residents viewing the seal

In 2019 the event included the first performance of the *Dunyvaig Ballad*, written and performed by Sarah Lambert-Gates, supported by Shane MacKinnon, a local musician



The Ballad of Dunyvaig

CAPO 3
Drove 2

1. We rebellion, battle won. Taken over from Lurgie to Lurgie
Rugged castle by the sea, show to me your *hath* history.

*What hides below the heather, sleeps within the soil, rests under the rock?
What hides below the heather, sleeps within the soil, rests under the stones?*
Oooooooooooooo

2. Betwixt, fra army down the Vikings O.D. fra Scotland lands and sea we men again
A hundred years or more McDonald lordship take, the land is yours Queen Mary says to James
3. Sir Lucklak Mac Macdonald he caught Ilay there. Betwixt Angus McDonald at our Dunyvaig
In 1588 a battle reared the table round, but James the 6th across it, saw it in the Crowns.

*What hides below the heather, sleeps within the soil, rests under the rock?
What hides below the heather, sleeps within the soil, rests under the stones?*

4. 1688 is granted; Bishop Knox of Ilay. But then brought by Ronald Og, McDonald's son,
Then taken by his brother Angus Og, and cousin Coll Connach, Colman's his horse.

5. But just as soon the Royal Charter grants the Isle, Sir John Campbell of Cawdor's lines take the pike.
And this part of the story links us to the past. A year ago the Campbell seal was found at last!

*What hides below the heather, sleeps within the soil, rests under the rock?
What hides below the heather, sleeps within the soil, rests under the stones?*

6. We come here to the castle every summer five, to seek the story true, to recount the lives.
As we disturb the soil, we move away the moans. What secrets do you keep with carmen, hat and beard?

Answers

The Dunnyvaig and Hinterland Assessment Project 2018/19 (DHAP2018/19) found positive answers to the five questions posed at the start of the fieldwork, teaching and community activities:

1. Dunnyvaig Castle and sites within its hinterland have been shown to have stratified deposits, structures and finds that can be used to address the research questions identified in the Dunnyvaig Strategic Plan.
2. The Dunnyvaig hinterland has suitable sedimentary deposits for extracting and analysing cores to reconstruct the palaeoenvironments and land management during the last millennium.
3. Dunnyvaig Castle has sedimentary deposits suitable for micromorphological analysis to identify past activities and site formation processes.
4. Dunnyvaig Castle provides an appropriate range of fieldwork opportunities and experiences for a field school to train undergraduates and early career professionals in archaeological field methods.
5. Dunnyvaig provides a diverse range of opportunities for community engagement to enhance understanding, enjoyment and use of the historic environment to make a real difference to people's lives in a myriad of ways.

In light of these positive findings from the DHAP 2018/19, the viability of the Dunnyvaig Strategic Plan has been confirmed. That plan intends to transform Dunnyvaig Castle into a significant heritage asset for Islay and Scotland, one that meets Historic Environment Scotland's 2019 Corporate Plan vision of 'being cherished, understood, shared and enjoyed with pride, by everyone'