



**Brora Back Beach, Sutherland**  
**Data Structure Report**

**2008**



**Funded by**

**Historic Scotland**

**with support from**

**The SCAPE Trust, the University of St Andrews and NOSAS**

**Back Beach, Brora, Sutherland  
August 2008**

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June 2009

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## 1.0 Executive Summary

This report sets out the results of archaeological fieldwork undertaken in 2008 at the Back Beach, Brora, the second phase of an ongoing interdisciplinary project, funded by Historic Scotland and carried out under the auspices of the Clyne Heritage Society and Shorewatch. The industrial heritage of Brora, in particular the history of the salt and coal works, has been the focus of recent survey and excavation, targeted principally on those buildings most severely affected by coastal erosion. This has been very much a community oriented project, with volunteers - drawn from throughout the local area - involved in all aspects of the fieldwork.

In 2007, the remains of what was identified as a possible panhouse was uncovered in the area of the New Salt Works, dating to 1767-1777. In 2008, effort was focused on excavating all of this building. Though the depth and complexity of the deposits prevented this from being achieved, the two hearths partially uncovered last year were found to lie on either side of a wall, which divided the substantial building within which they are located into two. The brick-built fireplace on the east side of the wall lay within what appeared to be a relatively empty structure. However, on the other side of the wall, an earlier fireplace had been extended, the later hearth complex lying on top of a slabbed floor. The presence of hammer scale and a large number of iron objects suggests that this building - though narrow to contain a salt pan - might have started as a panhouse, but then been re-used as a forge. Three small trenches were laid out around the main trench, serving to highlight the extent of the midden deposits around the main buildings. A trench upslope of the Saltman's House revealed an area of cobbling which, though on a slope, might have acted as a working area or stance for storage. Further erosion has led to the collapse of the wall of the best preserved of the two buildings in the area of the Old Salt Works, but overhanging material made it unsafe to work in its vicinity. A single small trench on the landward side of the dune containing the Old Salt Works, produced only evidence for agriculturally modified soils.

## 2.0 Introduction

The history of Brora, in the parish of Clyne, on the east coast of Sutherland, is dominated by its long industrial past (fig. 1). These industries, including coal mining, salt panning, tweed production, distilling, electricity generation, and so on, go back at least to 1598, though coal exploration is first referred to in a charter of 1529. These activities were encouraged by the Earls and Countesses (later Dukes and Duchesses) of Sutherland and it is perhaps the financial support provided by the estate, as much as the availability of a wide range of resources (both natural and human) which made Brora the 'Industrial Capital of the North' in the late nineteenth century.

Many of these activities were concentrated on Brora's Back Beach (NGR: NC 905 033) and it is the history of the salt and coal works carried out in this area which have provided the focus of an ongoing interdisciplinary project carried out under the auspices of the Clyne Heritage Society and Shorewatch. This has involved a considerable amount of historical research and two previous seasons of survey (Aitken 2004; Badger, Cressey and Aitken 2006; Aitken and Hooper 2008; a lengthier introduction to the Back Beach is given in Aitken and Hooper 2008, 5ff).

The impetus provided by the deteriorating condition of the buildings which appeared to be associated with the two earliest salt works led to the decision to carry out an excavation in summer 2007, with the support of Historic Scotland, National Lottery Awards for All and The SCAPE Trust (Aitken and Hooper 2008). A second season of excavation, funded by Historic Scotland and supported by The SCAPE Trust, took place in 2008 and the results of this are presented below. Geophysics was also undertaken by Orkney College Geophysics Unit during summer 2008 and their results are touched on where relevant below (Saunders and Ovenden 2008).

### 3.0 Aims and Objectives

The aim of this project is to explore key sites related to the early mining and salt-panning industries of Brora, and to undertake excavation at those sites facing the imminent threat of destruction from coastal erosion. Crucial to this is the participation of volunteers in all aspects of the fieldwork and the involvement of the local community and visitors to the area in the project, through guided tours, open days, and so on.

The specific objectives of the project were:

- Excavation of those sites facing imminent destruction

In addition to a number of actively eroding sites highlighted in the initial 2006 survey, the 2007 excavation revealed part of a previously unrecorded building associated with the New Salt Works, dating to 1767-1777. This structure had become even more unstable over the winter of 2007/8 and the 2008 season was focussed on fully excavating this building. In addition to retrieving as much information as possible before the sites were lost, the intention was also to provide local volunteers with training in archaeological techniques.

- Raising community profile

Though many people in Brora were aware of the walls eroding out of the dunes (and remembered them in a much better state of preservation), there is a lack of local knowledge about these sites, which appears to reflect the displacement of the population brought about by the Clearances and creation of the new planned village of Brora after 1810. It was hoped that, in addition to involving local people in the excavation, the profile of Brora's industrial heritage would be raised within the community.

## 4.0 Methodology

### 4.1 Excavation

In order to meet the objectives outlined above, a large trench was opened up over Site 37; retaining last year's numbering, Trench 4 was divided into three areas (C, D and F). The depth and complexity of the deposits within and outside this building had been apparent last year and most effort was concentrated on this trench. The instability of the dune edges meant that only the area over the two hearths was reopened, the rest of the trench aimed at establishing the inland extents of the building and the character of the deposits within it. Three small trenches were laid out around the main one, to aid in establishing the extents of the building and of the midden deposits surrounding it (Trenches 4E, G and H). Limited work was undertaken away from the main trench. Again on the basis of a slight geophysical anomaly and a concentration of stone apparent through probing, Trench 5 was laid out upslope of the Saltman's House (Badger, Cressey and Aitken 2006, 39, Site 19 and fig. 3).

In the area of the Old Salt Works, dating to 1598-1617, the collapse of much of the remaining upstanding walling associated with Site 2 (*ibid.*, 36 and fig. 3; Aitken and Hooper 2008, 26-7), which - though it exposed new features - left a dangerous overhang, precluded any invasive work in this area. However, a sketch elevation drawing was made. Fieldwalking and metal detecting were conducted on the landward side of the dune containing the Old Salt Works. A small trench was laid out just to the north of this dune, in an area which the molehills suggested might contain midden material (Trench 6). A second trench in this area across what appeared to be a substantial pile of stone right at the base of the dune was abandoned following partial de-turfing when it was realised that it was in fact the anchor point for the stay of one of the wartime radio masts, which local knowledge confirmed extended into this field (Badger, Cressey and Aitken 2006, 39, Site 22 and fig. 3).

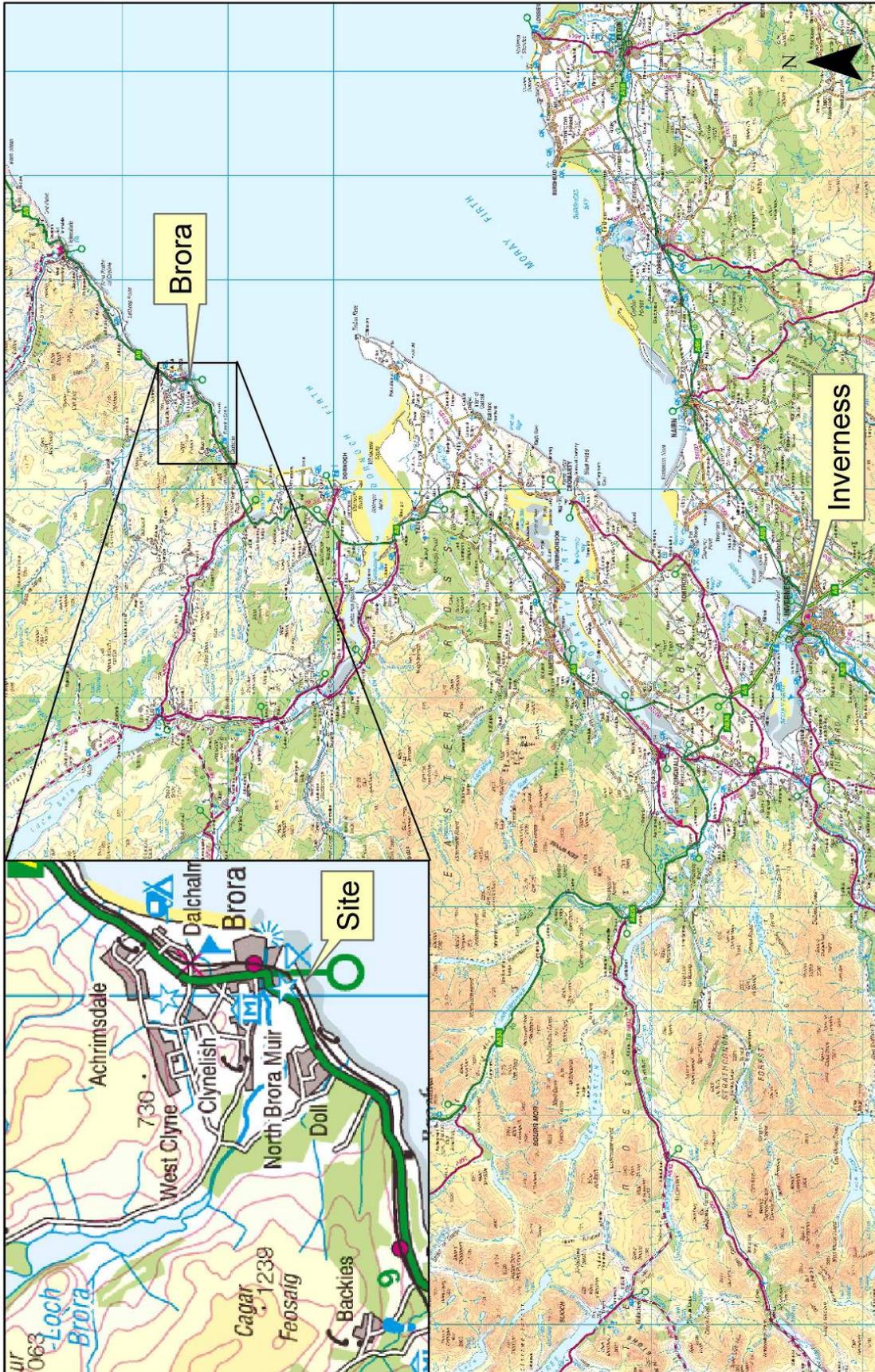


Figure 1 Map showing location of study area. Scale 1:500,000 (Inset 1:1000,000). ©Ordnance Survey, by courtesy of Highland Council

All excavation was carried out entirely by hand. The turf was cut using spades and stored in coursed stacks. All deposits and features were exposed in plan, with discrete features being first sectioned; stratigraphic control was ensured by the deep sections created by the trench edges. All contexts identified were recorded in written form on pro forma sheets, were drawn in plan at scales of 1:20 and in section at 1:10, and were also photographed at all stages of the excavation. Each trench was given a unique sequence of context and finds numbers and a daybook was kept by the supervisor. The location of each trench was recorded by EDM. Spoil was stored on tarpaulins to prevent damage to the underlying vegetation. Prior to backfilling, geotextile was laid down over the hearths in Trench 4 and the deposits returned in the order in which they had been removed. It was possible to return the spoil carefully by machine. The turf was replaced last, restoring the original appearance of the ground as far as possible.

## **4.2 Community Participation**

Throughout the excavation, training in archaeological field techniques was given to the local volunteers participating in the fieldwork, building on the skills many already possessed. In addition to excavating, there were also opportunities to undertake fieldwalking, metal detecting and erosion monitoring. Volunteer participation was encouraged through Clyne Heritage Society, NOSAS and Shorewatch. Locally, volunteers also came as a result of promoting the excavation in Historylinks in Dornoch and Timespan in Helmsdale and by advertisements put up throughout Brora and in the local press. Many of the volunteers from the 2007 season returned to take part in the second season. An information and assessment form was sent out to all volunteers in advance of the excavation. This helped the organizers to accommodate the different levels of skills, capabilities and expectations of the volunteers in the preparation of realistic daily work schedules and, as far as possible, to involve everybody in all aspects of the fieldwork.

## **5.0 Archaeological and Historical Background**

In spite of its importance in both domestic and commercial contexts, little is known about the production of salt in Scotland prior to the eighteenth century. Even after this date, most research has been concentrated on the main centres of production along the shorelines of the Firths of Forth and Tay. The importance of the export of salted fish to the economy of the settlements around the Moray Firth is well known; the geographical separation of this area from the principal production centres (whether in Scotland or further afield), is likely to have resulted in a considerable demand for salt. If this could be produced locally, much of the additional expense of importing salt could have been avoided. Therefore, Brora is of particular significance as it offers an opportunity to investigate three quite distinct chronological phases of production, in a location where the physical remains associated with salt making can be elucidated through a comprehensive documentary record. A brief summary of this history is given below (for a fuller account see Aitken in Badger, Cressey and Aitken 2006; Aitken and Hooper 2008).

Brora has long been associated with the production of both salt and coal. The Jurassic coal found locally was periodically exploited for making salt for nearly 300 years. Jean Gordon, Countess of Sutherland, initiated the industry in 1598, with her son John re-opening the works in 1614. These ventures were an early attempt at industrialisation in the Highlands and helped to elevate Brora to burgh status. However, the iron of the salt pans had to be sold in 1617 to pay off estate debts, two years after the death of the earl in 1615. The next phase of activity originated in the re-organisation of the Highland estates in the aftermath of Culloden in 1746. The lessees, Messrs Robertson & Co. from Portsoy, established trade links across the Moray Firth and continued to produce saleable salt until 1777. During this period, Brora was the tenth largest producer of salt in Scotland. In the early nineteenth century, the salt and coal industries at Brora were again revived by the Marquis of Stafford, but the abolition of the salt tax in 1825 sounded the death knell for the industry, even though the coal works survived until 1974.



Figure 2 Extract from John Farey's map of the Inverbrora coal workings, 1813. Dep.314/17. Courtesy of The Trustees of the National Library of Scotland

In February 1869, following unusually high tides, the sudden appearance of a row of buildings on the foreshore at Brora was reported in the *Inverness Advertiser*. The buildings were believed to be the remains of salt pans established at the end of the sixteenth century. The event caused such a sensation that “Numbers of people flock to visit this long hidden relic of the ancient glory of Brora.” Subsequently, the archaeological remains again slipped into obscurity, to be highlighted again by Jacqueline Aitken, archivist of Clyne Heritage Society. Regular monitoring of the site since 1999 reinforced how much the site had changed since she had played around the site as a child and, in 2004, with the help of The SCAPE Trust, members of Clyne Heritage Society began detailed recording of masonry on the beach as part of a Shorewatch project (Aitken 2004). This pilot project underlined the need for further survey and excavation and a complete survey of all the early industrial sites was undertaken in 2005 by CFA Archaeology, in conjunction with the local Society and NOSAS (North of Scotland Archaeological Society) (Badger, Cressey and Aitken 2006). The range of sites recorded included coal pits, lime kilns, probable salt pan buildings and middens.

The results of the survey, alongside the discovery of a newly eroding wall in early 2006 and the retrieval of late medieval pottery during fieldwalking, added to the growing impetus for excavation. In August 2007, a community excavation, jointly funded by Historic Scotland and the Heritage Lottery Fund's Awards for All took place (Aitken and Hooper 2008). Four trenches were excavated in 2007, two over buildings thought to be associated with the earliest phase of salt production at Brora (1598-1617) and two in the area of the eighteenth century salt works (1767-1777). The two buildings in the vicinity of the early salt works proved to be so damaged, that little additional information could be retrieved. The long wall which runs along the edge of the beach close to an inlet known as the ‘Winter Port’ was, however, tentatively identified as all that remains of a girdel or storehouse. The two trenches laid out over buildings in the area of the eighteenth century salt works were far more

productive. A trench exposing half of a building, identified on the basis of Farey's 1813 map (fig. 2) as the 'Saltman's House' was excavated down to floor level, revealing a substantial and well-built structure with a partly cobbled floor. The final trench, opened up behind the wall revealed in 2006, uncovered part of a building thought to be a panhouse, as it contained two fireplaces within a wall which could have supported the pan itself. Following partial demolition and stone robbing, both structures appeared to have been deliberately sealed with a layer of clay and building debris.



Figure 3 Map showing location of excavation trenches: the 2007 trenches are in yellow and the 2008 trenches in red. Scale 1:1000 (Inset 1:100,000). © Ordnance Survey, by courtesy of Highland Council

## 6.0 Results

In the following sections, context numbers for layers and feature fills are given in curved brackets ( ), while numbers for structures and cuts are given in square brackets [ ].



Figure 4 John Kirk's Plan of Inverbrora Farm, 1772. Dep.313/3581. Courtesy of The Trustees of the National Library of Scotland

### 6.1 New Salt Works

In spring 2006, Jacqueline Aitken and Nick Lindsay of Clyne Heritage Society noticed a mortared wall eroding out of the dunes, just to the south west of the Saltman's House (Site 19) and in the vicinity of the middens recorded as Sites 5-7 in the 2005 survey (Badger, Cressey and Aitken 2006, 37, 39 and fig. 3; following on from the site numbering system established in 2005, this wall is now Site 37). This placed it in the vicinity of the 'New Salt House' recorded on Farey's map in 1813, when his lack of detail suggests that the building had already been covered in sand blow (fig. 2). In 1772, Kirk's map of Inverbrora farm, which depicts the salt works when they were still in operation, shows four roofed buildings in this location. These include a long structure, immediately adjacent to the shore and set slightly apart from the other three, which is annotated as 'Salt Pans' (fig. 4). Given this information and the danger of erosion, establishing the nature of this wall and any features associated with it, were considered vital to understanding of the Brora site. The 2007 excavation

confirmed the importance of this building, as the discovery of two hearths, contained within dwarf walls, suggested that it might be a panhouse. In 2008, a much larger trench was opened up across this building (fig. 3). This included area 4B, dug in 2007, but left untouched most of area 4A, in order not to destabilise the edge of the dune further. Initially, the 2008 trench was begun as two areas; 4D was laid out at the east end and measured 4m by 4m. 4C was laid out over the hearths and extended to the west, measuring 6m E-W by 3m N-S at first, but expanding to the south and to the east to measure 8m E-W by 5m N-S. The two areas were eventually linked by a trench 2m wide N-S and 4m long E-W, the areas to the east of the division wall [4081], incorporated into this area (4F). Three small trenches intended to answer specific questions were opened up around the main trench (Trenches 4E, G and H), alongside a slightly larger trench upslope of the Saltman's House (Trench 5) (see 6.1.2; fig. 3). The middens eroding out along the shoreline were also cleaned up, photographed and drawn, while photographs in order to monitor the extent of erosion were taken along the shore between the New and Old Salt Works.

### 6.1.1 Trench 4

The 2008 trench exposed a substantial building, neatly constructed from hard white quartzite boulders [4003], the source of which (though of local origin) has not so far been identified. The walls appear to have been packed with rounded beach cobbles and clay and then harled, both internally and externally (4004); the walls are 0.74m wide, standing to about 0.7m high at most along the east gable (plate 1). The clay used for bonding the walls seemed to be browner in colour than the rest of the clay encountered during the excavation, though this may simply reflect the amount of exposure it has undergone (4060). The south wall of the building, in particular, seems to have tipped inwards slightly, perhaps because, for much of its length, it rested directly on sand (4005). Internally, the building measures 3.7m wide N-S and seems to be divided into two equal halves. The eastern half measured 6.8m long E-W internally, while, though not fully excavated, the western half of the building was at least 4.5m long. What appeared to be the cut for a foundation trench [4171], with a soily fill (4172), was identified in a small extension dug to follow the line of the building's north wall at the west end of the main trench; this remains to be explored further, when this end of the building is uncovered. The eastern half of the building had a centrally placed doorway (excavated last year). A second doorway [4216] lies 2.5m along the south wall from the west face of the division wall [4081], although its west side still lies within the section. This appears similar to that in the Saltman's House (Aitken and Hooper 2008, 31), as it has a threshold formed from a single layer of laid bricks [4213], protruding from below a wooden plank (4214). Within the doorway was a compacted black, far more organic deposit (4215).



Plate 1 E end of building, prior to extension of trench westwards. Taken from the NE



[Previous page] Figure 5 Plan of Trench 4. Scale 1:20

Overlying the building are a complex series of windblown deposits, consisting generally of clean, loose yellow sand, interleaved with thinner layers of darker material (e.g. 4001, 4002/9, 4066, 4187, 4200, 4211). The colour of the darker layers tend to derive from a high proportion of shale/coal fragments, though some are browner in colour and are more suggestive of old ground surfaces (e.g. those in 4187). However, the general lack of humic material throughout this sequence suggests that the layers have built up rapidly. At the east end of the building, towards the top of the sequence, there is a thin band of midden material, which includes coal, charcoal, limpet shells, fish bone and so on within a dark sandy matrix (4067); this rises up against the wall and lies between two much thicker layers of windblown sand (4066, 4187). This midden deposit is reminiscent of those found around the Saltman's House last year (Aitken and Hooper 2008, 29-34), which - because they clearly do postdate the use of the buildings - have been taken to represent a period of use of the site by fishermen.

Below these deposits is a layer of building rubble both inside (4011) and outside the structure (4061), which seems to have resulted from the deliberate demolition of the walls down to their present level (plate 2). This demolition did not occur until after windblown sand had been allowed to build up within the building (4012/4080, 4189, 4199). At the east end of the building - at some distance above the main layer of rubble - a thin layer of stone, mortar fragments and occasional black stained tile in a matrix of iron coloured sand rises up and onto the wall (4055), apparently continuing on the outside of the building as a very narrow band. This would also seem to be a demolition layer, but one postdating the main demolition of this building and so perhaps relating to a different (but nearby) structure. The accumulation of limpet shells (4059), which truncates the demolition layer (4055) in the centre of the building, must also be relatively recent. As the sandy matrix of the shells does not differ from the material around it, it cannot be distinguished from it, but their relatively discrete distribution would imply that they lay within a pit or burrow.



Plate 2 N facing section at E end of building, showing the rubble layer (4061) against its outside face. Taken from the N

The results of last years excavation had suggested that the building rubble appeared to be sealed by a thin layer of hard, yellow grey clay, generally 0.02m thick (4010/4062). This year the clay was exposed over the majority of the trench, rising up and over both long walls of the building, as well as the hearth complexes in its centre. Close to the field wall, at the west end of the trench, it lay directly under the yellow sandstone fragments which may be associated with its construction (4036, see below), though in places it was separated from it by a layer of windblown sand (4223). Where there are underlying structures (such as the hearths), the clay does immediately overly the rubble, but -

towards the centre of the building - there was a dividing layer of windblown sand (4224) between the clay and the demolition layer (4011). Similarly, beyond the east gable of the building, there was a very thin layer of bright yellow windblown sand (4199) between the rubble layer (4061) and the coal road (4068); against the outer face of the north wall, a similar deposit of windblown sand had mounded up against the wall (4197).

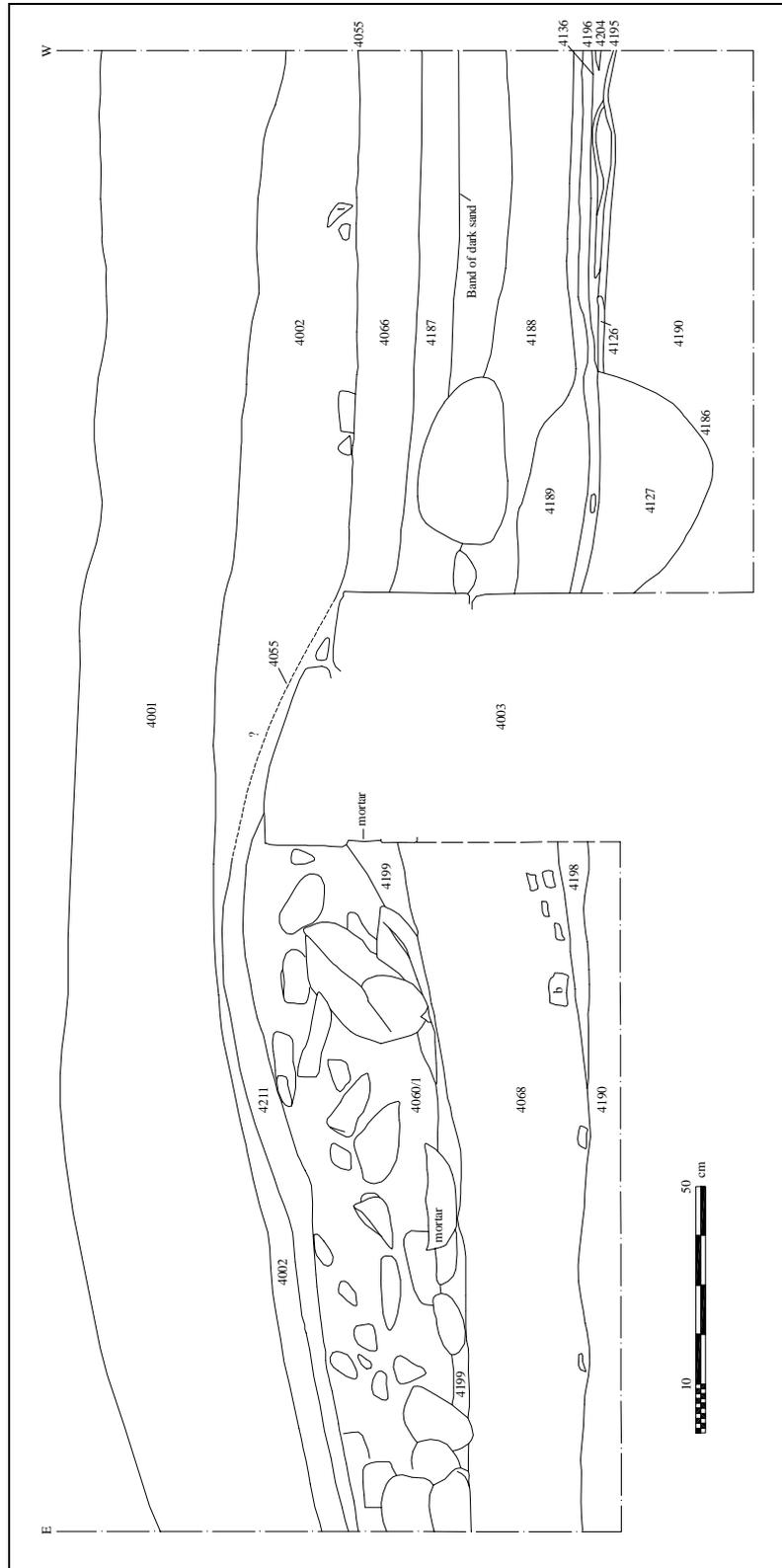


Figure 6 N facing section of Trench 4D. Scale 1:10

Towards the west end of the building, this deposit seemed much thicker (4167), but only a very limited area on the outside of the wall was excavated and not to the depth at the east end. The demolition layer (4011, 4061) consisted of chunks of mortar, brick, tile, and stone (principally pieces of angular quartzite) in a clay matrix; it was particularly compacted over the long (north) wall of the building. In the vicinity of the hearths, where it is higher than the bottom of the field wall (though the field wall has largely been robbed out), a slightly curving cut seems to represent the foundation cut for the wall (4221). There is a second, oval cut to the south of this at right angles to the first (4222), which may possibly be a spade cut made during wall construction. The demolition layer was at its highest over the dwarf walls surrounding the hearths, where it consisted of almost solid mortar and rubble.

At the east end of the building, the rubble seemed not to run up to the inside face of the wall - even though it was present on the outside (4061) - though there was a layer of yellow grey sandy clay, containing lenses of flecked windblown sand and clean, plastic clay, as well as frequent small pieces of coal/shale and mortar (4188), which may be equivalent to it (4010/4011) (plate 2). A worn silver coin of William III (1694-1702) was found in this layer, close to its interface with the floor deposits below it (SF 1). (4188) rose up over a windblown deposit, mounded up against the base of the wall, but very thin away from it, which also contained pieces of tile and lenses of plastic clay (4189); away from the wall, this may also be equivalent to a very similar deposit (4065). Towards the west end of the building, against its south wall and immediately below the clay (4010), was a deposit of small, clean, sharp quartzite flakes (4077) in a matrix of windblown sand (4078). This overlay a deposit of larger quartzite blocks (4079), which appear to have tipped off the south wall (plates 8, 10). These extended as far north as the hearth complex in the centre of the building, while the large voids between them suggest that the overlying deposits had formed very quickly; they overlay a layer of clean, plastic blue-grey clay (4088). Similarly, in the area immediately north of the hearths, large regularly shaped blocks (4093) appear to have tumbled off the dwarf wall containing the north side of the hearth complex. Both these piles do appear to be simply tumble, but it is possible that they represent deliberate demolition, which was not taken away for re-use.



Plate 3 Coal road deposits (4068) on N side of building. Taken from the SE

The middens, known locally as the 'coal road' (Site 7), visible in the face of the dune, against the outside face of the building, were found to extend right round its east end (plate 3). The material forming these midden deposits had been laid down in quite discrete horizontal layers, some dominated by burnt shale/coal and others by unburnt shale/coal fragments (4068). Other layers consisted principally of mortar or brownish grey ash and were interleaved with sandy deposits (4063, 4064). Overall, the 'coal road' was up to 40cm thick. The coal road deposits seem to be contained within a layer of yellow grey clay (4198). In the north east corner of the trench - and against the outside face of

the building - this was 40mm thick, though, to the west, it tapers to only 10mm thick against the U-shaped cut in the south facing section [4184]. In the west facing section of the trench, it contains small lenses of grey clay, which retain some plasticity, but elsewhere the clay has dried out, becoming very hard. In the north facing section of the trench the clay layer appeared to be far more inconsistent, appearing as much softer patches within a sandy matrix. The impression given is not so much of a 'road' as of a large amount of waste material used to create a firm working surface around the building.



Plate 4 U-shaped cut [4184] underneath coal road deposits (4068) at NE end of building. Taken from the S

Of interest in this respect are two U-shaped cuts dug into the windblown sand, below these deposits, both inside [4186] and outside [4185] the east end of the building. The fill of the cut inside the building [4186] appears to be a demolition deposit within a very black matrix (4127). The fill of the cut in the south facing section [4184] is indistinguishable from the coal road deposits above it (4068), though it is dominated by large pieces of tile and mortar (4185) (plate 4). The cut visible in the north facing section is also present in the eroding face of the dune - and so must pass under the south wall of the building - though it was not picked up in plan, a fact also true of that in the south facing section. These two cuts recall a similar cut uncovered last year running at a slight angle to the south wall of the Saltman's House (Aitken and Hooper 2008, 31-2). All are intriguing because they have been dug into sand (4190, 4194), but nonetheless retain a very crisp profile, suggesting that they must have been infilled either deliberately or very fast. It is possible that, if they were once lined with wood, they might have been brought sea water into the building - or drained it away. Even if the wood had disintegrated entirely - and wood was preserved at the other end of the building within the natural sand (see below) - the cuts would still have to have been infilled quickly.

The building had been divided into two, the centrally placed fireplaces identified last year lying to either side of this wall [4081]. The eastern half of the building had a neatly built brick fireplace [4018], contained with stone spur walls [4082, 4166] (plate 5). The void between the fireplace and the division wall had been partially infilled with small rubble and lumps of soft grey-green clay, but large gaps still remained (4084). The faces of the stub walls which projected into the room were plastered, as was the brickwork, thus obscuring the differences between them; the other faces of the stub walls and the division wall itself do not seem to have been harled. The fact that the brickwork still stands to a greater height than the surrounding walling does suggest the latter might have once been much taller, but that the stone was easier to re-use.

In the south wall, close to the division wall, was an apparently blocked feature [4220]. Given its position close to the base of the wall, it is possible that this had originally been a coal hole, especially

as there was a dense layer of coal/shale fragments immediately below it (4136), in the angle formed by the hearth and the division wall. These deposits were both particularly concentrated and contained a higher percentage of larger pieces of coal close to the wall (4161). They rose up against the wall, staining the masonry almost up to the (present) top of the wall, c. 0.5m high. Two complete peat blocks were found at the interface between the coal-rich layer (4161) and the underlying sand (4190) immediately below the possible coal hole (plate 6). It does seem likely that fuel would have been stored in the spaces either side of the hearth, but the preservation of the two peats is intriguing.



Plate 5 Fireplace [4018]. Taken from the E



Plate 6 Coal deposits, plus the two peats (4161), in the angle of the division wall [4081] and the fireplace [4018]. The stone on the right hand side of the photograph is buttying for the side of the trench. Taken from the S

A much heat-damaged stone slab formed the hearth, while the area around it had been covered with roughly shaped slabs and broken bricks, set on end, as well as several large pieces of coal/shale [4141]. The rest of the floor may have been cobbled [4142], but, as the cobbles had been set into sand (4190), they had required repair and the fact that they only survive at the east end, suggests they did not last long (plate 7). Above the cobbles and covering the rest of the floor area, the deposits were

complex, comprising thin layers of midden material, which - though not very trampled - had probably formed a more effective floor surface, where they had become compacted. These deposits consisted predominantly of unburnt shale/coal fragments (4136, 4158, 4161), much of their complexity probably deriving from the fact that they appear to have originated as discrete dumps of material. Within 4136, which averaged 0.05m thick, were lenses of clean windblown sand, as well as lenses of dark brown sand, which may also have been windblown, suggesting that it might have accumulated quite slowly. In places, particularly towards the east end of the building, it appears to consist more or less entirely of dark brown sand and is more reminiscent of an old ground surface than a midden deposit.



Plate 7 Cobbles towards E end of building [4142]. Taken from the N

A thin layer of homogenous chocolaty brown sand (4137/4195), very reminiscent of similar layers on the opposite side of the wall (see below), lay between (4136) and (4158) in the centre of the building and was also recognised in section at the east end, where the stratigraphy was complicated by another similar deposit, which was more grey in colour (4204). All these deposits perhaps represent a period when blown sand could not be kept out of the building entirely. Above the coaly deposit (4136) was a very thin layer of yellow grey clay (4196), which occurred patchily in the eastern half of the building, but was much clearer close to the east gable, where it capped the fill of the U-shaped cut (4186). Immediately adjacent to the U-shaped cut [4186] was a thin layer of black powdery coal (4126), which may be windblown debris from a coal store and is very reminiscent of that at the west end of this half of the building (4161).

In the centre of the floor, what was initially thought to be a pit [4178], appeared on excavation simply to be a depression where wear may have been greater, as the fill (4179) was not distinguishable from the material overlying it. Just to the west of the hollow [4178], bucketfuls of very hard, compacted ashy material, containing lots of fishbone (4207) appear to have been laid down on top of the natural sand (4190). To the west again were two bands of hard clay (4159, 4160), which may also have resulted from attempts to rectify the softness of the underlying sand. The latter were very thin (in general the floor layers were no more than 40mm thick overall) and did not extend across the floor; though the edges of the creamy white clay (4159), in particular, were very straight, they too appear to be dumps of waste material. However, close to the wall on the north side, there was a deep, almost circular pit (4209), dug into the underlying sand (4190), for which there is no ready explanation. The upper fill of the pit, which appears to overlap its edges, seems to consist of midden material (including burnt and unburnt coal/shale) within a matrix of dark brown clay (4210). The much thicker, lower fill of the pit comprises loose brown sand, containing numerous fragments of coal/shale and lenses of clean, bright yellow sand (4212).

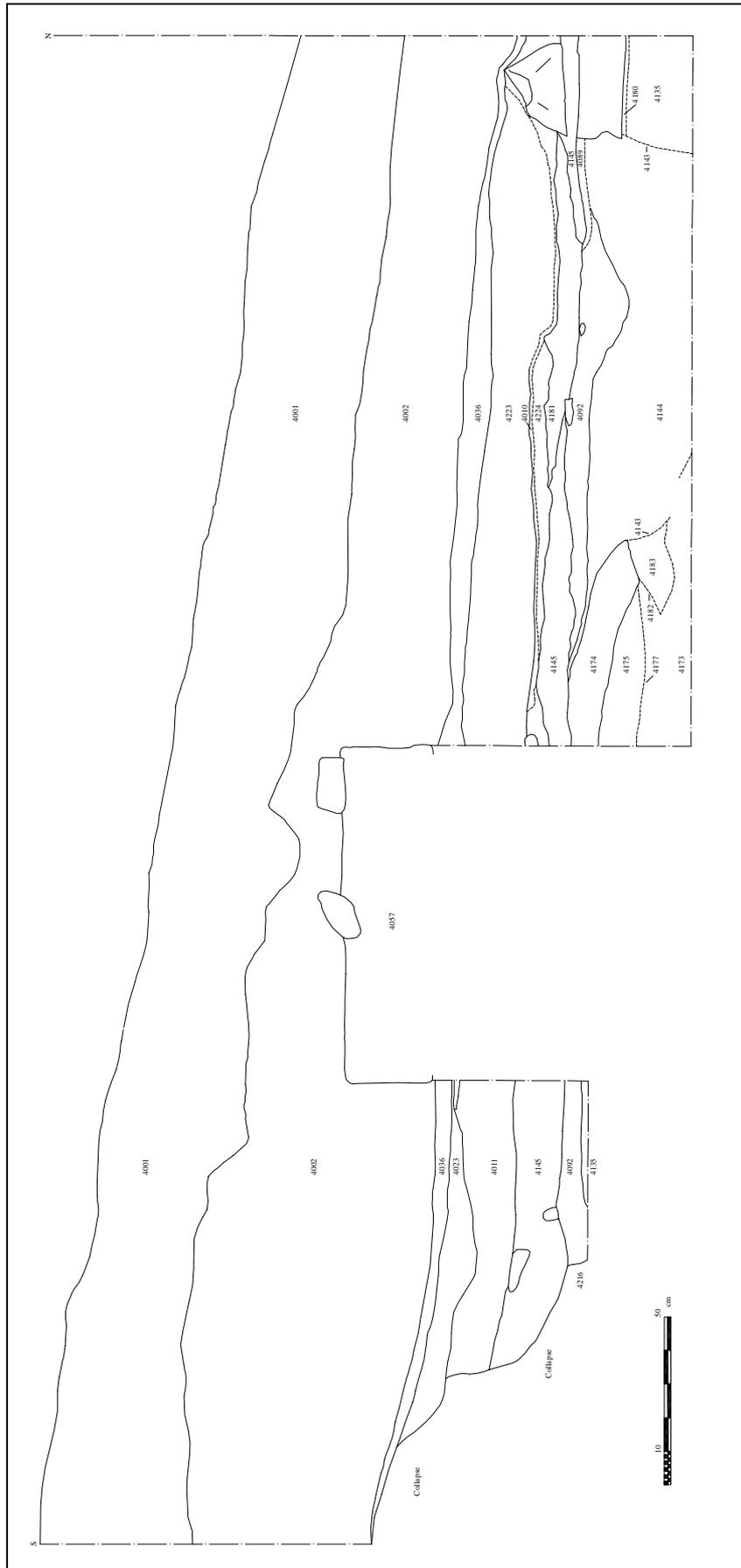


Figure 7 E facing section of Trench 4C. Scale 1:10

As seems to be the case at a later date with the yellow sandstone forming the field wall (see below), a thin, patchy layer of friable white sandstone fragments (4157), visible on the north side of the hearth and extending under the division wall [4081], may reflect the dressing *in situ* of the stone for the wall. However, the composition of the stone seems very different to the very hard white quartzite used for this building, though it is possible that much of its apparent degradation is due to post-depositional factors. The floor deposits rested directly on sand (4190), though a thin layer of black coal/shale fragments does appear to extend under both the stub wall on the south side of the fireplace and the south wall of the building in the south west corner (4161). Rather than being an indication of an earlier structure on this site, it may have been intended to form a harder surface on which to construct the building. Perhaps in a similar way, a very thin layer of dirty grey sand (4068) had built up under the division wall [4081].



Plate 8 W end of the trench, showing the field wall cutting across the trench [4057], with the partly uncovered hearth complex in the centre [4083]. The rubble tumbled from the S wall (4079) is visible in the background, while that from the hearth lies under the ranging poles (4093). Taken from the N

The sequence in the western half of the building was complicated by the field wall overlying it (plate 8). This is the boundary which is now exposed in the dune edge to the west of Site 37 and which is shown by John Farey on his map of 1813 as cutting across the site on an approximately NE-SW alignment (Badger, Cressey and Aitken 2006, 37, Site 8 and fig. 3). Its presence on Farey's map would seem to imply that the building was already out of use by this date, particularly since the wall sits directly on clean windblown sand (4223). Though revealed last year only as a scatter of large rounded chunks of bright yellow sandstone, it is now clear that the lower courses of the field wall consist of pairs of huge, square blocks of bright yellow sandstone, 0.94m wide [4057]. A layer of rubble, consisting of both white quartzite chips and grey beach cobbles (4056), in a matrix of windblown sand indistinguishable from that surrounding the wall (4002), overlies the larger blocks. Unusually, the packing stones for the wall consist of similar rounded cobbles (4058).

The yellow sandstone probably came from close to the Sputie quarry, 1.6km down the coast to the south west. The stone itself is very friable and not of particularly good quality - it has not been found in any of the buildings so far examined on the Back Beach. As the nature of the wall construction is also not typical of field dykes, it is possible that this stone was re-used from elsewhere on the site. However, extending out from either side of the base of the wall, is a thin, patchy layer of degraded yellow sandstone (4036) (plate 9). It appears horizontal in section at the west end of the trench and, particularly because it tapers away from the wall, it may represent the fact that the stone was dressed *in situ*. The wall rises perceptibly upwards to the north east where the dyke becomes fragmented, presumably as a result of the robbing of the larger blocks; in Trench 4E which was laid

out to the north east of the east end of the trench, the yellow sandstone appears only as small chunks of stone (4070), below the grey beach cobbles (4069).



Plate 9 E facing section of trench, showing the layer of yellow sandstone fragments (4036) at the base of the field wall [4057] on its N side. Taken from the E

Below the demolition layer (4011) and the tumble from the south wall (4079), the western side of the building (except for the hearths) was covered with a layer consisting of tile fragments, shale and coal (4089). This was uniformly 10cm thick and, though it may also be demolition material, it did not have the same clayey matrix as the layer above and was therefore much looser. Given the concentration of tile, this might suggest it had resulted from the collapse of the roof - though it is also possible that the amount of wastage from dismantling a tile roof would produce a layer of similar appearance. This concentration of tile also occurred in the angle of the hearths, against the division wall (4101 to the north and 4104 to the south).

Underneath these layers and dominating the western half of the building was the hearth complex backing onto the division wall (plate 10). Though this was not dismantled, enough was revealed to determine the phasing of the hearths. The earliest hearth may have lain within stub walls matching those on the east side of the division wall [4028, 4108], but had been obscured by what appears to have been a slightly smaller second fireplace [4029], the slab forming its hearth much higher than the floor level and set into loose ashy deposit [4147]. All of the sandstone forming this fireplace is now very friable and has been turned dark red in colour by heat. Infilling the gap between the division wall and the east side of this fireplace was a plastic black clay, streaked with pink ash and burnt shale (4031). On the south side of the fireplace, the infill was much looser, consisting of burnt shale, ash, small chunks of mortar and two half bricks (4156).

After this hearth went out of use, the spur walls were extended - at a slight angle to the original walling - by low walls, made up of mixture of brick and stone and also mortared [4109, 4110]. These enclosed a central wall [4128], which was flanked by what appeared to be two 'flues' [4129, 4130] (plate 11). Within these 'flues' was a similar sequence, consisting of what appeared to be rubble and mortar in a loose ashy matrix deliberately packing the flues (4131, 4132), overlying a thin layer of very plastic, yellowy green clay (4139). Resting against the west end of each of these three walls were loosely bonded bricks, which appear to have been intended to extend the walls [4103]. These low walls seem to have supported a raised hearth, enclosed by very roughly built brick and stone walling on the east and north sides [4146]. A large semi-circular piece of iron had been built into the top of this wall, while a second one was found amongst the tumble surrounding it. The base of the fire must have rested on the clay used to cover the top of the platform as this had been turned orange-red by

heat, retaining its original yellow grey colour around the edges (4134). However, the clay also spilled out from the hearth and across the tile rich layer (4089), overlying the surrounding floor slabs [4091], making it appear later in date.



Plate 10 The hearth complex [4083] on the west side of the division wall [4081], prior to the emptying of the 'flues'. Taken from the N



Plate 11 Later part of the hearth complex, following the emptying of the flues [4129, 4130]. Taken from the W

This part of the complex had been built on substantial stone slabs, which formed the central part of the floor [4091]. A thin black deposit, only 5mm thick, adhered to the flags (4090) and may simply be trampled coal dust. The slabs themselves were of enormous thickness - far more than would be necessary - and suggest that the activities taking place on this floor required a very solid surface. However, the slabs were only 3.8m long and did not extend eastwards as far as the division wall. Their western edge was very straight suggesting that they deliberately terminated at this point (plate 12). A few small slabs appear to have been robbed [e.g. 4191], while there was also a large gap immediately to the west of the hearth complex. The latter was filled with a very mixed deposit (4148), its disturbed nature most probably the result of the robbing of the slab once located in the 'gap', perhaps when the overlying field wall [4057] was built. In all four parts of the western half of the building where the

slabs were not present, a chocolate brown loamy sand, flecked with coal, abutted them (variously numbered 4092, 4100, 4102 and 4105); it was also present on the east side of the division wall (4137, see above). The sand (4102) did partially cover the south side of the large floor slab west of the hearths, which angles downwards, but this is most probably a reflection of later disturbance. If the trample over the slabs (4090) perhaps reflects a period when there was plenty of coal debris within the building, the chocolate brown sand may represent the floor surface around the slabs - though it is not particularly compacted.



Plate 12 The large slabs [4091] on which the later part of the hearth complex rests are visible in the foreground, as is its clear western boundary. Taken from the W

The gaps in the floor slabs against the division wall appear far more deliberate than simply robbing. That on the north side of the hearth, which measured 1.2m by 0.9m, was filled with a deep deposit of compacted, unburnt coal fragments (4133), underneath a thin mixed, sandy layer (4107) which seems to represent the interface between it and a skim of cleaner windblown sand overlying it (4106), below a chocolate brown sand (4105). The coal deposit was notable for the number of iron objects recovered from it. Underneath the coal-rich layer was another mixed sandy layer (4099), in places above what appears to be a thin layer of clean, plastic yellow grey clay intended to contain the coal deposits (4140). This appears to rest on what is probably natural sand, though it has not been excavated (4135). A small lens of friable white sandstone fragments (4157), similar to those found on the other side of the division wall (4138), and which may have a similar origin, was preserved under the clay in the north west corner of this area. Though these deposits clearly extended under the stone slabs to the west, only the coal rich deposit (4192) and the underlying yellow grey clay (4193) were visible in the small cavity left by a missing slab adjacent to the north wall [4191].

The deposits on the south side of the hearth were far less clear, partly because of the amount of tumble from the south wall (4079), as well as the activities of burrowing rabbits. Here the demolition layer (4101) simply petered out to the west, though the chocolate brown sand (4100) underlying it did continue in a thin strip, approximately 5cm wide, along the base of the dwarf walls containing the hearths (its western boundary could not be identified). Abutting the sand and between it and the south wall of the building, was a mixed deposit consisting of reddish clay, shale and ash (4111), which overlay a more compacted surface; this appeared to be of similar composition, though darker in colour (4112). Initially thought to be contained within a cut, the relationships could not be clarified - principally because of the limited area visible between the hearth and the tumble (4079).

At the west end of the floor slabs, the situation was particularly complicated. The yellow-grey clay (4010) was clearly visible as a discrete layer within the E facing section of the trench, but the rubble

layer (4011) was not present. A thin layer of clean windblown sand (4012) separated the clay from a layer of compacted coal/shale fragments (4181), though this was only visible in the northern half of the trench and did not reach as far as the field wall. A layer of grey-blue clay not observed elsewhere (4145) lay below this, overlying the possible roof collapse (4089). Under the collapse, the chocolate brown sand (4092), overlay a very thin layer of sandy yellow grey clay (4180), though this was only picked up in the east facing section of the trench in the north west corner. This in turn overlay clean windblown sand (4135), but was truncated by the large pit to the south [4143], so its extents are not known. The clean windblown sand (4135; 4173 to the south of the pit, 4143) has been assumed to be the natural, though the interface was not always clearly defined in areas where the slabs are not present.



Plate 13 Stakeholes [4150, 4152] at W end of slabs. Taken from E and above

Underneath the chocolate brown sand (4092), a series of possible small stakeholes had been dug into the natural sand, in a row approximately 10cm west of the edge of the flagged floor. The two most northerly stakeholes [4150, 4152] were rectangular in section and steep sided (plate 13). Further to the south west, in the angle formed by the (later) field wall and the floor slabs, there appeared to be another stakehole [4154], with another, shallower and less convincing, next to it [4162] and two slightly off the line [4169, 4226]. There were a number of other possible stakeholes in this area, though not all were rectangular in shape, which, coupled with the fact that they were not on the same alignment, suggests that they were more likely to be animal burrows [4164, 4201, 4203]. Those stakeholes with a fill of grey brown sand, containing little pieces of mortar (4151, 4163, 4165, 4225), are perhaps more convincing than those which have a darker fill (4153, 4155, 4170, 4202, 4227), differing very little from the overlying sand (4092). A vertical piece of mortar [4176] projecting from the sand underneath the field wall, plus two small pieces of wood (which disintegrated when exposed), following the same line as the stakeholes, hinted at the presence of a partition along the edge of the slabs.

At the west end of the trench, on the north side of the field wall - and obviously continuing into the section - were a series of intersecting cuts [4143, 4177, 4183], their fills not easily distinguishable from the sands above and below them overlying them. Under 4092, a straight-sided, angled cut, respecting the line of stakeholes, clearly continued into the section, becoming much deeper at this point [4143]. Its fill comprised a flecked yellow sand (4144), which is only distinguished by feel from the underlying sand (4135/4173). The chocolate brown sand (4092) petered out in the vicinity of the north side of the field wall, where it overlay a compacted, dark brown sand (4174). This in turn overlay a dirty brown, flecked sand (4175), both of which seemed to be contained within a very shallow cut [4177], which has been truncated by the field wall. In the angle between [4143] and [4177], was another cut [4182], containing a dirty brown, flecked sand (4183), very reminiscent of that

above it (4175). On the south side of the field wall, there were two small pits cut into the underlying sand [4205, 4217]; the fills were both sandy and reminiscent of the overlying chocolate brown sand (4092), but varied from light to dark in colour (4206, 4218). Underneath the wall are what may be two rabbit burrows, again filled with chocolate brown sand [4219]. Time constraints, combined with the complexity of the deposits, meant that excavation stopped at this point, leaving the west end of the building intact, hopefully to be uncovered next year.

### 6.1.2 Small Excavations

Three small trenches were laid out around Trench 4. The line of a field wall, shown on John Farey's 1813 map, had been picked up cutting across both this building and the Saltman's House in 2007 (Badger, Cressey and Aitken 2006, 37, Site 8 and fig. 3; Aitken and Hooper 2008, 33-4; fig. 2); early on in this year's excavation it was revealed close to the west end of the trench, but then seemed to disappear. Therefore, Trench 4E was laid out 2m north of the north east corner of Trench 4, not only to see whether the line of the wall continued, but also to assess the character of the midden deposits in this area. Trench 4G was located 2m to the west of the main trench, in the hope of establishing the length of the building. Trench 4H was located 10m west of the main trench, on top of a level knoll, where there appeared to be the possibility of a building, highlighted by a geophysical anomaly (see below). Trench 5 was upslope of the Saltman's House (*ibid.*, 39, Site 19 and fig. 3; Aitken and Hooper 2008, 29-34), identified on the basis of Farey's 1813 map and itself lying just inland of the main trench. It measured 4m by 4m, with small extensions at the south east and north west corners, each measuring 0.5m wide by 1m long.



Plate 14 E facing section of Trench 4E

Trench 4E, which measured 2m square, revealed a very similar sequence to that in the main part of Trench 4 (plate 14). However, the complexity of the windblown deposits ensured that they cannot all be clearly related to those uncovered elsewhere on the site, particularly because of the variability of the deposits highlighted even within the small area of this trench. Underlying a thick layer of windblown sand (4002), the field wall (Site 8) appeared to survive as a layer of yellow sandstone fragments, averaging 100mm thick (4070), underlying grey beach cobbles (4069), which lie within a matrix of windblown sand (4071). The yellow sandstone lies partly above a layer of darker, windblown sand (4087), as well as a patchy layer of dense, black midden material (4072). The latter is variable in thickness and contains concentrations of mussel shells, making it very reminiscent of one of the midden layers uncovered around the outside of the Saltman's House in 2007 (Trench 2A, 2040). Away from the field wall, this midden layer appears to lie within the windblown sand, which also contains the wall (4071), though this is itself very variable in thickness and merges with other

windblown layer in the south east corner of the trench (4086). At a similar level, within 4086, is what may be an old ground surface, although in the north east corner this also contains greater concentrations of burnt coal/shale fragments and ash (4075). Below the midden material is a layer of clean windblown sand (4073, possibly equivalent to 4071), overlying compacted, dark brown layers (4074, 4075, 4098). These may be windblown deposits which have accumulated (perhaps more slowly) in a dirty environment, though in places they may represent an old ground surface. These lie above a clean sand, which is more clearly a windblown deposit (4076). This lies directly above what appears to be the 'coal road' (4085), which was clearly contained within a layer of greeny grey clay (4097). In the north and west sections, this overlay a solid layer of degraded mortar, at the base of which was a very thin layer of grey clay (4095), which may represent a demolition layer. Underlying this was what was probably natural sand (4096).



Figure 8 E facing section of Trench 4E. Scale 1:10

Trench 4G, which was L-shaped, measuring 3m long N-S by 1m wide E-W, with an extra 1m square at its SW corner, was begun as an attempt to establish whether or not the stakeholes at the west end of the slabs around the hearth complex represented an internal partition or the gable of the building. As it turned out, though it must lie just beyond the end of the building, the trench provided an insight into the demolition deposits around its outside (plate 15). Immediately below the windblown sand which covered the site (4002) was a layer of rubble, mortar and broken tile within a matrix of yellow grey, sandy clay (4117). Though the thin sealing layer of clay (4010), was not present, this must be the same rubble as that covering the whole of the main trench (4011). The rubble layer petered out to the west, becoming a thin layer of clay. The rubble overlay the 'coal road' deposits (4119), separated by only a thin layer of clean, bright yellow, windblown sand (4118). Underneath these was a shallow U-shaped cut (4120), dug into the underlying sand (4122) and reminiscent of those found outside the east end of the building and the Saltman's House. This was infilled with a hard, greyish brown sand (4121), containing numerous small pieces of brick or tile and coal/shale, though this deposit also extended to either side of the cut. Visible only in the east facing section at the base of the coal road was a thin band of compact dark sand, which may be an old ground surface (4125). The 'coal road' deposits were not present in the western part of the trench, where the rubble layer rested partly on a compact grayish brown sandy clay (4123), very similar to that found on the opposite side of the trench (4121). In the northern part of the trench and apparently abutting the coal road (4119), a more ashy deposit of similar colour and also containing rubble, mortar, brick/tile and coal/shale was present (4124). The variability of these deposits suggests that they might be demolition material, dumped on the outside of the building. In the centre of the north facing section, the rubble rested directly on a layer of bright yellow,

windblown sand (4122). Though this contains occasional stone and shale inclusions and lenses of yellow grey clay, particularly close to its interface with the rubble layer, it does probably represent the natural in this area.



Plate 15 N facing section of Trench 4G

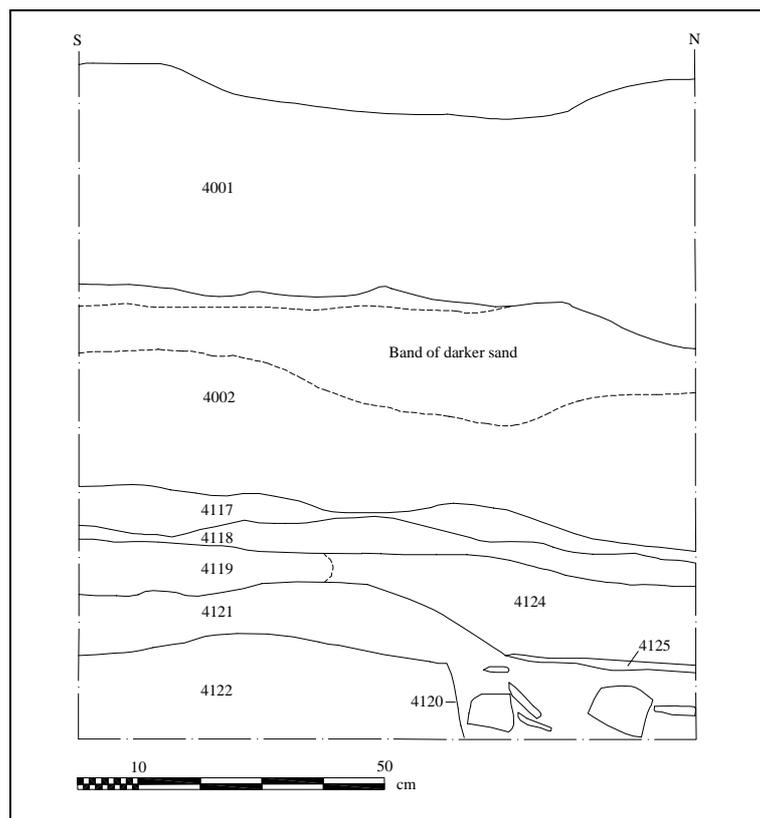


Figure 9 E facing section of Trench 4G. Scale 1:10

The location of the other two trenches in the area of the New Salt Works was prompted by the geophysics undertaken by the Orkney College Geophysics Unit in June and August 2008 (Saunders and Ovenden 2008). The gradiometer survey suggested a large area of midden material to the south of the Saltman's House (Site 19) and which may be that exposed in the face of the dune (Sites 5-7), while a linear anomaly appears to be the field wall shown on Farey's map of 1813, particularly as both seem

to follow the line of the 'Intended Waggon Road' shown on Kirk's map of 1772 (Site 8; fig. 4). The gradiometer results also highlighted a number of other anomalies which may be archaeological in origin, though others suggest a strong ferrous response (perhaps modern), the existence of igneous boulders (recognisable on the surface), or - given that this is an industrial site - the presence of burnt material. The resistivity survey revealed a large area of low resistance, its southern edge reflecting the northern boundary of the magnetic anomalies suggesting the midden and wall. The anomaly may reflect the fact that anthropogenic features have interrupted the drainage of the sand in this area; there are suggestions of linear features within it, but nothing to confirm the existence of the substantial stone buildings known to be present. However, the lime kiln (Badger, Cressey and Aitken 2006, 39, Site 17 and fig. 3) and the pit (ibid., Site 18) show up clearly in both the gradiometer and resistivity surveys, while the latter also suggests another area of disturbed drainage in the south western corner of the survey area.



Plate 16 S facing section of Trench 4H

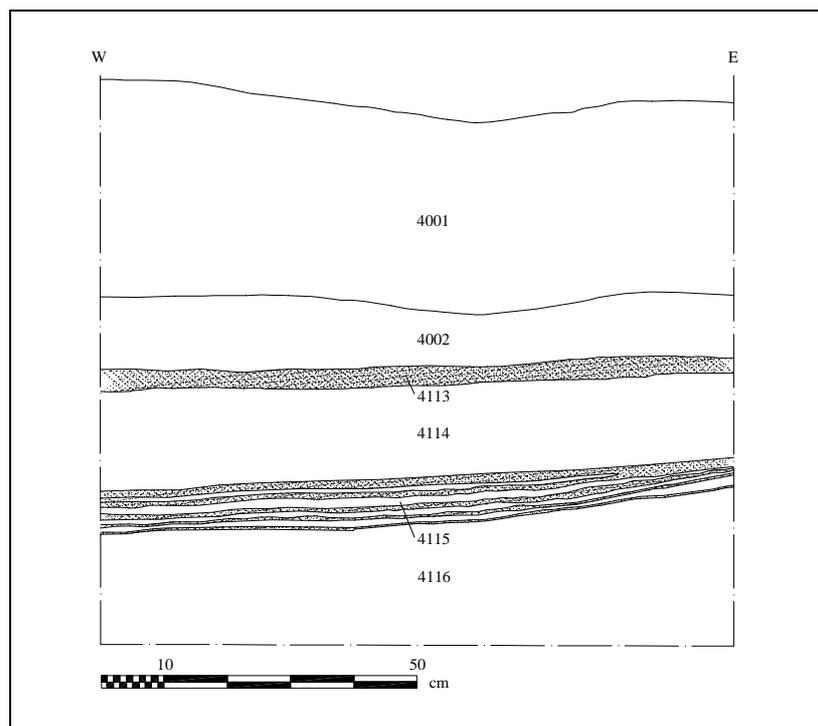


Figure 10 S facing section of Trench 4H. Scale 1:10

The geophysics results were inconclusive in the area of the New Salt Works, so Trench 4H was laid out in an area of high resistance, 10m to the west of the main trench, where a level-topped knoll seemed also to suggest there was the potential for a building (plate 16). This revealed that the topsoil (4001), though it graded towards sand with depth, was 0.3m thick, overlying a windblown sand (0.1m thick) (4002). The relative thicknesses of these two layers contrasts with the other trenches in this area. Between the windblown sand and another windblown deposit of similar thickness (4114), was what appears to be an old ground surface (4113), though this is not consistent throughout the trench. Below the lower sand, there was a sequence of very narrow bands of more compact grey brown sand, containing flecks of coal/shale, interleaved with light coloured, loose sand (4115). These layers may also be old ground surfaces, though laid down in a more active environment. Underneath these deposits was another thick layer of clean, windblown sand (4116). The horizontal nature of all these deposits suggests that they are relatively unaffected by human activities in this area.

The location of Trench 5 was prompted by the geophysics, which suggested a positive anomaly, reflected on the surface by a low mound. Probing of the area suggested that there was a concentration of stone below the turf. This was indeed the case, as removal of the topsoil and a layer of windblown sand (5001) revealed a roughly rectangular area of very neatly laid cobbling (5009) (plate 17), on which was found a sherd of late eighteenth century pottery, reminiscent of the 'seeded' white saltglazed ware made at Prestonpans c. 1760-80 (Cruickshank 2007, 48-9). Extending to the west of the cobbling and level with the base of the stones was a thin band of dark grey sand (5002), which may be a surface contemporary with it. Below these layers and separated from them by a layer of dirty windblown sand (5003) - was another dark grey sand (5004), which may be a working surface, created when the cobbles were laid, or perhaps an old ground surface. Below this was a layer of (cleaner) windblown sand (5005), above a thicker layer of dirty - but also probably windblown - sand (5006). Underneath this was a midden deposit, containing a lot of shell, which was much thicker in the north west corner of the trench and sloped down steeply (from north west to south east) underneath the cobbling (5007). This overlay what appears to be natural windblown sand (5008). As there was no apparent structural evidence associated with the cobbling, its purpose and character needs further assessment. It is possible that it was a working surface or, as there were a number of horses kept to operate the horse gins used to drain the coal pits, it may have been the base for a hay stack.

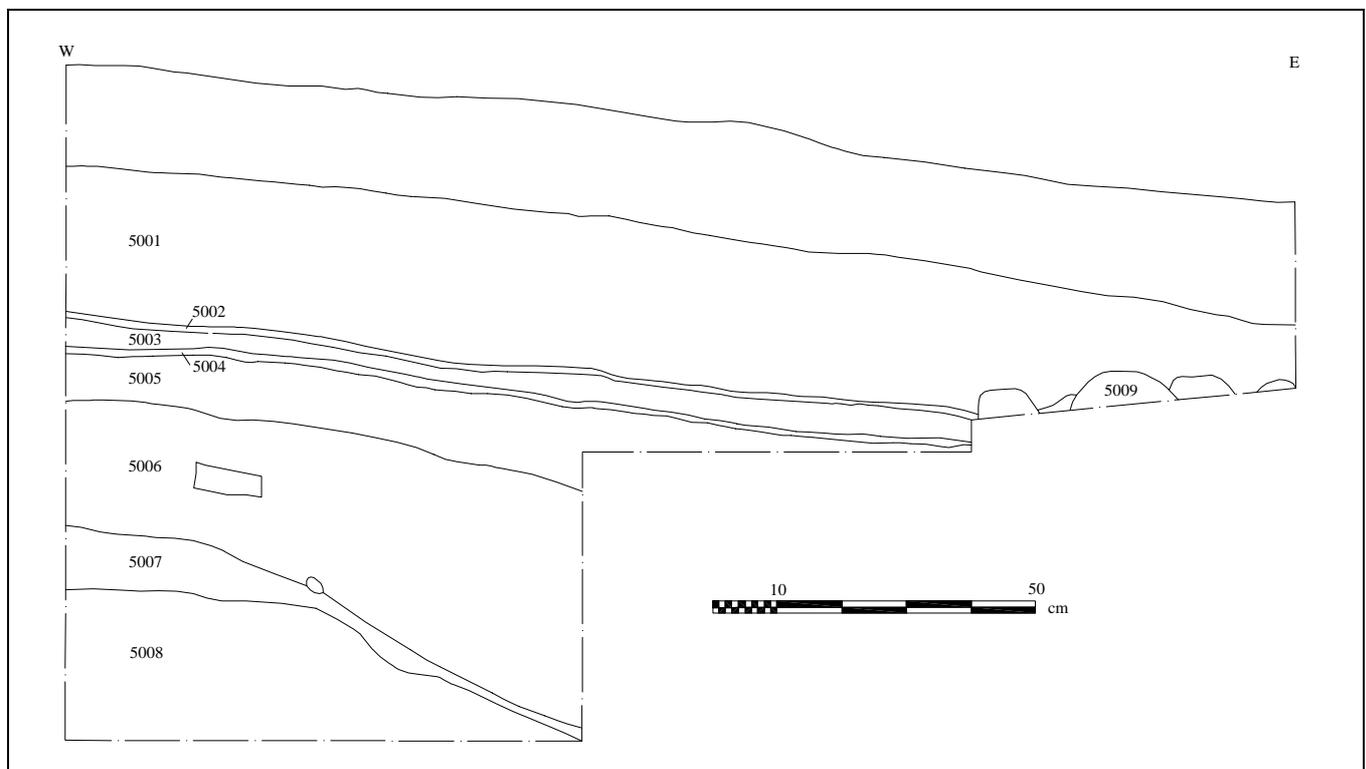


Figure 11 S facing section of Trench 5. Scale 1:10



Plate 17 The cobbling in Trench 5, following excavation. Taken from the N

## 6.2 Old Salt Works

Unfortunately, the eroding face of the building with associated floor deposits (Site 2; Aitken and Hooper 2008, 26-7), which might form part of the Old Salt Works, proved too precarious to examine during the summer. The upstanding part of the wall collapsed during spring 2008, while the floor slabs, with their overlying deposits, slumped further forwards (plate 18). However, a large overhang - formed from tumbled masonry within the building and the turf overlying it - meant that safe access was not possible. The sequence of deposits within the building is now much more obvious (plate 18). Above the dark grey brown sand lying on top of the floor slabs, are thin layers of what appears to be almost solid chunks of mortar, interleaved with windblown sand. Above this are slightly darker sandy layers, which become cleaner towards the top of the dune. Finally, above this and immediately below the turf, is what appears to be a thick deposit of tumble in a matrix of clay, which, though generally yellow grey in colour, in places seems to have been turned red by heat. Intriguingly, this sequence makes it reminiscent of the demolition layers over the structures associated with the New Salt Works. Over the winter of 2008/9, this overhanging material has collapsed and it is hoped that it will be possible to explore this sequence in more detail in summer 2009.



Plate 18 Site 2 in summer 2008, following the collapse of most of the upstanding walling



Plate 19 Deposits overlying the floor slabs within Site 2

On the landward side of the Old Salt Works, the erosion scars formed by trail bikes within the dune were fieldwalked and a metal detector run over the whole dune. This produced bullets relating to the nearby volunteer rifle range and sherds of later nineteenth century china, but no further sherds of fifteenth-sixteenth century pottery. Partial deturfing of the pile of stones (Site 22) at the base of the dune on its landward (north) side revealed thick wire wrapped around the stones. These must relate to the radio masts, which two of the local volunteers, George MacBeath and Karl Majors, confirmed did extend into this field. A small trench measuring 2m N-S by 1m E-W was laid out just to the north, where the black soil exposed in the molehills suggested that there might be midden material below (Trench 6, plate 19). The black sandy soil was in fact just the topsoil (6001) and, though a lot of large pieces of angular white quartzite were recovered from the upper layers, there was little to suggest that these were not just naturally accumulating windblown deposits. Below the topsoil, was a build-up of clean windblown sand, interleaved with very thin layers of much darker, dirtier sand (6002). Underneath these was a slightly thicker and more distinct dark brown band, which may be an old ground surface (6003). Below this again was a thick build-up of clean, windblown sand (6004). In the northern part of the trench, a concentration of small beach cobbles suggests the sands rests directly on raised beach deposits (6005). These deposits were recorded photographically and backfilled.

## 7.0 Discussion and Recommendations for Future Work

The 2008 excavation has revealed a long narrow building, which does appear to be industrial in nature and to date to the late eighteenth century. For a building probably in use for only ten years, it is surprisingly complex and a number of still unanswered questions surround its use and function. Much of the masonry was covered in barnacles, confirming documentary evidence that many of the stones had been taken directly from the beach (Minute Book of the Curators of the Countess 1771, Tack of James Robertson & Coy, NLS Dep.313/724, 29-32). A substantial amount of broken tile overlying the floor deposits reinforced the suggestion that this building had a pantile roof. If this was the case, it appears to contradict the mention of slate in the 1767 lease of the salt works (Petition of James Robertson and Co. Merchants in Portsoy and John Williams Tacksman of the coal of Brora in Sutherland, 1767, NAS E728/42/3/1) and the use of turf for the salters' houses, which were being built a year later (NLS MS 1485). Tiles or slates were commonly used for the fore-chambers of the panhouse, while wood would be used for the pan-chamber (Brownrigg 1748, 287). This seems to have been the case at Preston Island (Ewart, Stewart and Dunn 1996, 11), though elsewhere in Scotland, turf or heather was commonly used (Whatley 1987, 9).



Plate 20 Trench 6, following excavation, showing S facing section

The nature of the deposits at the west end of the building are especially complicated. Flake hammer scale was identified between the slabs around the hearth complex in the eastern half of the building. This was possibly derived from repairs to the pans, which would have had to be undertaken frequently, because of the corrosion caused by the salt. However, given the number of iron objects also recovered, it is possible that at least one phase of the hearth complex in the western half of the building functioned as a forge. This interpretation is reinforced by the relatively small size of the building, which suggests it could not have been large enough to contain even one pan. Though the size of the pans at Brora is not known, the Swedish spy, Henry Kalmeter reported that Scottish pans measured 18ft long by 9ft wide by 18in deep (5.49m long by 2.74m wide by 0.46m deep) (Whatley 1984, 22; Whatley 1987, 9). A pan of this size would have been a tight fit within a building only 3.7m wide, particularly given that at St. Monans, where - though again the pan size is not known - the pan houses varied between 8.5m-8.7m and 9.2m-9.7m wide overall (Murdoch and Lewis 1999, 18). Apart from the fireplace on the west side of the division wall, which is quite domestic in scale, there is nothing to indicate the function of this half of the building; its 'emptiness' suggests it might have been used for storage. The high quality of the ceramic finds - all of which appear to support a late eighteenth century date - somewhat offsets the impression of an industrial building.

At Brora one of the most striking features of the western half of the building is the size and thickness of the slabs surrounding the hearth complex. They rest directly on sand, so it is possible that this was simply to offset the propensity for the slabs to sink into the sand below. However, their thickness would also have allowed them to support a considerable weight, perhaps a salt pan, on a firm, level surface. At Brora, the sand below the slabs has not been excavated, but at the Cock of Arran, where the floor slabs within the girdel (not the panhouse) also sat on 0.6m of sand, Whatley has suggested that this was to aid the draining away of the bitters (1982, 94, quoted in Murdoch and Lewis 1999, 27). This might have been the case at Brora, but only chemical analysis of the sand could confirm this. At St. Monans, a wooden floor, resting on a double row of unmortared bricks, may have performed a similar function (Murdoch and Lewis 1999, 27). The enclosing stub walls around both fireplaces are very reminiscent of the St. Monans panhouses, though they do differ in that the Brora walls are made entirely of stone (not sandstone and brick). As they are slightly less substantial than those at St. Monans, where the walling seems to have also been thickened in order to support chimneys, as well as the walkways around the pans (*ibid.*, 19), it does not lend much support to the theory of an upper level at Brora. At St. Monans, there was also evidence for steps up to the walkways in all the excavated panhouses (*ibid.*, 20). At Brora, both the hearths and the stub walls display a considerable amount of heat damage, but it is restricted to within the fireplaces, unlike St. Monans where the whole of the pan-chamber was badly affected by heat (*ibid.*, 19).

This building - like the Saltman's House (Aitken and Hooper 2008, 29-34) - appears to have been deliberately demolished, so the original height of the spur walls surrounding the fireplaces are not known. This is equally true of the division wall, though its width (0.4-0.5m), makes it unlikely to have been supporting. It is possible that - if this was a panhouse - it might have supported a mezzanine floor, allowing the fires, with all their attendant smoke and ash to be sealed away from the salt being made in the pans above. However, if the emptiness of the eastern half of the building is perhaps indicative of a storage function, it is more likely to have stood to full height. The finds from this half of the building appear to be similar to those from the western half and are therefore little help in determining its function. In contrast, even though no finds were made from the panhouses at St. Monans (Murdoch and Lewis 1999, 22), the function of the buildings was clear. Each saltern was divided into a fore-chamber with walls 0.6m to 0.8m thick and a pan-chamber with more substantial walls, varying from 0.9m to 1.3m thick (ibid., 19). The fore-chamber tended to be the smaller of the two rooms, varying in area between 35m<sup>2</sup> and 42m<sup>2</sup>, compared with the pan-chamber with an area ranging from 41m<sup>2</sup> to 60m<sup>2</sup> (ibid.). The eastern half of the Brora building has a floor area of 25.16m<sup>2</sup>. This ensures that, as well as being narrower, it is considerably smaller than any of the fore-chambers at St. Monans. In addition, the fact that the wall thickness remains the same between each half of the building seems to preclude its interpretation as a panhouse.

However, no final conclusions can be drawn until the west end of the building has been uncovered and its layout can be seen in full. The array of nine single panhouses arrayed at right angles to the beach, contrasts with the range of three panhouses uncovered at Preston Island (Ewart, Stewart, and Dunn 1996, 4, illus. 3; Lewis 1999, *passim*). At Preston Island, though the dimensions of the excavated panhouse is very similar to those at St. Monans, the hearth arrangement is far more reminiscent of that depicted by Brownrigg in *The Art of Making Common Salt* (1748, pls. III and IV; Ewart, Stewart, and Dunn 1996, 14, illus. 12). The differences between Preston Island and St Monans highlight the variation which is possible, reinforcing the need to fully explore the whole of the structure at Brora, as well as the area around it. The relationship of the long building to the Saltman's House still hints at the possibility that this is the structure, annotated as 'Salt Pans', depicted by Kirk on his map of 1772. One of the factors which will be crucial to determining this will be whether or not the other two buildings shown by Kirk can be identified. So far neither the geophysics nor limited test pitting has helped in this search - though it has produced the cobbling uncovered in Trench 5 - and again further exploration is needed to resolve this question. In attempting to set the excavated evidence into context and to assess, for example, the mechanisms by which salt water was brought to the pans, a greater understanding of how much erosion has taken place along the Back Beach, is essential. It is hoped that utilising the excellent series of historic maps, of which the Kirk map is just one, will aid this research.

The second season of excavation at Brora has reinforced the quality of the remains on the Back Beach and their potential to reveal much about the industrial history of the Sutherland Estate sponsored activities in this area. This has been brought to life by the enthusiasm and energy of the volunteers, who numbered 35 in all - ranging from 5 to 75 in age. Though all the volunteers are Highland-based, there was an increase in the level of participation from members of the local heritage society, who have become even more aware of the significance of this site and who were keen to show their support by becoming actively involved in the excavation. The whole of Brora Primary School (approximately 100 children) came to visit the excavation during the 2008 season, touring the site, carrying out their own small excavation, helping to wash and sort the brick and tile and watching salt being made by Dr. Ralph Shuttleworth, one of the excavation team. During the excavation, there were around 450 visitors and an open day was held on the final Saturday, advertised through the Clyne Heritage Society and in the local press. This attracted 70 people, who not only got a tour of the site, but could watch Ralph demonstrate the process of making salt using Brora coal. Monitoring of the beach by Clyne Heritage Society has continued through the winter. The results have been presented to the public as part of Archaeology Scotland's Community Archaeology conference held in Musselburgh in May 2009 and, locally, at Clyne Heritage Society's AGM. Over the winter of 2008, interpretation banners were prepared and these are now on display in Brora Heritage Centre, alongside some of the finds from the excavation. The project also has its own website, hosted by The SCAPE Trust ([www.shorewatch.co.uk/Brora](http://www.shorewatch.co.uk/Brora)).

## 8.0 Acknowledgements

The success of the excavation was due to the commitment and hard work of all the volunteers - our grateful thanks are extended to them all. The authors would also like to thank the trench supervisors - Cathy Dagg and Dr. Ralph Shuttleworth, who was also responsible for the salt-making experiments, while Tom Dawson took charge of Trench 5. Nick Lindsay carried out the survey and, even more importantly, organised the open day. Our thanks go to NOSAS, who provided the excavation equipment and the site tent, while The SCAPE Trust provided the on-site facilities. The Highland Council TEC Services department kindly provided an EDM. Access to the Back Beach was by courtesy of Martin Janson and was facilitated by Chris Whealing, factor of the Sutherland Estates and by Malcolm McCall of Inverbrora Farm. Richard Sutherland provided the digger, and our thanks go to the driver, Mattie Matheson. Our thanks to James Synge for a lovely cottage with a wonderful view. We also appreciate the advice and support of Noel Fojut of Historic Scotland and Tom Dawson of The SCAPE Trust.

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## 10.0 Appendices

### 10.1 List of Contexts

#### Trench 4 (including small trenches)

No.	Description	Interpretation/Relationships
4001	Mid grey-brown humic sand and turf penetrated by bracken roots	Turf and topsoil
4002	Clean, pale yellow sand	Windblown deposit
4003	White quartzite masonry blocks of wall	Wall, forming long side of a building running E-W parallel to the shore (Site 37)
4004	Lime mortar, tempered with shell	Harling of wall, 4003
4005	Yellow sand. Lenses of shale fragments present E of doorway (unexcav.)	?Natural sand, under wall, 4003
4009	Clean, pale yellow sand	Windblown sand under 4001. Same as 4002
4010	Thin layer of yellow grey clay	Layer of clay, potentially sealing 4011. Equivalent to 4062
4011	Rubble layer in clay matrix, underlying 4010. Mixture of angular and dressed stone and chunks of mortar	Demolition layer
4012	Bright orangey yellow sand	Windblown deposit, underlying 4011
4018	Rectangular brick-built structure	Brick-built chimney
4028	Mortared white sandstone masonry	Dwarf wall, running E-W, containing N side of hearth, 4029
4029	Heavily burnt stone-built structure	?Stone-built hearth
4031	Plastic, black/red clay between walling, 4081, and lining of hearth, 4029	?Clay packing around hearth, 4029
4036	Spread of yellow sandstone fragments	?Rubble from dressing of stones of field boundary. Equivalent to 4070
4055	Thin layer of mortar fragments within a dark sand matrix	Demolition layer
4056	Predominantly grey, beach stone cobbles	Cobbles overlying field wall. Equivalent to 4069
4057	Massive square, yellow sandstone blocks	Field wall (Site 8)
4058	Predominantly grey, beach stone cobbles	Hearting of field wall, 4057. Very similar to 4056
4059	Concentration of limpet shells in a matrix of loose bright yellow sand	?Recent intrusion of limpet shells, due to action of animals
4060	Hard, brown clay	Clay bonding of wall, 4003
4061	Rubble within clay matrix, 4060	Demolition rubble, overlying wall, 4003
4062	Thin layer of greeny, grey compacted clay	Layer of clay, potentially sealing 4011. Equivalent to 4010
4063	Compact dark grey brown, ashy sand, containing numerous fragments of burnt and unburnt coal/shale	Midden deposits on the outside of the building, known locally as the 'coal road'

<b>No.</b>	<b>Description</b>	<b>Interpretation/Relationships</b>
4064	Black mixed deposit, containing numerous fragments of coal/shale	Midden deposits on the outside of the building, known locally as the 'coal road'
4065	Loose yellow sand, containing angular rubble, tile fragments and lenses of clay	Windblown deposit, following demolition of building. ?Equivalent to 4189
4066	Loose, clean yellow sand	Windblown deposit
4067	Thin layer of limpets, fish bone, etc within a dark sandy matrix	Midden deposit. ?Possibly the same as 4059
4068	Burnt black coal/shale, plus black sandy layers	Midden deposits on the outside of the building, known locally as the 'coal road'
4069	Predominantly grey, beach stone cobbles	Cobbles overlying field wall. Equivalent to 4056
4070	Spread of yellow sandstone	?Rubble from dressing of stones of field wall. Equivalent to 4036
4071	Loose bright yellow sand	Windblown deposit, containing cobbles, 4069. Equivalent to 4012 and ?4073
4072	Dense black layer of variable thickness, containing numerous mussel shells	Midden deposit
4073	Loose bright yellow sand	Windblown deposit. Equivalent to ?4071
4074	Compacted brown sand, containing tile and shale flecks	?Old ground surface
4075	Compacted grey/black sand; variable layer which abuts cobbles, 4069	?Old ground surface or midden deposit?
4076	Loose bright yellow sand, containing occasional shale/coal fragments	Windblown deposit
4077	Sharp angular pieces of white quartzite	?Demolition rubble, overlying wall, 4003
4078	Loose bright yellow sand; notable for lack of clay and mortar inclusions	Windblown deposit, forming matrix of 4077
4079	Large white quartzite tumble, with voids between	?Collapse from wall, 4003
4080	Bright orangey yellow sand	Windblown deposit, bounded by walling 4081 and 4082. Equivalent to 4012
4081	Mortared white quartzite masonry	Dwarf wall, running N-S, dividing building into two
4082	Mortared white quartzite masonry	Dwarf wall, running E-W, containing S side of fireplace, 4018
4083	Brick built structure	General no. encompassing later part of hearth complex
4084	Lumps of soft green clay and rubble	Packing of void between brick fireplace, 4018, and division wall, 4081
4085	Burnt black coal/shale, in a dense black sandy matrix	Midden deposit, known locally as the 'coal road'. Equivalent to 4068
4086	Loose, pale yellow sand	Windblown deposit. Possibly equivalent to 4071
4087	Loose yellow sand	Windblown deposit
4088	Clean, plastic, blue-grey clay, visible only under 4079	?Equivalent to 4145

<b>No.</b>	<b>Description</b>	<b>Interpretation/Relationships</b>
4089	Loose, mixed deposit, containing lots of brick/tile and coal/shale	Concentration of tile lying horizontally, suggesting it may be roof collapse. Equivalent to 4101 and 4104
4090	Compacted (unburnt) coal/shale dust	?Trampled layer on top of the slabs, 4091
4091	Massive flat, red sandstone blocks	Flagged floor underlying later fireplaces
4092	Chocolate brown loamy sand, containing flecks of coal/shale	Equivalent to 4100, 4102, 4105
4093	Large pieces of angular stone	Regularly arranged tumble, to N of hearth complex, 4083
4094	Bands of yellow/brown sand	Windblown deposit
4095	Dense layer of mortar fragments, in a matrix of decayed mortar	Demolition deposit
4096	Loose, bright yellow sand	Windblown deposit
4097	Thin layer consisting of greeny grey clay, interleaved with bands of yellow/brown sand	?Clay containing 'coal road' deposits
4098	Dirty, grey brown sand, interleaved with thin bands of pale yellow sand	?Windblown deposit (in dirty environment)
4099	Loose, pale brown sand, containing brick, tile and coal/shale	?Windblown deposit (in dirty environment)
4100	Chocolate brown loamy sand, containing flecks of coal/shale	Equivalent to 4092, 4102, 4105
4101	Mixed deposit, containing lots of brick/tile and coal/shale	Concentration of tile lying horizontally, suggests may be roof collapse. Equivalent to 4089 and 4104
4102	Chocolate brown loamy sand, containing flecks of coal/shale	Equivalent to 4092, 4100, 4105
4103	Mortared bricks stacked at ends of each of the three walls forming later hearth	Extension to later hearth, 4083
4104	Mixed deposit, containing lots of brick/tile and coal/shale	Concentration of tile lying horizontally, suggests may be roof collapse. Equivalent to 4089 and 4101
4105	Chocolate brown loamy sand, containing flecks of coal/shale	Equivalent to 4092, 4100, 4102
4106	Thin layer of yellow sand, containing flecks of shale/coal and tile	Windblown deposit, localised in NE corner where slabs not present
4107	Loose dark sand, containing many fragments of coal	Interface between windblown deposit above, 4106, and coal layer below, 4133
4108	Mortared white quartzite masonry	Dwarf wall, running E-W, containing S side of hearth, 4029
4109	Mortared white quartzite masonry	Dwarf wall, running E-W, forming N side of later hearth platform
4110	Mortared white quartzite masonry	Dwarf wall, running E-W, forming N side of later hearth platform

<b>No.</b>	<b>Description</b>	<b>Interpretation/Relationships</b>
4111	Mixed deposit, containing lots of brick/tile and coal/shale, in reddish clay matrix, under large slab tumbled from wall	?Demolition deposit
4112	Compacted, mixed reddish ashy clay, containing lots of coal fragments (unexcav.)	Compacted surface, shelving slightly downwards. Abutting 4092, 4100, and 4102
4113	Mid grey-brown humic sand	?Old ground surface
4114	Loose, pale yellow sand, containing flecks of coal/shale	Windblown deposit
4115	Narrow bands of clean pale yellow sand and more compact mid grey-brown humic sand	Interleaved windblown deposits and ?OGSs
4116	Clean, pale yellow sand	Windblown deposit
4117	Predominantly white sandstone rubble and mortar within yellow grey clay matrix	Demolition deposit on outside of building. Equivalent to 4011
4118	Clean, bright yellow sand, containing flecks of shale	Windblown deposit
4119	Dense, burnt black coal/shale fragments	Midden deposits, known locally as the 'coal road'. Equivalent to 4068
4120	Shallow, probably U-shaped cut	?U-shaped cut, similar to those noted elsewhere
4121	Hard greyish brown sand, containing numerous flecks of brick/tile and coal/shale	Deposits infilling cut 4120, but also extending to either side. ?Equivalent to 4123 and 4203
4122	Clean, bright yellow sand, containing lenses of yellow grey clay	Windblown deposit
4123	Compact, grey brown sandy clay, containing rubble, brick/tile and coal/shale, as well as thin layers of windblown sand	Demolition deposit. ?Equivalent to 4121 and 4124
4124	Compact, grey brown ashy sand, containing rubble, brick/tile and coal/shale	Demolition deposit. ?Equivalent to 4121 and 4123
4125	Thin band of dark brown/black sand	?Old ground surface
4126	Thin band of black powdery coal	Midden deposit. ?Reminiscent of 4161
4127	Coal/mortar/tile fragments in a brown sandy matrix	?Demolition deposit, filling U-shaped cut, 4186
4128	Mortared stone and brick wall	Dwarf wall, running E-W, forming central part of later fireplace
4129	Gap between low walls, 4128 and 4109	North 'flue' of later hearth
4130	Gap between low walls, 4110 and 4128	South 'flue' of later hearth
4131	Loose rubble and mortar fill of north flue	Deliberate packing of north 'flue'
4132	Loose rubble and mortar fill of south flue	Deliberate packing of south 'flue'
4133	Coal-rich deposit in NE corner	?Remnants of coal store. Apparently continues under floor slabs to meet up with 4192
4134	Thin layer of compacted clay, turned red by heat	Clay layer sealing later hearth, but also extending across rubble, 4089
4135	Bright orangey yellow sand	Windblown sand. ?Equivalent to 4173
4136	Soft black, coal/shaley deposit, containing lenses of dark brown sand and clean sand	Floor deposit, though in places its brown colour suggests it might be an OGS

No.	Description	Interpretation/Relationships
4137	Chocolate coloured sand, containing flecks of shale	Equivalent to 4195 at the east end of the building and to 4092, 4100, 4102 and 4105 at its west end
4138	Thin, patchy layer of friable white sandstone	?Rubble from dressing of stones for walls. Equivalent to 4157
4139	Thin soft, yellowy green clay, overlying slabs within both 'flues'	?
4140	Thin layer of soft, yellowy green clay	Clay used to ?contain coal deposits, 4133. Equivalent to 4193
4141	Uneven layer of stone slabs and broken bricks	Hearth for fireplace, 4018
4142	Cobbles, sitting in underlying sand	Cobbled floor
4143	Steep sided cut (part visible under W end of trench)	Cut for pit
4144	Loose, flecked, yellow sand	Fill of pit, 4143
4145	Thick layer of clean, plastic blue-grey clay	?Sealing layer, beyond W end of floor slabs, 4090. ?Equivalent to 4088
4146	Roughly built masonry walling	Walling, running N-S, forming E side of later fireplace
4147	Uneven layer of stone slabs and broken bricks, in a loose dark, ashy, matrix containing small lumps of brick, mortar and yellow grey clay	Rough surface at base of hearth, 4029
4148	Very mixed dark deposit	Deposit infilling robbed hole between slabs, 4091
4149	Not used	
4150	Steep sided rectangular cut	Cut for stakehole
4151	Compact grey brown sand, containing small fragments of mortar	Fill of cut, 4150
4152	Steep sided rectangular cut	Cut for stakehole
4153	Loose dark brown sandy loam	Fill of cut, 4152
4154	Steep sided rectangular cut	Cut for stakehole
4155	Loose dark brown sandy loam	Fill of cut, 4154
4156	Loose deposit of burnt shale, ash, small chunks of mortar and two half bricks	Infill between division wall, 4081, and fireplace, 4029
4157	Thin, patchy layer of friable white sandstone	?Rubble from dressing of stones for walls. Equivalent to 4138
4158	Thin layer of black (unburnt) coal/shale	?Midden material, used as make-up for floor
4159	Thin layer of creamy white clay	?Midden material, used as make-up for floor
4160	Thin layer of black streaked pink clay	?Midden material, used as make-up for floor
4161	Layer of solid black (unburnt) shale/coal fragments	?Midden material, used as make-up for floor, but also extending under the wall of the building
4162	Shallow rectangular cut	?Cut for stakehole
4163	Compact grey brown sand, containing small fragments of mortar	Fill of cut, 4162
4164	Shallow circular cut	?Cut for stakehole

No.	Description	Interpretation/Relationships
4165	Compact grey brown sand, containing small fragments of mortar	Fill of cut, 4164
4166	Mortared white quartzite masonry	Dwarf wall, running E-W, forming N side of fireplace, 4018
4167	Bright orangey yellow sand	Windblown deposit on outside of wall, 4003
4168	Dirty light grey sand	Layer of sand trapped under wall, 4081
4169	Shallow, oval-shaped cut	?Cut for stakehole
4170	Loose red brown sandy loam	Fill of cut, 4169
4171	Steeply sloping cut (unexcav.)	?Cut for foundation trench of wall, 4003
4172	Dark fill of cut (unexcav.)	?Fill of foundation trench of wall, 4003
4173	Bright orangey yellow sand (unexcav.)	Windblown deposit. ?Equivalent to 4135, from which it is apparently divided by cuts (4143, etc)
4174	Dark brown, compact sand (unexcav.)	Upper fill of pit, 4177 (apparent in E facing section)
4175	Dirty brown, flecked sand (unexcav.)	Lower fill of pit, 4177 (apparent in E facing section)
4176	Vertical piece of mortar in section under field boundary	?Part of partition wall
4177	Gently sloping cut	Cut for pit (apparent in E facing section)
4178	Shallow, ill-defined cut or hollow	Shallow depression in centre of floor
4179	Soft black, coal/shaley deposit	Fill of cut, 4178. Equivalent to 4136
4180	Thin layer of sandy yellow grey clay (unexcav.)	?Containing sandy deposits (4092). Visible only in E facing section
4181	Compacted (unburnt) black coal/shale fragments in a sandy matrix	?Trampled deposit
4182	Steeply sloping cut (unexcav.)	Cut (apparent in E facing section)
4183	Dirty brown, flecked sand (unexcav.)	Fill of cut, 4182. ?Equivalent to 4175
4184	U-shaped cut	Cut, containing 4185
4185	Loose black deposit, full of building rubble and large pieces of mortar and tile	Fill of cut, 4184. Indistinguishable from 4068 above, except for the amount and size of inclusions
4186	U-shaped cut	Cut, containing 4127
4187	Clean, pale yellow sand, interleaved with thin layers of dark brown sand	Windblown deposit, with possible OGSs within it
4188	Thin layer of yellow grey clay, with lenses of flecked windblown sand and clean clay	?Similar to 4010, the clay sealing the rubble layer (4011), though the latter not present at this point
4189	Loose yellow sand, containing tile fragments and lenses of clay	Windblown deposit. ?Equivalent to 4012
4190	Bright orangey yellow sand (unexcav.)	Windblown deposit, equivalent to natural
4191	Gap between floor slabs, 4091	Hole created by robbing of a small slab
4192	Black coal-rich deposit	Deposit visible within 4191. Equivalent to 4133
4193	Layer of yellow grey clay	?Layer containing coal deposits, 4192. Equivalent to 4140

<b>No.</b>	<b>Description</b>	<b>Interpretation/Relationships</b>
4194	Bright orangey yellow sand	Windblown deposit, equivalent to natural, on outside of wall, 4003
4195	Chocolate brown loamy sand, containing flecks of coal/shale. Slightly more grey in colour than 4137	Equivalent to 4137 in the centre of the building and to 4092, 4100, 4102 and 4105 on its west side
4196	Thin layer of yellow grey clay, containing tile, mortar and lenses of black	?Clay sealing floor deposits
4197	Bright orangey yellow sand	Windblown deposit
4198	Thin layer of yellow grey clay	Clay underlying 'coal road' deposits
4199	Bright orangey yellow sand	Windblown deposit
4200	Bright orangey yellow sand	Windblown deposit
4201	Straight sided circular cut	Cut for stakehole
4202	Chocolate coloured sand, containing flecks of coal/shale	Fill of cut, 4201. Very similar to e.g. 4195, so may be a burrow
4203	Steep sided, rectangular cut	Cut for stakehole
4204	Loose grey brown/yellow banded sand	Windblown deposit. Very similar to 4195
4205	Almost circular cut (unexcav.)	Cut for pit, just inside doorway, 4216
4206	Loose pale yellow sand (unexcav.)	Fill of pit, 4205
4207	Compact, ashy deposits, containing fishbone	Floor deposit
4208	Softer black, ashy deposits on outside of wall, 4003, close to doorway (unexcav.)	?Equivalent to the 'coal road' deposits
4209	Steep-sided, almost circular pit	Cut for pit
4210	Burnt and unburnt coal/shale within a matrix of dark brown clay	Upper fill of pit, 4209
4211	Dirty, flecked sand, interleaved with thin lenses of cleaner sand, which increase with depth	Windblown deposit, on outside of building. Similar to 4187 in interior
4212	Homogenous, loose brown sand	Lower fill of pit, 4209
4213	Single layer of laid bricks (unexcav.)	Threshold of doorway, 4216
4214	Wooden plank (unexcav.)	Threshold of doorway, 4126
4215	Compacted, black, organic deposit (unexcav.)	Within doorway, 4216
4216	Doorway within 4003 (unexcav.)	Doorway allowing access into W half of building
4217	Sub-circular cut (unexcav.)	Cut for pit
4218	Loose, dark sand (unexcav.)	Fill of pit, 4217
4219	Two steep sided, sub-circular cuts (unexcav.)	?Burrows, visible under wall, 4003
4220	Blocked ?aperture in S wall of building	?Opening to coal hole
4221	Sharp edged, slightly curving cut	?Foundation cut for field wall, 4057
4222	Sharp edged, slightly curving cut	?Foundation cut for field wall, 4057
4223	Loose bright yellow sand	Windblown deposit
4224	Loose bright yellow sand	Windblown deposit
4225	Compact grey brown sand, containing small fragments of mortar	Fill of stakehole, 4203
4226	Steep sided, circular cut	Cut for stakehole
4227	Loose dark brown sandy loam	Fill of stakehole, 4225

**Trench 5**

No.	Description	Interpretation/Relationships
5001	Loose, light grey brown sand	Windblown deposit
5002	Thin band of loose, dark grey sand	?Old ground surface, contemporary with the cobbles, 5009
5003	Loose, grey sand	Windblown deposit (in dirty environment)
5004	Loose, very dark grey/black sand	?Working surface, created when cobbles, 5009, laid down
5005	Loose, relatively clean, light orange sand	Windblown deposit
5006	Light grey sand, with occasional inclusions and bands of cleaner sand	?Windblown deposit (in dirty environment)
5007	Compact, dark grey/black sand, containing fragments of coal/shale and lots of shell	Midden deposit
5008	Loose, orangey sand	Windblown surface
5009	Small rounded beach cobbles	Cobbled surface

**Trench 6**

No.	Description	Interpretation/Relationships
6001	Black sandy loam	Turf and topsoil
6002	Loose yellow sand, with narrow bands of darker sand. Large angular pieces of white quartzite	Windblown deposit
6003	Thin band of dark brown sandy soil	?Old ground surface
6004	Loose, yellow sand	Windblown deposit
6005	Concentration of small to medium sized beach cobbles	Raised beach

**10.2 List of Finds**

No	Tr	Context	No pieces	Material	Description
1	4D	4188	1	Metal	Cu alloy coin
2	4D	4068		Glass	Window glass
3	4F	4012	1	Ceramic	Redware, with cream, brown and green mottled glaze
4	4D	4188	1	Glass	Curved, bottle glass
5	4D	4068	1	Glass	Bottle neck and ?sherds
6	4D	4068	1	Ceramic	Creamware, with very fragile blue and white glaze
7	4D	4068	1	Metal	Cu alloy pin
8	4C	4078	1	Ceramic	Thin pottery, with a white glaze
9	4D	4068	1	Ceramic	Incised blue and white pottery
10	4D	4068	1	Ceramic	Thin porcelain, with blue and white cross-hatched decoration on one side and brown glaze on the other
11	4D	4068	1	Metal	Iron ?handle
12	4D	4068	1	Metal	?Cu alloy artefact
13	4D	4068	1	Ceramic	Reddish brown glazed pottery

No	Tr	Context	No pieces	Material	Description
14	4D	4068	1	Ceramic	Thin porcelain, with blue and white cross-hatched decoration on one side and brown glaze on the other
15	4D	4068	1	Glass	Curved, bottle glass
16	4D	4068	1	Ceramic	Creamware, with very fragile blue and white glaze
17	4D	4068	1	Ceramic	Clay pipe stem, with a narrow bore
18	4F	4011	1	Ceramic	Redware, with slip glaze
19	4F	4011	1	Metal	Iron ?latch
20	4F	4011	1	Metal	Iron ?pot and hole
21	4F	4011	1	Metal	Iron flake
22	4F	4011	1	Metal	Iron nail
23	4F	4011	1	Metal	Iron nail
24	4C	4092	1	Metal	Iron object
25	4C	4092	1	Metal	Iron object
26	4C	4092	1	Metal	Iron and other oxide
27	4C	4092	2	Wood	
28	4C	4011	1	Metal	Iron ?pot and hole
29	4C	4011	1	Metal/ wood	Cu alloy button
30	4F	4187	1	Metal	Cu measure
31	4D	4187	1	Metal	Cu alloy fragment
32	4D	4011	1	Metal	Cu pin
33	4F	4011		Glass	Window glass
34	4F	4011	1	Ceramic	Brown glaze
35	4F	4011	2	Ceramic	Brown glaze
36	4C	4089		Metal	Iron buckle
37	4C	4089		Metal	Iron oxide/slag
38	4C	4091		Metal	Iron ?pig x2
39	4C	4091	3	Ceramic	
40	4D	4068	1	Metal	Iron nail
41	4C	4102		Glass	
42	4C	4101		Metal	Iron plate & hook, + 1 fragment
43	4C	4091		Ceramic	
44	4C	4101		Glass	
45	4F	4136		Stone	Slate: complete with nail hole
46	4D	4136		Stone	Slate: broken with scratch marks
47	4F	4136		Metal	Cu alloy ?buckle
48	4F	4136		Metal	Iron object
49	4F	4012		Metal	Iron/wood handle and blade
50	4C	4111		Ceramic	
51	4C	4100		Metal	
52	4C	4100		Metal	Slag
53	4C	4148		Glass	
54	4F	4136		Glass	

No	Tr	Context	No pieces	Material	Description
55	4F	4136		Metal	Iron hook and iron object
56	4F	4136		Metal	Iron nail
57	4G	4117		Glass	Curved, thin
58	4G	4117		Glass	
59	4F	4012		Metal	Iron object
60	4C	4107		Metal	Iron object
61	4C	4107		Metal	Iron object
62	4C	4148		Glass	
63	4G	4117		Slag	Iron slag
64	4F	4012		Ceramic	Slipware
65	4C	4148		Bone	Complete skeleton of cat/puppy
66	4F	4167		Glass	
67	4F	4012		Metal	Iron
68	4C	4148		Bone	
69	4C	4130	2	Ceramic	
70	4G	4122		Metal	Iron
71	4G	4122		Bone	
72	4C	4092		Wood	
73	4C	4092	1	Metal	Iron nail
74	4C	4092		Ceramic	
75	4C	4125		Metal	Iron plate
76	4C	4125		Metal	Iron lump
77	4C	4125		Metal	Iron slag
78	4C	4092		Metal	Iron nail
79	4C	4125		Ceramic	?Chinese
80	4C	4125		Metal	Cu alloy ?button
81	4C	4129		Glass	Bottle neck
82	4F	4137		Metal	Iron lump
83	4F	4136		Metal	Cu alloy/iron button
84	4C	4133		Ceramic	Fine, brown/cream
85	4F	4137	1	Metal	Iron
86	4F	4137	2	Metal	Iron nails
87	4C	4133	1	Metal	Angled piece of iron
88	4C	4135		Metal	Iron
89	4F	4137	2	Metal	Iron
90	4F	4136	1	?Amber	Bead
91	4F	4136	1	Metal	Iron
92	4F	4136		Ceramic	
93	4F	4159		Bone	Fish
94	4F	4159		Ceramic	?Salt glazed
95	4F	4160		Metal	Cu alloy pin
96	4F	?4112		Metal	Iron object
97	4C	4135		Ceramic	
98	4F	4137	2	Metal	

No	Tr	Context	No pieces	Material	Description
99	4F	4137	2	Metal	Iron object
100	4C	4102		Metal/ wood	Iron nail in wood
101	4C	4102		Metal	Iron nail
102	4C	4102		Metal	Iron buckle
103	4C	4102	4	Ceramic	Brown-yellow
104	4C	4133	2	Metal	
105	4C	4102		Metal	Iron nail
106	4C	4107	1	Slag	
107	4C	4102	3	Metal	3 small pieces of iron
108	4C	4102	1	Metal	Iron: amorphous lump
109	4C	4102		Glass	
110	4C	4215		Ceramic	
111	4C	4215		Ceramic	
112	4C	4135		Metal	Flat piece of iron
113	4C	4102		Metal	Iron object
114	4C	4215	3	Metal/ wood	Iron/wood
115	4F	4195		Metal	Iron: amorphous lump
116	4F	4195		Ceramic	
117	4F	4195		Metal	Iron nail
118	4C	4011		Ceramic	
119	4C	4102		Ceramic	
120	4C	4100		Metal	Iron object
121	4C	4173		Metal	Iron object
122	4C	4092	2	Ceramic	
123	4C	4092		Metal	Iron nail
124	4C	4092		Slag	Iron object
125	4C	4092		Ceramic	Large sherd
126	4F	4137		Ceramic	
127	4F	4207		Metal	Iron object
128	4F	4207		Metal	Iron object
129	4F	4137	4	Ceramic	
130	4F	4137	3	Metal	Iron object

### 10.3 List of Samples

No	Tr	Context	No bags	Description
1	4C	4088	1	Hard grey clay, including tile, etc.
2	4C	4133	2	Concentrated unburnt coal deposit
3	4C	4134	2	Red clay
4	4F	4144	1	Fill of pit
5	4F	4138	2	Degraded ?Clynelish sandstone
6	4F	4159	1	Creamy white clay

No	Tr	Context	No bags	Description
7	4C	4207	1	Grey clay
8	4F	4195	1	Floor deposits, containing lots of fish bones, etc.
9	4F	4210	1	Fill of pit
10	4F		1	Ashy deposits forming part of floor

#### 10.4 List of Drawings

Sheet	No	Tr	Description	Scale	Date	Author
1	1	4D	Plan of trench, following removal of 4002	1:20	18/08/2008	RS
2	2	4C	Plan of trench, following removal of 4002	1:20	19/08/2008	CD
3	3	4C	Overlay plan of Dwg 2	1:20	20/08/2008	CD
4	4	4D	Overlay plan of Dwg 1	1:20	20/08/2008	RS
5	5	4E	E facing section of trench, following excavation	1:10	21/08/2008	MS/WAS
5	6	4E	Plan of trench, following excavation of sondage	1:20	23/08/2008	SW
6	7	4D	E facing section of trench (1 of 2)	1:10	23/08/2008	ARJ
7	8	4D	E facing section of trench (2 of 2)	1:10	23/08/2008	ARJ
8	9	4D	S facing section of trench (in 2 parts)	1:10	23/08/2008	ARJ
9	10	4C	Working plan showing tumble between boundary wall and 4003	1:20	24/08/2008	NGL
10	11	4C	Working plan showing flags, etc	1:20	24/08/2008	JW
11	12	Site 7	Dune section on outside of 4D	1:10	24/08/2008	JW
12	13	4D	W facing section of trench (in 2 parts)	1:10	24/08/2008	ARJ
13	14	4D	Plan of wall, 4003	1:20	24/08/2008	RS
14	15	Site 6	Section along exposed face of midden (E half)	1:10	25/08/2008	GG
14	16	Site 5	Section along exposed face of midden	1:10	25/08/2008	GG
15	17	Site 6	Section along exposed face of midden (W half)	1:10	25/08/2008	GG
16	18	4D	N facing section of trench (in 2 parts)	1:10	28/08/2008	ARJ
17	19	Site 2	Section of Site 2, following collapse	sketch	28/08/2008	RS
18	20	4H	S facing section of trench	1:10	28/08/2008	JA
19	21	4C	Plan of floor area, showing central hearth complex	1:20	29/08/2008	NGL/JW
19a	21	4C	Plan of S wall of building, 4003	1:20	29/08/2008	CD
20	22	4G	N facing section of trench	1:10	29/08/2008	BB/TW
21	23	4D/F	Plan of floor area	1:20	30/08/2008	RS/JH
21a	23	4D	Plan of floor area	1:20	30/08/2008	RS/JH
20	24	4G	E facing section of trench	1:10	30/08/2008	MJS
22	25	5	S facing section of trench	1:10	30/08/2008	TCD
23	26	4F	N facing elevation of wall, 4003	1:10	30/08/2008	DG
24	27	4F	N facing section through floor deposits	1:10	30/08/2008	JH
25	28	4D	W facing elevation of wall, 4003	1:10	31/08/2008	ARJ
26	29	4C	Overlay plan, showing central hearth platform	1:20	31/08/2008	NGL
23	30	4F	S end of E facing elevation of wall, 4081	1:10	31/08/2008	AC
27	31	4F	N end of E facing elevation of wall, 4081	1:10	31/08/2008	ARJ

Sheet	No	Tr	Description	Scale	Date	Author
24	32	4C	N facing section of stakehole, 4150	1:10	31/08/2008	NGL
24	33	4C	N facing section of stakehole, 4152	1:10	31/08/2008	NGL
24	34	4C	N facing section of stakehole, 4154	1:10	31/08/2008	NGL
24	35	4C	N facing section of stakehole, 4164	1:10	31/08/2008	NGL
24	36	4C	N facing section of stakehole, 4162	1:10	31/08/2008	NGL
24	37	4C N ext	Plan of small extension, showing cut, 4171	1:20	31/08/2008	JA
23	38	4F	S facing elevation of wall, 4082	1:10	31/08/2008	AC
24	39	4C	N facing section of stakehole, 4169	1:10	01/09/2008	JH
28	40	4C/F	N facing elevation along central platform, 4028, 4109 and 4166	1:10	05/09/2008	AC
24	41	4C	N facing section of stakehole, 4201	1:10	06/09/2008	JH
29	42	4F	N facing elevation of fireplace, 4018	1:10	06/09/2008	AC
30	43	4C	E facing section of trench (1 of 2)	1:10	07/09/2008	JA/AD
29	44	4F	E facing elevation of fireplace, 4018	1:10	07/09/2008	AC
28	45	4F	E facing section of pit, 4209	1:10	07/09/2008	EK
31	46	4C	E facing section of trench (2 of 2)	1:10	07/09/2008	JA/AD

## 10.5 Photo Record

### Trench 4

No	Area	Context No(s)	Description	From
1	4C		Working shot, showing trench once cleaned	N
2	4C		Working shot, showing trench once cleaned	E
3	4C		Working shot, showing trench once cleaned	W
4	4C		Working shot, showing trench once cleaned	S
5	4D	4055	Sondage in SW corner of trench, showing demolition layer, 4055	S
6	4D	4055	Sondage in SW corner of trench, showing demolition layer, 4055	E
7	4D	4055	Sondage in SW corner of trench, showing demolition layer, 4055	N
8	4C	4056, 4057	Working shot, showing field wall, 4056/7	N
9	4C	4056, 4057	Working shot, showing field wall, 4056/7	N
10	4C	4056, 4057	Working shot, showing field wall, 4056/7	W
11	4C	4056, 4057	Working shot, showing field wall, 4056/7	E
12	4C	4056, 4057	Working shot, showing field wall, 4056/7	NE
13	4C	4056, 4057	Working shot, showing field wall, 4056/7	SW
14	4D	4003	Return of wall, 4003, just appearing under rubble	N
15	4D	4003	Return of wall, 4003, just appearing under rubble	W
16	4D	4003	Return of wall, 4003, just appearing under rubble	E
17			W end of dune section, showing eroding end of wall (Site 9)	S
18			Dune section, showing eroding end of wall (Site 9)	S
19			Dune section, showing eroding end of wall (Site 9)	S
20			Dune section, showing eroding end of wall (Site 9)	S
21			Dune section, showing eroding end of wall (Site 9)	S
22			Dune section	S
23			Dune section	S
24			Dune section	S

No	Area	Context No(s)	Description	From
25			Dune section, showing coal road deposits, immediately E of Tr 4A	S
26			Dune section, showing coal road deposits, immediately E of Tr 4A	S
27			Dune section, showing coal road deposits, immediately E of Tr 4A	S
28			Dune section, showing coal road deposits, immediately E of Tr 4A	S
29			Dune section, showing coal road deposits, immediately E of Tr 4A	S
30			Dune section, showing coal road deposits, immediately E of Tr 4A	S
31			Dune section, showing coal road deposits, immediately E of Tr 4A	S
32			Dune section, showing coal road deposits, immediately E of Tr 4A	S
33	4C	4056, 4057	Boundary wall, 4057, with rubble spread, 4056, immediately to N	S
34	4C	4056, 4057	Boundary wall, 4057, with rubble spread, 4056, immediately to N	S
35	4C	4056, 4057	Boundary wall, 4057, with rubble spread, 4056, immediately to N	W
36	4C	4056, 4057	Boundary wall, 4057, with rubble spread, 4056, immediately to N	E
37	4C	4056, 4057	Boundary wall, 4057, with rubble spread, 4056, immediately to N	N
38	4D	4061	Working shot, showing clay and rubble, 4061, appearing on outside of wall	W
39	4D	4061	Working shot, showing clay and rubble, 4061, appearing on outside of wall	N
40	4D	4061	Working shot, showing clay and rubble, 4061, appearing on outside of wall	E
41	4D	4061	Working shot, showing clay and rubble, 4061, appearing on outside of wall	S
42	4E		Trench, following removal of topsoil	W
43	4E		Trench, following removal of topsoil	E
44	4E		Trench, following removal of topsoil	S
45	4E		Trench, following removal of topsoil	S
46			Dune section, showing coal road deposits, immediately E of Tr 4A	S
47			Dune section, showing coal road deposits, immediately E of Tr 4A	S
48			Dune section, showing coal road deposits, immediately E of Tr 4A	S
49			Dune section, showing coal road deposits, immediately E of Tr 4A	S
50			Dune section, showing coal road deposits, immediately E of Tr 4A	S
51			Dune section, showing coal road deposits, immediately E of Tr 4A	S
52			Dune section, showing coal road deposits, immediately E of Tr 4A	S
53			Dune section, showing coal road deposits, immediately E of Tr 4A	S
54			Dune section, showing coal road deposits, immediately E of Tr 4A	S
55			Dune section, showing coal road deposits, immediately E of Tr 4A	S
56			Dune section, showing coal road deposits, immediately E of Tr 4A	S
57			Dune section, showing coal road deposits, immediately E of Tr 4A	S
58			Dune section, showing detail of coal road deposits, immediately E of Tr 4A	S
59			Dune section, showing detail of coal road deposits, immediately E of Tr 4A	S
60			Dune section, showing detail of coal road deposits, immediately E of Tr 4A	S
61	4E		Trench, following expansion and removal of topsoil	S
62	4E		Trench, following expansion and removal of topsoil	W
63	4E		Trench, following expansion and removal of topsoil	N
64	4E		Trench, following expansion and removal of topsoil	E
65	4C	4056, 4057	Field wall, 4057, following removal of cobbles, 4056	W
66	4C	4056, 4057	Field wall, 4057, following removal of cobbles, 4056	S
67	4C	4056, 4057	Field wall, 4057, following removal of cobbles, 4056	E
68	4C	4056, 4057	Field wall, 4057, following removal of cobbles, 4056	N

No	Area	Context No(s)	Description	From
69	4C	4056, 4057	Detail of field wall, 4056, following removal of cobbles, 4057	NW
70	4C	4056, 4057	Detail of field wall, 4056, following removal of cobbles, 4057	NW
71	4C	4056, 4057	Field wall, 4057, following removal of cobbles, 4056	SW and above
72	4C	4056, 4057	Detail of field wall, 4056, following removal of cobbles, 4057	SW and above
73	4C	4056, 4057	Field wall, 4057, following removal of cobbles, 4056	NE and above
74	4C	4056, 4057	Detail of field wall, 4056, following removal of cobbles, 4057	NE and above
75	4C	4010, 4011	Clay and rubble mound, 4010/4011, in SE corner of trench	E and above
76	4C	4010, 4011	Deposits to S of boundary wall	W and above
77	4C	4010, 4011	Clay and rubble mound, 4010/4011, in SE corner of trench	W and above
78	4D	4003, 4068	NE corner of building, 4003, with coal road deposits, 4068, around it	NE
79	4D	4003, 4060	NE corner of building, 4003, with clay, 4060, overlying it	NE
80	4D	4003, 4068	NE corner of building, 4003, with coal road deposits, 4068, around it	N
81	4D	4003, 4068	NE corner of building, 4003, with coal road deposits, 4068, around it	W
82	4C	4077	Pile of clean, angular hearting stones, 4077, coming out of sand	N
83	4C	4077	Pile of clean, angular hearting stones, 4077, coming out of sand	N
84	4C	4077	Working shot, showing source of stones, 4077	W and above
85	4C	4077	Working shot, showing source of stones, 4077	N and above
86	4E	4069, etc	E facing section of sondage, following excavation	E
87	4E	4069, etc	Detail of E facing section of sondage, following excavation	E
88	4E	4069, etc	S facing section of sondage, following excavation	S
89	4E	4069, etc	Detail of S facing section of sondage, following excavation (W)	S
90	4E	4069, etc	Detail of S facing section of sondage, following excavation (E)	S
91	4E	4069, etc	N facing section of sondage, following excavation (E)	N
92	4E	4069, etc	Detail of N facing section of sondage, following excavation (E)	N
93	4E	4069, etc	W facing section of sondage, following excavation	W
94	4D	4136	Interior of E end of building, showing black floor deposits, 4136	S and above
95	4D	4136	Interior of E end of building, showing black floor deposits, 4136	W and above
96	4D	4136	Interior of E end of building, showing black floor deposits, 4136	N and above
97	4D	4003	Detail of wall, 4003, of building	N
98	4D	4002, etc	E facing section of trench (S end), following excavation	E
99	4D	4002, etc	E and S facing sections of trench, following excavation	SE
100	4D	4002, etc	S facing section of trench, following excavation	S
101	4D	4002, etc	W facing section of trench, following excavation	W
102	4D	4002, etc	Detail of W facing section of trench, following excavation (N end)	W
103	4D	4002, etc	Detail of W facing section of trench, following excavation (N end)	W
104	4D	4002, etc	Detail of S facing section of trench, following excavation (E end)	S
105	4D	4002, etc	Detail of S facing section of trench, following excavation (E end)	S
106	4D	4002, etc	Detail of S facing section of trench, following excavation (centre)	S
107	4D	4002, etc	Detail of E facing section of trench, following excavation (S end)	E
108	4D	4002, etc	Detail of E facing section of trench, following excavation (N end)	E
109	4F	4117	Detail of trench, following removal of 4002 to show rubble/clay layer, 4117	E

No	Area	Context No(s)	Description	From
110	4F	4117	Detail of trench, following removal of 4002 to show rubble/clay layer, 4117	W
111	4C	4018	Working shot, showing brick built fireplace, 4018	N and above
112	4C	4018	Working shot, showing brick built fireplace, 4018	N and above
113			Dune section, showing corner of building (Site 37), once cleaned up	S
114			Dune section, showing corner of building (Site 37), once cleaned up	S
115	4E	4072	Eastern half of trench, following exposure of limpet layer, 4072	W
116	4E	4072	Eastern half of trench, following exposure of limpet layer, 4072	W
117	4E	4072	Eastern half of trench, following exposure of limpet layer, 4072	N
118	4C	4003, 4068	Working shot of trench, following removal of 4002, but still with coal road deposits, 4068 partially present against external face of S wall, 4003	S
119	4C	4003, 4068	Working shot of trench, following removal of 4002, but still with coal road deposits, 4068 partially present against external face of S wall, 4003	S
120	4C		Robber trench dug into S wall, 4003	W
121	4C		Robber trench dug into S wall, 4003	E
122	4C	4093	Working shot of rubble, 4093, on the N side of the hearth complex	N and above
123	4C	4093	Working shot of rubble, 4093, on the N side of the hearth complex	N and above
124	4C	4093	Working shot of rubble, 4093, on the N side of the hearth complex	W and above
125	4C	4091, 4093	Working shot of rubble, 4093 and floor slabs, 4091, on N side of hearth complex	NE and above
126	4C	4091, 4093	Working shot of rubble, 4093 and floor slabs, 4091, on N side of hearth complex	E
127	4C/F	4003, 4081	Working shot of S wall, 4003, of building and division wall, 4081, on the S side of fireplace, 4018	E and above
128	4D	4003	NE corner of building, 4003, following excavation	NE and above
129	4D	4003	NE corner of building, 4003, following excavation	N and above
130	4D	4003	NE corner of building, 4003, following excavation	E and above
131	4D	4003	NE corner of building, 4003, following excavation	SW and above
132	4D	4003	NE corner of building, 4003, following excavation	W
133	4D	4003	Present top of N wall, 4003	W and above
134	4D	4003	Present top of N wall, 4003	SW and above
135	4D	4002, etc	N facing section of trench	N
136	4D	4002, etc	N facing section of trench (W, inside building)	N
137	4D	4002, etc	N facing section of trench (E, outside building)	N
138	4C	4143	Cut, 4143, at end of floor slabs	N and above
139	4C	4143	Cut, 4143, at end of floor slabs	S and above
140	4C/F	4083, etc	Floor area (E) within building, showing hearth complex, 4083, etc	N and above
141	4C	4083, etc	Floor area (W) within building, showing hearth complex, 4083	N and above
142	4C	4083, etc	Floor area (NW) within building, showing hearth complex, 4083	SW and above
143	4C	4083, etc	Floor area (NW) within building, showing hearth complex, 4083	SW and above
144	4C	4083, etc	Floor area (SW) within building, showing hearth complex, 4083	W and above

No	Area	Context No(s)	Description	From
145	4C	4083, etc	Floor area (SW) within building, showing hearth complex, 4083	S and above
146	4C	4083, etc	Floor area (SW) within building, showing hearth complex, 4083	E
147	4C	4083, 4093	Rubble, 4093 on the N side of the hearth complex, 4083	N and above
148	4C	4083, 4091	Floor slabs, 4091, on the N side of the hearth complex, 4083	N and above
149	4F	4161	Floor deposit, 4161, against S side of fireplace, 4018, showing complete peats	S and above
150	4F	4161	Floor deposit, 4161, against S side of fireplace, 4018, showing complete peats	S and above
151	4F	4082	S face of walling, 4082, on S side of fireplace, 4018	S
152	4F	4081	E face of walling, 4081, on S side of fireplace, 4018	E
153	4F	4018	Working shot, showing fireplace, 4018, fully exposed	E
154	4F	4018, 4166	Working shot, showing N side of fireplace, 4018, and walling, 4166	E
155	4F	4018	Working shot, showing fireplace, 4018	NE and above
156	4C	4079	Large tumble, 4079, on inside of S wall, 4003, of building	N
157	4C	4079	Large tumble, 4079, on inside of S wall, 4003, of building	W and above
158	4F	4136, etc	Working shot, showing floor area, 4136, etc, within building	E and above
159	4F	4142	Working shot, showing cobbled floor, 4142, within building	E and above
160	4F	4142	Working shot, showing cobbled floor, 4142, within building	N and above
161	4F	4142	Working shot, showing cobbled floor, 4142, within building	W
162	4C		SF ?, in situ	N and above
163	4C		SF ?, in situ	E and above
164	4H	4002, etc	S facing section of trench, following excavation	S
165	4H	4002, etc	Detail of S facing section of trench, following excavation	S
166	4H	4002, etc	N facing section of trench, following excavation	N
167	4H	4002, etc	Detail of N facing section of trench, following excavation	N
168	4H	4002, etc	E facing section of trench, following excavation	E
169	4H	4002, etc	W facing section of trench, following excavation	W
170	4G	4002, etc	Trench, following excavation	N and above
171	4G	4002, etc	Trench, following excavation	E and above
172	4G	4002, etc	Trench, following excavation	S and above
173	4G	4002, etc	W facing section of trench, following excavation	W
174	4G	4002, etc	N facing section of trench, following excavation	N
175	4G	4002, etc	Short E facing section of trench, following excavation	E
176	4G	4002, etc	S facing section of trench, following excavation	S
177	4G	4002, etc	Long E facing section of trench, following excavation	E
178	4G	4002, etc	S facing section of trench, following excavation	S
179	4C/F	4018, 4083, 4091	Hearth complex, 4083, etc, following exposure of floor slabs, 4091	NE and above
180	4C	4083, 4091	Hearth complex, 4083, etc, following exposure of floor slabs, 4091	NE and above
181	4C	4083, 4091	Hearth complex, 4083, etc, following exposure of floor slabs, 4091	NE and above
182	4C/F	4018, 4083, 4091	Hearth complex, 4083, etc, following exposure of floor slabs, 4091	N and above
183	4C/F	4018, 4083, 4091	Hearth complex, 4083, etc, following exposure of floor slabs, 4091	N and above
184	4C/F	4018, 4083, 4091	Hearth complex, 4083, etc, following exposure of floor slabs, 4091	N and above

No	Area	Context No(s)	Description	From
185	4C/F	4018, 4083, 4091	Hearth complex, 4083, etc, following exposure of floor slabs, 4091	N and above
186	4C	4083	Detail of hearth complex, 4083, etc	N and above
187	4C	4083, 4091	Hearth complex, 4083, etc, following exposure of floor slabs, 4091	NW and above
188	4C	4083, 4091	Hearth complex, 4083, etc, following exposure of floor slabs, 4091	NW and above
189	4C	4083, 4091	Hearth complex, 4083, etc, following exposure of floor slabs, 4091	W and above
190	4C	4083	Detail of hearth complex, 4083, etc	W and above
191	4C	4133	Deposits in 'gap' in floor slabs, in angle of division wall, 4081 and stub walls, 4028 and 4109	W
192	4C	4028, 4109, 4133	Deposits in 'gap' in floor slabs, showing relationship between walling, 4028 and 4109	N
193	4C/F	4083, etc	Detail of hearth complex, 4083, etc	N and above
194	4C	4109, 4146	Detail of walling, 4109 and 4146, on N side of hearth complex	N
195	4C	4134	Detail of clay, 4134, overlying hearth complex, 4083, etc	W and above
196	4C	4083, etc	Detail of hearth complex, 4083, etc	W and above
197	4C	4103	Detail of hearth complex, showing bricks, 4103, piled at W end	W
198	4C	4083, etc	Detail of hearth complex, 4083, etc	S and above
199	4C	4083, etc	Detail of hearth complex, 4083, etc	S and above
200	4C	4108, 4110	Detail of walling, 4108 and 4110, on N side of hearth complex	SE
201	4C	4029, 4031, 4147, 4156	Detail of secondary hearth, 4029 and material infilling gaps between it and surrounding wall, 4031/4147/4156	N and above
202	4C	4029, 4146	Detail of secondary hearth, 4029, and later hearth complex, 4146	E and above
203	4C	4083, etc	Detail of later hearth complex, 4083, etc	E and above
204	4F	4003, 4220	N facing elevation of S wall, 4003, of building, showing possible blocked aperture, 4220	N
205	4F	4003, 4220	N facing elevation of S wall, 4003, of building, showing possible blocked aperture, 4220	N
206	4F	4081	E face of walling, 4081, on S side of fireplace, 4018	E
207	4F	4082	S face of walling, 4082, on S side of fireplace, 4018	S
208	4F	4142, 4178	Cobbling, 4142, and possible pit, 4178, in floor of building	N and above
209	4F	4142, 4178	Cobbling, 4142, and possible pit, 4178, in floor of building	N and above
210	4F	4142, 4178	Cobbling, 4142, and possible pit, 4178, in floor of building	W and above
211	4F	4142, 4178	Cobbling, 4142, and possible pit, 4178, in floor of building	W and above
212	4F	4136, etc	N facing section through floor deposits, 4136, etc, in eastern half of building	NE
213	4F	4136, etc	N facing section through floor deposits, 4136, etc, in eastern half of building	N
214	4F	4138	Friable sandstone fragments, 4138, at base of floor deposits in eastern half of building	E and above
215	4F	4142, 4178	N facing section cut through cobbling, 4142, and possible pit, 4178	N and above
216	4F	4142, 4178	N facing section cut through cobbling, 4142, and possible pit, 4178	W and above
217	4F	4178	Detail of possible pit, 4178	N

No	Area	Context No(s)	Description	From
218	4F	4142	Detail of cobbling, 4142	N
219	4C	4129/4130	Working shot, during emptying of 'flues', 4129/4130	W and above
220	4C	4129/4130	Working shot, during emptying of 'flues', 4129/4130	W and above
221	4C	4129	Working shot, showing emptying of N 'flue', 4129	W
222	4C	4130	Working shot, showing emptying of S 'flue', 4130	W
223	4C	4083, etc	Later hearth, 4083, etc, following excavation of 'flues'	W and above
224	4C	4083, etc	Later hearth, 4083, etc, following excavation of 'flues'	W and above
225	4C	4083, etc	Later hearth, 4083, etc, following excavation of 'flues'	W
226	4C	4083, etc	Later hearth, 4083, etc, following excavation of 'flues'	E and above
227	4C	4083, etc	Later hearth, 4083, etc, following excavation of 'flues'	S and above
228	4C	4029, 4031, 4147, 4156	Detail of secondary hearth, 4029 and material infilling gaps between it and surrounding wall, 4031/4147/4156	S and above
229	4C	4029, 4031, 4147, 4156	Detail of secondary hearth, 4029 and material infilling gaps between it and surrounding wall, 4031/4147/4156	N and above
230	4C	4150, etc	Possible stakeholes, 4150, etc, at end of floor slabs, W end of trench	W and above
231	4C	4150-3	Stakeholes, 4150/1 and 4152/3	W and above
232	4C	4152-5, 4162-5, 4169-70	Stakeholes, 4152/3, 4154/5, 4162/3, 4164/5 and 4169/70	W and above
233	4C	4150-3	Stakeholes, 4150/1 and 4152/3, following sectioning	E and above
234	4C	4150, 4151	N facing section of stakehole, 4150/1	E and above
235	4C	4152, 4153	N facing section of stakehole, 4152/3	E and above
236	4C	4135	Gap' in floor slabs, in angle of division wall, 4081 and stub walls, 4028 and 4109, following excavation, showing SF ?	W and above
237	4C	4135	Gap' in floor slabs, in angle of division wall, 4081 and stub walls, 4028 and 4109, following excavation, showing SF ?	W and above
238	4C	4133, etc	E facing section through 'gap' in floor slabs, in angle of division wall, 4081 and stub walls, 4028 and 4109, following excavation	E
239	4F	4136, etc	Floor deposits, 4136, etc, in eastern half of building	N and above
240	4F	4136, etc	Floor deposits, 4136, etc, in eastern half of building	E and above
241	4F	4018, 4141	Fireplace, 4018, showing roughly laid hearth, 4141	E and above
242	4F	4018, 4141	Fireplace, 4018, showing roughly laid hearth, 4141	E and above
243	4F	4018, 4141	Hearth, 4141, of fireplace, 4018	E and above
244	4F	4141	Detail of hearth, 4141	E and above
245	4F	4141	Detail of hearth, 4141	E and above
246	4F	4141	Detail of hearth, 4141	E and above
247	4F	4018	Rear of fireplace, 4018	E and above
248	4F	4018, 4141	Fireplace, 4018, showing roughly laid hearth, 4141	E
249	4F	4018, 4166	N jamb of fireplace, 4018, and enclosing walling, 4166	E
250	4F	4018, 4166	N jamb of fireplace, 4018, and enclosing walling, 4166	E
251	4F	4018, 4082	S jamb of fireplace, 4018, and enclosing walling, 4082	E
252	4C	4109	Fe object set into top of walling, 4109	N and above
253	4C	4109	Detail of Fe object set into top of walling, 4109	N

No	Area	Context No(s)	Description	From
254	4C	4109	Detail of Fe object set into top of walling, 4109	S
255	4C	4154, 4155	N facing section of stakehole, 4154/5	S and above
256	4C	4164, 4165	N facing section of stakehole, 4164/5	S and above
257	4C	4164, 4165	N facing section of stakehole, 4164/5	S and above
258	4C	4162, 4163	N facing section of stakehole, 4162/3	S and above
259	4C	4169, 4170	N facing section of stakehole, 4169/70	S and above
260	4C	4203, 4225	N facing section of stakehole, 4203/4225	S and above
261	4F	4003	S facing section of trench, showing internal elevation of N wall, 4003	S
262	4F	4003	S facing section of trench, showing internal elevation of N wall, 4003	S
263	4C/F	4003	S facing section of trench, showing internal elevation of N wall, 4003	S
264	4C/F	4003	S facing section of trench, showing internal elevation of N wall, 4003	S
265	4C	4003	S facing section of trench, showing internal elevation of N wall, 4003	S
266	4F	4003	W facing section of trench, showing cross-section through N wall, 4003	W
267	4F	4003	W facing section of trench, showing cross-section through N wall, 4003	W
268	4C/F	4003	W facing section of trench, showing cross-section through N wall, 4003	W
269	4C N ext	4171, 4172	Possible foundation trench for N wall, 4003	E and above
270	4C N ext	4171, 4172	Possible foundation trench for N wall, 4003	W and above
271	4C	4226, 4227	N facing section of stakehole, 4226	S and above
272	4C	4143, 4177, 4182	E facing section of trench, showing cuts, 4143, 4177 and 4182	E
273	4C	4143, 4144	S facing section of pit, 4143	E and above
274	4C	4143, 4144	S facing section of pit, 4143	N and above
275	4C	4143, 4144	S facing section of pit, 4143	S and above
276	4C	4143, 4144	Detail of S facing section of pit, 4143	S and above
277	4C	4201, 4202	Stakehole, 4201/2	E and above
278	4C	4201, 4202	Stakehole, 4201/2	N
279	4C	4201, 4202	N facing section of stakehole, 4201/2	N
280	4C	4079, 4213	Apparently laid bricks, 4213, appearing under tumble, 4079, from S wall, 4003	N
281	4C	4217	Possible features in SW corner of trench, including 4217	E and above
282	4C	4217	Possible features in SW corner of trench, including 4217	E and above
283	4C	4217	Possible features in SW corner of trench, including 4217	E and above
284	4D	4217	Possible features in SW corner of trench, including 4217	S
285	4D	4184, 4185	Detail of U shaped cut, 4184, under coal road deposits	S
286	4D	4003	W facing elevation of E wall, 4003	W
287	4D	4003	S facing elevation of N wall, 4003	S
288	4C	4003, 4216	N facing section of S wall, 4003 and probable doorway, 4216	N
289	4C	4003	N facing section of S wall, 4003	N
290	4C	4216	Probable doorway, 4216	N and above
291	4C	4216	Probable doorway, 4216	N and above
292	4C	4003	Cross section through S wall, 4003	W
293	4F	4018	Rear of fireplace, 4018	W and above
294	4F	4018	Rear of fireplace, 4018	W
295	4F	4018	Rear of fireplace, 4018	W
296	4F	4018	Rear of fireplace, 4018	N

No	Area	Context No(s)	Description	From
297	4F	4003	S facing elevation of N wall, 4003	S
298	4F	4003	S facing elevation of N wall, 4003	S
299	4F	4003	S facing elevation of N wall, 4003	S and above
300	4F	4003	S facing elevation of N wall, 4003	S and above
301	4F	4002, etc	N facing section of trench (E end)	N
302	4F	4209	Pit, 4209	E and above
303	4F	4209	Pit, 4209	W and above
304	4F	4209	Pit, 4209	S and above
305	4F	4209, 4210, 4212	E facing section of pit, 4178, showing fills 4210 and 4212	E and above
306	4C	4219	Possible postholes or burrows, 4219, under S wall, 4003	N
307	4F	4136, etc	Section through floor deposits, 4136, etc in eastern half of building, created by rabbit hole	NE
308			Detail of erosion of dune section (Dec 2008)	S
309			Detail of erosion of dune section (Dec 2008)	S
310			Detail of erosion of dune section (Dec 2008)	SE
311			Detail of weathering to outer face of wall, 4003 (Dec 2008)	SE
312			General view of Site 37 (Dec 2008)	SE

**Trench 5**

No	Area	Context No(s)	Description	From
1	5	5009	Cobbled surface, 5009	S
2	5	5009	Cobbled surface, 5009	E
3	5	5009	Cobbled surface, 5009	N
4	5A		Trench, following excavation, showing ?raised beach deposit	S
5	5A		Trench, following excavation, showing ?raised beach deposit	W
6	5A		Trench, following excavation, showing ?raised beach deposit	N
7	5	5002, etc	E facing section of sondage, at NW corner of trench	E
8	5	5002, etc	W facing section of sondage, at SE corner of trench	N
9	5	5002, etc	E facing section of sondage, at SE corner of trench	N
10	5	5009	Cobbled surface, 5009	N
11	5	5009	Cobbled surface, 5009	E
12	5	5009	Cobbled surface, 5009	W

**Trench 6**

No	Area	Context No(s)	Description	From
1		6001, etc	Trench, following excavation, showing S facing section	S and above
2		6001, etc	Trench, following excavation, showing N facing section	N and above