AOC ARCHAEOLOGY
DUNBEATH BROCH PROJECT
Consolidation | Excavation | Outreach

Background to the project

- Thanks welcome and intro

Due to its position as one of the best preserved of the many Caithness brochs a partnership of Dunbeath and Berriedale council and AOC Archaeology undertook a series of archaeological investigations, interventions and structural consolidations at Dunbeath Broch. These were prompted by an increase in tree growth and vegetation on and around the monument as well as increasingly unstable stonework both of which raised concerns for the long-term stability of the monument. There was a strong desire to halt the deterioration and restore the monument as well as to improve access, and interpretation and to promote the broch as a visitor attraction to its rightful place as one of the key heritage assets in Caithness.

The first phase of on-site work took place in 2016 and comprised a detailed archaeological survey of the monument based on a 3D laser scan survey. This was accompanied by the production of a conservation management plan.

Following the suggestions of the structural survey and management plan in 2018 a series of archaeological investigations and structural interventions were undertaken to answer some key questions about the structure and to ensure its preservation and interpretation for future generations.

What I would like to take you through tonight are what we achieved during this programme of archaeological work by first by: **SLIDE**

- looking at bit of background to brochs and The Iron age of the area
- then the past history of the broch
- then look at the structural history of the broch
- Archaeology of broch
- Chronology of the broch.
- Conservation of the broch
- Education and outreach
- Before finally reaching some conclusions about the broch and its inhabitants

Background to brochs and Caithness archaeology **SLIDE**

Around the middle of the first millennium BC impressive stone built structures, called brochs, or Atlantic Roundhouses were built. With perhaps 200 sites, Caithness has more brochs per square kilometre than any other area of Scotland. Interestingly, these monuments sit in areas of the landscape in which other evidence for earlier activity is scarce, for example in the north-east. Here, there are very few chambered cairns, cists and standing stones.

Brochs were thick-walled round structures, often with inter-mural chambers [built within the wall's thickness] and stairs leading to upper floors. Excavations have revealed traces in the floors of post-holes which could have supported internal wooden structures. Many brochs are surrounded with less substantial outbuildings although, without excavation, it is often difficult to tell whether they are contemporary with the brochs or later.

Almost without exception, investigations of the Caithness Iron Age have concentrated on the prominent mound sites of decayed and partly collapsed brochs. Further, most of these were examined during the Victorian period. The earliest recorded work was undertaken by Rhind, Anderson and Laing. However, these early investigations were significantly extended by the work of Sir Francis Tress Barry between 1890 and 1904. Although written accounts of Barry's investigations are incomplete it is clear that his excavation techniques were coarse. As with many early excavators, he concentrated on the roundhouse and its interior and was little concerned with recording structural details and complexities or stratigraphic relationships.

The conventional view of a broch is that of a tall imposing circular drystone tower with cells or galleries contained within the thickness of the wall and which feature, in varying combinations, a range of architectural devices including stairs, scarcements (corbelled courses, possibly to support wooden floors), lintel stones, stress relieving gaps, and low single entrances with door rebates, bar-holes and guard cells.

Similar to the Orcadian brochs, many of those from Caithness have associated outbuildings and ditches; the presence of buildings around broch structures can be directly observed or inferred from surface evidence at many sites. Although we cannot be sure whether all, if any of these features, are contemporary with the brochs, almost have the feeling of being a planned village, perhaps similar to the impressive Gurness complex in Orkney.

Brochs have been regarded as the homes of local chieftains, or places where refuge could be sought in times of trouble. This image of a broch has existed for a long time, but a new understanding of the nature of brochs is now beginning to emerge as a result of modern work which questions the date, function and use of brochs.

Although brochs dominate any discussions of the Iron Age in Caithness some hilltop enclosures, promontory forts, hut circles and other roundhouses may also have been built and used around this time. These have been somewhat neglected in discussions of the Iron Age of the county for the very understandable reason that we know virtually nothing about them. However it seems unlikely that the monumental Atlantic Roundhouses tell the whole story of Iron Age settlement in Caithness even though they are the most prominent feature of it.

History of work at the broch **SLIDE**

- Sinclair & Anderson

The broch first came to antiquarian attention in 1865, when W S T Sinclair of Dunbeath had the interior emptied of rubble. This was among the earliest antiquarian investigations of any broch in Caithness, and from the description given by Sinclair in a letter to Joseph Anderson, then keeper of archaeology at the National Museum of Scotland, there was little understanding of the nature of the building discovered, and few records were made.

Prior to Sinclair's work the broch was a green mound but his excavations were extensive and cleared the interior and exterior wall faces, revealing the entrance, guard cell and the intra-mural cell. In his second hand report of the works Anderson suggests that the chambers in the walls are larger than usual with what appears to be the guard cell some 12 1/2 feet long by 6 1/2 wide and surviving 13ft high although this is hard to reconcile with the surviving remains on the ground today. The intra-mural cell is described as squarish in form, having recesses on three sides.

On the south side of the interior of the broch Sinclair notes a pit-like structure resembling a well 4 -5ft in diameter, with stone sides. It is not clear if Sinclair fully excavated this feature.

Artefacts recovered by Sinclair consisted of animal bone and antler, some of it possibly worked, along with considerable numbers of fish bones. Sinclair thought that the broch may have been used for smelting iron as the effect of intense heat was discernible on the walls, and he found nodules of iron ore along with an iron "spear-head" 5 inches long.

At some point following the clearance of the broch, or possibly during and immediately after this work, some limited rebuilding was carried out, including the re-instatement of the intra-mural cell. The broch was enclosed by a dry-stone dyke soon after the 1866 excavations and is shown on the OS 1st edition map of 1877. **SLIDE**

Visits to the broch are made by the Ordinance Survey and the Royal Commission though the 20th century and record the broch as unchanged but overgrown and in gradual deterioration. The second major episode of work at the broch is a programme of consolidation and conservation carried out by Glasgow University in 1990. At this time vegetation was cleared and trees were

removed from the monument. Loose rubble and debris were cleared from the entrance passage and around the guard cell which was cleared to the wall faces. A possible new gallery was discovered in a 'void' in the badly damaged southern arc of the inner wall face, but this was not excavated. The corbelled roof of the intra-mural cell, already rebuilt in the 19th century, was stripped down rebuilt to make it safe for visitors. Almost all of the inner wall face was repaired, along with the scarcement ledge and sections of the upper wall head.

This history of intervention has complicated the interpretation of Dunbeath broch but there are important features that make Dunbeath of interest to the study of brochs and Iron Age settlement

Structural history of the broch **SLIDE**

Structural tour of the broch highlighting the changes and alterations to the broch through time

The structure of the broch at Dunbeath demonstrates something of the longevity, use, alteration and re-construction at this monument.

- Location of the broch – possible outer works and lack of evidence thereof.

The broch is located on a prominent spur of land overlooking Dunbeath Water with steep slopes to the SW and steep craggy slopes to the NE. The location makes an impressive setting and would have commanded views down the strath when the broch was in use. The ground rises gently to the W, where there has been the suggestion of structures external to the broch, there is now no evidence for these however.

- The broch itself -size, preservation etc

The broch itself is typical of the corpus, comprising a circular drystone wall best preserved in the NW to NE quadrant where it survives around 2 ½ meters high. The inner wall face is vertical while the outer wall is conical with a slope of around 1 in 6. Projecting these walls upwards to their intersection gives an approximate original height of 14 ½ meters at the junction of the walls with possibility 1-2m of parapet walling above this to a total of 15 ½ to 16 ½ meter high. This would have consumed some 1,500 m3 of stone with a mass of 2,300 tonnes.

- Entrance passage and alterations on south side, guard cell to north – to be returned to later.

The entrance to the broch lies in the SE through a passage that has been heavily modified, probably in antiquity. An inward check in the passage wall on the S side indicates the presence of a blocked or modified cell or gallery entrance with large stones in the body of the wall angled backwards, perhaps having slipped into a void in this area. Opposite on the north of the entrance passage lies the guard cell, which we shall return to later, but it is worth noting that stonework of the first floor intra-mural gallery is visible above this guard cell.

- The southern arc of the broch – area of collapse **SLIDE**

The southern arc of the broch, in the area closest to the steep slopes above the Dunbeath Water, has collapsed almost entirely. This has probably been brought about by the huge weight exerted by the mass of stonework on the sandy subsoils that form the substrate upon which the monument has been built. It is likely that the inner wall was split in this region by a stacked void above a stair entrance to lighten the dead weight of the walls on the passage lintels. This would also have the effect of reducing the tensile strength of the wall, making this region vulnerable to settlement damage, exacerbated by the encroachment of the cliff edge.

- Intra-mural cell – unusual form, corbelling, aumbries etc and the dating of this feature – again to be returned to later

A single intra-mural cell is accessed from the interior of the broch, almost opposite the entrance passage. This cell is of an unusual form: unlike most broch cells it is almost rectangular in plan, corbels against the inner wall of the broch and rises above the height of the scarcement ledge and the 1st floor gallery. This unusual arrangement had led Ewan MacKie to suggest that the cell was the chamber of an earlier Neolithic chambered cairn that had been incorporated into the broch at the time of its construction. There is also the possibility that this structure is a secondary reworking of the broch, aumbries constructed in each face of the cell would support this as they are common features in secondary structures around brochs such as at Midhowe. We will return to the dating of this cell as it was the focus of one area of excavation to test these theories.

- Scarcement ledge – rebuilt in the 1990's

The final structural element to the broch that I want to talk about is the scarcement ledge which is visible for around half of the internal wall circuit, this was extensively rebuilt during the 1990's conservation works. It is from this ledge that the first floor of the tower was sprung.

Archaeology of the broch **SLIDE**

What we did and found out about the broch

- Aims and objectives of the archaeological works

The 1990's repair works were well executed and extensive, however certain areas of the monument had deteriorated and the fabric of the monument had deteriorated in several locations. The archaeological excavations were mainly focused on enabling and facilitating the conservation of the monument and comprised clearing the guard cell of accumulated debris along with investigation of the putative cell entrance in the southern arc of the broch. The exception to this was the excavation of a trench immediately in front of the entrance to the intra-mural cell.

- The intra-mural cell entrance and the interior of the broch

We excavated this trench to investigate the chronology of the intra-mural cell and to determine if this was a primary or a secondary feature. This trench also aimed to investigate the interior deposits of the broch and to determine the levels of the antiquarian excavations. This trench extended 2m counter-clockwise from midway across the cell entrance.

Removal of around half a meter of backfilled rubble exposed series of two possible occupation surfaces with a couple of flat slabs that may have been paving. The earliest of these was carbon dated to between the mid-1st century BC and the late 1st century AD.

The excavation of this trench exposed the inner wall of the broch, which demonstrated the level of deterioration of its stonework prior to the 1990's conservation works. Three levels of preservation were identified, with the above ground area of the wall having been restored by GUARD. Extending for around half a meter below the current ground surface was a very poorly preserved section of walling. Probably affected by water flow and pooling through the structure of the broch leading to the denaturing of areas of the stonework and resulting in loss and loosening of stonework in the inner face of the broch. The lowest 2-3 courses of the broch inner wall were well preserved due to lying below the fluctuating, oxygen rich upper surface of the ground water.

- The guard cell **SLIDE**

The second area of excavation was within the guard cell accessed from the north side of the entrance passage. This was reportedly cleared of loose material during the consolidation works in the 1990's. We aimed to remove further loose rubble and blown topsoil and to return the cell to its former condition, as well as facilitating repair works to the cell corbelling and inner broch wall.

This removal of accumulated vegetation and collapsed rubble exposed structural elements of the guard cell as well as soft deposits relating to the occupation of the broch.

Immediately within the cell was a single large paving slab, followed by a blocking wall extending across the full width of the cell. This blocking wall abutted the sides of the guard cell but was not keyed into the side walls, implying that it was of a later phase of construction than the guard cell.

To the north of this blocking wall, further into the cell, ware smaller possible paving slabs set into soft deposits relating to the occupation of the broch. A carbon date from one of these deposits returned a mid-2nd to mid-4th century AD date range.

At the north end of the guard cell a linear feature extended across the full width of the cell. This was unexcavated but appeared to continue under the walls of the guard cell. This may suggest that there was a period of occupation predating the construction of the broch, or that the guard cell is a repair, alteration or secondary rebuild.

- Possible cell/stair entrance **SLIDE**

The third and final area of excavation was within the putative stair entrance in the southern arc of the broch inner wall. These excavations enabled the consolidation of the southern arc of the broch wall, as well as allowing an investigation of the nature and of the stonework and deposits in this area.

Removal of a rubble backfill deposit from the antiquarian excavations exposed the east and west walls of the opening in the broch wall. Sitting between these walls was a small deposit of burnt material that appears to have been the remains of a small fire possibly a camp fire of the Victorian excavators or some transient occupants of the broch in relatively recent times.

Notably the side walls of the opening were sitting on the rubble derived from the collapse of the broch, suggesting a late date for these features. The western wall also seemed to join with a sleight retaining wall that appeared to be attempting to rivet the collapse of the southern sector of the broch wall. We think this mat have been erected by Sinclair around the time of his investigations into the monument.

Although this opening appears to be late in the sequence at Dunbeath broch, there is good reason to suppose the stair gallery did open in around this position, and possible stair slabs are visible in the collapsing stonework in the rising arc of the surviving broch wall. This late opening may be marking a feature Sinclair had found in his deeper excavations, although he does not mention this in his account.

- Artefacts recovered from the broch **SLIDE**

Unsurprisingly given the limited nature of the excavations and that we were re-excavating a previously investigated monument there were few artefacts recovered from the broch. There were a few artefacts however and these come from two categories objects relating to the Iron age activity at the site and a few Victorian artefacts lost by the antiquarian excavators of the broch.

The Iron Age assemblage is small, but wide ranging in type given the limited assemblage including worked bone and antler, metalworking debris, handmade ceramics, and coarse stone tools.

The stand out artefact is undoubtably two pieces of a bone die decorated with a number of incised circles. These are most likely made of a cow or deer metapodial with each flat rectangular face bearing incised numbers expressed as a series of well-made and confidently incised ring and dot motifs.

How bone dice of this type were used during the later Iron Age is a subject of debate. Use in a type of domino game, a guessing game or that they were rolled as dice have been suggested but none of these interpretations seem wholly suitable, not least because many are uneven in shape and therefore unevenly distributed in weight, and if rolled would have resulted in recurring numbers.

A parallel with a North American game which involved throwing sets of dice in the air and keeping score based on how they land has also been suggested. The breakage of the Dunbeath die, along its length and across diametrically opposing short ends could also indicate percussive damage on a corner resulting in the bone splitting and detaching in a manner not inconsistent with being thrown and landing heavily. By contrast a die from Scalloway appears to have been deliberately loaded with the insertion of a metal pin which suggests that rolling during use cannot be fully ruled out.

Although it is often tempting to see gaming pieces as an indication of leisure activities in prehistory, shamanism has been a suggested role of gaming and this could be a function of the Dunbeath Die, and bone dice in general.

Additionally, to the bone die, a segment of hollowed antler tine was found. These are fairly common to Iron Age artefacts but one where function is unclear. It is possible that these may have been used in composite handles, although their use as net spacers and fittings for ropes has also been suggested. There may have been a similar artefact found during the 19th Century excavations as Anderson notes the recovery of '*a section of antler about an inch long ground at each end*'. **SLIDE**

There is also limited evidence for metalworking at the broch attested by fragments of vitrified waste and ore. A fragment of hearth bottom suggests that iron was forged, possibly not within the broch but in the vicinity of the site. A piece of bog ore may suggest the raw material and is consistent with the type of ore used in the Iron Age. A small iron staple of a type that may have been used in the repair of small wooden objects was the only metal artefact recovered.

Despite the limited assemblage and the fact that the majority of the finds came from disturbed deposits, the artefactual evidence does illuminate aspects of life at the broch during the middle and late Iron Age including metal working and hide processing along with possible leisure or ritual activity demonstrated by the bone die.

- Environmental remains and animal bones

A small assemblage of charred cereals, charcoal, and animal bone was recovered during the excavations at the broch; these were typically from secondary, re-deposited contexts allowing only a general view of activities at the broch, not associated with a particular phase of occupation. However we can say that the assemblage from Dunbeath Broch is typical of a mixed economy where the community had access to a range of food and fuel resources, cultivated cereals, turves and woodland. The bone assemblage comprised the main domesticates of cattle sheep/goat and pig, as well as limited wild resources in the form of deer antler. The disrupted and mixed nature of the deposits means little can be said of animal husbandry or butchery.

- Fish bone

Alongside the animal bone, a small amount of fish bone was recovered from the excavations, mainly of cod with the possibility that almost all the bones came from a single large fish of around 90cm long. Large mature cod such as this tend to be found in deeper waters of 150-200m, while the immediate coast off Dunbeath is too shallow for this an area known as the 'southern trench' is located around 80km from the site off the coast between Banff and Fraserburgh. This exploitation of deep water fish shows a sophisticated understanding of the sea and an ability to deal with potentially dangerous waters.

Dating the broch **SLIDE**

As we have seen from both the structural evidence of the broch itself and the limited excavations the broch clearly has a long history of construction, primary occupation, rebuilding and re-construction before it finally fell out of disuse. To try and quantify some of this a number of radiocarbon dates were obtained, both from secure contexts and also from materials recovered from the broch. These dates fall into two broad ranges the mid-1st century BC to the mid-4th century AD and the late 8th to mid-10th centuries AD

- Early occupation and the construction of the broch 41BC to 340AD

As might be expected two of the early dates come from some of the only secure, in-situ deposits that were excavated on the site, from occupation deposits within the interior of the broch and guard-cell as well as a piece of animal bone incorporated into the Victorian backfill. As we pretty much stopped excavation at the first archaeological horizon, this suggests that Sinclair did leave some deposits untouched.

While these are the earliest dates it is unlikely that these relate to the construction of the broch as there are a consistent series of dates from more fully excavated brochs probably suggesting construction in the 4-5th centuries BC. It is also however common to find little evidence for occupation at brochs during this period with the main period of occupation being in a similar date range to that which we are seeing for Dunbeath.

- Later re-occupation and possible reconstruction works 771AD to 961AD

The second date range lies in the later 1st millennium AD between 771 to 961AD, some 430 years after the first series of carbon dates. This date comes from animal bone within the Victorian backfill and thus merely suggests activity at the site during this period. Taken with the structural evidence of the repeated alteration and reconstruction of the broch these dates show the use of Dunbeath broch for over a millennia, potentially more, however episodic and intermittent this may be.

- Can we tie these to some of the observable structural alterations at the broch or do they simply tell us that the broch has a long and complex history of occupations, construction, alteration and use?

Consolidations and conservation of the broch **SLIDE**

This long history of Dunbeath broch had left certain elements in an unstable and untenable state for long term preservation of the monument. In order to address this, a programme of consolidation and conservation was undertaken.

The area at greatest risk is the area where the broch probably failed in antiquity, in the southern arc where the broch lies closets to the steep slope down to the Dunbeath Water. The outer wall of the broch had long collapsed, and the enclosure wall is built over the remains of the broch masonry. The breaking away of the broch at this point has pulled at the end of the remaining masonry, opening joints and leaving unsupported tusking projecting towards the gap. The most worrying state of the wall was close to the ground, giving rise to concern for the whole wall where it rises to its highest surviving point. In order to counter the potential further creep and wholescale failure of the wall a supporting/retaining wall was constructed from the opening through the inner wall, in the area of the putative stair stretching across to the break pint of the outer wall. This was tied into the remaining mass of the broch wall and its collapse and should act to support the broken edge of the outer wall and buttress the mass of rubble.

Parts of the corbelling of the guard cell had collapsed ad other stones were at imminent risk of failure, which may have lead to the loss of evidence for the first floor gallery preserved above this corbelling. The inner broch wall was ramped up to strengthen the inner wall, with counter balancing stones built up over the surviving corbelling, some tied into the wall. These measures aimed to protect both the corbelling of the cell and the inner broch wall.

The final structural intervention was the reseating of projecting stonework in the upper courses of the outer wall of the broch.

Outreach and education programme **SLIDE**

Alongside the survey, excavations, and conservation of the monument which was itself undertaken by volunteers with support and training from professional archaeologists and stone masons a programme of outreach and education was delivered both on and off-site.

This included a living history day here at the heritage centre, delivered while the excavation and conservation of the broch was being undertaken. Craftsman and re-enactor James Dilley gave demonstrations ancient crafts accompanied by hands-on activities such as object handling, grinding grain on a replica quern, armour wearing and making pottery.

Dry-stone walling workshops were delivered by George Gunn the stone mason undertaking the conservation of the broch, as was a workshop led by Andy Heald invited contributions and discussion on interpreting the broch, to be delivered with a new interpretation panel soon to be installed.

A programme of school engagement combined on and off-site activities to introduce the pupils to the themes of archaeology, brochs and the Iron Age. This was delivered through in-school workshops and living history experiences delivered by James Dilley and Charlotte Douglas. Following and building on these school based activities, pupils visited the broch and took an active part in the excavation and interpretation of the broch.

Conclusions and understandings **SLIDE**

After all this work what can we say about Dunbeath broch and its inhabitants?

- Original form of the broch

The building appears to have been constructed as a 'true' broch tower, with at least one guard cell off the entrance passage and a clockwise rising staircase, entered from a cell located in the south of the broch. This would have given access to a first floor intra-mural gallery, the lintels of which can be seen above the corbelling of the guard cell. The first floor of the tower was sprung from the scarcement ledge that can still be traced around large parts of the inner wall. We do not know when the broch was built but it was probably in the early or middle Iron Age, possibly around the 4-5th centuries BC.

The tower at some point in its life suffered a catastrophic failure and collapse, perhaps brought on by the undermining of the steep southern slope. This collapse badly damaged the southern half of the monument and probably necessitated the near-complete rebuilding of this area of the broch.

The broch wall was rebuilt in antiquity, involving the construction of the surviving intra-mural cell. The broch wall must have been built to at least 1m above its surviving height to allow for the corbelling of the cell. The dating of this activity is not recorded archaeologically but a date in the mid-1st century BC to mid-4th century AD, or the late 7th to 10th century AD would fit with the radiocarbon dates.

- Occupation of the broch and their resources

We can say that the broch is utilised and probably occupied for over a millennia, from at the least the mid-1st century BC to the late 10th century AD. We cannot however say how sporadic and intermittent this occupation was, given that some of the evidence comes from a single bone.

The occupiers of the broch, for at least some of the time had access to a wide range of resources including domesticated and wild animals, a range of cultivated cereals and woodland resources and deep water fish stocks. Iron working in the vicinity of the broch both in terms of smelting and forging can be shown by the remains of both processes, a spear head and a small staple may be the products of this activity.

All of these suggest a small community successfully utilising a wide range of resources to satisfy dietary and other economic requirements. A slight glimpse into matters beyond mere subsistence is given by the discovery of the bone die pieces suggesting either time for leisure or a slight glimpse into ritual activity.

The conservation programme has addressed major areas of structural instability and uncertainty, preserving the monument for future generations and adding to the already complex history of construction collapse and rebuilding of a magnificent monument.