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# **S U A T L T D**

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**A Watching Brief  
at**

**Meadows Business Park,  
Dornoch, Sutherland**

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### Abstract

*A watching brief was commissioned by Highland Council Archaeology Service and carried out jointly by Resurgam! and SUAT Ltd in May 1997 on the development of a new business park in Dornoch. The site lay immediately to the south of the former Bishop's Palace (part of which is now the Bishops Hotel) on the southern edge of the old burgh. The watching brief involved monitoring ground works and, in particular, top soil stripping, which revealed numerous features including a building, ditched enclosures and evidence for ironworking, all sealed beneath an artefact-rich medieval cultivation soil. Salvage excavation was quickly agreed and was carried out over a period of five days with the help of the Tain Archaeology Group and students from the Certificate of Field Archaeology course, University of Aberdeen over a Bank Holiday weekend. Finds, many of which were recovered by a local metal detectorist, included large quantities of metal slag and burnt clay, medieval pottery, small finds of medieval and post-medieval date such as buckles, harness fittings, coins and nails, together with animal bone and shell. A series of radiocarbon dates were obtained providing dates of XXX (due April 2000).*

*The post-excavation analysis and reporting of the results was funded by Historic Scotland.*

### Introduction

A watching brief was commissioned by Highland Council Archaeology Service and carried out jointly by Resurgam! and SUAT Ltd between Monday 19th May and Tuesday 27th May 1997 on the development site of a new business park in Dornoch (SUAT Site Code DH01). The site lay immediately to the south of the former Bishops Palace (part of which is now the Bishops Hotel) on the southern edge of the old burgh and, unfortunately, just outside the area of archaeological interest as defined in *Historic Dornoch: The Archaeological Implications of Development* (Scottish Burgh Survey, Simpson & Stevenson, 1982).

The watching brief involved monitoring ground works associated with the development, in particular the top soil stripping of a new access road which revealed numerous features including a building, ditched enclosures and evidence for ironworking, all sealed beneath an artefact-rich medieval cultivation soil. Originally commissioned as one or two days work to a specification prepared by Highland Council Archaeology Service, an extension was subsequently agreed in consultation with Highland Council, as the developer, and Highland Council Archaeology Services to allow salvage excavation. Over the Bank Holiday weekend the Tain Archaeology Group and students from the Certificate of Field Archaeology course, University of Aberdeen kindly helped out. Finds, many of which were recovered by Mike Gallon, a local metal detectorist, from spoil taken off site and dumped on an adjacent field, included large quantities of metal slag and burnt clay, medieval pottery, medieval and

post-medieval buckles, horse fittings, coins and nails, together with animal bone and shell. A series of radiocarbon dates were obtained providing dates of XXX (due April 2000).

The post-excavation analysis and reporting of the results was funded by Historic Scotland.

### Site Location

The site lies on the south side of The Meadows (NH 797 895), the road that runs parallel with, and to the south of, the main thoroughfare of the burgh, Castle Street. The former Bishop's Palace lies immediately to the north, part of which still stands and is now the Bishop's Hotel. The development area has been under grass since at least the First Edition OS map of the burgh when it was known as The Glebe. The former manse, now the Highland Council offices, stands at the south-west corner of the site, while on the east side stands a recently closed abattoir, now partly in use as a joinery and garage. On The Meadows frontage stands the newly built Dornoch Heritage Trust 'Historylinks' centre, with adjoining car park. To the south of the site, the low-lying fields and machair stretch uninterrupted to the Dornoch Firth.

### Early History and Burgh Morphology

The first reference to settlement in Dornoch is contained in a writ by David I (1127 x 1153). Recorded in the Dunfermline Abbey register, it has led to the suggestion that monks from Dunfermline had established a cell in Dornoch. Alternatively, it could refer to an earlier community. Dornoch is traditionally associated with St Barr or St Finbarr and it has long been held that a community of culdee monks had established a cell there.

David's first bishop in Caithness was Andrew. A Scotsman who had been a Benedictine monk at Dunfermline, he was largely an absentee. His appointment by about 1147 is, however, seen as a deliberate policy of detaching this remote and partly Norse-speaking Scottish province from the Norse-ruled earldom of Orkney. It was not until the 13th century that the see was moved from Norse-dominated Halkirk to the more southerly church of Dornoch in the Gaelic-speaking part of the diocese. It was only with the establishment of the Scottish lines of earls of Caithness after 1231, and during the episcopate of Bishop Gilbert, that the church at Dornoch was built or rebuilt, and developed as the cathedral of the diocese. It was largely destroyed by fire in 1570.

The Bishop's Palace, which stands to the south and directly opposite the cathedral, is basically late 15th-century in date with some mid 16th-century reconstruction. Extensive rebuilding and renovation was carried out in 1813 as part of the Countess of Sutherland's reconstruction of Dornoch to achieve its present appearance. The palace is thought to have comprised three towers and formerly extended across what is now Castle Street towards the cathedral. Like the cathedral, it was largely destroyed in the fire of 1570. The palace of Bishop Gilbert, the builder of the cathedral, may have been on the same site.

Other than the cathedral and Bishop's Palace, little is known of medieval settlement here, and the town was not officially recognised as a burgh until it received its charter from Charles I in 1628. The principal thoroughfare of the town is Castle Street, leading onto The Square, but these are

late alterations to the town plan and date to the early nineteenth century. Many, if not all, of the buildings in High Street, the original thoroughfare and market place in the medieval period, which runs east to west on the north side of the Cathedral, were demolished around this time. Prior to the present watching brief, no archaeological work had been carried out in the burgh.

### Methodology

Top soil, and what was later identified as medieval cultivation soil, was stripped off by machine down to the natural sand sub-soil and dumped on the adjacent field to the south of the site by a fleet of tipper trucks. Many of the small finds were recovered from here by a local metal detectorist, Mr Mike Gallon.

The watching brief concentrated on monitoring the top soil stripping of the access road, an area measuring approximately 70 m in length and varying in width from between 10 - 15 m at its narrowest point at the western end, widening to c 30 m at the entrance from The Meadows. The main part of the site, where the business units will be sited, had already been stripped but showed no features in either base or section. This phase of groundworks did demonstrate, however, that the topsoil progressively thinned out towards the south. Once the topsoil had been removed, the floor of the trench was shovel-scraped and inspected for features. Due to constraints on time, and working within the contractors' timetable, the site was divided into three parts of roughly twenty metres in length each, as work progressed from the west end of the site to the entrance off The Meadows. All features were planned at scale 1:50, related to OD and photographed. Slots were rapidly excavated through each feature to obtain sketch profiles, soil descriptions and finds, with information recorded on context sheets. Soil samples were taken from a number of features, including pit fills, ditch fills, possible hearths and occupation layers. Once a basic record had been made, as many features as possible were rapidly excavated and bulk sampled to retrieve finds.

### The Stratigraphic Sequence

#### *Medieval/Post-Medieval Cultivation Soil*

A thick, homogeneous deposit of possible cultivation soil 02 was extensive across much of the site, but progressively thinned out towards the south, and on average measured between 0.55 m and 0.75 m in depth but in places reached 1.1m. This deposit, which was rapidly machined off and loaded directly onto a fleet of tipper-trucks during the initial site strip, was largely recorded from sections. An assemblage of predominantly medieval and post-medieval finds was recovered from this layer, most of it off-site by a local metal detectorist, as this soil was taken off site and dumped on an adjacent field to create a bund (these finds have been submitted to Treasure Trove and are not reported on here). These finds included coins, tokens, brooches, buckles, buttons, pins, a bone counter, a mirror case, pottery, a leather shoe sole, glass, slag, bog iron, burnt clay, animal bone, shell, fish bone and clay pipes. The pottery assemblage included 3 sherds of East Coast Redware and 2 sherds of Yorkshire ware, which suggests a 13th to 14th century date for the earliest working of these soils but with activity clearly continuing through to at least the 17th century.

The residual early medieval finds include a sherd of pottery, not grass tempered as at Portmohomack but a finer fabric, a whale bone counter and a decorated copper alloy bell.

### West End – Possible Dark Age Enclosure, Ditches, Ironworking Debris and Possible Hearth

At the western end of the main trench, and sealed by the cultivation soil 02, were three linear features. The most substantial of these was cut 18, a curvilinear ditch 0.35 m wide and 0.2 m deep with a concave base. Thought to be an enclosure, it was only partially exposed in the floor of the trench, the rest extending beyond the north section. The upper fill 17 comprised dark brown sand with frequent shell inclusions (small fragments and flecks), fragments of animal bone, including sheep/goat (burnt) and one fragment of a young calf bone, and frequent small pieces of slag. In parts, the fill was almost pure shell. Occasional charred grains of barley were present.

To the south-west lay a similar feature, cut 20. It lay on a N-S axis but was curving to the south-east as it reached the main south section. At the north end it appeared to be shallowing out and at its deepest it only measured 0.1 m. Its fill, 19, comprised dark sandy silt and contained shell fragments, burnt clay and small pieces of slag and a small number of unidentifiable fish bone fragments. Immediately to the west lay an amorphous cut feature 22 with four depressions in the base of the cut. To the north-west was a third linear cut, 16, 0.17 m deep, filled with dark sandy silt containing patches of mussels.

Further east, beyond ditch 18, was a hearth-like feature 14, 1.6 m long by 0.8 m wide. It had sharp, almost vertical sides and at its maximum depth it measured 0.20 m. The base of the cut was on two levels with a smaller cut in the centre. The lower fills comprised successive layers of burnt sand with shell fragments, charcoal fragments and an occasional fragment of burnt animal bone. A layer of fire-cracked stones marks either its final phase of use or its abandonment.

Immediately to the east was what may be the remains of a turf bank 28, reddish orange sand, with mussel shell, bone, charcoal and one flax seed present, between 1.2 m and 1.8 m wide and running N-S across the floor of the trench. To the east of this bank, and sealed by layer 37 which filled a hollow in the underlying natural, was a small spread of ironworking debris 45 partially truncated by a later ditch 25, containing a massive lump of top quality bog iron ore, charcoal, pieces of slag and burnt bone. Larger fragments of cattle and sheep/goat bone were also recovered, together with cockle and snail shell, charred barley and oat grains.

Many of the features exposed at the western end of the trench had been cut through an area of disturbed natural sand sub-soil 23. This layer, which may have filled a hollow in the underlying natural, was found to contain large quantities of smelting slag and hearth or furnace remains partly vitrified. A fragment of a *tuyere* was also recovered from this layer during initial cleaning.

## East End – Possible Dark Age Building within Enclosure, Ironworking Debris and Hearths, Ditches and Pits

### Outer Enclosure

Truncating the turf bank 28 was the western end of a large, possibly sub-rectangular, ditched enclosure 25, thought to contain a building at its east end. The west and north sides were traced in plan in the floor of the trench, but the rest lay beyond the south section. The building, if contemporary, lay *c* 16 m in from the edge of the ditch, the ditch itself being flat-bottomed and measuring 0.65 m across and 0.2 m deep. It contained a single fill 24 (also recorded as Context 11 further north in an earlier trench), a grey-brown fine sand with occasional inclusions of animal bone, cockle and mussel shell, charcoal, charred oat and hulled barley. A rodent tooth, burnt, and a small number of fish bone fragments were also recovered, identified as Haddock and of the Cod family. The north arm of the ditch appeared to terminate close to the building.

Filling an E-W hollow in the underlying natural sand sub-soil, but confined within the enclosure, was 37, a grey-brown sand. It extended some 11 m, possibly more as it had been truncated by ditch 27 and measured some 4 m across. An iron nail with a circular head was recovered from this layer.

Immediately to the south was cut 36, possibly a post-pit, which extended beyond the south section. It comprised an oval pit cut through the northern end of a shallow gully. The pit measured some 0.6 m by 0.65 m and was cut to a depth of 0.6 m. It had near vertical sides and a flat base. The upper fill, a dark brown sand with occasional charcoal flecks, also contained large packing stones. The ditch measured *c* 0.6 m across. Close by was another oval pit 30. Only 0.18 m deep, with a concave base, and measuring 0.4 m by 0.35 m, it contained dark brown sand with the occasional large sandstone, with signs of burning, and a patch of burnt animal bone.

Sealed by 37 was a rectilinear cut 39, 0.42 m by 0.54 m and 0.2 m, with a concave base. It was filled with 38 comprising densely packed charcoal, over a litre in volume, slag, hammerscale, a fragment of furnace or crucible wall, cockle shell, a hazelnut shell, two iron nails both with a circular heads, and a possible iron saw blade. Surrounding the southern edge of the pit was layer 40, with a large concentration of hammerscale, cockle shell and one legume seed also present.

### Building

At the east end of the enclosure, partially exposed and continuing beyond the main east section and south sections was a possible building. Although disturbed by later features, the structure was represented by a pair of closely spaced, parallel ditches 42/44 on the north side with a single ditch on the south side only just visible (the second ditch would have lain beyond the south section). The outer of the two ditches on the north side 44 may have functioned as a drip trench. Some charcoal fragments and a small piece of slag were found in the fill.

Internally the building, which appeared to be sub-rectangular, would have measured *c* 5 m from N-S and at least 4 m E-W. Both ditches had vertical sides and flat bases and measured *c* 0.4 m deep, and between 0.45 – 0.55 m wide. The fill of the inner ditch 41, comprised sandy silt and contained a large lump of slag or metal and one fragment of slag. The fill of the outer ditch 43

was more organic in content, and a curved strip of iron was also recovered from this fill. There was a gap through these ditches on the west side surfaced with a series of flat stones 52. The largest slab lay at the centre with smaller stones laid around it. The packing between the stones comprised pebbles in a dark soil matrix 53. Cockles, mussels, charcoal, small pieces of slag and charred barley grain were also found between the stones which may have also been used as packing or alternatively may have been later trampled over the threshold and somewhat similar to layer 37 within the outer enclosure.

At the north end of the entrance was a small, sub-square post-hole 55 with a large stone in the fill. There may have been a matching post-hole on the south side but this would have been truncated by pit 49. Within this possible building were two cut features which or may not have been contemporary with its use as a building. The most significant was pit 59. This sub-rectangular pit was packed full (fill 58) of charcoal, numerous fragment of clay furnace or hearth lining, numerous small fragments of slag and hammerscale, a fire cracked stone, small fragments of shell and barley grains and two iron objects, possibly nails, all in a blackened sand matrix. Adjacent to this pit was a shallow oval shaped post-hole 52, measuring 0.88 m by 0.48 m and surviving to a depth of 0.14 m.

### Post-Building Features

#### Ditch and Pit

The most substantial feature uncovered during the work was a large curvilinear ditched enclosure 27, a 12 m long stretch of which was visible in the floor of the main trench at the eastern end. Only the base of the cut could be seen in the floor of the main trench where it measured some 1.5 m wide and 0.4 m deep. The fill 26 comprised dark brown and grey sandy silts with cockle, buckie and otter shells in the upper level and large lumps of smelting slag and lumps of bog iron ore in the basal fill. A stone disc with one slightly convex surface was also recovered from this fill.

During excavation, this ditch was thought to be post-medieval in date and a similar feature was observed in section, cutting through the cultivation soil 02 and was traced in plan cutting through natural sand further to the north. The contents of the ditch are, however, entirely consistent with other features on the site which prompted a re-examination of this feature. It still remains one of the latest features on the site, as it cuts all but one of the features at the east end of the main trench including the building, but is now thought to pre-date the medieval cultivation soil.

There were other cut features, unfortunately little understood, which post-date the building. Cut through east edge of ditch 27 and through the flagstone threshold was an oval pit 49, 1.75 m by 1.0 m and 0.4 m deep. The upper fill 48 comprised laminated silts and sands with cockle shells, fragments of animal bone and a piece of slag. Further analysis of this fill yielded important evidence on the local environment with concentrations of cereal grain, chaff fragments and weed seeds (see Plant Report below). Grains of barley and rye were predominant with a smaller concentration of black oat and weeds common to cultivated fields also present. Interestingly, there was also a large concentration of heather indicative of heaths and moors and probably

collected for use as a building material (bedding, thatching, flooring for example) and small fragments of hazlenut shells, either collected for food or accidentally brought to site with fire wood.

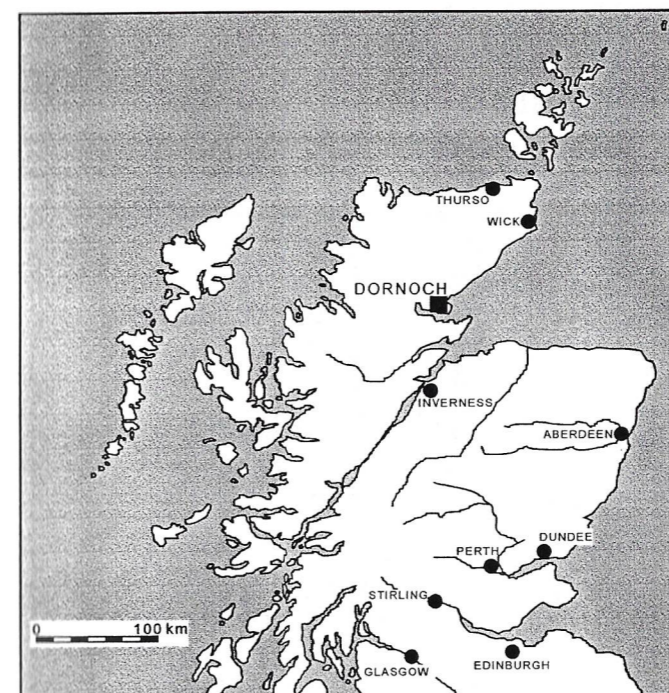
A bone weaving tool, possibly of sword beater type and widely known from Anglo-Saxon sites, was recovered from the fill (see Artefacts Report below). The lower fills comprised bands of charcoal separated by bands of silty sand.

### Other Cut Features

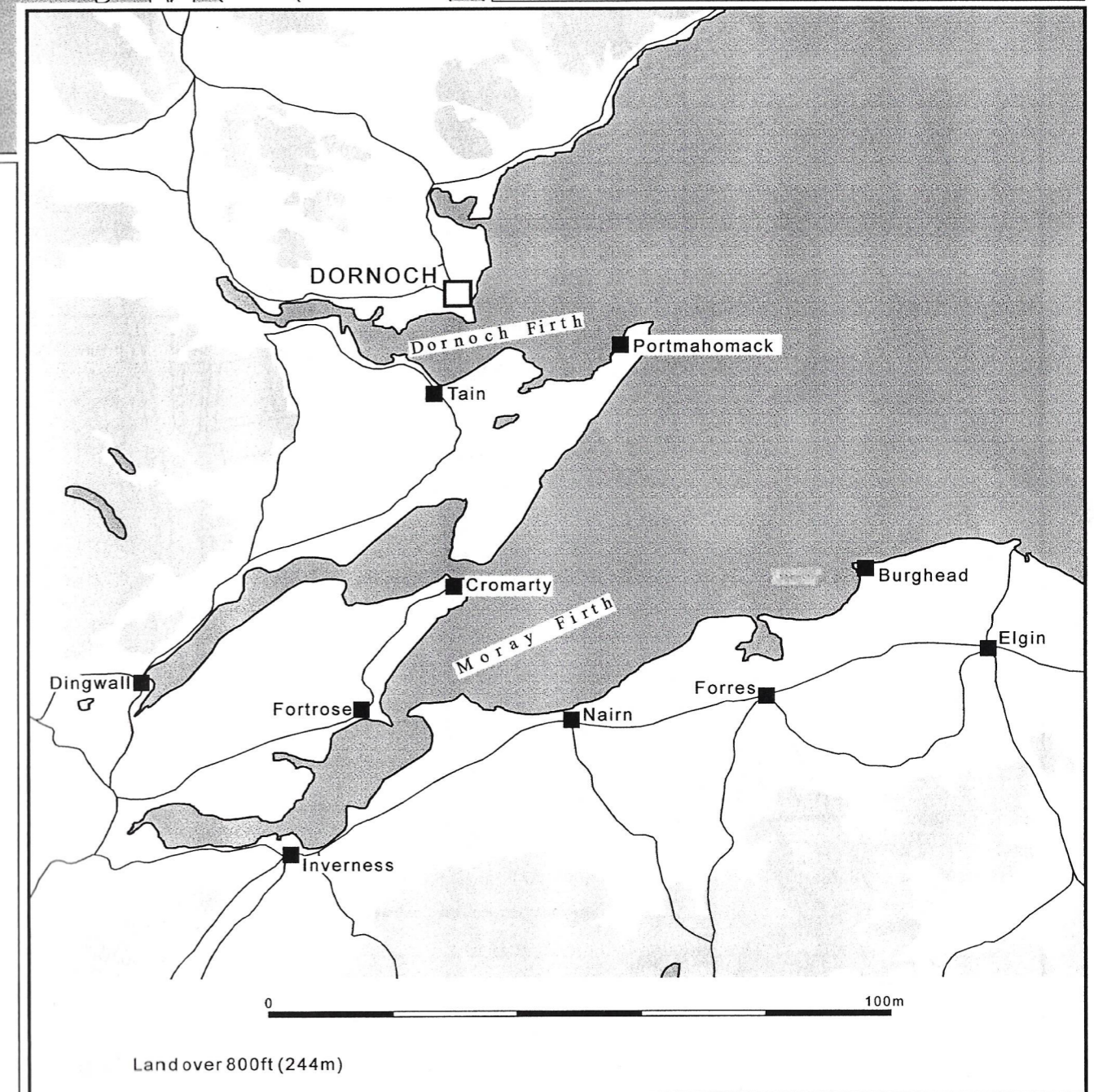
Cut 34 comprised two intercutting ditches or a ditch which branched off in two directions, starting as a single ditch at the west end before forking in two directions and heading off in a north-easterly direction. One fragment of slag was recovered from the fill. It too was truncated by ditch 27. This feature may have continued to the east of ditch 27 as cut 60, which in turn was cut by another narrow gully 57. It had been cut through the south arm of the ditch marking the building and also truncated pit 59. It was aligned roughly N-S, terminating in the centre of the building. The upper fill 56 comprised silty sand but like many other features it was packed full of charcoal, cockles and whelk shells, a whale vertebra, fish bone of the cod family and two fragments of animal bone, one of sheep the other of pig, and charred barley grain. The lower fill contained pieces of a clay furnace or hearth, large lumps of slag and a fragment of iron. Another feature which cut ditch 34 was pit 32. This shallow pit contained (fill 31) burnt and unburnt bone, charcoal, flecks of burnt clay, sheep/goat bone, shell, charred matter and heather twigs (possibly indicative of peat burning) and a sherd of coarse pottery.

### Reference

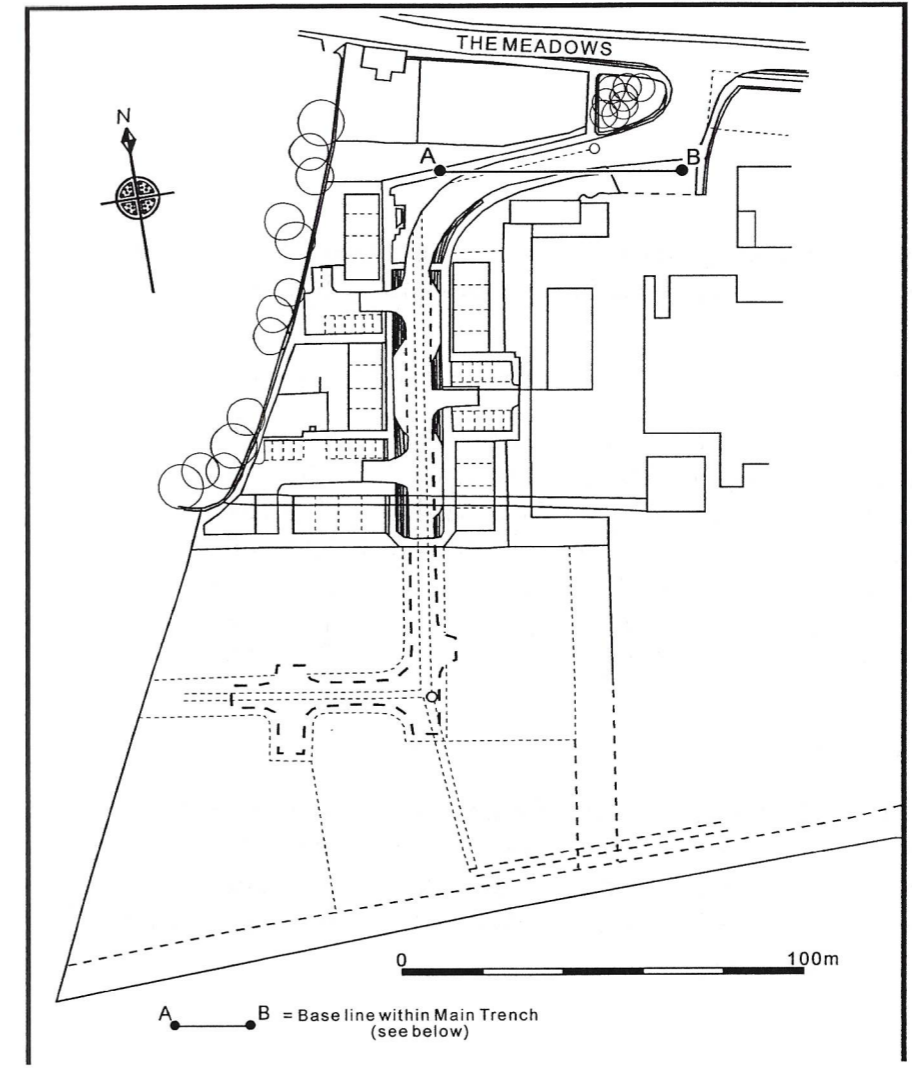
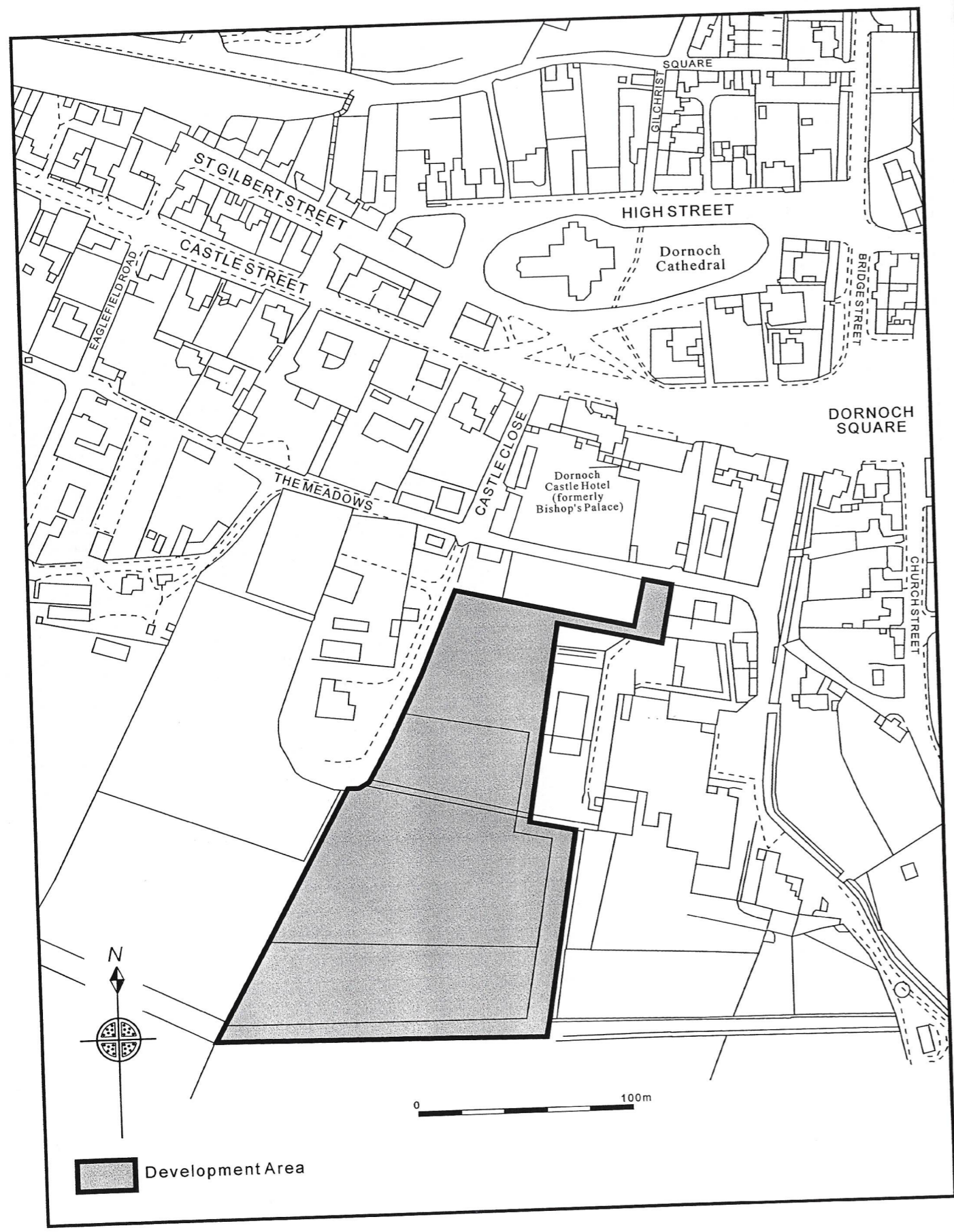
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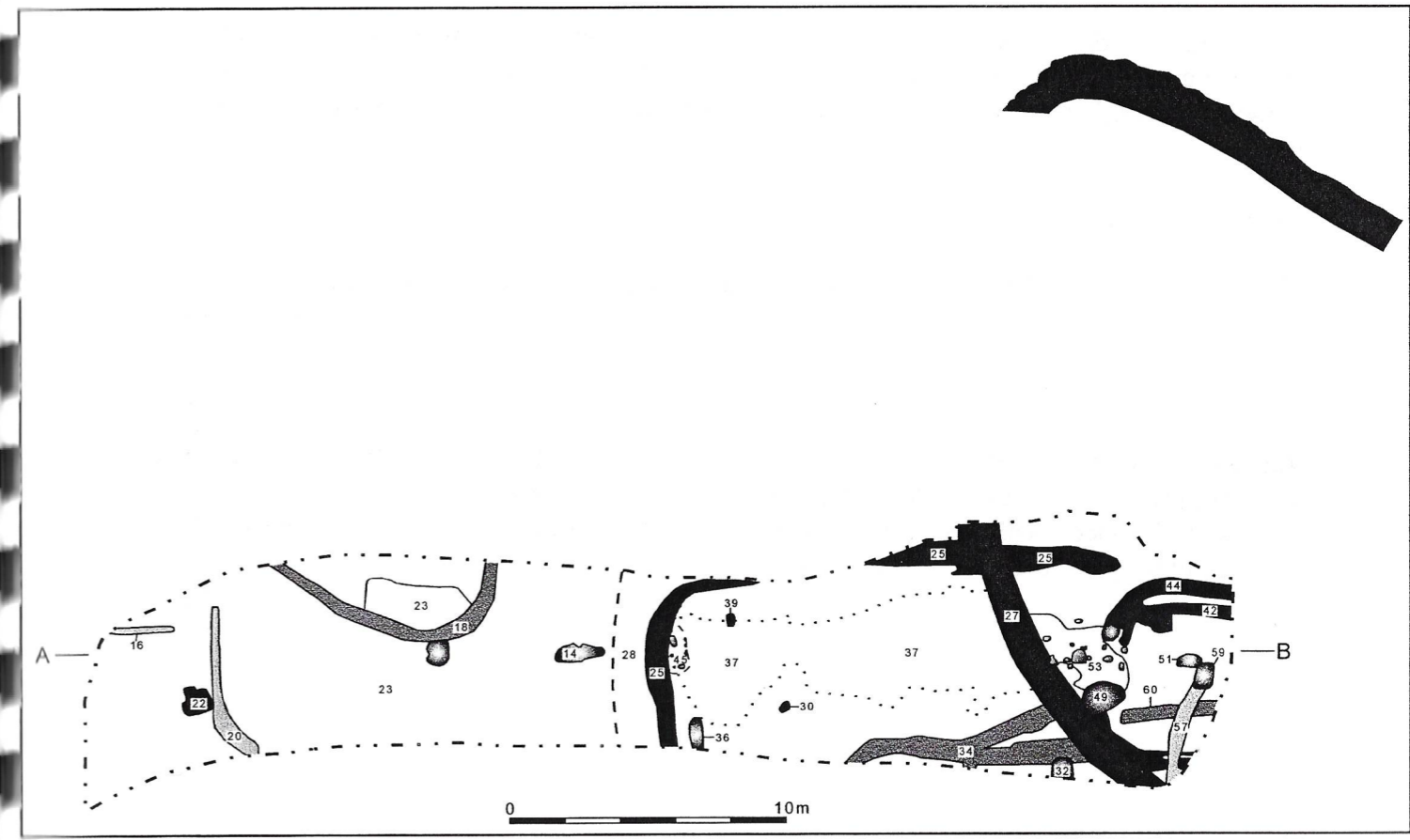
## Dornoch Regional Setting



# Location of Development at The Meadows, Dornoch



Early Medieval Enclosures, Dornoch



D W Hall

### The Pottery

This watching brief produced 30 sherds of pottery which have all been examined by eye and, where possible, assigned a recognised fabric name. No petrological analysis has been undertaken.

#### East Coast Redware

Twenty years of archaeological excavations in the Scottish east coast burghs have identified this fabric type as forming a tradition of native pottery production apparently dating from the 13th to the 15th centuries (Hall, 1996, 126). The Dornoch material is of interest because although it shares many of the standard characteristics of this fabric it appears to be much grittier than normal. Ongoing excavations at Portmahomack are recovering a similar material from the medieval levels and there would appear to be the implication that an as yet unidentified production centre or centres for this fabric must exist somewhere in this part of the Highlands (Hall, 1999, 17-19).

#### Scottish White Gritty ware

Recent work has identified three potential production centres for this fabric in Lothian, Borders and Fife regions (Haggarty, 1984; Hall, 1997). It has been found in Perth in association with 12th century fabrics and appears to predate the Redware industry and may have ceased production by the 15th century. It is most commonly highly fired to a white or grey colour and contains quartz inclusions. There are only four sherds present in this assemblage.

#### Yorkshire Type wares

Vessels in these distinctively glazed fabrics are the most common imports in the east-coast burghs in the 13th and 14th centuries (McCarthy and Brooks, 1988, 227-52). There is a small group of this fabric (six sherds) which includes an unusual small vessel which may be a container for pigment or unguent.

#### Modern Ceramic

There are four sherds of Victorian china and earthenware included in this assemblage.

### Conclusions

Although there are only 30 sherds of pottery in this assemblage the redware fabric is of interest as it may suggest that there are production centres for this material slightly further North than has been previously assumed. This assemblage would seem to date to the 13th or 14th centuries as there is certainly nothing present to suggest a later date.

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- Hall, DW 1999 'Medieval pottery from the church excavation at Portmahomack' in Tarbet Discovery Programme Bulletin no 4 1998, 17-19.
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**Table 1**

Fabric Key

ECR = East Coast Redware  
 WG = White Gritty ware  
 Yorks = Yorkshire Ware  
 Unid = Unidentified

Context	ECR	WG	Yorks	Unid	Modern
U/S	0	0	4	0	0
(Metal detected off bunds)					
U/S	1	0	0	0	0
(Car park area)					
U/S	7	1	0	0	2
(assorted finds from sewage)					
U/S	1	0	0	0	0
(West End)					
U/S	2	1	0	0	2
U/S	1	1	0	0	0
(Main Area)					
2	3	0	2	1	0
6	0	0	0	1	0
<b>Total per column</b>	<b>15</b>	<b>3</b>	<b>6</b>	<b>2</b>	<b>4</b>

Total sherd count = 30 (234g)

**Artefacts Report**

Adrian Cox

**Introduction**

The assemblage recovered from the excavation at The Meadows Business Park consists predominantly of copper-alloy and iron artefacts. The finds span a wide date range, reflecting long-term activity on the site or in its vicinity, from the early medieval period until recent times.

Unfortunately, few finds were recovered from stratified contexts. Most are either from the extensive cultivation soil deposits or from unstratified contexts. This, along with the small size of the assemblage, allows only very limited conclusions to be drawn from the artefacts about the nature of activities on the site. The finds reported on below do not represent the total assemblage recovered from the site; only those recovered from the excavation itself. Many finds, including several coins, were also located by metal-detecting, and should be considered, along with the excavated finds, as components of a single site assemblage, although they are outwith the scope of the present report.

The excavated artefacts are discussed below within material categories. Measurements are generally expressed to the nearest 1 mm, except where they are less than this, when they are expressed to the nearest 0.1 mm.

**Copper-alloy objects**

A diverse range of copper-alloy artefacts was recovered, although all apart from No 11 (a perforated sheet fragment) are from unstratified contexts. No 1 is a clapper bell of faceted conical form, with a trapezium-shaped suspension loop. Its full height does not survive, as it is broken above the rim. The surface is decorated by ring-and-dot motifs, especially in a zone immediately above the broken edge.

Parallels for this bell come from Norse contexts, for example in Keoldale, Sutherland and Iceland. A fine example, surviving more completely than the Dornoch bell, was found at Freswick Links (Batey, 1988). This bell has very similar faceting and decoration, and incorporates small, downward projections, equally spaced around its rim; elements which may originally have been present on the Dornoch bell.

No 1 has an internal wire loop at its apex, indicating that it had a clapper. Some bells, though, including an example from North Elmham Park, Norfolk, had no provision for a clapper or a pea, and possibly rang by clashing with other bells (Goodall, 1980, 504).

Whilst rumbler bells containing loose 'peas' were worn as dress accessories, on horse harness and on the collars of pets and hunting dogs in the medieval period, earlier clapper bells such as this one may have had a slightly different range of functions. While some are interpreted as harness bells, others may have served an ecclesiastical function. Biddle and Hinton (1990, 725) note that bells of this size were used as mass bells from the 13th century onwards.

- 1 **Bell.** Surviving height 30 mm; max width 21 mm  
 Open bell of six-faceted, tapering form, broken above the base. At the apex is a trapezium-shaped suspension loop, with a small, circular perforation. Internally, remains of a wire loop for suspension of the clapper survive, although the clapper itself is missing.



Decorative ring-and-dot motifs are visible on the exterior surface, below the apex and immediately above the broken edge, although much of the decoration is obscured by corrosion products.

Unstratified; Find No 8

No 2 is part of the frame of an annular brooch, broken across the recess in the frame about which the brooch pin pivoted, and transversely across the frame. Both faces bear incised decoration. On one face this consists of a repeating zig-zag type design, within a border or panel. The design on the opposite face is less regular and resembles the tail of a fish, although this may also be part of a repeating pattern. Brooches of this type are described by Callander (1924, 169 and 179) as flat ring brooches, and he catalogues examples of copper-alloy, silver and gold. Examples of similar form to that of No 2 are generally dated by Callander to the 14th century, although he notes that this type of brooch remained popular in Scotland until the latter part of the 18th century, when larger and broader examples were fashionable (*ibid*, 178). Although none closely parallels the Dornoch example, a group of annular brooches was among the assemblage recovered from Urquhart Castle between 1912 and 1922 (Samson, 1982, 573, Fig 6, Nos 82-3).

A brooch of openwork design, incorporating claw settings (No 3) may date from the later part of the 19th century, when both brooches and buckles of ornate, openwork design were fashionable (Johnson, 1994, 15). The upper and lower ends of this brooch were formerly connected by a wire or pin, now missing, and the brooch was secured by means of a pin or clasp (also missing) which was aligned horizontally across its width.

2 **Brooch fragment.** Length 18 mm; width 7 mm; thickness 1 mm  
Fragment of an annular brooch (projected external diameter *c* 35-45 mm), with a recess in the frame about which the pin pivoted. The frame is of sub-rectangular cross-section. Incised decoration appears on both faces.  
Unstratified; Find No 32

3 **Brooch.** Length 44 mm; width 33 mm; max thickness 6 mm  
Openwork brooch, approximately lozenge-shaped, incorporating four circular claw settings, each of which holds a sphere of pale blue glass paste (diameter 4 mm). (Not illustrated)  
Unstratified; Find No 26

Only a single buckle is represented. No 4 is a fragment of a small buckle with an integral plate. Lacking its frame, this example is not closely datable on typological grounds, although buckles with integral plates appear to have been popular during the 13th and 14th centuries. Such buckles had a range of uses, including fastening spurs and a variety of clothing.

4 **Buckle.** Length (including pin) 26 mm; surviving width 17 mm; thickness 6 mm  
Part of a buckle with an integral buckle plate, including the pin. The buckle plate, which has bevelled edges, is broken across a centrally-positioned rivet hole. The frame of the buckle is almost entirely missing.  
Unstratified; Find No 13

Three buttons were recovered (Nos 5-7). Two (Nos 5 and 6) are of a similar type, with a circular

face and the foot of the eye set within a conical boss. Both have a spyrograph-type, machine-turned design on their faces. This type of decoration dates from the early 18th century onwards. No 7, by contrast, has a plain face and its eye, now distorted, was probably attached by soldering.

5 **Button.** Diameter 16 mm; thickness 4 mm  
Button with a circular face and the foot of the eye set within a boss. The eye itself has broken. A machined design appears on the face. The entire button has a white metal plating. (Not illustrated)  
Unstratified; Find No 14

6 **Button.** Diameter 20 mm; thickness 7 mm  
Button with a circular face and the foot of the circular eye set within a boss. A machined design appears on the face. (Not illustrated)  
Unstratified; Find No 22

7 **Button.** Diameter 14 mm; thickness 3 mm  
Button with a plain, circular face and a distorted circular eye attached to the rear.  
Unstratified; Find No 15

Sexfoil mounts like No 8 are generally interpreted as decorative fittings on leather straps and clothing. Evidence from London confirms this, as examples have been found decorating perimeter tabs on a fragment of leather and lying equally spaced along a strap (Egan and Pritchard, 1991, 192, Illus 121, Nos 1028 and 1030). A variety of forms of sexfoil mounts, with different methods of attachment, has been recovered from London excavations (*ibid*, 186-92), and they appear to have been in common usage by the mid-14th century. Scottish examples of these flower-shaped mounts include sexfoil examples from Aberdeen (Stones, 1989, 157, Illus 96, No 109) and Ayr (Cox, forthcoming). An octofoil mount with embossed decoration was found at Tay Street, Perth (Cox, 1994, 483, Illus 9, No 4). In comparison with these, No 8 is smaller and less regular in outline.

No 9 is an openwork mount of zoomorphic design. Central to the design is a stag's head, with its antlers forming the sides of the mount. The mount was secured by means of three rivet or cord holes, one at the apex and two along the bottom edge.

A circular, discoid object made from very thin sheet and perforated through its centre is probably a mount. Small, lightweight mounts, including specific forms termed spangles, appear to have been sewn to clothing in the medieval period, and possibly worn in groups rather than singly.

8 **Mount.** Diameter 14 mm; thickness (including rivet) 6 mm  
Slightly concavo-convex mount of sexfoil form. The segments are of unequal size. A rivet with a domed head pierces the centre of the mount.  
Unstratified; Find No 25

9 **Mount.** Length 36 mm; width 28 mm; thickness 7 mm  
Cast, openwork mount of zoomorphic design, with originally horizontal upper and lower edges (the lower edge is now broken). There is a centrally-positioned, circular perforation (diameter 4 mm) at the top of the mount and two smaller perforations (diameter 2 mm), one of which is broken, adjacent to the lower edge. The design in the centre of the mount

may represent a stag's head and its stylised antlers form the curving sides of the object.  
Unstratified; Find No 35

- 10 Mount?** Diameter 16 mm; thickness 0.1 mm  
Circular mount in two conjoining fragments, made from thin sheet, with a central, circular perforation (diameter 1 mm). Embossed decoration of pellets and hachures appears around the edge of the object and bordering the perforation. The object is broken across the perforation. (Not illustrated)  
Unstratified; Find No 10

No **11** is a sheet fragment with two perforations. It is of unknown date but may be post-medieval. It must have been folded when in use, as the pattern of burring around the edges of the perforations is consistent with a rivet or nail being hammered in through one side and out through the other. Although distorted, the object has a slight transverse ridge, *c* 6 mm wide, lying between the two holes. It appears to have functioned as an edging or binding strip, attached to an object with a rectangular cross-sectioned edge.

- 11 Perforated sheet.** Length 38 mm; max width 18 mm; thickness 0.2 mm  
Sheet fragment with parallel long edges and irregularly broken ends, with two roughly square perforations (length 3 mm). It may have broken roughly across smaller perforations at either end.  
Context 2; Find No 2

The form of the terminal of No **12** indicates that it is most likely to be the shaft of a pin rather than a needle. The top of the shaft, though not carefully finished, appears to represent a deliberate terminal rather than the site of a fracture, which would indicate that it is not a needle. Additionally, the upper 5 mm of the shaft is slightly discoloured in comparison with the remainder; a possible indication that this zone was covered or enclosed by a missing head. A strong possibility is that this shaft is from a large, globular-headed pin in which the upper 5 mm of the shaft was enclosed.

- 12 Pin shaft.** Length (if straightened) 94 mm; max diameter 3 mm  
Tapering, circular cross-sectioned shaft, probably from a pin. It is bent at mid-shaft, and the head is missing.  
Unstratified; Find No 34

No **13**, made from a folded strip, was used on the end of a strap or cord. Its form and decoration indicate a probable medieval date. The type of incised zig-zag decoration appearing on this object is not uncommon on medieval belt fittings. Similar ornament appears on a buckle plate from Linlithgow (Stones, 1989, 159, Illus 99, No 223), for example.

- 13 Strap end.** Length 34 mm; width 18 mm; thickness 4 mm  
Rectangular strap end made from a folded strip. A rivet, positioned 8 mm from the open end, secures the two sides, and a fragment of textile appears to be enclosed. The edges of the upper face are decorated by an incised zig-zag design.  
Unstratified; Find No 33

### Lead alloy object

The single lead alloy artefact from the excavation (No **14**) possibly represents a shot. Many of the indentations in its surface appear to have been made by punching rather than being a result of abrasion or the object impacting upon a hard surface. Possibly the shot was modified in preparation for being fired.

- 14 Shot?** Diameter 12 mm  
Roughly spherical object with numerous indentations in its surface. (Not illustrated)  
Unstratified; Find No 27

### Iron objects

The small assemblage of iron artefacts from the excavation consists of three nails and three other artefacts (Nos **15-17**). On two of the nails their roughly circular heads survive, and all three have square cross-sectioned shafts.

A heavily corroded fragment with a curving profile (No **15**) was found in the fill of a flat-bottomed ditch or slot. Recovered from the base of the cultivation soil deposit, No **16** consists of a nail and a circular washer, which appears to have been used on a substantial timber fitting, for example a door. The washer would have helped to fasten the head of the nail in position and may, additionally, have served a decorative purpose. In use, a second washer or rove may have been attached near the tip of the nail, and the tip then clenched over it, effectively forming a clench bolt. Clench bolts were used to secure double thicknesses of timber, and although commonly associated with ship- and boat-building, as outlined by McGrail (1973, 102-3), also had a wide range of structural uses within buildings. Also from the cultivation soil deposits, No **17** is probably a fragment from a slender-bladed saw, of post-medieval date.

- 15 Curved fragment.** Length 28 mm; width 26 mm; thickness 4 mm  
Curved fragment of even thickness, with all edges irregularly broken. Heavily corroded. (Not illustrated)  
Context 56; Find No 3
- 16 Door nail or clench bolt.** Length 67 mm; width of nail head 24 mm; width of washer *c* 40 mm  
Probable door nail or clench bolt, consisting of a nail with a circular head and a square cross-sectioned shaft, pushed through a roughly circular washer, which rests immediately below the nail head. The nail tip is clenched at an angle approaching 90°. Heavily corroded.  
Context 2; Find No 21
- 17 Saw blade?** Length 67 mm; width 10 mm; thickness 0.5 mm  
Probable saw blade fragment, of slender form, with a straight back and a serrated edge. (Not illustrated)  
Context 2; Find No 1

## Glass

The only glass found during the excavation is a small fragment from the wall of a bottle in green glass, from an unstratified context. It is in an eroded condition, with a patinated surface.

## Leather

Only a single fragment of leather was recovered. No **18** is probably from the waist section of a shoe sole, with small copper-alloy nails or rivets along its edges. It was recovered from the extensive cultivation soil deposits, which appear to have gone out of use at some time in the 17th century.

- 18 Sole fragment.** Length 53 mm; max width 45 mm; thickness 3 mm  
Probably part of the waist from a shoe sole, with edges irregularly torn. A series of circular cross-sectioned copper alloy nails or rivets perforates the leather at regular intervals (*c* 6 mm), along either edge. (Not illustrated)  
Unstratified; Find No 5

## Bone objects

Two artefacts of bone (Nos **19** and **20**) were recovered. No **19**, probably derived from whale bone, is a fragment from the edge of a discoid object, possibly a counter. It has not been finely finished, as it is of uneven thickness and exhibits paring marks on its outer edge. It may be of Dark Age or medieval date.

A probable weaving tool fragment (No **20**) was recovered from a pit cut into a ditch, which in turn cut the cultivation soil deposits, but although it is from this post-medieval context, it appears to be of medieval or earlier date to represent a residual find. Smooth, pointed tools like this one are necessities in fine weaving on hand looms, being used to adjust single threads or groups of threads, before and after a throw.

Small, cigar-shaped pin beaters are widely known from Anglo-Saxon sites, such as Harston in Leicestershire (Dunning, 1952), and these tend to survive better than their larger counterparts, sword beaters, possibly because the latter may often have been made from wood (MacGregor, 1985, 188). The two types performed complementary functions, the pin beater being inserted between individual warp threads and used at right angles to the plane of the weft, while the sword beater operated parallel to the weft (*ibid*). This example seems more likely to have performed a sword-beater type role. The species identifications are by C Smith.

- 19 Disc fragment.** Length 37 mm; max width 10 mm; max thickness 10 mm  
Worked fragment probably derived from whale bone. It appears to represent part of a discoid object (projected diameter *c* 45-50 mm), of slightly uneven thickness. One surface has a smooth curvature and is pared. The opposite surface is straight and flat, but is probably the site of a fracture.  
Context 2; Find No 40
- 20 Weaving tool.** Length 66 mm; max width 9 mm; thickness 8 mm  
Probable weaving tool fragment, derived from a large ungulate long bone shaft (possibly

from a bone such as a tibia). The object tapers at one end, although the tip is missing. The broader end is also broken. The surface is highly polished.  
Context 48; Find No 16

## Clay pipes

Two stem fragments (Nos **21** and **22**) were recovered from unstratified contexts. Both are broken immediately behind the bowl, and No **21** bears rouletted decoration. Bore diameters are expressed to the nearest 0.05 mm.

- 21 Stem.** Length 57 mm; bore diameter 2.00 mm (5/64")  
Stem fragment with an off-centre bore, broken immediately behind the bowl and decorated by six rouletted lines encircling the stem. (Not illustrated)  
Unstratified; Find No 6
- 22 Stem.** Length 14 mm; bore diameter 1.85 mm (4/64")  
Plain stem fragment, broken immediately behind the bowl. Slightly stained or fumed. (Not illustrated)  
Unstratified; Find No 7

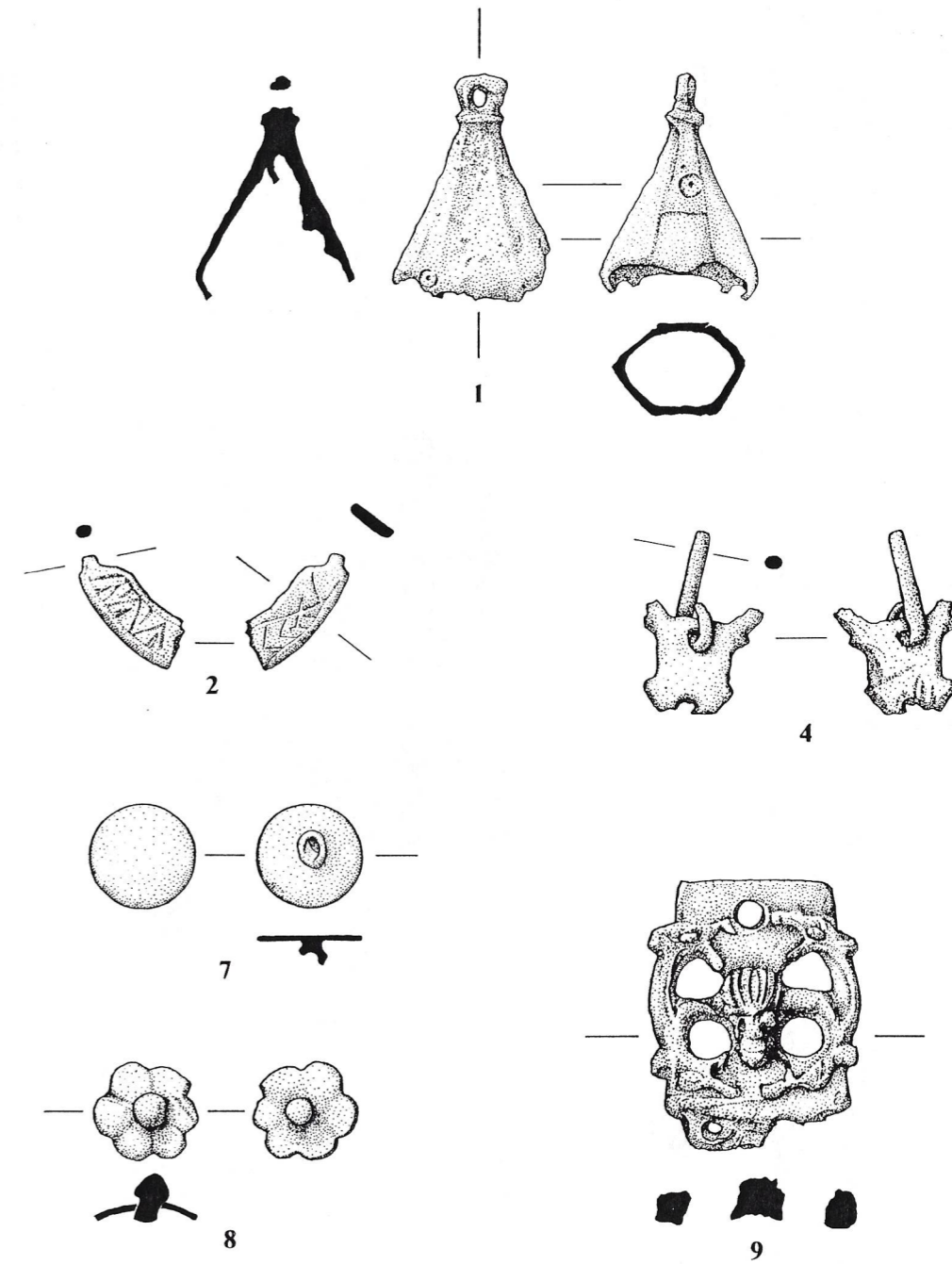
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## The Faunal Remains

*Animal bones found at the site*

Remains of mammals, fish and marine mollusca were amongst the finds that were rescued from the site by hand excavation. The mammal remains were mainly those of domestic animals (cattle, sheep, pig, horse and dog) although one bone from a marine cetacean, a medium-sized whale, was also recovered. **Table 2** shows the numbers of bones identified from each species, recovered by hand retrieval. Sheep bones from a garden soil layer, Context 2, are omitted from the table, since they represent two partial skeletons.

On the basis of the fragment count of the hand-excavated sample, the most common mammalian species found at the site were cattle (35 fragments), and sheep (two partial skeletons and 12 fragments from other individuals). Pig and horse bones were not so numerous as those from either sheep or cattle. A single bone from a dog was also recovered.

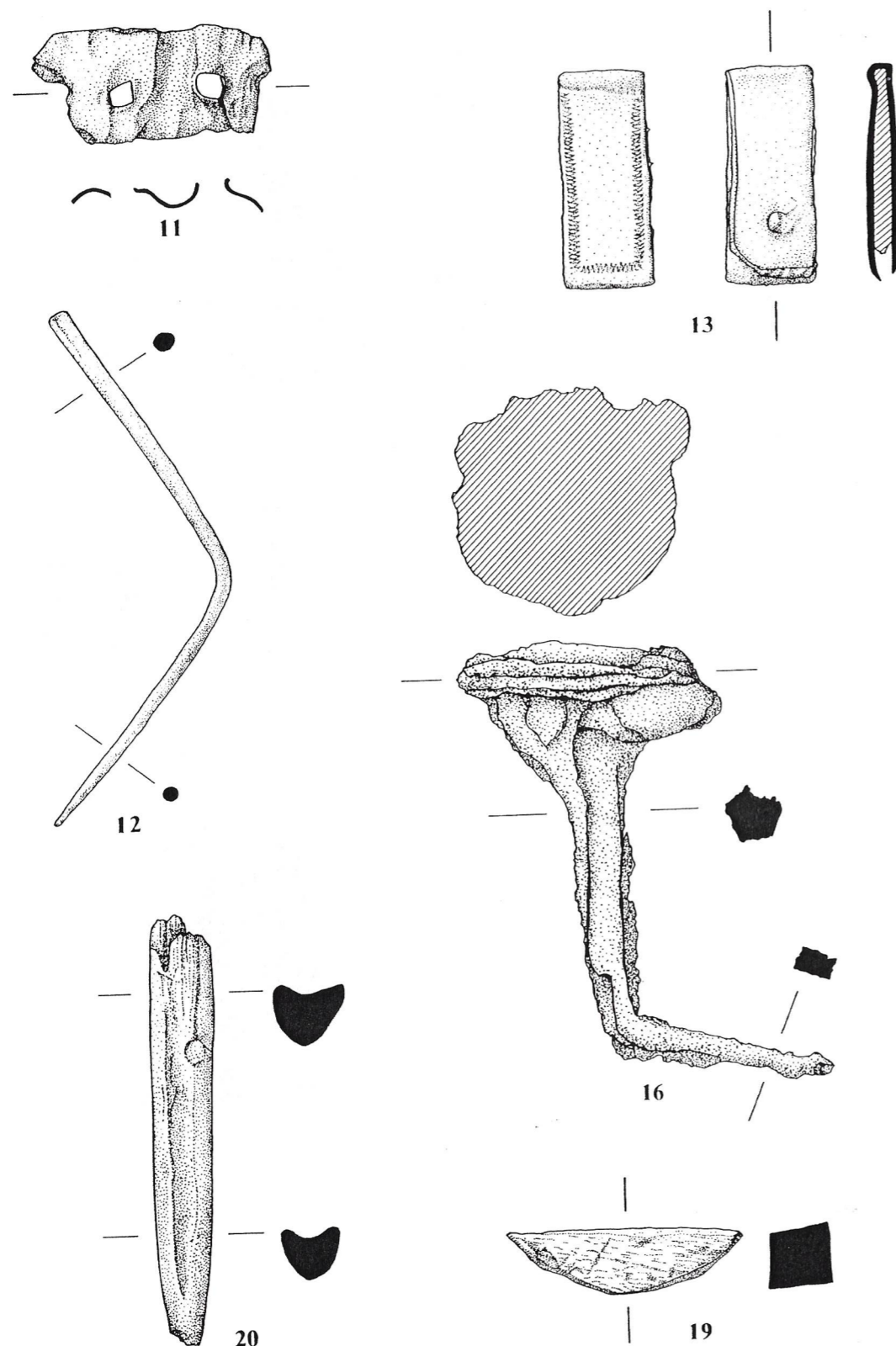
A summary of the mammalian species identified in the surviving sieved residues is presented in **Table 3**. Apart from numerous tiny unidentified fragments of both burnt and unburnt bone and marine mollusc shell, bones of horse, sheep/goat and large mammal (possibly cattle) were noted in the samples. One rodent incisor tooth was also recovered (Context 011, Sample 002).

*Size and type of animals*

With the exception of some of the cattle bones from Context 2, most of the remains appear to be of the small size usually associated with the medieval period, or earlier. The remains of at least two sheep skeletons were recovered from Context 2, a garden soil layer that may contain material of relatively recent date. Only one skull was associated with the sheep skeletons: this was from a naturally hornless, or polled, sheep. Anatomical measurements made on the long bones of these sheep in order to estimate the animals' stature indicated that the taller (and more robust) of the two animals stood at approximately 64.6 cm at the shoulder while the shorter was approximately 61.8 cm high (Teichert, 1975). The withers height range for medieval sheep from the large assemblage recovered from 75-77 High Street in Perth has been estimated at between 46.7 to 65.8 cm (Hodgson *et al*, forthcoming). The Dornoch specimens thus fall within the upper part of the distribution for medieval animals. However it has been noted elsewhere that the effects of agricultural improvement on the body size of domestic animals was not marked in Scotland until the mid-19th century (Smith, 1996). On the basis of size, therefore, these animals may have been medieval, post-medieval or early modern in date.

*Butchery*

A medieval or earlier date for the stratified material is also confirmed by the evidence of marks on the bones caused by the butchery implements that were used at the site. These tools appear to have been either cleavers or axes, which were the tools most commonly used in fleshing from the Iron Age until the early modern period. Saws were used only infrequently in butchery before this period. It is notable that saw cuts were observed on only one bone from the site, a cattle femur from Context 2, indicating a relatively modern date for this bone. Other bones from the same context had however, been chopped rather than sawn.



There was some evidence that one of the sheep in Context 002 had been pole-axed: a substantially complete skull bore evidence of a jagged hole in the right parietal bone, accompanied by a break in the bone leading across the frontal to the edge of the orbit of the eye. The right occipital condyle, part of the articulation with the first cervical vertebra, had sheared away from the skull, perhaps as a result of the same blow. There was no evidence to suggest that these marks were caused by recent damage during excavation, since the cut surfaces were stained to the same colour as the rest of the skull and skeleton.

#### *Age at death*

A pair of mandibles associated with one of the sheep skeletons in Context 002 was estimated to come from an animal of between six and eight years of age at death (Payne, 1973). The rest of the skeleton indicated that the animal was fully adult, since the epiphyses were entirely fused. Evidence from the other contexts was sparse, although a fragmentary mandible from a young calf (Context 17), an unfused femur from a juvenile sheep (Context 56) and an unfused distal epiphysis from a pig (Context 56) all indicated that young animals were present. The remainder of the bones probably came from adult animals.

#### *Pathology*

Several bones from the most complete sheep skeleton in Context 002 displayed arthritic changes, in particular the pelvis and sacrum. The acetabula of both the left and right innominates were surrounded by new bone growth (exostoses), while the centrum of the sacrum showed degenerative changes typified by pitting and slight bone extension. These changes are insufficient to provide a diagnosis of osteoarthritis, but are further evidence that the animal was of fairly advanced age.

A dog mandible (Context 002) showed some dental pathology: despite the fact that the jaw was probably from a relatively young animal and displayed very little visible wear on the teeth, one tooth, the fourth premolar, had been lost during life. The empty socket (alveolus) had then become infilled with new bone. Although periodontal disease is often a factor in ante-mortem tooth loss, there was no evidence for a build-up of calculus on the teeth. Some other factor, such as trauma, may therefore have been responsible for loss of the tooth.

#### *Marine resources*

The most notable find of animal origin was the cetacean vertebra (Context 56). This had been chopped through the centrum in a dorso-ventral direction, and also showed evidence of hack marks both on the lateral aspect of the centrum and near the surviving neural spine. It has not been possible to identify the species of whale which this bone represents, but on size indications the animal was larger than a pilot whale but smaller than, say, a sperm whale. It probably represented a beached animal found on the shore of the Dornoch Firth. Whale meat, bones and other by-products were utilised by coastal dwellers in all parts of Scotland from the earliest times, and a chance stranding may have provided a welcome addition to the diet, as well as providing a valuable source of raw material. It is notable that a broken bone artefact recovered from the sieved residues was also cetacean in origin (Context 002; Sample 001). The artefact was compared with modern

specimens of both red deer and reindeer antler as well as a dorso-ventral section of mandibular bone from a Greenland right whale. The pattern of pores in the surface of the object was almost indistinguishable from that of the outer (cortical) layer of the whale bone sample, indicating its most likely origin.

Other marine resources were also exploited: a small number of fish bones, were recovered, as well as shells of marine mollusc. The fish bones came from haddock as well as members of the gadid family, which includes cod, ling, saithe and pollack (see Fish Bone Report, below). The marine mollusc shells all came from edible species: common periwinkle or wulk (*Littorina littorea*), buckie (*Buccinum undatum*), cockle (*Cerastoderma cf edule*), mussel (*Mytilus edulis*), limpet (*Patella* sp.) and common otter shell (*Lutraria lutraria*). Shells were particularly numerous in the sieved samples. Although it is probable that the shells were the remains of processing for food, they may also have been used for fishing bait. It is notable that the most abundant mollusc species was the cockle, which is more palatable to humans than the limpet, a far less common species in the Dornoch assemblage. Limpet flesh is fairly tough and it was common in Scottish fishing communities for the women to chew the flesh to a soft consistency before baiting the lines with them. In addition, some of the mollusc shells may have been imported to the site along with seaweed intended as agricultural fertiliser.

Some of the mollusc shells recovered from sieving of the ditch fills on the site were subjected to X-ray diffraction analysis (XRF) in order to ascertain whether they had been used in industrial practices involving the production of iron ore, but this was found not to be the case (Photos-Jones, archive report). There was however, some evidence that they had been subjected to heat (*ibid*), perhaps as a result of coming into contact with the residues from iron production, although their gross structure and appearance were not noticeably affected.

#### *Discussion*

Although the faunal sample was not large, it contained a diversity of species and showed that the people who occupied the site exploited both marine and domestic resources. Although bird bones were absent from the assemblage, this is unsurprising, given the relatively small sample size. It is very likely that sea-birds and their eggs were also harvested in the breeding season, since there would have been access by boat to coastal cliffs to the north of the site. The sheep skeletons recovered from the garden soil layer may have been of more recent date than the remainder of the assemblage, but it is notable that they came from animals which could be considered small by modern standards. One of these animals was rather elderly and this was probably the reason for culling it. With the exception of the sheep skeletons, which may possibly have been associated with a relatively recent butcher's shop, the bone assemblage probably represents domestic rather than industrial refuse.

**Table 2** Numbers of hand-excavated animal bones recovered from the site, by species

Species	Number of fragments
Cattle	35
Sheep	[2 partial skeletons]
Sheep/goat	12
Pig	3
Horse	4
Dog	1
Cetacean	1(omitting worked fragment)
Large ungulate	20
Small ungulate	6
Indeterminate mammal	77
<b>Total</b>	<b>159</b>

**Table 3** Summary of identified mammal and mollusc species recovered from sieved samples

Context	Sample no	Type	Species	Details
002	001	Mammal bone	Horse	1 <sup>st</sup> phalange; abraded
002	001	Mollusc	<i>Cerastoderma</i> sp	++
002	001	Mollusc	<i>Littorina</i> sp	+
002	001	Mollusc	cf <i>Mytilus</i> sp	+
011	002	Mammal bone	Rodent	Incisor tooth
011	002	Mollusc	<i>Cerastoderma</i> sp	+
011	002	Mollusc	<i>Mytilus</i> sp	+
031	012	Mollusc	<i>Cerastoderma</i> sp	++
017	003	Mammal bone	Sheep/goat	Metatarsal shaft, burnt
028	004	Mollusc	<i>Mytilus</i> sp	+
031	012	Mammal bone	Sheep/goat	1 upper molar tooth 1 upper deciduous molar 1 lower molar tooth 1 deciduous incisor tooth 1 incisor (enamel shell only) 5 fragments enamel from molar/premolar R ulna: articulation only L calcaneum: epiphysis and articulation
038	005	Mollusc	<i>Cerastoderma</i> sp	++
040	006	Mollusc	<i>Cerastoderma</i> sp	+
045	007	Mammal bone	Cattle	L/R maxilla with molar tooth present R mandible fragment; oral; no teeth L/R mandible fragment; oral; no teeth 1 lower third molar tooth (in wear) 1 molar fragment (unworn)

Context	Sample no	Type	Species	Details
045	007	Mammal bone	Sheep/goat	1 lower third molar tooth 1 lower second molar tooth 1 lower first molar tooth 1 lower fourth premolar tooth 1 lower third premolar tooth  The above teeth probably represent a complete tooth row from a left mandible
045	007	Mammal bone	Large ungulate	Vertebra; abraded
045	007	Mollusc	<i>Cerastoderma</i> sp	+
045	007	Mollusc	Gastropod	+
053	008	Mollusc	<i>Cerastoderma</i> sp	++
053	008	Mollusc	<i>Mytilus</i> sp	+

Note:

Unidentified bone and shell fragments are omitted  
+ indicates 10 fragments or less  
++ indicates between 10-50 fragments  
+++ indicates between 50-100 fragments

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## The Fish Remains

Ruby Cerón-Carrasco

### Introduction

Five contexts from Dornoch contained fish remains. One sample was hand-retrieved during the excavation of the site, and four contexts were sieved. One sample derived from an unstratified context.

### Methods

All the remains were examined and recorded and a catalogue is available for consultation. Where possible the remains were identified to species level or to family group. Identification of the fish remains was done using a modern fish bone reference collection. Nomenclature follows Wheeler & Jones (1989, 122-123).

The size of the Gadidae, the cod-family species, has been calculated by giving an approximate size range. This was done by matching the archaeological material to modern fish skeletons of known size based on 'total body length'. Therefore, the elements were categorized as 'small' (15-30 cm), 'medium' (30-60 cm) and 'large' (60-120 cm).

The recording of the state of preservation of the fish bone was based on two characteristics: texture on a scale of 1 to 5 (fresh to extremely crumbly) and erosion also on a scale of 1 to 5 (none to extreme). The sum of both was used as an indication of bone condition; fresh bone would score 2 while extremely poorly preserved bone would score 10 (after Nicholson 1991). Fragmentation was also noted in terms of bone completeness; this is expressed in percentages in the catalogue.

### Results

Most of the fish bones recovered from Dornoch were quite eroded and fragile. Table 4 lists the fish remains representation per contexts by fragment count (NISP).

The only identifiable elements consisted of vertebra from immature haddock (*Melanogrammus aeglefinus*) of less than 30 cm Total Length and to cleithra from mature specimens of up to 60 cm Total Length.

Also present in this small assemblage were elements assigned to the cod-family group, Gadidae. These consisted of head elements, fragments of cleithra, subopercular, and branchiostegals from 'large' specimens of up to 120 cm Total Length; a fragment of pterygoid from a 'medium' size specimen of less than 60 cm Total Length and a posttemporal from a 'small' specimen of less than 30 cm Total Length.

### Discussion

Due to the poor condition of the fish remains from Dornoch it is only possible to suggest that they are components of food refuse. There was not specific dating information at the time of writing this report, the contexts however appear to be early medieval in date.

Haddock was the only identified species in the assemblage. This species has been one of the favorite food-fishes in Scotland throughout time and is particularly found in assemblages dating from early medieval times. Castle Sween, Dairsie Castle, Carrick Castle, Chambers Street in Edinburgh, the Byre Theatre in St. Andrews and Murraygate in Dundee (Phase 4) all contained haddock remains (Cerón-Carrasco 1992, 1995, 1997, 1998, 1999).

Haddock is a fish of the North Atlantic found mainly in deep-water although large shoals are occasionally found in mid-water. It therefore requires the use of boats and lines for fishing particularly for the capture of mature specimens although smaller specimens were also caught in inshore waters. This activity was in practice for most of the year around the East Coast of Scotland but particularly in autumn and winter (Gray 1978). In the North Sea, haddock spawning takes place from late February to early May (Wheeler 1978).

Haddock size and quality vary with location, the best fish coming in the main from deep-water and in Scotland from the East Coast. It needs to be handled well and is generally gutted at sea; the skin is kept on to avoid tearing of the soft flesh and it is mainly cured by drying and by smoking (Lockhart 1997).

From medieval times in particular, haddock increasingly became one of the principal food-fishes and this appears generally to have been the case for both high status and urban communities. It must be borne in mind that fish resources have played a very important part in the religious, social and political history of Scotland.

### Conclusion

Although this is a small assemblage, the presence of haddock and other cod-family species (Gadidae) give further evidence of the importance of fish in the diet of the inhabitants of Scotland. Haddock was the main species represented in the Dornoch fish bone assemblage outlining its importance in the economy and the diet of most of the Scottish population during the periods represented.

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Ruby Ceron-Carrasco February 2000

Table 4 Catalogue of the Fish Remains from Dornoch

Context	Retrieval method	Element	Number	Species	Size	Fragmentation	Texture	Erosion	Condition
2	Sieved	branchiostegal fragment	1	Gadidae	M?	45%	3	4	7
2	Sieved		3	Unidentifiable	Unknown		4	4	8
11	Sieved	caudal vertebra	2	Haddock	S	90%	3	4	7
11	Sieved	posttemporal	1	Gadidae	S	Proximal/60%	3	4	7
19	Hand-retrieved	fragment	1	Unidentifiable	Unknown		4	4	8
56	Sieved	cleithra	1	Gadidae	L	Distal/50%	4	4	8
56	Sieved	subopercular	1	Gadidae	L	Medial/50%	4	4	8
56	Sieved	pterygoid	1	Gadidae	M	Proximal/70%	4	4	8
56	Sieved	branchiostegals	2	Gadidae	L	45%	4	4	8
U/S	Sieved	cleithra	1	Haddock	M	Proximal/50%	3	4	7
U/S	Sieved	branchiostegal	1	Gadidae	L	50%	3	4	7

## The Plant Remains

Mhairie Hastie

### Background

Archaeological excavations revealed a series of well-stratified deposits indicating occupation since the early medieval period. A number of features were recovered including a post-medieval ditch and pit and a homogenous deposit of medieval cultivation soil. Other potentially dark-age features included substantial metal working debris and a possible building with associated enclosure, ditches and pits. Environmental samples were taken primarily from ditch and pit fills, and from areas of industrial activity.

### Method

Twelve un-processed soil samples were received from the Scottish Urban Archaeological Trust for assessment. These were subjected to a system of flotation and wet sieving in a Siraf style flotation tank. The floating debris was collected in a 250µm sieve and, once dry, scanned using a binocular microscope.

The majority of samples contained fragments of charcoal and occasional charred cereal grains identified as hulled barley and oat. One sample did, however, stand out due to the concentration of cereal grains, pit fill - Context 48.

This report, while focussing on the sample from Context 48 also incorporates material previously identified during the assessment stage of the project. The results are presented in Table 5 - the early medieval samples contained only small quantities of cereal grains and results are shown as either + = rare, ++ = occasional. All identifications were made with reference to the modern comparative collection of Headland Archaeology Ltd and seed atlases (Berggren, 1969 and 1989). Botanical nomenclature broadly follows that of the Flora Europaea.

### Results

#### 1) Early Medieval Ditch and Pits

The majority of the samples (Contexts 2, 11, 17, 28, 31, 40, 45, 53, 56 and 58) were removed from a series of ditch and pit features thought to be of early Medieval date. The samples were dominated by metal working debris implying that the area was used principally for industrial activities. In addition, small quantities of cereal grain, primarily hulled barley with occasional oat were recovered. Both of these crops are typical of this part of Scotland for this period and the site fits into a well-established pattern for the East of Scotland (Boyd, 1988). The low concentration of grain, in many of the features, is a common observation on medieval sites and is probably indicative of small-scale domestic activities occurring on or near to the site.

#### 2) Post-Medieval Pit

One sample was removed from a pit (Context 48) that cut into a post-medieval ditch. Both features overlay a spread of medieval cultivated soil (Context 2) and the ditch is thought to be from the early to mid 17<sup>th</sup> century. The pit is therefore likely to be of similar or later date.

#### Note

*This pit (48), and the ditch it was initially thought to truncate (27), have been re-assessed since this draft report was prepared both may now be Early Medieval in date.*

#### Context Composition

The pit was filled with a series of laminations that contained a concentration of cereal grain, chaff fragments and weed seeds.

#### Cereals

Grains of barley (*Hordeum* sp.) and rye (*Secale cereal*) were the most frequently encountered elements. Preservation of the barley grains was poor. A small number were identified as the hulled variety but more specific identification was impossible. Some barley rachis fragments (12 in total) were also recovered but preservation of these was also poor and it was not possible to distinguish between the two-row and six-row variety. The presence of rye was re-enforced by the recovery of a large quantity of rye rachis fragments.

Oat grains were also recovered, though not in the same numbers as the barley and rye. Most grains could only be identified to the level of *Avena* sp., however, a small number, still enclosed within their florets (lemma/palea) were present. This made it possible to identify *Avena strigosa* (small/bristle/black oat) with certainty, suggesting that the majority of the grains were also black oats.

#### Wild Species

The seeds of wild or weedy species were present in low concentrations. The most commonly encountered were the seeds of *Agrostemma githago* (corn cockle). Other seeds were present but only represented by one or two seeds - *Polygonum persicaria/lapathifolium* (persicaria/pale persicaria), *Rumex* sp. (dick) and *Stellaria media* (chickweed). Most are common elements of cultivated fields and corn cockle is specifically associated with cultivation. It is therefore certain that the seeds were growing as weeds in the fields along with the rest of the cereal crops and brought to the site as contaminants.

The sample also contained a large quantity of *Calluna vulgaris* (ling/heather) buds, florets and wood charcoal. These cannot grow as a weed of cultivation and their presence is indicative of more acid heaths and moors. Possible explanations are that it was collected and used for bedding, packing, tempering, thatching, flooring and general building materials.

## Other Potential Economic Species

Small fragments of hazelnut shell (*Corylus avellana*) were present. Hazelnuts have been used as a food source since the Neolithic period and are commonly recovered from many archaeological sites. Their presence at Dornoch may suggest that the nuts were being collected specifically for human consumption but they could also have been brought accidentally to the site as part of wood collected for fuel.

## Interpretation of Assemblage

The assemblage contained a substantial quantity of cereal grain mixed with chaff fragments and a small quantity of weed seeds. Rye, hulled barley and black oat were all present. The ratio of grain to chaff seems to indicate that the rye may have been charred at a different stage to the barley and oat. Only small amounts of chaff fragments were recovered for the latter species yet 45% of the identified rye elements was chaff. This would tend to suggest that this cereal might have been charred while still on the ear.

The concentration of grains is such that some sort of accident concerning processing or storage seems likely. With the exception of catastrophic destruction of buildings by fire, plant material in contexts such as this is most likely to have been charred by one of the following processes:

- a) small-scale corn drying on household fires
- b) bulk corn drying in a kiln
- c) domestic debris charred on the hearth.

The density of grain present in this case argues against purely small-scale domestic accidents. It is most likely, therefore, that the assemblage relates either to bulk corn drying or burning of a store/building. The evidence produced during excavation does not, however, enable us to distinguish conclusively between these two possibilities. There is no indication that a building or store had been burnt down within the immediate area and the fire in which the grain became charred probably lies out with the excavated area.

## Significance of the Cereal Remains

Three of the primary post-medieval cereal crops are represented with hulled barley, rye and oat all being present. Documentary evidence for this area suggests that oat, especially black oat, and barley or bere were the most commonly cultivated crops (Bethune, 1793). The recovery of a large concentration of rye from Dornoch is therefore very significant.

Cultivation of rye tends to be confined to areas of poor quality land as it is usually less profitable when grown on good soils compared to other cereal crops. It can, however, fair better on dry and light land or upland marginal arable areas that produce inferior crops of oats, barley and wheat (Watson and More, 1962). Occasionally it was also grown as part of a mixed crop sometimes with barley and oats or as a maslin with wheat. This would generally produce a higher yield of grain than would be obtained from cultivating species separately (Grant, 1995).

During the last three centuries, improved farming techniques have allowed large areas of marginal land to be reclaimed specifically for cereal cultivation. The Scottish Statistical Accounts (Bethune, 1793 and Kennedy, 1833) indicate that these new crop husbandry processes were also being implemented in the Sutherland area. The presence of a large concentration of rye at Dornoch may, therefore, reflect the initial increase in the cultivation of these marginal areas and improved farming techniques.

Rye can be cultivated both for its corn and straw:

- a) The grain is used in the making of rye bread and a variety of beverages (Chambers and Jones, 1984)
- b) It may have been grown specifically for thatch or packing purposes, the straw being much longer, stronger and wearing better than other cereal straw (Watson and More, 1962)
- c) In some areas it was grown for non-human consumption (Green, 1981). The 'native' varieties of rye were more leafy and suitable for winter sowing which would produce a spring crop that was very appropriate for the use as fodder or foliage. It wasn't until after the Second World War that new improved grain varieties of rye were introduced from the continent (Watson and More, 1962).

The archaeological assemblage from Dornoch does not enable us to distinguish between these three uses primarily because it seems to have been burnt while still in the ear. It does, however, open up the possibility that what we are seeing here is direct evidence for cultivation of marginal land or for the growing of specialised crops that were destined for specific purposes such as fodder or thatching. Either way this find is of considerable interest and adds to our understanding of agricultural development in post-medieval Sutherland.

## References

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