

Portkil Cave No 1 Excavation Interim Report No 1
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Sea Cave NS 24830 80488 c8m OD

Abstract

Partial excavation of cave deposits revealed evidence of Bronze Age primary activity which included the use of beaker and other types of pottery and napkin rings. Charcoal enriched deposits produced burnt and unburned bone, unburned wood, hazel nut shells and various seed types. Upper deposits were not diagnostic as to their age although they contained charcoal and animal bones; however the top most deposits show occupation of the cave by picnickers and others from the mid 19th century AD.

Note: this report currently deals only with Trench No 1 at Cave No 1 and will be revised accordingly as new work progresses.

Introduction

At several locations along the coast of the northern part of the Clyde estuary, particularly west of Dumbarton to Cardross, at Ardmore Point, Rosneath Caravan Park and Portkil, there are good examples of sea cliffs of Old Red Sandstone conglomerates of Upper Devonian age, and north of Kilcreggan and the Highland Boundary Fault Line are other cliffs, but of schist rock (Pl 1). At Dumbarton, Ardmore Point and Portkil there are sea caves of various sizes in the cliffs (Pl's 2 - 3), now set back from the coastline by several hundred metres and which rise above the 5m raised beaches. In all locations there are rock overhangs (Pl 4) at the cliff bases and it is possible that similar features and further caves may be obscured by the build up of debris fans in front of the cliffs at different locations (Fig 1).

The sea cliff caves at Portkil (Pl's' 1&5, & Fig 1) were used as a research excavation project as part of a larger fieldwork programme by the Society and now known as The North Clyde Coast Cliffs and Caves Project. Limited excavation at Portkil was planned to establish if archaeological deposits lay within the caves there, or on their immediate environs.

Part of the cliff complex was surveyed at 1:500 (Fig 1) and which encompassed the principal features seen along it; these are five potential cave openings (Including Cave No 1) and a rock over hang. Military installations in the vicinity of the cliff were surveyed at the same time and these will form part of another project.

The area of the site

The sea cliffs and possible caves stretching between Portkil and Kilcreggan on the southern tip of Rosneath Peninsula, in Argyll and Bute, are part of a series described above, and in the case of Portkil (Pl 5) the cliffs are some 300m from the present shoreline and reach about 20m in height.

Although described here as caves, the five possible examples which can be seen, may be more accurately considered as rock shelters, since considerable quantities of rock fall debris forming fans along the entire length of the cliff are obscuring details of the visible sites and possibly the existence of others.

Cave No 1 (Pl 6 & Fig 2) measured 8.6m in open height above the old beach level; however deposits of rock fall up to 7.5m deep lay within and in front of the opening. The width in total at its frontal area was 3m, it extended into the cliff for a total length of c7m where it bifurcated into two narrow branches at the rear, however the cave had originally been at least 2m deeper before a large rock fall above it had collapsed. The cave had been formed by sea wave action which had eroded between two main fissures lying parallel with each other and at an angle of approximately 45⁰, and of which the rear branches remain. The width nearer the rear of the cave was also 3m which was the average distance between the two fissures apart from the frontal area where it widened out. Both the anthropogenic and natural (rock fall) deposits therefore followed the angles and space between the eroded fissures.

A fan of material lying in front of the cave and which includes some large lumps of conglomerate that have scaled off the cliff, appears to be mainly a layer of soil and rock, having slumped over the cliff edge above, the entire cliff is covered in mature and younger trees and shrubs which would have contributed to the humic soil formation. Beneath the soil is a mass of conglomerate (004) which has fallen from the upper frontal area of the cave, but since its formation, and perhaps caused by an earthquake, but certainly it appears to have been principally a cataclysmic event and one which foreshortened the depth of the original cave - and possibly the first human occupation of it (more below).

At the base of the debris fan the 5m raised beach runs along the cliff line and out to the sea edge as fairly level, but boggy land, having c0.75m depth of peaty soil. A recently cut open drain running from the cave area to the Fort Road beside the present beach shows that no beach deposits are present above a rock shelf apart from about 0.5m of gravel, this being only seen immediately in front of the site, however the rock platform which is the same conglomerate as the sea cliffs, can be seen to gently slope down to the present sea shore.

Evidence from early 20th century OS maps shows that the area of the raised beach on the western side of the site was once partially landscaped as a park and used by the local Scouts as recreational ground, while the land to the east was encompassed within the military boundaries of Portkil Battery (above the cliff) and was used as a firing range and other activities by the military from before WWI. The entire area is now covered in fairly recent re generation scrub land of mainly birch, willow and hazel, with larger and older mature trees growing along the cliff line.

Geology

The solid geology of the cliffs and the ground above and below them is Devonian in age; some 375M years old, often referred to as Old Red Sandstone (BGS 1985). The sea cliff caves and raised beaches along the north Clyde shoreline are conventionally described as dating to the end of the last Ice Age which is known as the Loch Lomond Re-Advance, and which began around 11,000 years ago. However, it is possible that the Portkil caves were formed prior to that epoch and may have existed as cliff caves before the sea levels and land masses were altered in altitude, due to eustatic and isostatic effects resulting from the weight of ice burden being removed from Scotland and subsequent sea level rise (Paterson 2014). Since the raised beach is completely devoid of beach gravel, such material which must have been washed clear before the beach shelf was raised by isostatic uplift.

Co-incidentally and during these excavations similar circumstances of peat deposition on the solid 5m raised beach platform were observed and recorded by the writer at Cardross, during field drainage operations there in 2014, identical beach and cliff circumstances can be seen at both locations.

Prospectus and Methodology

The work was initiated as a research project and from the outset it was realised that if important archaeological deposits were encountered, then minimal excavation of them would be attempted in order to sample such deposits while leaving as much as would be possible in situ. From the outset it was hoped that primary deposits would be reached to establish earliest human activity at the site.

A local datum was established in the cave by dumpy levelling from the present high water beach line 300m away, and this gave a height of 8.5m above the beach for the cave datum (TBM). A base line (Fig 2) was established to run out of the cave from its rear wall to the centre of a large mature ash tree, at 182⁰ mag looking out of the cave, the cave was thus aligned almost N/S. The local TBM and the base line were used to record all contexts, features and finds, each feature, sample and object being recorded three dimensionally.

Two trenches will be opened (Fig 2); T1 and T2. T1 was opened within the cave shelter and T2 still to be done is out with the rock overhang, the rationale being that potentially different deposits could be located in these locations.

Section positions (Fig 2 for T1) were established to demonstrate as much of the site stratigraphy as it would be possible to show, in the event seven sections were excavated in T1 giving details of nearly every context. The locations of the sections in T1 were determined as the excavation progressed.

The trenches will be backfilled using clean rock fall material and copper date tags (Pl 7) (2014) were inserted at the base of the sections for T1 and will be (2015) for T2.

On and off site sieving

Sieving was not necessary for the dry upper deposits within the cave, all of which lay above the rock fall material 004 (e.g. Fig 8).

However, the context 006 which lay below 004 and was quickly established by artefact evidence to date to the Bronze Age, was entirely wet sieved, either on site

where charcoal was not retrieved, but objects were; or off site where it was processed into 2mm and 0.5mm sieves to recover all environmental material.

Pools were created beside the excavations and were liberally filled by clean fresh water ensuing from natural drainage above the cave. A 4mm sieve was used on site and all residues were inspected for finds before being discarded, charcoal was not retained from this operation despite its presence in all samples, charcoal was however recovered from those samples which were removed from the site (see Appendix II).

A control sample (S46) of 0.5litre was taken from the on site mud in 006 spoil, resulting from sieving on site, three microscopic carbonised seeds were recovered. Despite this it was considered non feasible to wet sieve all spoil from the site, to the higher off site standards.

Sampling Strategy (App II)

From the outset it was realised that important environmental deposits were likely within such a feature as a sea cliff cave. Soil and mineral samples were thus taken from every context and in the case of the main pre historic one (006), it was sampled at various areas and depths throughout the parts exposed in the excavation.

The majority of the samples have measured 14 litres in capacity being the volume of the buckets used; this ensured uniform representative samples of the contexts.

Apart from routine sub samples which have merely been dried and bagged for future reference, all samples removed from the site were wet sieved by flotation into 2mm and 0.5mm sieves, the flots were dried at room temperature, hand picked of extraneous materials such as rootlets and grit as much as was practicable, inspected for nut shell and selective examples for seed and any other interesting qualities such as twig round wood, they were then weighed in grammes and bagged in plastic bags.

The residues, which in nearly every instance were derived from the cave roof or wall as sands and gravels, were discarded, but not before they were inspected for artefact evidence; some produced pottery, burnt and unburned bone, and also teeth. Similarly the on site sieving produced nearly all of the recovered pottery and bone from the site. The entire excavated context 006 was thus either sieved on or off the site to ensure total recovery of objects.

Details of the samples are given in Appendix II and include volume of site sample recovered, context, weights of charcoal above 2mm in size, and other organic materials such as bone, and whether sub samples were retained. In some samples selected at random carbonised seeds have been removed.

Finally, 0.5 litre sub samples were taken from every contexts seen in sections, and in the case of 006 from numerous areas of it, these samples are listed as 'SeS' (Section Samples) and were dried and retained without further work. The section drawings are marked with these samples as red numbers, and showing the exact location of their recovery.

Recording

Drawings of the site (Figs 1 – 13) including general plan , Cave No 1 excavation plan and sections, and have been completed to appropriate scales; sections were drawn at 1:10. Small stones seen in sections were not drawn. The entire project has been recorded by digital photography and the record comprises over three hundred images of the site and finds.

The entire work has thus been recorded as it progressed.

The excavation. Trench No 1.

The inner area of the cave was initially cleared of rubbish in preparation for excavation which began with cleaning the overall surface (Pl's 8 & 9) when the first finds were encountered.

Five sondage and seven sections (Fig 3) were ultimately opened to explore deposits; these were positioned as dictated by the progress of the excavation and were as follows:

Sondage A (Fig 3 & Pl 10) ran along the baseline at Section A-B and was bounded on the west side by the cave wall. It measured 3.3m by >1m wide by >0.9m deep and the upper level was 0.4mD, Contexts 001-006 were recorded here.

Sondage B (Fig 3) ran across the full width of the cave and at right angles to the base line, it was bounded by sections C-D and G-H and the two cave walls, it eventually connected with Sondage D. The total size was c3.5m by 1.2m wide and 2.7m maximum depth, the upper level was at 0.4mD. Contexts recorded were all those given in sections C-D (Fig 8) and G-H (Fig 10).

Sondage C (Fig 7 & Pl 13) was a small opening into context 009 and was later subsumed by further excavation. It measured c0.7m long by 0.3m wide and was 75mm deep; it lay at 1.3mD.

Sondage D (Fig 3 & Pl's 25&30) ran along section I-J and was bounded on the west side by the cave wall and eventually merged with Sondage B and E. It measured 1.6m long by >c1.9m wide and >2.1m deep, much of which was accounted for by an upper layer of rock fall (004) on the west side and which was at 0.4m D. Contexts recorded were 004, 006, 016A and 018A.

Sondage E (Fig 3 & Pl's 25&30) Ran along section K-L and was bounded on the east by part of section E-F, on the north side by section M-N and Sondage D, and on the west side by the cave wall. It measured 4m long by 1.5m wide and was >1.45m deep (the latter dimension being at Section K-L). An unrecorded volume of 004 rock fall was cleared from above it by machine, but the section K-L began at 1.6mD. Contexts recorded were 004, 006, 011,013,016B, 017 and 018A. Nearly all of the pottery was found in this sondage.

The base of each sondage apart from C was the cave floor.

Section A-B Fig's 3 & 4 Pl 10

Section A-B was cut along and on the west side of the baseline from the rear of the cave, it measured 3.3m long and this formed Sondage A. Unfortunately the cave wall

at that side sloped significantly inwards and the section only reached a maximum depth of 0.85m at its southern end. All the stratigraphy in A-B was continued round the corner into section C-D.

001

The modern upper layer of soil covered the entire baulk which was left intact at the rear of the cave, between sections A-B and C-D. In the section in measured >0.2m deep and it was a uniform light coloured soil with a few stones, occasional charcoal flecks and a collection of crockery of relatively modern date (Pl--).

002

Similar in appearances to 001 above this soil was distinctive from 001 as it contained no objects, it measured in depth >0.25m at the southern end.

002A

Also similar in appearances to 001 and 002 above except that this layer contained a variety of animal bone (PC/B/1).

002B

A layer of charcoal enriched soil which was only seen between the two lumps of rock fall (004), it measured up to 100mm deep.

003

The thin band of charcoal enriched soil and this continued around the corner into section C-D, it measured less than 100mm deep in section A-B.

004

A prominent band of rock fall, >0.45m deep and including two large blocks ran the length of the section. Between the two boulders a layer of 004 with charcoal was > 0.2m deep, the charcoal may have emanated from 002B above, the rest of 004 was clean conglomerate gravel which evidently was deposited in the same occurrence as much of the same material noted over the whole of T1. The larger lump of rock fall nearly blocked access to the western fissure but certainly prevented any exploration of that area by trowel.

006

At the base of 004 in two patches were charcoal layers; these are both assumed to be derived from 006 which lay at and around the corner in section C-D.

Section C-D Fig's 2, 3 & 8 Pl's 11-19 & 49

The position of section C-D; 3.3m from the start of the baseline and at a right angle to it, was chosen to be sufficiently near the rear of the cave but also to allow for cutting most of the assumed layers that may have been at that position, while leaving much of those assumed layers intact at the rear. The area in front of section C-D became Sondage B.

The ground profile before excavation was fairly level between Section C-D and the back of the cave (Pl 10), it sloped down abruptly and outwards from the line of Section C-D and in the event it was shown that the various upper layers seen in the section tailed out within a few metres from it, with the continuation of the ground

rising outwards but consisting entirely of rock fall gravels (004) which were removed by machine.

The section lay between the sloping walls of the cave, both sloping down to the eastward side with the eastern cave side being a hanging wall; the west side met the east side at 3.1mD in a narrow natural gully.

The stratigraphy is described from the upper level (001) at 0.4mD and which lay as a slightly sloping surface down to the east side, but more steeply towards the south.

001 Pl's 12 – 16 & 49

The layer was c150mm – 1000mm deep, with the upper surface sloping down slightly to the east as a light coloured soil containing charcoal lumps, modern crockery and glass (PC/P/1 -11) and quantity of mixed sea shells (PC/S/1), and occasional small stones, the shells being mostly found to cascade down the east wall for almost a metre in total depth and filling a former cavity between the sea wall and 002, crockery also found its way down this space.

Principal finds were two 19th century trade tokens (PC/M/1 -2) and a clay pipe bowl (PC/P/12). A tea pot lid (PC/P/8) and brown glaze sherd were found lying on the clay deposit 011 at c6.0B/2.0E/1.4D, and occasional bits of crockery were found in the same modern deposit extending out of the cave on the east wall side to about 8m on the base line. 001 was also noted in Section A-B above.

002

The soil layer 0.2-0.3m deep and sloping down to the east side was similar in texture to 001 but contained lumps of white lime up to 0.3m in size and also larger random stones, no objects or shells were recovered from this context, the fact of which clearly demarcated it from 001. It must have formed the upper surface within the cave at some point and where a space was left between it and the cave wall to allow 001 to filter downwards there.

The lime presence (Pl 16) is inexplicable unless it was the product of natural deposition emanating from fissure cracks in the cave roof where a flow stone deposit of similar lime existed on the west side of the cave. An even more impressive deposit but seen on the hanging roof of Cave No 3 is to be seen, however, the lumps of lime in 002 did have a more homogenous appearance in both colour and texture than those described on the caves walls.

002A

Similar in all respects to 002 apart from an absence of the lime, this layer reached a maximum depth of 0.3m and was notable for a variety of bones (PC/B/1) which lay within it. The bones (Pl 16) are in good condition and appear to be from a variety of animals. Also like 002 above it the layer did not abut the east cave wall allowing a space for 001 to fill the gap.

003

A 50-110mm deep layer of black charcoal enriched soil/gravel extended between the two cave walls, and following the underlying material as a bump as seen in Section C-

D. The same context was seen along section A-B (Fig 4) and this suggests it covered the entire unexcavated baulk at the rear of the cave.

004 Pl's 6, 11 -19 & 49

Evidently rock fall material composed of lumps of conglomerate up to 1m in size but for the most part it was the gravel and pebble components of it. This material was found to pervade the entire excavation and principally may have been the product of an earthquake since a major fall had taken place from the upper frontal area of the cave and covered the entire area within and without it. The deposit as seen in Section C-D and most other places where it was encountered showed it as fresh material with few inclusions apart from charcoal which had been crushed by it, or subsequently invaded it from upper contexts. Apart from the major fall which foreshortened the depth of the cave, the gravel must have been consistently scaling off the cave to mix with other deposits as was seen in nearly all the wet sieved sample residues which were recovered from the excavations. A large volume of 004 was removed by machine from both within the cave and also the area extending outwards.

005 Pl 19

Layer of light coloured soil up to 100mm and 0.9m long sandwiched between 003 above and 005A below it.

005A Pl 19

First thoughts on this deposit from its appearance was that it was ash, probably from coal burning, however microscopic examination and tests showed it to consist of charcoal, sand and lime. It was up to 150mm deep lying immediately below 003 but distinctively different in texture and appearance. The lime may be the product of the natural deposition described above.

006 Pl's 12 – 19, 26-31, 49 & 50

This context was seen in all areas and is described here firstly for Section C-D and then for the remainder of the excavation to allow a more continuous description of the entire context, it is further described for each section.

006 (Section C-D)

The upper limit on the west side was 1.7mD and it descended on the east to 2.4mD. It measured 0.15m deep on the west and 0.6m deep on the east, the depth varied across Section C-D. Lenses of thin soils were seen on the upper east side where a band of clay (014) lay within 006 (Pl 17) and followed the cave wall contour for about 0.8m length. Context 014; fine cream coloured clay contained a quantity of burnt bone (Pl's 15 & 17). As seen elsewhere 006 appeared as subtly streaked with varying densities of charcoal content among the gravelly matrix which was mostly rock fall (004), thus indicating different deposition periods, albeit suspected to be within a short time frame. It was abundantly apparent that 006 terminated abruptly with the deposition of the rock fall 004 above it (Pl 17), and also that it began as the primary human deposit within the cave as it lay directly on the natural cave floor and on the beach gravel of 018 in the gully on the east side. However, and perhaps as a sign of what was to come, two fresh lumps of rock fall (PL 18) were embedded within 006 at the east side, and since these two lumps lay at different levels and were completely encased within 006, like the other parts of 006 deposit where lenses of 004 were seen in 006, this means that 006 was accumulating while material from the cave walls was falling.

006 (entire context)

Black charcoal enriched rock fall (004) deposit with 'streaky' layers of greater or less density of charcoal fragments. Upper part of deposit was 1.7mD on the west side of the cave, and the deepest part at the east side was 2.4m D at both Sondage B and E.

The deposit varied in depth and height from place to place but extended to all parts of the excavation in front of Section C-D apart for the area above section E-F; however it could be seen to totally underlie that part (Pl's 22, 24 & 25) and also along the full width of Section C-D and was incorporated in part of Section K-L (Fig 12).

A central block of 006 with an uneven surface was left intact (Pl's 29-30 and 49-50), the middle of this was raised above the rest; the baulk was fronted by Sections G-H, I-J and M-N. The main deposit of 006 lay directly below the major rock fall (004) across most of the cave, and was also inter mixed with it as seen in Section K-L and by the two lumps of 004 in Section C-D (described above).

Throughout the 006 deposit layers of more or less concentrated charcoal were visible and which often interleaved with bands of more evident rock fall gravel (004), this was seen in all sections where 006 was exposed and also in the areas where it was entirely removed. Therefore the main stratum was laid down in a variable manner; however, the finds of beaker sherds (Pl 42) in Sondage E indicate that the period was relatively quick since sherds from the same pot/s appear to be represented in the lower and upper layers there. Mixing up of 006 is considered unlikely since the 'ghost' layers were seen in all places. Other deposits were also laid down as 006 accumulated, for example the clay layers 014 and 016 (Fig's 8&10, Pl 15 {014 only}) both of which contained burnt bone (PC/B/20&24).

The 006 deposit was shown to be the probable basal anthropogenic one in the cave (in T1) and lay directly over a naturally deposited beach gravel (018&018A) which was seen in Sondage B, D and E, 006 is evidently Bronze Age in date as the finds demonstrate.

A ridge of rock fall lay alongside the west cave wall and had 006 above and below it showing the rock fall was coming down during the deposition of 006, such interleaving was noted at several locations and more isolated rock fall lumps within 006 were seen in section C-D at the east side (Pl 18). 006 was deposited up against the cave west wall at a height of 1.3D being the highest point at which it was seen, it may have been deliberately thrown against the cave wall here prior to a rock fall event taking place and thus forming the ridge (given above) and it was at this high point that the two napkin ring fragments (PC/L/1 & 2, Fig 14, Pl 39) and the large string decorated sherd (PC/P/13, Pl 43) was found. A small AOC decorated beaker sherd (PC/P/47) and another less diagnostic sherd were found nearer the eastern side of section C-D in Sondage B and near the base of 006; these were the only sherds found out with Sondage D and E.

Tiny rodent bone (Pl 47) deposited as a fairly discrete patch within the upper surface of 006 at the west side is considered to have been the result of owl pellets being dropped, this presumably was at a time when the cave was absent of people, and makes an interesting natural history event.

Along the ridge of 006 at the western side, a layer of unburned wood was recovered (PC/W 3); some of this is certainly birch and appears to be twig and small round wood. Hazel nut shell was also found here.

Burnt and unburned bone fragments and various teeth were found throughout 006 (see finds & samples lists App I&II). The larger teeth appear to be from cattle and /or horse but smaller examples were also found. Some of the burnt bone pieces may have derived from Contexts 014 and 016 (clay layers) where a collection of such material was gathered, at this stage it is uncertain whether the burnt bone is human or other animal.

During random searches and rapid scans of some of the charcoal samples retrieved from 006, microscopic (burnt?) bone was found, e.g. from Sample No 35. Presumably these are from marine species, perhaps fish. During the same operation but from more samples (see App II) plant seeds were recovered, and these are from at least five different plant types.

As stated above the entire volume of excavated 006 was either wet sieved, on or off the site, since the whole context could be seen to have charcoal within it. The sieving was necessary because the excavation conditions of both texture of the context and the fact it was mostly very damp or soaked meant that recovery of artefacts by trowel alone would be uncertain. In the event all artefacts were found in the sieves and a number of sherds and fragments of beaker and other pottery types were found, as well as those items given above. Sherds from at least two beakers (Pl 42), possibly three were found in Sondage E, these include base, rim and body sherds, some of which are decorated by fine cord impression and may be from AOC beaker/s. The rim sherds are 'finger fluted' and two incompatible sherds show that at least two pots are represented.

Expert analyses will of course be required for all finds and samples but it is clear that beaker sherds were deposited within the lower and upper layers of 006 in Sondage E giving rise to the theory that it was a short lived deposit. Parts of other pots including sherds with finger nail impression came from the same area (see App I & II for details of all finds and samples).

It is abundantly clear that the finds from 006 shows the deposit to date to the Bronze Age, perhaps the EBA judging by the beaker types, however, the environmental data in the carbonised material, burnt and unburned bone and wood from 006 offer a valuable and fascinating insight as to what the activity in the cave was about, this will be further discussed below.

Mostly 006 was devoid of stones larger than c50mm although a few were present and these were clearly conglomerate pebbles.

A large proportion of micro charcoal was washed through the sieves {0.5mm} accounting for the totally black appearance of the deposit on site, and while relatively small amounts of charcoal above 2mm were recovered, only a few large pieces (>25mm) were present, the 0.5mm flots recovered were equal or larger in volume to

those from the 2mm flots, suggesting the deposit 006 was heavily trampled throughout its deposition and thus eroding the charcoal.

Section C-D continues

Context 014 is fine cream coloured clay (Pl's 14 & 15) with no inclusions other than a quantity of burnt bone (Pl 46), the species of which is still to be determined. The clay lay within 006 sandwiched between two bands of charcoal enriched soil and 014 itself as a band no more than 25mm thick and extending in the section for 0.8m while following the contour of the west cave wall. In front of the section in Sondage B it was seen as a rectangular patch of about 0.5m square (although it was probably slightly larger than that size). The context can be compared directly with that of 016 seen in Section G-H and possibly with 016A and 016B seen in Sections I-J and M-N respectively, however, only in 016 was there further bone found. Interestingly, a small collapse of Section C-D after rainfall cause about 4litre of 014 to fall from the section and when this was sieved, hardly any bone came from it, and this may mean that the burnt bone is running out as the clay lies behind the section line.

015

A thin band >50mm deep of light coloured clayey soil containing much crushed but with some complete limpet? Shells and other tiny shells (PC/S/2) lay directly on the cave wall/floor at the west side of the section, and also extended out by 0.75m from it and lay immediately beneath a large block of rock fall (Fig 10). 006 lay directly over this deposit but it is unclear whether this is a natural layer or a human one, but given its height within the cave the latter is suspected.

017

Lying against the east cave wall is a tapering column of fine red clay >100mm thick and 0.5m high (Pl 18), it is abutted on the west by a lump of rock fall and 006 above that. The clay is extremely homogeneous with no inclusions and is of a plasticine texture which would allow its use for pottery making; indeed it is of a quality that may be purchased in modern craft shops. The same clay is seen to lie along the east cave wall in Section E-F (Fig 9 & Pl's 22 & 25) and beyond and is it certainly not a naturally derived deposit within the cave. Speculatively it is suggested that this and the other clay deposits found in the excavations (011,014,015and016) may have been brought in for the purpose of potting.

018

The west cave wall descended at a fairly uniform angle down to the east where it terminated in a natural gully at 3.1mD, the 'V' shaped gully was 1m wide at its upper edge and 0.7m deep and on the east side the cave wall rose almost vertically from the upper side of the gully (Fig 8). Completely filling this space was a deposit of flattened round grey coloured pebbles (Pl 18) of varying size up to about 0.3m but mostly much smaller. The pebbles lay within a matrix of cream to grey coloured gravels throughout with many smaller flattened grey stones included. Clearly this was a naturally deposited beach in wash and the identical material can be seen on parts of the present beach. The difference between the cave rock falls (004) derived from the reddish coloured conglomerate and the greyer coloured beach material is quite distinctive (Pl 20). Some doubt exists regarding the age of this deposit and is discussed further below. A 0.5litre sub sample (SeS47) was microscopically examined for any marine organic but none was seen.

Section C-D summary

Section C-D is perhaps the most informative as to the cave history. The topmost layer 001 with its crockery and shells had cascaded down the gap in the east wall of the cave and deposits 002, however further out it reached down to the top of 011 the clay layer, and it extended out of the cave where some of it was removed by machine. The gap was presumably caused by ground shrinkage since the rear deposits behind Section C-D remained dry throughout the excavation.

The lumps of pure white lime are inexplicable, although they appear to have been brought into the cave, it is possible that they are naturally derived there, from the seepage seen in the roof and also in the roof of Cave No 3 where lime is being deposited as a stalactite flow formation and can be seen to be seeping from the fissures on the cave roof. However the lime in the cave walls is cream in colour with other coloured impurities and completely distinctive from the more homogenous pure white lumps seen in 002.

The upper layers 001 – 003 were carried forward and down from the section for a few metres covering much of the ground excavated but as thinning layers the further from C-D, apart from 001 which was around 1m deep outside the cave at the east wall. The ages of the various layers apart from 001 above the rock fall 004 is uncertain and it could be that from 005A upwards are early deposits, perhaps pre historic in age. For example the charcoal layer 003 lies directly on the rock fall 004 and could have been deposited soon after its collapse, however the date of that event can only be speculation without recourse to C¹⁴ dating of the upper limits of 006 and 003 itself.

The ‘bone layer’ 002A seems to be more modern taking the stone inclusion within it and its similar soil to the contexts above to account, the good preservation of the bones cannot be used to judge even an approximate age since the bone preservation throughout 006 below is excellent, and must be at least 3000 years old. Analyses for species type of 002A bone should however be an indicator of approximate age, especially if domestic animals are represented in the assemblage.

006 is definitely Bronze Age in date and that can be refined by analyses of the pottery alone, but C¹⁴ dating will be pursued in due course to give a more accurate time span of the deposit, which is almost certainly the primary anthropogenic one. 006 has been filling in the cave ‘floor’ space from the lower east side and then gradually levelling up to the west, this is seen in all areas along the west wall, some of it may have been cast up along the west side giving a thinner profile there, perhaps during a levelling episode?

Certainly the deposit 006 is thinning out considerable at Section C-D compared to other frontal areas and it may tail out completely under the remaining baulk at the rear of Section C-D as the cave floor rises towards the rear, it was only just seen in Section A-B for example. The bulk of 006 at the other end of the excavation appear to veer off to the east cave wall as can be seen in Section K-L.

A band of rather darker (more dense charcoal) 006 lies immediately above the beach gravels (018&018A) and can be seen in most sections where the gravel was exposed,

it is unclear because of the indistinct but perceptible horizons within 006 whether this is a separate context or merely the beginning of 006.

The natural shape of the cave is shown at Section C-D with the gully on the east side and the natural deposit of beach gravel being at 2.8mD above the old beach level in front of the cave, therefore there is a considerable slope between the gully at Section C-D and the old beach level outside, some 17m away and at the end of the baseline (Fig 2).

Section E-F Fig's 3, 6 & 9 PI's 21 – 26, 29-30

The position of section E-F on the eastern side of the cave was chosen to establish the relationships of deposits not directly connected to those at section C-D (e.g. see Fig 5) and also to allow for the preservation of much of those deposits in that area as a stratigraphic column.

The section measured 2.6m long by a maximum of 1.4m deep; its strata could also be seen in Sections G-H, M-N and K-l. The southern end of the section (PI 26) formed the east side of Sondage E.

Beginning at the top but not shown in Fig 9, was a layer 0.9m deep of 001 (and possibly 002) and which overlay another soil 008.

008

Fine clayey soil including charcoal fragments, not seen at section C-D but extended along the east side of the cave, and included a primary flint flake with cortex (PC/L/5). The upper surface of 008 had prominent charcoal thought originally to have emanated from charcoal patch 009 (Fig 7, PI's 13 & 14) to the west and centrally placed in the cave, however this is unlikely given the difference in charcoal sizes from each context, the charcoal from 009 being consistently smaller in size, although this may have been due to trampling the patch and not the 008 deposit which was under the rock overhang of the east side of the cave. Carbonised bark charcoal recovered immediately above clay layer 011 shows that all the large charcoal from 008 emanates from it. At the base of the soil and above the clay 011 a tea pot lid (PI 23), another brown glaze sherd and a brass screw nail were found indicating the interface with 008 and 001. Also at this level was a butchered rib (saw cut, bovine?) and other small bone, and also some teeth fragments (bovine?) (PC/B 3 & 4). The finds indicate that modern material had access to the upper limit of 011 beside the cave wall.

011

The extent of the clay on plan is given in Fig 5 but it was of a uniform depth wherever it was seen in section (Fig 9 & PI's 22-25); this was 0.15m, however it thinned out somewhat where the deposit was seen in the centre of the cave. Its texture was homogeneous as dark cream coloured sandy clay, with no other inclusions. The deposit was seen as if bake cracked (PI 21) and caused by shrinkage such as when mud dries out in a pond, this appeared somewhat odd as it was buried under damp soil (001/008) and it may mean that the shrinkage took place before the overlain soil appeared, the soil certainly filled the interstices within the clay lumps. 011 was not seen in Section C-D.

013

Lying in an equally level layer below 011 and also at c0.15m deep is a dark soil (Pl 22), but not charcoal enriched although a few flecks of charcoal were seen within it. With the exception of a few small stones nothing was found in this deposit, nor is it particularly well understood, however it formed a distinct layer between 011 above and 017 below, both being clays but of differing types. 013 was not seen in Section C-D.

017

Beneath 013 was another uniform layer of 100 – 150mm deep, but this time of red coloured homogeneous smooth textured clay (Pl's 22, 24 & 25), and certainly of a quality which could be used for the manufacture of pottery, although there is no evidence that it was used as such.

This material was seen as an inclusion in Section C-D (Pl 19) and it was also noted as continuing out-with the cave where the ground was machine stripped on the east side, it therefore appears to be a continuous deposit at much the same level. 017 lay directly over 006 along the section and was seen to do so in Sections G-H and K-L, it was also seen to abut the east cave wall in Section G-H as it did at C-D and was seen out-with the excavations in the machine stripped area. A lower deposit of the same clay was seen at the southern end of Section E-F, sandwiched between layers of 006, and it continued round the corner into Section K-L, but only for a short distance indicating it was thinning out as it travelled out of the cave.

A central baulk of 006 was preserved in front of Section E-F but the downward strata in the section continued at the southern end where it complimented Sections M-N and K-L. Lying at the interface with 017 clay and 006 charcoal near the centre of the section was a conspicuous lump of haematite (Pl 24), however similar pebbles were seen throughout the work and forming part of the rock fall material, this piece is probably of co incidental and natural origin. However a single small faceted piece was found as part of 006 context, in Sondage E (see below and Pl 44).

006

The general description of this context is given above, but its local description in this section is as follows (Pl 26): A band of conspicuously denser charcoal about 100mm deep formed the upper part of 006 here, lying below that was the band of 017 clay intermixed with rock fall (004), also about 100mm thick and which continued around into Section K-L. However 006 dropped down continuously at the corner with Section M-N and was seen as 'streaky', the same as in most places where it was exposed in section. A possible basal layer of about 50-100mm thick became denser in charcoal than the central area and below that was a layer of rock fall 004 about 75mm thick but with charcoal included. The next layer down was an amorphous charcoal enriched band of about 100mm deep and which intermixed with beach gravel 018A below. This lower band of charcoal rich material was noted in Sections C-D, G-H, I-J and M-N and it is uncertain whether it is a separate context from 006 or a continuation of it. It is possible it could pre date 006 and this should be borne in mind if any future work is done on the samples. However, lying below that is the definite beach gravel layer which was seen in Section C-D, but the section here was not cut over the centre of the gully, rather at the eastern edge of it. The full depth of the gully and its contents are however seen in adjacent Section K-L.

Section G-H Fig's 3 & 10 Pl 27

The section formed the southerly part of Sondage B and the northern side of the central baulk of 006 which was left intact. It included some of the deposits seen in Section E-F and showed the cave profile which somewhat mirrored that in Section C-D. It was 2.1m in length by a maximum of 1.4m deep reaching 2.9mD, but some upper contexts in the area were left out of the section plan as they had already been excavated.

Upper contexts 011, 013 and 017 as seen against the east cave wall are as described in Section E-F, being a direct continuation of those deposits. The remainder of Section G-H continues with 006 and which is generally described above as being of a 'streaky' appearance with slightly more dense patches of charcoal at various places but mostly in such visible but subtle quantities as render their depiction in drawings impossible. At the western end of the section a thin layer of 015 including sea shell was noted immediately below the lump of rock fall 004 which itself formed part of a basal deposit of 004 gravel on the cave floor. A dense thin layer of charcoal was noted immediately above this layer of gravel and above that the usual appearance of 006 continued. A single rock (not rock fall) lay within the centre of the section and was enclosed by 006. However and lying above the gully in the cave floor but within 006 was another short 25mm thick layer of cream coloured clay (016) (Pl 27) which also included a quantity of burnt bone the same as nearby 014 in Section C-D. This layer extended for much of the area *between* Section C-D and G-H (Pl 28) However, the two contexts, although identical in description other than in overall size as seen in the respective sections, were not conjoined and were at differing levels. It is possible however that they were part of the same depositional layer and perhaps bone identification from each may establish that point.

The almost mirror reflection of the gully seen in Section C-D is shown and the fill was exactly the same as described in C-D, although two bone fragments were found in the uppermost level, it is likely that they were derived from 006.

A sherd of cord decorated beaker (PC/P/47) was found near the base of 006 and close to section G-H.

Section I-J Fig's 3 & 11 Pl 29

Section I-J is the western side of the central 006 baulk which was left intact. It conjoins with Sections G-H and M-N. It is 1.6m long and its depth varied from 0.25m to 0.5m, being the slope of the cave floor. The upper layer of the section begins with 006 and the same description applies as elsewhere as it was of the same 'streaky' nature but with slightly denser charcoal at its upper layer. A band of cream coloured clay 016A and the same as 014 and 016 already described was seen to follow the contour of the cave floor and the 006 deposit above the floor, this clay was 25mm thick and ran for a distance of just over 0.8m, however unlike the other two deposits, no burnt bone was found here, it does seem possible that all these clay band contexts are one and the same, perhaps with gaps in their deposition being caused at that time or later. At the southern end of the section and for a distance of 0.7m and at greatest depth of only 100mm was the natural beach gravel 018A. This deposit is therefore assumed to underlie the entire 006 baulk and be a continuation of the same material as seen in Sondage B and E.

Section K-L Fig's 3 & 12 PI 30

Section K-L formed the southerly limit of Trench No 1. It measured 4m long and was a maximum of 1.4m deep at the base of the gully which was 3mD. The upper surface of Section K-L lay at 1.6mD and was part of the area which was machine stripped of overburden which was known to be 004 rock fall apart from a volume of 001 & 002 beside the east cave wall.

The section began a short distance from the east cave wall where the clay deposit 011 lay against the wall (see Fig 5 for the full extent of 011 on plan). Contexts 013 and 017 were both encountered but only for short distances when they gave way abruptly to a mass of 004. Another short band of 006 lay below these and this continued round into Section E-F as did all the other contexts at the eastern end of K-L. Below 006 lay another discrete patch of rock fall 004 but with a component of the red clay 017 intermixed with it.

The usual 'streaky' 006 continued for a depth of 0.6m with a short band of denser charcoal 75mm thick appearing and conjoining with the southern end of Section E-F. Below that was a short patch of 004 and a basal layer of 006 lying over the beach gravel 018A which dropped for 0.5m in depth to the base of the gully, 018A also lay along about half of the base of Section K-L, on the cave floor as it followed the slope upwards in a western direction where it petered out. Centrally placed and within the 004 rock fall mass was a slightly charcoal enriched band of the same material, it stretched for around 2m and was > 0.2m thick and it followed the cave floor contour but around 0.3m above it. This deposit appeared as an anomaly in the otherwise mass of rock fall lying hard on the cave floor on the western side. Two similar patches of charcoal enriched rock fall also lay encased in the fresher conglomerate gravel.

Section K-L demonstrated that 006 deposit was veering away to the eastern side of the cave (Fig 12) but as a steeply sided mass against which the rock fall material had fallen. The direction and force of the fall which everywhere appeared from the west side may have forced some of the 006 deposit over and compressed it against the east side. It is conceivable that the rock fall also undercut a layer of 006 along the cave floor and above the shallow beach deposit near the centre, pushing the charcoal layer upwards and embedding it as a layer within the fresh 004; however that is speculative in an attempt to understand how these deposits were formed.

Section M-N Fig's 3 & 13 PI 31

Section M-N conjoins with Sections I-J and part of E-F and for the most part all contexts are shared in each of these sections. It measures 1.3m in length and is 1m deep as it embraces the gully in the cave floor seen in Sondage B and E. The strata here merely runs round the corner from section I-J with a darker layer of 006 at the top and the same 'streaky' deposit below that. However this gives way to another denser band near the base where there is also another band or streak of cream coloured clay (016B), same as in I-J but not actually connected and similarly without any burnt bone. Beneath the clay band there is another more amorphous layer of charcoal enriched beach gravel which may or may not be part of 006 (see Section E-F which conjoins). The basal layer of beach gravel and which fills the gully is as described, being a continuous deposit over much of the lower excavated area.

Contexts not seen in sections

Several contexts do not show in the available sections and these were principally located in Sondage D and above the retained baulk of 006 in the centre.

007 Fig's 6 & 7 Pl 32

Context 007 was a layer of randomly positioned angular rocks of varying types which included schist, sandstone and conglomerate but mostly the grey schist rock was present. They were recorded in two levels at 1.4-1.5mD, for the most part they lay within and below soil 008, and a small patch of the clay 011 covered some of them. They extended out from Section C-D for about 2m and the lower layer was at the same level as the charcoal patch 009. No finds were made among the stones which formed no recognisable structure nor made any floor surface and appeared as hap hazard in their disposition and in both plan and elevation. Their purpose if any is not understood, but they were mostly types of rock which would not have been derived from the cave walls, none had been subject to heat but they were certainly brought into the cave by human agency.

009 Fig 7 Pl's 11 - 13

Charcoal patch 1.2m diameter by 25mm deep, at 1.3mD. It was level with the upper part of clay 011, both of which overlay the stones 007. See charcoal explanation for Context 008. A superficial and fairly discrete deposit lay directly over rock fall gravel as a level patch. Sondage C was cut through it showing how superficial the deposit was. It is possible that due to similarities in samples (as far as may be seen at this stage), Contexts 009, 010 and 006 may be the same content and may be closely associated in time.

010 Fig 7

Charcoal patches forming an irregular shaped elongate deposit over rock fall and principally seen along the sondage D on the west side of the cave and extending outwards to 7.5B by c0.6m wide and up to 100mm deep in places. Upper surface was at 1.3mD. Samples S6 – S8 were taken as arbitrary spits at an area where 010 domed slightly at 4.4m on baseline (Fig 7). S15 was taken between 6-7m on the base and 0.6m E. All the samples produced unburned and semi burnt wood and charcoal and included twigs, seeds and hazel nut shell. Birch wood is represented in the samples (see App' II). The same seed types are noted in 010 samples as those from underlying 006, the 010 examples being non burned while the 006 ones are carbonised, this may indicate the contexts are very closely connected in time and season.

It was about this level that 006 charcoal was making its appearance along the west side of the cave while only slightly away from the wall it was covered in a ridge of rock fall 004.

012 Fig 5

Charcoal patch in soil, 0.75m diameter and lying below clay layer 011 at 1.4m D. Sampled as S 011.

The cave walls

The cave had experienced a series of rock falls after its original formation by wave action; the rock fall material 004 consisted of lumps of conglomerate up to 1m in diameter but for the most part the fallen material had broken down by weathering into its constituent sand, gravel and pebble components. A large quantity was removed by

machine [courtesy of the site owner] (Pl's 33 & 34), clearing much of the upper frontal deposit of this material from the cave mouth and along the cliff edges on each side (Pl 6), shrubbery was also removed in this process allowing a better view of the cave and facilitating the archaeological excavation by levelling the rock fall deposit down and nearer to anthropogenic deposits. The large quantity of material removed in this process was landscaped in front of the cave forming a level platform area.

For the most part on the west side the cave the wall sloped at the same angle as that seen above the excavation (Pl 6), it levelled off somewhat in Sondage E (see Section K-L) before dropping into the shallow gully. The east side however was a 'hanging wall' dropping also at the same angle as above the excavation until it reached the base of the east side of Sondage B, where it stepped out slightly into the cave before dropping into the gully there, this was the only part of the east side which was completely excavated, the remainder of the east wall being obscured along section E-F.

Finds See Appendix I for details

The finds are summarised here and the full details are given in Appendix I.

The finds, apart from the bone rich context [003] come from two discrete areas within the excavation; the modern upper context/s [001/002] and the basal Bronze Age context [006]. The modern material (Pl 35) comprises for the most part crockery, glass, tobacco pipe stems and a bowl, and two farthing valued trade tokens. However a single flint primary flake and two slate discs (Pl 36) may represent pre historic and post medieval dislocated finds respectively, the latter being pot lids often found in 17th/18th century contexts on settlement sites (Ward 2015).

The modern material clearly indicates picnickers temporarily occupying the cave from the mid 19th century through to the early 20th century. Certainly wood fires were being lit judging by the charcoal in 001 and objects were being accidentally broken such as tea pots and cups, plates, bowls, and jars (Pl 35).

Of particular interest is the clay pipe bowl (Pl 37) with the illustration of a steam ship and a steam engine on opposite sides of the bowl. The ship appears to be a representation of the famous and local Comet, designed and operated by Henry Bell who is commemorated in the nearby town of Helensburgh. The Comet originally had a double paddle wheel on each side of the vessel but this was soon altered to a single paddle wheel on each side (as is shown on the pipe bowl). The Comet is generally accepted as being the first ocean going steam ship in the world and operated between 1812 to 1820 when its career ended rather ingloriously by being shipwrecked near Oban.

The steam engine appears to be of a type known as a 'Killingworth' and built by George Stephenson in Newcastle around 1812 to work at Killingworth Colliery. It may well represent the first one to operate in Scotland in 1817, when the Duke of Portland used one to pull coal wagons from the mines at Kilmarnock to the harbour in Troon. The engines was nicknamed 'The Duke' but had a short career as it wrecked the railway which was formerly used by horse drawn wagons – the horses soon got

their jobs back! Troon town had a four wheeled 'Killingworth' on its Coat of Arms but this was later replaced by an image of 'The Rocket'.

The pipe may therefore be a commemorative issue to celebrate the two machines.

The two trade tokens (Pl 38) found together are also interesting in their seemingly vastly differing applications. They are described in Seaby's *Coins and Tokens in Scotland* (1972) and listed under 'Later 19th century tokens and advertising tickets', both were valued at a farthing.

The following legends are visible on the tokens:

'John Whyte Hardware Merchant Glasgow', central placed with '50 High St Dundee' above it and '11 Mosley St Newcastle on Tyne' below. The reverse side has the arms of Glasgow illustrated and with legend 'Let Glasgow Flourish' above it.

The other token is fascinating as it was issued by a Glasgow medical doctor. He gives his name and address as Dr Stuart, 39 Maxwell St Glasgow surrounding a medicine bottle labelled 'Panacea'. The reverse shows two frock coated men sitting facing each other and either shaking hands or exchanging something, the surrounding legend is 'Private Medical Establishment' and the date of 1840. Another issue by the same doctor shows a lady and child with the legend 'Midwifery & Nursing' and the date 1841 and apparently there are further similar tokens issued by Dr Stuart.

Nothing can presently be said about the various bones from Context 003 and these await professional examination.

Finds from the largest anthropogenic context in the cave (006) were fortuitous in that they were mostly diagnostic of Bronze Age activity and help considerably with dating the entire context.

The two napkin ring fragments (Fig 14 & Pl 39) may be from a single ring and it will be determined if they have been made from Whitby jet or cannel coal, of which similar rings have been found elsewhere. Napkin rings or more commonly pieces of them are increasingly being found in southern Scotland, and while nearly all examples are found as random finds with no provenance, two complete rings (Pl 40) were found (by the present writer) in a crouched inhumation grave at Camps Reservoir (Pl 41), Crawford, South Lanarkshire (Ward *ibid*), the pair, being the first examples as such in Scottish archaeology and made from cannel coal came from a secure context showing that they were used as garment fasteners positioned under the chin, probably to pull a cloak into position there. Furthermore the broad polished sides were against the body, possibly accounting for the smoothness on that side.

The pieces from Portkil now provide another location on the Clyde for such objects and it may yet be shown that they were in use in association with a funerary process as were the Camps examples.

The pottery was all found within 006 and clearly some sherds are derived from a beaker (Pl 42), and possibly more than one judging by incompatible rim sherds alone. The fine cord decoration suggests AOC pots and this may indicate an Early Bronze Age date. Other sherds have come from thicker walled pots and food vessels may be

the type, certainly the finger nail impressed sherds (Pl 42) may be such a style of pottery.

Carbonised encrustation adhering to the surfaces of some sherds, for example the cord decorated one from a larger pot (PC/P/13) (Pl 43) could provide the most accurate dates for the pottery and perhaps other valuable data as to their use at the site. However, all of the finds from 006 come with secure datable material in the form of charcoal.

The piece of faceted haematite (PC/L/7) (Pl 44) is particularly important and is a rare example of colouring agent in the Bronze Age. Although found on a spoil heap of residue from wet sieving on site, it is positively known from whence it was lying in the excavation. It came from the last samples of 006 in Sondage E and is therefore associated by context with the beaker sherds found there.

Similar pieces of haematite have been found by the writer on both Mesolithic and on Post Medieval sites (e.g. Ward 2013) and it is gratifying to find it now in a Bronze Age context. The use of this material, being a naturally found substance, has therefore been recognised by people in the past as a colouring agent for millennia. Lumps of similar haematite were found in the rock fall conglomerate layers and as occasional pebbles throughout the dig, but none of those showed any indication of having been used. The example which was used was natural to the cave area and must have been recognised for its colouring properties by the Bronze Age people.

Only a single piece of white quartz (PC/L/6) (Pl 45) was identified as a possible lithic tool. Although there were numerous split quartz pebbles and also flakes, these are all considered to be naturally occurring and as a result of rock fall damage. It is possible that the adoption of such a flake and used as a tool was the case for PC/L/6; which awaits specialist examination.

The bone found in the various strata but especially in 006 (e.g. Pl 46 [PC/B/13] & Pl 47 [Sample 2]) will be subject to expert analyses at some point when funds are acquired. The bone, whether human or other animal, will be equally informative as to the various activities which took place within the cave in the Bronze Age.

Samples see Appendix II for details

The soil samples are summarised here and the full details are given in Appendix II.

Pollen samples were not attempted in view of the fact that tree rootlets permeated the entire deposits within the cave, this included the basal natural layer of beach gravel, and furthermore occasional earthworms were encountered at depths of over 1.5m, presumably following root systems.

Samples have been taken from every context in the excavation and retained without further processing, however most contexts have also been subject to wet sieving and retrieval of environmental material; principally charcoal, but also wood, seeds and bone.

Routine examination by microscopic means has already identified hazel nut shell fragments and numerous types of plant seeds, both carbonised and unburned, and tiny

bones which appear to be burnt. Eventually it is hoped that funds will be raised to have this material professionally analysed and some samples prepared for C¹⁴ dating, however, in the interim, selected samples will be subject to such scrutiny and these are the ones that contain plant seeds and the tiny bone samples.

The small sample of sea shell from a lower context should similarly prove of some interest.

The environmental data which will be gleaned from the eventual outcome of analyses of Portkil Cave samples should add a considerable interest to the project and to Scottish studies of the Bronze Age in general.

Other Excavation. Trial Pit. PI 48

A pit was opened by machine in front of the cave (NS24824 80480) and at the old beach level to establish the nature of the stratigraphy there. A soil profile of 0.2m lay over clean buff coloured beach gravels of 0.3m in depth, and apparently lying on conglomerate from the sea cliff, the base consisted of solid sandstone which is known to extend as a shelf all the way to the present shoreline, as it was seen in a track way drain recently cut from the Fort Road to the cliffs for access to the area. Coincidentally in the pit an old field drain was discovered to run E/W across the front of the cave, it is made of short lengths of c3" clay pipes and is provisionally dated to c 100 years ago, and possibly associated with the first military activities in the area prior to WWI.

Discussion/conclusion

The aims and objectives of the excavation in Trench No 1 have been met with satisfaction on the part of the Society. The basal deposits were reached within the cave while leaving substantial quantities of all contexts intact. The project has been an excellent training opportunity for the members of the fledgling Society who participated, and whose names are given below. The Society also organised an Open Day at the site for local and other people and which was a resounding success, and the opportunity to expand the project is already under-way, possibly with the inclusion of creating heritage trails.

However, the archaeological results have proved exceedingly successful with new data of local and national archaeology being secured, and the promise of much more to come as a consequence of post excavation work on the findings.

NCAS, as part of their fieldwork programme, originally planned to engage in some form of marine archaeology along the north Clyde coastline. However after initial investigation, possibilities appeared extremely limited on the various mud flats and beaches in the area, but it was realised that sea cliff caves and rock overhangs in the district could prove rewarding places to explore, since apart from an excavation in one cave at Ardmore Point (Coles 1958) nothing else like this had been attempted in the area.

Sea caves elsewhere have proved important locations for archaeological research in the past and the various coastal areas of Scotland; both the mainland and on the west coast islands have produced significant findings covering many periods of the past from the Late Upper Palaeolithic and Mesolithic to later historical times.

It was anticipated that perhaps Mesolithic activity may have been detected; however the team are delighted to have discovered a Bronze Age presence in Cave No 1.

The discoveries in Portkil caves now add significantly to that special part of Scotland's buried heritage; sea cave deposits.

The discovery of modern objects within a prominent cave is hardly surprising, as the Clyde coast was adopted as a tourist haunt as soon as steam ships and later steam trains began to ply their trade bringing day trippers and holiday makers from Glasgow. It appears that some genteel tea parties were held inside the cave with unfortunate breakages for the picnickers.

It is not certain whether Cave No 1 is the locally known place called 'Effie's Cave' and which features in Walter Scott's novel *Heart of Midlothian* (Maidment 2014), certainly no modern evidence earlier than the mid 19th century was found and which would have fitted the period of the story, but Cave No 1 appears to be the only cavern of the group which is prominent enough to be considered.

The next deposits below the modern stratum are problematic in terms of date since no objects other than a collection of well preserved animal bones were found. Charcoal was also evident and while it has been sampled in the present work it is unlikely to be pursued since its age is not understood. However, these deposits above the prominent rock fall could still be any period between pre historic and the modern layer at the top of the sequence.

The main rock fall event was certainly dramatic and at least on one occasion occurred as a major cave in, the debris from which is assumed to cover the entire area within and to some extent without the cave, this may have been triggered by earth quake.

Clearly, and because of the diagnostic finds of pottery and napkin ring fragments, the rock fall landed directly on to a Bronze Age strata of charcoal enriched ground which also contained much other debris from the cave walls. Variations in the density of charcoal in this deposit inter leafed with lenses of soil and clay showing that the overall deposition had taken place over a presently unknown period of time, allowing more gentle rock fall to cascade down and to inter mix with the product of continuously burning wood, the actual fireplaces of which were not found. However the location and levels of the beaker sherds tend to suggest a relatively short time span for the deposition of 006.

The napkin ring/s are evidently dress accoutrement as was demonstrated in the only pair ever having been found as grave goods in an archaeological context at Camps Reservoir in Upper Clydesdale; in an Early Bronze Age (EBA) inhumation grave (Ward, *ibid*). Fragments of napkin rings are being increasingly found in southern Scotland and many examples including the Camps pair have been found by the Biggar Archaeology Group around the upper end of the River Clyde, the examples from Portkil provide an important new location for such items especially on the Clyde. The ring/s pieces could have merely been discarded after being broken at the site and therefore may imply no special significance for their presence there, however it is

interesting to note that their proximity may also be in association with a funerary process.

The piece of worked haematite, often referred to as 'ochre', similarly connects with Upper Clydesdale as a find type, however, the previous discoveries further up the Clyde have been associated with the Mesolithic and Post Medieval periods (Ward 2013, *ibid*), it is therefore gratifying to discover its use as a colouring agent in the Bronze Age at Portkil. However and for whatever the piece was used, the striae on the facets show it was being rubbed on stone. It is now known that haematite, being a naturally occurring substance, has been used for over six millennia in southern Scotland.

The other finds from the Bronze Age context at Portkil other than bone and teeth, have been various pot sherds, some of which appear to be from at least one AOC beaker and are therefore also likely to date to the EBA. Most beaker pottery is associated with funereal practice and here is a second strand of evidence of EBA at Portkil, and also possibly associated with funerary activity. All of the sherds will have to await expert analyses as to their exact typology but the finger nail impressed sherds could be from food vessels and taken with beakers could indicate mortuary pottery.

Similarly the unburned bone and animal teeth await expert scrutiny as do the fragments of burnt bone from various parts of the dig. The burnt bone should be diagnostic as to species and perhaps even pathology and if some turn out to be human, then the inclination will be to imply cremation as at least one activity within the cave, and which would account for the various charcoal lenses within the main deposit having seemingly built up over a presently unknown period. It was rather a pity that given the excellent preservation of bone, a larger assemblage was not recovered.

Despite the plethora of charcoal only very occasional small burnt stones were seen and no evidence of a hearth either formal or informal was found, it seems safe to conclude that such a feature did not exist within the areas of the present excavation sondage. Nevertheless the charcoal which was evident, had to be burned in the vicinity of the finds which were associated with it.

The analyses of the various charcoal samples, seeds, unburned material and bone, and C¹⁴ dating of some of it will be paramount to better understanding the Bronze Age activity at the site and of course give valuable evidence of the environment of the time.

Not a single piece of flint was found apart from the flake in the upper modern context and only a single piece of quartz flake appears to have possibly been utilized as a cutting tool. The absence of lithic tools and domestic type pottery appear to preclude domestic activity at the cave, also the absence of sea shell for example suggests food consumption within the cave in context 006 was not a major event, however, some of the burnt and unburned bone may indicate that meals were being taken; the large teeth which were found may support that theory. The provisional hypothesis for the Bronze Age activity is that it was of a funerary nature.

The Bronze Age people appear to have occupied the cave as the first humans to use it and leave any mark of their presence, their activity deposits accrued over a layer of

naturally deposited beach stones and gravel lying in the gully on the east side of the cave, and eventually some of the charcoal and the napkin ring pieces and a sherd of pottery were deposited against the higher west side of the cave, and all in a continuous but presently unknown period of time. C¹⁴ dates could clarify that matter.

Regarding other Bronze Age evidence in the area, two nearby sites to the east probably fit the bill; “several cists were found in a field near Portkil about 1815” were reported in the New Statistical Account viii, Dumbarton and are given as NS 253 804, and “An urn, now lost, was found in 1853” was recorded in the Name Book for Dumbarton and is given as NS 263 806. In the opposite direction at Knockderry, Cove, “Human bones were found in a field” and also given in the Name Book for Dumbarton at NS 216 834.

The latest but more conclusive evidence for the Bronze Age on Rosneath Peninsula given in this report is gratifying, and perhaps revisiting the sites referenced above would pay further dividends in the search for the ancient past in this part of Scotland.

The cave at some point before human activity had been washed clear of any deposits leaving only the bare cave walls and solid floor. Wave action had then deposited a layer of flat beach pebbles and beach gravel into the lower east side of the cavity. No such material presently lies in front of the cave on the rock shelf which forms the raised beach, and it is this fact that leads to speculation that the cave may have been formed prior to the last Ice Age and also that the beach deposit within the cave may also pre date the last high water level of the present raised beach. Speculation is also raised that the high water line which fell from its highest post glacial level around 6500 years ago, may not have endured long enough to cut the cliffs or the caves on the north Clyde coastline (Paterson, *ibid*).

However at nearby Cove just along the coast there are identical active beach deposits of flat pebbles and gravel. The matter is a geological conundrum which does not affect the archaeological story of Portkil Cave No 1.

Finally, part of the original project brief was to landscape the cliff area of the cave, in keeping with the site owners plans for the location, thus creating a place of archaeological and geological interest and possibly a heritage trail to that end, this work is under consideration.

Acknowledgements

Firstly the project could not have been achieved without the permission of the site owner Mr Paul Wilson who furthermore machine stripped the frontal areas of the cave site, clearing shrubbery and landscaping the various locations. The Society is gratefully indebted to Mr Wilson. Also Graham Barr of the Boatyard at Kilcreggan assisted by providing wood for various purposes at the site.

The work was carried out as part of the field work programme and as a training project by the following members and friends of the North Clyde Archaeological Society, mostly at weekends: the core team were Carole Biggam, Anne Evans, Alasdair Jamieson, Sandra Kelly, Nick Maidment, Katherine Price and Tam Ward, with occasional assistance by Jacquie Dryden, Alistair McIntyre, Moira Murning, Norman Rogers, Suzanne Wardle, Irene Wotherspoon.

Site plans were by Nick Maidment and finalised by T Ward.

Tam Ward planned, recorded and directed the work and processed finds and samples.

The napkin ring is being analysed at the National Museum of Scotland and the Society is indebted to Dr Alison Sheridan, Principal Curator of Pre-History, for this work.

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Appendix I Finds

Portkil Cave No 1 Finds Catalogue (includes wood, bone and teeth).

The descriptions given here in this preliminary catalogue should be read as 'non specialist' and may alter in the course of expert analyses.

Pre fixed PC = Portkil Cave

Categories

PC/P = pottery

PC/L= lithic

PC/S = sea shell

PC/M = metal

PC/B= bone

PC/W= wood

PC/Misc= miscellaneous

Finds from Trench No 1, inside cave overhang.

Pottery

PC/P 1 Pl 35

Cup, incomplete. Blue transfer flower and garland design on external and internal sides with cottage image on internal base. 70mm rin diam' and 36mm foot diam'.

PC/P 2 PI 35

Bowl, part of. White with grey transfer leaf design round outer rim. Rim diam' 160mm, foot diam' 80mm.

PC/P 3 PI 35

Bowl, part of. White with blue, orange and brown ring decoration on external side. Rim diam' 160mm, foot diam' 68mm.

PC/P 4 PI 35

Bowl rim sherd 180mm diam'. White with blue and brown external line decoration similar to PC/B/3.

PC/P 5 PI 35

Bowl/tea pot? sherds. Black glaze internal and external sides overall. Rim diam' 180mm, foot diam' 100mm. Lines of pellets decoration with foliage band, parts of two handles and lid.

PC/P 6

Spirit Jar sherds. Brown glazed jar, possibly 2 gallon size. Base diam' 115mm.

PC/P 7

Tea pot lid. Red earthenware with brown glaze overall. 70mm diam'

PC/P 8 PI 23

Tea pot lid. White fabric with brown glaze overall and foliage design on outer surface. 88mm diam'. [*Note; this item along with a brown sherd of similar type and a brass screw nail were found in 008 lying immediately on 014 clay layer*]

PC/P 9 PI 25

Assorted sherds of cups, bowls, plates and dishes; plain white and also with decoration including 'blue and white'.

PC/P 10

Doll head fragment. Part of a ceramic dolls head of German manufacture. C1900.

PC/P 11

Assorted clay pipe stems of differing sizes. 19 – 20century.

PC/P 12 PI 37

Tobacco clay pipe bowl. Slightly oval shaped bowl, rim size 20-22mm, height 38mm including heel. 19th century.

A tobacco clay pipe bowl with an image of a steam engine on one side and a single wheeled paddle steamer on the other was found on the south side of the cave in the 'modern' upper context (001). The pipe bowl appears to have been a commemorative one celebrating steam transport in the early part of the 19th century.

The engine appears as a type designed by Robert Stephenson in 1812 for the Killingworth Colliery and sometimes known as a 'Killingworth'. The Duke of Portland in 1817/1818 used one of these engines on his Kilmarnock – Troon railway

to pull coal to the coast, it was called 'The Duke' and was the first use of a steam engine in Scotland. However it broke the cast iron rails and was soon replaced by the horses it itself had replaced! Troon town had a four wheeled 'Killingworth' on its Coat of Arms but this was later replaced by an image of 'The Rocket'. A series of these engines were made and given astronomy names, a replica of one; the 'North Star' is in Swindon museum.

The paddle steamer is probably The Comet, built and operated by Henry Bell from Helensburgh and the first steam ship to operate on the open sea. Converted from a double paddle on each side to a single one, this image is presumed to represent that stage in the ships history. The ship began its career in 1812 co-incidentally the same year as Stephenson's engine was made. The pipe bowl may be a commemorative one to celebrate the first steam train and sea going ship to operate in Scotland.

Follows pre historic pottery sherds

Unless otherwise stated the sherds were recovered from on and off site wet sieving of soil and all came from Context 006/Sondage E apart from PC/P/1 and PC/P/47 but which also came from 006.

PC/P 13 Pl 43. West side of cave in 006 charcoal and at c4.0B/0.5W/ c2D.
Body sherd 80x60x12mm thick. Buff coloured exterior and sooty interior with carbonised encrustation adhering all over. 50% of body thickness black on inside grading to exterior buff colour. A single band of string decoration but with a doubled imprint runs along exterior side which also may have been burnished or finger polished below (?) the string line. Angular inclusions >8mm in the body.

PC/P 14 Pl 42. Beaker rims x 3of conjoining, found in Sondage E, one from S34. Body thickness 8mm, rounded rim 7mm thick. Finger fluting (two of) below exterior rim with raised cordon between, orange fabric with white quartz inclusions. Rim diameter = 110-120mm.

PC/P 15 Beaker rim, same pot as above and also from Sondage E.

PC/P 16 Pl 42. Beaker rim, same pot as above and also from Sondage E.

PC/P 17 Pl 42. Beaker rim, same pot as above and also from Sondage E.

PC/P 18 Pl 42. Beaker body sherds x 3of conjoining. C7mm thick, buff colour, 70x55mm overall, possibly from same pot as above rims, also from Sondage E.

PC/P 19 Beaker body, c7mm thick, buff colour, 40x30mm, possibly from same pot as above rims, also from Sondage E.

PC/P 20 Beaker body, c7mm thick, buff colour, 40x30mm, 43x30mm, possibly from same pot as above rims, also from Sondage E.

PC/P 21 Beaker body, c7mm thick, buff colour, possibly from same pot as above rims, also from Sondage E.

PC/P 22 Beaker body sherd, c7mm thick, buff colour, appears to have burnished surface? possibly from same pot as above rims, also from Sondage E.

PC/P 23 Beaker fragment, ditto above.

PC/P 24 Beaker base fragment, 20x26mm.

PC/P 25 Beaker neck fragment, 25x20mm, same pot as sherd No's 14 – 17. Found at c7.0B/1.0W/2.3D

PC/P 26 PL 42. Beaker rim/shoulder sherds? x 2 of, 7mm thick, > zones of string decoration, 30x40mm, [different pot from others?] Found at c7.0B/1.0W/2.3D

PC/P 27 Beaker rim sherd, 20x20mm, round top everted, may be the same as No's 14-17 above. Found at c7.0B/1.0W/2.3D

PC/P 28 Pl 42. Sherd, 25x35mmx10mm thick, buff/orange coloured exterior, black interior, slight encrustation, four finger nail impression marks, same as No 29. Found at c7.0B/1.0W/2.3D

PC/P 29 Pl 42. Sherd, 25x35x10mm thick, buff/orange coloured exterior, black interior, slight encrustation, two finger nail impression marks, same as No 28, but with quartz inclusion showing. Found at c7.0B/1.0W/2.3D

PC/P 30 Sherd, 25x35x12mm thick, similar in appearance to No's 28&29 but plain and slightly thicker = same pot? Found at c7.0B/1.0W/2.3D

PC/P/31 Sherds/fragments, 6 of, different pots. Found at c7.0B/1.0W/2.3D

PC/P/32 Sherd 35x53x15mm thick, pale orange coloured exterior, black body and buff interior side, quartz inclusions throughout. Found at c7.0B/1.0W/2.3D

PC/P/33 Sherd 25x30x14mm thick, black coloured overall with encrustation on interior side, quartz inclusions throughout. Found at c7.0B/1.0W/2.3D

Note: No's 32 & 33 are from different pots and not parts of the beaker sherds found beside them.

PC/P/34 Sherd 25x30x11mm thick, Buff coloured exterior, black encrustation on interior side, black fabric, with quartz inclusions showing. Found in Sample 32.

PC/P/35 Sherd 35x50x16mm thick, same as No 34 above = same pot? Found in Sample 34.

PC/P/36 Sherd 25x30x10mm thick, black one side and buff coloured other, abundance of quartz inclusions, bevelled surface may indicate a rim? Found in sample 25/4.

PC/P/37 Sherd 25x35x10mm thick, much abraded with iron staining, Found at 6.0B/0.0/2.5D.

PC/P/38 Pl 42. Sherd, rim, 25x35x9-11mm thick, round topped everted, with raised cordon below, similar to No's 14 – 17 but not the same pot. Iron stained surfaces but with few large inclusions. [Second beaker rim type?]

PC/P/39 Pl 42. Beaker sherd 30x45x8mm thick, AOC? Six lines of cord decoration on buff/orange exterior, inclusion pit 4mm but otherwise none showing. Found c7.0B/1.0W/2.3D.

PC/P/40 Pl 42. Beaker sherd (abraded) 25x30x7mm thick, AOC? Five lines of cord decoration on buff/orange exterior. Found c7.0B/1.0W/2.3D.

PC/P/41 Beaker sherd 20x26x8mm thick, AOC? two lines of cord decoration on buff/orange curved exterior. Found c7.0B/1.0W/2.3D.

PC/P/42 Beaker sherd 20x30x8mm thick, plus fragment, orange coloured exterior, black encrustation on interior, abraded. Found c7.0B/1.0W/2.3D.

PC/P/43 Rim sherd x 4 parts, 15x30x8mm thick, round topped, possibly everted and same as No's 14 – 17 above. Buff colour. Found c7.0B/1.0W/2.3D.

PC/P/44 Pl 42. Beaker base sherd, 30x35x7mm body thickness, orange/buff exterior and black interior, AOC?, > 7 cord impression starting from base. Base diameter = 80mm. Found in Sample 43.

PC/P/45 Pl 42. Beaker sherd, 30x31x7mm body thickness, orange/buff exterior and similar interior, AOC? > 7 cord impression starting from base. Found in Sample 44.

PC/P/46 Beaker? Sherd, 20x25x8mm thick, orange exterior and black interior.

PC/P/47 Pl 42. Beaker sherd AOC? 20x30x6mm thick, buff coloured with > 8 lines of cord decoration. Found at c 4.25B/1.25E/ 2.2D.

Note: this is the only BA sherd not found in Sondage E or D.

Lithic

PC/L 1 **Coal/jet? Napkin ring** Fig 14 & Pl 39

Fragment of a napkin ring found in sample No 4 from Context 006, at circa 4.0B/00/c2D, on the west side of cave. The jet/cannel ring has been 70mm and 43mm in external diameter of the upper and lower flanges. The height is 20mm and the hour glass perforation was 25mm at its centre. The broader flange has a well finished concave side and has an upper zone of 11mm of fine polished surface while its underside is not finished to the same quality, having only random striae indicating shaping rather than polish. The narrower flange flat surface varies between 5 and 3mm with cross striae on it. The central perforation below the smoothed flange shows uniform curving striae perhaps indicating turning on a lathe during manufacture, while the external striae on the ring is more angular, especially below the broad flange. The breaks are very fresh indicating it has not moved much from its find position.

PC/L 2 **Coal/jet? Napkin ring** Fig 14 & Pl 39

Second fragment of the same ring? Similar fresh breaks. Also from Context 006, at circa 4.5B/00/c2D. This fragment concurs in both dimensions and description to PC/L/1 above and it is likely that the two pieces are from the same object.

PC/L 3 Pl 36. Slate disc, c45 diameter x >5mm thick. Found in 001 at east side of cave.

PC/L 4 Pl 36. Slate disc, c70 diameter x > 10mm thick. Found at 6.0B/1.2E/1.4D in Context 008.

PC/L 5 Flint primary flake with cortex, From 3.8B/2.5E/1.3D in Context 007.

PC/L 6 Pl 45. Quartz flake 20x32x>4mm thick. With possible edge wear and serration.

PC/L/7 Pl 44. Haematite, 22 by 12 by 6mm thick. The piece has a semi polished broad side with fine striae and on the other side it is similarly marked but less so. Three facets of the edges have distinct striae showing use by rubbing. The piece has been used as a crayon or marker by holding the broad sides between fingers, hence the polished surfaces, alternatively the facets been ground to obtain a powder to be used as a colouring agent.

The item was found during routine examination of spoil heaps but it definitely came from Context 006 and as a result of on site wet sieving, furthermore the object must have come from Sondage E as it is known that the residue it was found in came from that area.

PC/L/7 Random selection of 14 quartz flakes and chips, probably natural and non anthropogenic, plus flat pebble of schist.

Metal

Two small Glasgow copper tokens were found sandwiched together on the south side of the cave in the 'modern' upper context (001). They are both of farthing size and although much corroded are legible.

PC/M 1 Pl 38. Issue of John Whyte, hardware, Dundee, Newcastle on Tyne and Glasgow. With arms of Glasgow and legend LET GLASGOW FLOURISH on the reverse. It dates to circa 1820 and several issue types were produced for Whyte, perhaps for the different establishments?

PC/M 2 Pl 38. Issue of a 'Dr Stuart of 39 Maxwell St, Glasgow' and which is given on one side with a central image of a hexagonal shaped long bottle with PANACEA on it, the reverse is a charming image of two men sitting facing each other (perhaps the Dr consulting?) and the surrounding legend of PRIVATE MEDICAL ESTABLISHMENT. It is dated 1840. [Another issue by Dr Stuart in 1841 shows a woman breast feeding a child, instead of the bottle].

Such tokens were used as privately produced small denomination coinage in the absence of official money which was not made, due to its value being less than the metal and also because copper coins were being converted to armaments by the State.

Such tokens were issued by larger businesses for paying wages to be redeemed in the company shop and also in workhouses among other places, why a doctor used them is unclear.

Sea Shell

Only two samples of sea shell were recovered and from two Contexts; 001 and 015.

PC/S/1 Cockles and limpets from uppermost surface in the cave = Context 001. [One small jaw bone included].

PC/S/2 Limpets and other tiny shells from basal Context 015 on east side of cave. *Very Fragile crushed shells.*

Bone/teeth

PC/B 1 Quantity of mixed species bone recovered from Context 002A along section C-D.

PC/B 2 Quantity of mixed species bone recovered from Context 002A along section A-B.

PC/B 3 Three teeth, one bone and two bark? From Context 008.

PC/B 4 One rib with saw cut and other smaller bone. From Context 008.

PC/B 5 Tooth enamel. From Context 009.

PC/B 6 Three fragments bone .From Context 019 west side of cave.

PC/B 7 Tooth and bone. From Context 006, 3.8B/0.0/1.2D.

PC/B 8 Two teeth, burnt bone and ten bone unburned. From 006 circa 5.5B/0.0/1.8D.

PC/B 9 Tooth, three unburned bone and three burnt bone. From 006 4.0B/1.4E/2.0D.

PC/B 10 Two teeth, three burnt and three unburned bone. From 006 circa 5.0B/0.0/1.5D.

PC/B 11 Teeth and bone fragments. From 006 7.0B/1.0W/2.3D.

PC/B 12 Six small unburned bone. From 006 interface with 014 at section C-D.

PC/B 13 Quantity 27 grammes of burnt bone. From interface with 006 and 014 at section C-D. [See also No 20}

PC/B 14 Tooth fragment. From Context 006 in Sondage E.

- PC/B 15 Bone fragment. From Context 006 in Sondage E.
- PC/B 16 Burnt bone. From Context 006 in Sondage E.
- PC/B 17 Tiny bone, seed, nut shell. Hand picked from sample 12, Context 006.
- PC/B 18 Three unburned bone. From Sample 13 Context 006.
- PC/B 19 Three teeth and fragments. From Sample 13 Context 006.
- PC/B 20 Burnt bone circa 7 grammes. From Sample 19 Context 014. [See also No 13].
- PC/B 21 Bone two of. From Sample 21 Context 015.
- PC/B 22 Tooth enamel. Sample 21 Context 015
- PC/B 23 Burnt bone. Sample 21 Context 015
- PC/B/24 Burnt bone 69 grammes. From Sample 24 Context 016.
- PC/B/25 Tiny bone. From Sample 18 Context 006.
- PC/B/26 Burnt bone. From sample 22/3 Context 006.
- PC/B/27 Jaw bone fragment. From Sample 25/1 Context 006.
- PC/B/28 Large tooth. From Sample 25/2 Context 006.
- PC/B/29 Bone. From Sample 25/3 Context 006
- PC/B/30 Burnt bone. From Sample 25/3 Context 006
- PC/B/31 Burnt & unburned bone. From Sample 25/4 Context 006.
- PC/B/32 Burnt bone 3.5 grammes. From Sample 26 Context 006.
- PC/B/33 Burnt bone 8 grammes. From Sample 26 Context 006.
- PC/B/34 Bone 3of. From Sample 26/1 Context 006.
- PC/B/35 Bone 2of. From Sample 27/2 Context 006.
- PC/B/36 Burnt bone 7.5 grammes. From Sample 27/1 Context 006.
- PC/B/37 Bone, 3of. From Sample 28 Context 006.
- PC/B/38 Burnt bone. From Sample 42 Context 006.

PC/B/39 DELETED

PC/B/40 Bone fragments from Sample 3 Context 006

PC/B/41 Microscopic bone from Sample 35 Context 006.

Wood

PC/W 1 Quantity, 33grammes of semi and unburnt wood from Sample 7, Context 010 'lower' at 1.5D.

PC/W 2 Quantity, 16 grammes of semi and unburnt wood plus seed from Sample 8, Context 010 'lowest' level.

PC/W 3 Quantity, 105 grammes of unburnt wood plus hazel nut shell from Sample 13, Context 006.

PC/W 4 Possibly two pieces of semi burnt wood; *may be bone or antler*. From Context 018 beach gravel in front of section C-D, may be residual from 006 context above?

PC/W/5 Wood, charcoal, hazel nut shell and seed from Sample No 6 Context 010 'upper'.

PC/W/6 Twig and seed from Sample No 15 Context 010

PC/W/7 Twig, hazel nut shell, seed from sample No 17 Context 010.

PC/W/8 Twig and other from sample No 16 Context 010.

Miscellaneous [all modern]

PC/Misc 1 Pl 35
Glass beer bottle, circa 1900, complete.

PC/Misc 2 Pl 35
Black glass beer bottle shreds and internal stopper from Barr Glasgow and Reid Helensburgh bottles.

PC/Misc 3 Pl 35
Wooden pulley block and shackle, 20century.

PC/Misc 4
Iron nail, 260mm long with square section shaft 15mm and square head.

PC/Misc 5
Copper alloy nails 6of, square shaft/round heads, 40mm – 60mm long.

PC/Misc/6
Copper alloy wick burner from a paraffin lamp

PC/Misc/7

Small two holed copper alloy button with 'Joseph Gray Dalkieth' found in upper layer 001. Joseph Gray is given Carment's Directory for Dalkieth and District, 1887 and he is described as a clothier, hatter and draper of 97 High Street Dalkieth.

Appendix II Soil samples

All samples were measured in litres and apart from Section Samples, were wet sieved for flotation of charcoal and other material, flots were collected in 2mm and 0.5mm sieves, after which extraneous material such as rootlet were removed by hand as much as was possible, stone/silt residues were inspected and discarded after inspection for finds. All final samples were dried at room temperature and weighed in grammes apart from 0.5mm flots which were not weighed since they include grit. In some cases sub samples of > c 0.5 litre were taken and dried for future reference (see table).

An additional series of sub samples of 0.5 litres each were taken from specific contexts at specific points in sections and to be available for future reference, these have been dried with no further processing. They are listed below as SeS (Section Sample).

Some samples have been arbitrarily scanned using a binocular microscope, and different types of carbonised seed and minute bone fragments have been noted, where seen these have been separated, bagged and recorded below. The entire assemblage should be similarly inspected for more comprehensive analyses; the present work merely stands as a pointer to what may be available from the assemblage.

Soil samples Number	Volume	Trench No 1 Context	Charcoal/ /other Above 2mm In grammes	0.5mm	Sub Sample
S1	5litre	008	91g	N/A	no
Light coloured clayey soil with charcoal fragments throughout Same as S9, & S14 Contained coal					
S2	14 litre	006	15g	N/A	no
Dark layer with charcoal evident throughout in mostly rock fall sand & gravel, charcoal flot contains tiny rodent? bones. The bones appear to be very discrete within this sample which is the same as S4, S4/1, S12, S13 and S18 below. Sample taken from 3.6B/0.3E					
S3	7litre	009	16g	N/A	no
From a discrete charcoal patch lying on rock fall, contains a few small bone fragments (3 grammes). S3 taken from sondage 'C', 1.5D through the main deposit. [Same as S5]. Contained unburned bone (3 grammes).					
S4	14litre	006	10g	N/A	no

Thought to be the same context as S2 (006) but no trace of the tiny bone was present, however a good fragment of a jet/cannal napkin ring was in the sample.
Sample taken from 4.0B/0.2E/1.4D

S4/1 14 006 12g N/A no

Same as S2, S4 and S13.

Sample taken from 4.5B/0.0/1.4D

S5 14litre 009 39g N/A no

Remainder of 009 [Same as S3]

S6 14litre 010 upper 26g N/A no

Contains wood, charcoal, hazel nut shell and seeds

Taken at c 5-6m baseline as first arbitrary spit.

[Same as S7 & 8]

Contained seed.

S7 14litre 010 middle 33g N/A no

Taken at c 5-6m baseline as second arbitrary spit

Contains wood, semi burnt wood and charcoal

[Same as S6 & 8]

S8 14litre 010 lower 16g N/A no

Taken at c 5-6m baseline as third arbitrary spit

[Same as S6 & 7]

Contains wood, semi burnt wood and seed.

S9 1 litre 008 48g N/A no

Large pieces [But same as S1 & S14 in 008/011]

S10 2 litre 011 Clay only, full sample retained.

Lump of cream coloured soft course grained clay.

Location 5.8B/1.8W and at 1.3m D

S11 12 litre 012 43g N/A no

Charcoal in fine soil

S12 28 litre 006 80g N/A yes

Charcoal enriched gravelly soil from sondage 'C' in front of section C-D west side at 3.6B/0.4E, 2 to 2.2 m D. [Same as S18] contained twig round wood, Hazel nut shell, seed, tiny rodent(?) bone and burnt bone. The tiny bone is probably residual from S2 area (see S2 above) and the burnt bone is residual from clay 014 area, (see S19 below).

S13 48 006 81g N/A no

From the west side of the cave in sondage [A] at 5-6m on base and also against west cave wall and at 1.4m D. Included quantity of unburnt wood including silver birch twig (105 grammes), unburned bone (3of) and teeth fragments (horse + bovine?) and a single unburned hazel nut shell.

S14	0.5	008/011	60g	N/A	no
On top of clay (011), possibly a branch/plank, semi burnt wood, same as S1 & S9					
S15	14	010 one above S17	2g	N/A	no
Taken at 6-7m on baseline and 0.6mE Two seeds and twig					
S16	14	010 basal	5g	N/A	yes
Twig and semi burnt wood					
S17	14	010 above basal	6g	N/A	yes
Hazel nut shell, twig and semi burnt wood					
S18	28	006	50g	N/A	no
Charcoal enriched gravelly soil from sondage 'D' in front of section C-D west side. Taken at 3.8B/0.4E, 2 to 2.2 m D. [Same as S12] also very small amount of tiny bone.					
S19	6	014	<1g	N/A	yes
Cream coloured clay bulk sampled from 014 context includes burnt bone. Location 3.7B/0.3W and 1.2-1.3m D.					
S20	1	001	N/A	N/A	no
Selection of sea shell and bone taken along baseline in section A-B. Modern layer. Location 1m -3mB/0.0 and 0.4m D.					
S21	0.5	015	N/A	N/A	no
Selection of sea shell and fragments lying mostly crushed against cave wall on west side at the base of 015. Location 3.5B/0.5W and 2.1m D.					
S22/1	upper 14	006	35g	/A	yes
S22/2	middle 14	006	35g	/A	yes
S22/3	lower 14	006	30g	/A	yes
Three samples taken at 4B/1.5E on east side of cave, No22/1 at 2mD, No 22/1 at 2.1m D, No 22/3 at 2.2m D.					
S23	3		N/A	N/A	entire sample
Red coloured fine clay 017 lying against the east wall of the cave and abutting the wall and also 006 charcoal which it also lies above. Not wet sieved. Location 2.3B/2.6E and 1.7-2.0m D.					
S24	12	016	2g	N/A	yes
Cream coloured clay with burnt bone from 016, same as 014 on west side of cave but not directly connected as this deposit is level, lying below 006 charcoal. Location 4.5B/1.7E and 2.2m D.					
S25/1	upper 14	006	38g	NA	yes
S25/2	lower 14	006	31g	N/A	yes
S25/3	lower 14	006	79g	N/A	yes
S25/4	basal 14	006	49g	N/A	yes

Samples from east side of cave in front of section C-D, Location 4.0B/1.5E, taken in arbitrary spits: No 25/1 at 2.1m D, No 25/2 at 2.2m D, No 25/3 at 2.3m D and No 25/4 at 2.4m D.

Sample 25/4 contained Sherd PC/P/36

S26	14	006	50g	N/A	yes
Contained hazel nut shell fragment and seed.					
S26/1	14	006	20g	N/A	no
Location 7.0B/1.0E and 2.1m D and lying intermixed with red clay [017?] and rock fall.					
S26/2	36	006	60g	N/A	no
Location, below S26/1 (1 square metre) at 2.2m – 2.4m D. Contained hazel nut shell fragment and seed.					
S27/1	14	006	33g	N/A	yes
Contained hazel nut shell fragment.					
S27/2	14	006	20g	N/A	yes
006 west side of cave. Location c6.0B/0.0 and 27/1 = 2.3m D and 27/2 = 2.4m D					
S27/3	25	006	70g	N/A	no
Below S27/2 same general area circa 2.5m D.					
S28	25	006	36g	N/A	no
Charcoal enriched layer lying immediately above 018 cobbles. Location 5.0B/1.2E and 2.3m D.					
S29	12	006	23g	N/A	no
Location 6.0B/0.25E/2.4D.					
S30	12	006	32g	N/A	no
Location 6.75B/0.5W/2.3D.					
S31	12	006	18g	N/A	no
Location 6.5B/0.25E/2.3D.					
S32	12	006	21g	N/A	no
Location 6.5B/1.25E/2.25D. Contained small sherd. [PC/P/34]					
S33	12	006	15g	N/A	no
Location 7.4B/0.4E/2.3D.					
S34	12	006	10g	N/A	no
Location 7.3B/1.5E/2.25D. Contained pot sherd. [PC/P/14 & 35]					
S35	28	006	110g	N/A	no
Location 6.0B/0.25E/2.4D Both the 0.5mm and 2mm flots were rapid scanned by microscope and several seeds of at least four species were picked out, also tiny microscopic burnt bone was recovered, with the exception of three pieces the bone all came from the 0.5mm flot					

and one larger piece (to the untrained eye) appears to be a fish vertebrae. Most of the seed came from the 0.5mm flot.

S36 14 006 77g N/A no
Location 6.5B/0.25E/2.4D

S37 14 006 22g N/A no
Location 7.0B/0.25E/2.4D
Contained hazel nut shell fragment

S38 14 006 35g N/A no
Location 6.5B/0.75E/2.5D
Contained seed and micro bone

S39 14 006 85g N/A no
Location 6.5B/1.25E/2.5D
Contained seed and nut shell

S40 14 006 50g N/A no
Location 7.25B/0.75E/2.5D
Contained seed.

S41 14 006 55g N/A no
Location 7.25B/1.25E/2.5D
Contained seed.

S42 14 006 53g N/A no
Location 6.5B/0.75E/2.6D
Contained seed and burnt bone

S43 14 006 57g N/A no
Location 6.5B/1.25E/2.5D
Contained seed and two beaker sherds; a rim and a base sherd (PC/P/44)

S44 14 006 66g N/A no
Location 7.25B/1.25E/2.6D
Contained seed and two beaker sherds; one with cord decoration (PC/P/45).

S45 10 006 48g N/A no
Location 6.75B/1.75E/1.7D
Contained seed

S46 This was a control sample of 0.5litre taken from the sieved mud on site and passed through a 0.5mm sieve to check what materials were being discarded during on site sieving (through a 4mm sieve). Four seeds were recovered including a type not seen in the samples which were scanned. A few pieces of microscopic bone were seen but not removed from the sample which otherwise consisted of grit and charcoal.

S47 This was a sub sample of 0.5litre taken from 018 beach gravel and passed through a 2mm sieve and collected in a 0.5mm sieve to check for evidence of marine organic. Only grit composed primarily of quartz was noted apart from modern root fibre.

S48 This was a sample of the white lime chunks lying in Section C-D and from Context 002. When tested with neat hydrochloric acid an immediate reaction took place indicating it is lime, and probably slaked lime judging by its homogeneous texture.

S49 This was a sample taken from 005A in Section C-D. When seen in the section it appeared as possible coal ash, however, examination by microscope revealed it to be charcoal with fine sand and also included probably lime. When tested with neat hydrochloric acid an immediate reaction took place indicating lime in the matrix of the material.

Total samples = c 747 litres producing c 1998 grammes of charcoal above 2mm in size.

**Follows Trench No 1 Section Samples, all 0.5 Litre. Dried and stored only.
See section drawings for exact locations, given in red numbers**

Number	Context	Section	Location [plan & TBM]
SeS 1	001	C-D	3.3B/1.3E/0.5D
SeS 2	002	C-D	3.3B/1.2E/0.7D
SeS 3	002A	C-D	3.3B/0.6E/0.8D
SeS 4	003	C-D	3.3B/0.5E/1.1D
SeS 5	003	C-D	3.3B/1.2E/1.1D
SeS 6	005	C-D	3.3B/1.3E/1.2D
SeS 7	005A	C-D	3.3B/1.3E/1.3D
SeS 8	014A	C-D	3.3B/0.3E/1.3D
SeS 9	006	C-D	3.3B/0.7E/1.8D
SeS 10	014	C-D	3.3B/0.8E/1.8D
SeS 11	006/014	C-D	3.3B/0.8E/1.8D
SeS 12	015	C-D	3.3B/1.0E/2.2D
SeS 13	006	C-D	3.3B/1.3E/2.1D
SeS 14	006	C-D	3.3B/2.4E/1.9D
SeS 15	006	C-D	3.3B/2.3E/2.2D
SeS 16	006	C-D	3.3B/2.1E/2.4D
SeS 17	019	C-D	3.3B/2.3E/2.7D
SeS 18	006	G-H	4.5B/2.3E/2.1D
SeS 19	016	G-H	4.5B/2.8E/2.25D
SeS 20	006	G-H	4.5B/2.9E/2.4D
SeS 21	006	I-J	5.3B/0.4E/2.0D
SeS 22	016A	I-J	5.2B/0.4E/2.2D
SeS 23	006	I-J	5.7B/0.4E/2.4D
SeS 24	006	----	from 'bump' in 006 at 5.5B/1.0E/2.0mD
SeS 25	006	M-N	6.1B/1.7E/2.1D
SeS 26	006	M-N	6.1B/1.3E/2.3D
SeS 27	006	M-N	6.1B/0.7E/2.5D
SeS 28	016A	M-N	6.1B/0.6E/2.5D

SeS 29	011	E-F	6.3B/1.6E/1.5D
SeS 30	013	E-F	6.3B/1.6E/1.6D
SeS 31	017	E-F	6.3B/1.6E/1.7D
SeS 32	006	E-F	6.4B/1.6E/1.8D
SeS 33	006	E-F	6.5B/1.6E/2.4D
SeS 34	006 (basal)	E-F	6.7B/1.6E/2.6D
SeS 35	004	E-F	7.0B/1.6E/2.5D
SeS 36	018A	E-F	7.0B/1.6E/2.7D
SeS 37	004+ch	A-B	0.5B/0/0/05D
SeS 38	003	A-B	1.0B/0.0/0.7D
SeS 39	006	A-B	2.1B/0.0/1.2D
SeS 40	001/002	A-B	3.1B/0.0/0.6D
SeS 41	003	A-B	2.5B/0.0/0.8D
SeS 42	003	A-B	3.0B/0.0/0.9D