



**YORK ARCHAEOLOGICAL TRUST**



## **ARCHAEOLOGICAL INVESTIGATIONS AT FEY FIELD, WHITHORN**

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## SUMMARY

In 1995-6 York Archaeological Trust undertook two seasons of excavation at Fey Field Whithorn, directed by A. Clarke. The excavations uncovered the remains that were largely of 6<sup>th</sup> to 10<sup>th</sup> century date and related to the important early-medieval monastery at the site. The excavations, the post-excavation work and the production of this web-based publication were all generously funded by the Whithorn Trust.

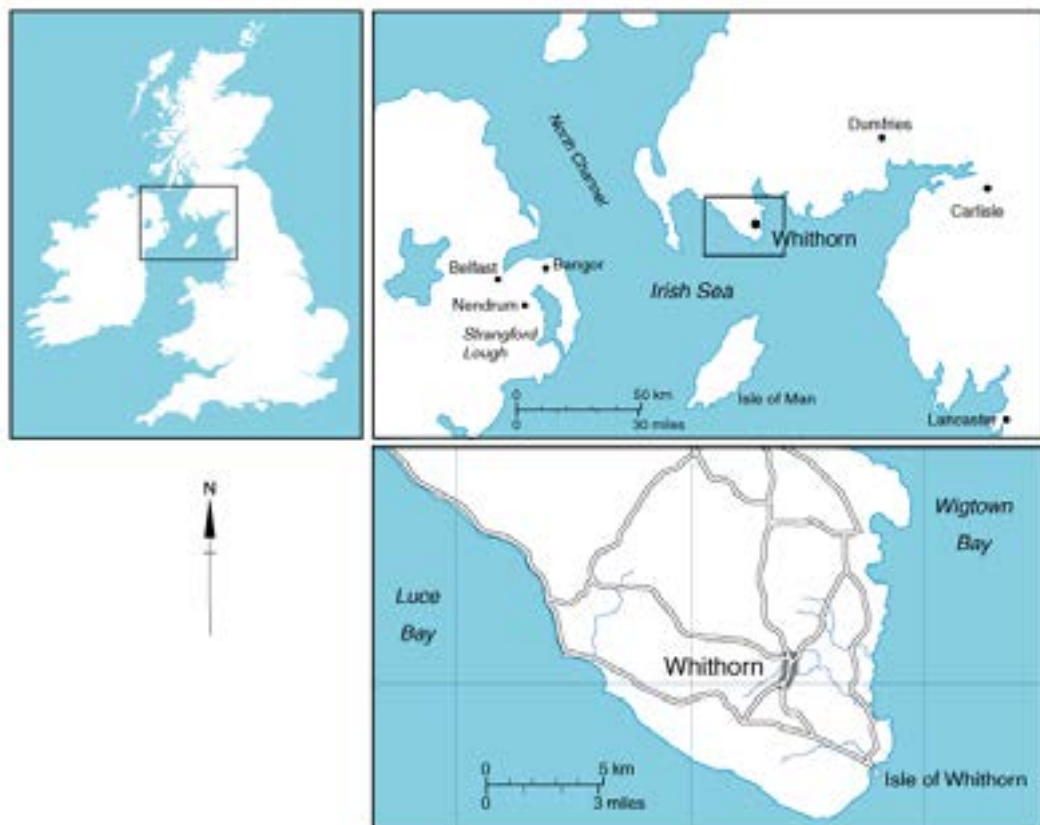
This Pdf report represents a copy of a report which was designed as an interactive web report that was originally hosted on York Archaeological Trust's website. Due to changes in the design of this website the original interactive report is no longer available. This Pdf was produced to ensure that the information held in the original report remained widely available. As the original report was designed for web-viewing, its' design did not follow conventional publication formats. There were some problems when converting the web information into this Pdf, notably with the figures, which though perfectly clear when viewed on the web are slightly blurred when transferred into Pdf format. In addition, there are no Plate numbers in the text, as the photographs were originally simply embedded in the web-text at the relevant point. This Pdf follows the layout of the original web report exactly, and readers should bear these limitations in mind while reading the report.

## 1 INTRODUCTION

By J. M. McComish

Whithorn in Galloway, south-western Scotland, is a site of considerable importance for the history of Christianity within Scotland. Writing in the early 8th century, the Northumbrian monk Bede linked Whithorn with a British bishop named Ninian who was credited with preaching to people in southern Scotland and converting them to Christianity at a date 'long before' the arrival of St Columba's mission in 563. According to Bede, Whithorn was Ninian's episcopal seat, where he constructed a stone church, and the place of his burial.

Today, the visitor can see the remains of a later medieval Premonstratensian Abbey church and its crypts, and a display of early medieval and medieval grave markers and other stonework from the site, both curated by Historic Scotland, and an exhibition introducing the history and archaeology of Whithorn, presented by The Whithorn Trust at The Whithorn Story Visitor Centre.



**Figure 1 Location of the site**

Over the years Whithorn has attracted considerable attention from historians and archaeologists, and excavations have been undertaken on the site intermittently since the 1880s. Peter Hill's monograph '*Whithorn and St Ninian*' (Hill 1997) reports on his excavations of 1984–91 in Glebe Field, south of the later medieval priory church, presenting evidence, interpretation and speculation on the evolution of the site's function, layout and usage from c.AD 500 to the modern period. Hill also summarises the results of the earlier excavations and the historical evidence for the site.





good evidence that for much of Periods 3 and 4 the boundary between settlement and burial zones was carefully marked, fitting into the pattern of monastic enclosures seen in the earlier Glebe Field excavations. The Period 5 structures also compare well with those seen in Glebe Field. There were few remains on the site that can be firmly dated as 14th century or later but these include various stone-built drains, quarry pits and a byre/stables of later medieval date (Period 6). Following the dissolution of the Priory the site was used for cultivation, an activity which continues to the present day.

The most important assemblage of artefacts relates to evidence for metal working, which seems to have been undertaken throughout Periods 3–5. This forms one of the largest and most important collections of early medieval metal working debris from Scotland. Another important group of finds is a number of iron coffin fittings associated with the burials. These are generally interpreted as being evidence for Northumbrian settlement, and add to the corpus of similar finds from the earlier excavation at Whithorn. Other important finds included early medieval imported pottery and glass.

Further detailed information on the archaeology of Whithorn can be obtained from The Whithorn Trust website at <http://whithorn.com/>

## 2 METHODOLOGY

By J. M. McComish

From 1984–91 major excavations on behalf of The Whithorn Trust were undertaken at the Glebe Field, Whithorn, under the direction of Peter Hill. The results of this work have been published in *Whithorn and St Ninian: the Excavation of a Monastic Town 1984–1991* (Hill 1997).

A new campaign of excavations in the Fey Field, some 25m north-west of the Glebe Field site, was started on behalf of The Whithorn Trust in 1992–93, under the direction of David Pollock. Summaries of the provisional interpretations of the main discoveries in these seasons were published in interim reports entitled *Whithorn 5 Interim Report on the 1992 excavations at Whithorn Priory* (Pollock 1993a), and *Whithorn 6 Interim Report on the 1993 excavations at Whithorn Priory* (Pollock 1993b). The 1992 trench (Trench A) was 25 x 8m and was extended 10m north-westwards in 1993. By the end of the 1993 season, the excavations had reached bedrock over much of the north-western portion of the trench and had reached archaeological deposits interpreted as an 11th or 12th century graveyard in the south-western portion of the Trench. A resistivity survey was undertaken in the area to the south-west of Trench A in 1993 (see Fig. 3).

There was a hiatus in excavation in 1994, caused by David Pollock leaving Whithorn. York Archaeological Trust (YAT) was then asked by The Whithorn Trust to continue the investigation, and it duly completed the excavation of the southernmost 17m of the 1992–93 trench (Trench A), together with an additional 10 x 10m trench located 77m to the south-west of the 1992–93 trench (Trench B). The work was undertaken in a 13-week summer season in 1995 and an 11-week season in 1996, under the direction of Amanda Clarke; a provisional view of the results was published as an interim report, *Whithorn 7 Interim Report on the 1995 and 1996 Excavations at Whithorn Priory* (Clarke 1997a). In addition to the excavation work a geophysical

survey was undertaken of the area between Trenches A and B was undertaken by GeoQuest in 1996.



**Figure 3 Location of resistivity survey and trenches**

Period	Date	Description	Equivalent Glebe Field Period (Hill 1997)
1		Naturally occurring deposits	
2	Pre-6th century	Undated features directly above natural deposits	Period I/Phase 0
3	6th to early 8th century	Settlement and burial ground	Period I/Phases 1–4
4	c.AD 730 to c.AD 845	Settlement and burial ground relating to the Northumbrian monastery	Period II
5	c.AD 845 to c.1250–1300	Settlement and burial	Periods III and IV
6	c.1250–1300 to 16th century	Medieval Priory and quarrying	Period V
7	16th century to the present	Largely horticultural deposits	Period VI

**Table 1 Summary of periods identified in the Fey Filed excavations and their relationship to the periods identified at the Glebe Field excavations (Hill 1997, 27-66).**

During 1995–96 the York Archaeological Trust’s single-context planning system was employed. All contexts were numbered and recorded on proforma cards, as well as being hand-drawn on 1:20 permatrace plans. All finds were individually numbered and 3-dimensionally recorded on site before being entered in a Finds day-book. Appropriate soil samples were taken throughout the excavation. A photographic record was made, using colour and monochrome print film as

well as colour slides. The information obtained from the 1995–96 excavations was entered onto computer in the York Archaeological Trust’s Integrated Archaeological Data Base (IADB), which at the time included the Aegis programme for plan digitisation. Subsequently a detailed archive report was prepared (Clarke 1997b Volume 1 and Clarke 1997 b Volume 2), encompassing an assessment of all the artefacts and the stratigraphy, and discussions about the preparation and the final format of publication took place. In April 2004 an agreement was reached between The Whithorn Trust and York Archaeological Trust that a web-based publication would be prepared.

### **3 POST-EXCAVATION METHODOLOGY**

By J. M. McComish

This web-based publication broadly follows the format of other York Archaeological Trust (YAT) web-based publications (see [www.yorkarchaeology.co.uk](http://www.yorkarchaeology.co.uk)). This involves the use of the Integrated Archaeological Data Base (IADB), devised by M. Rains, and used by YAT. The IADB contains basic artefacts data, context data and site plans. It allows public access to the site archive, and thus enables anyone interested to study the excavated material in detail, without the necessity of travelling to Whithorn to consult the paper archive.

Preparing the data for publication in this way required a variety of tasks to be undertaken. The first of these was to assess the site archive and, wherever possible, to rationalise it for long-term storage. The second task was to check the completeness and accuracy of the data on IADB and, if necessary, to input or amend data. The interim reports and archive reports for 1992–93 (Pollock 1993a and Pollock 1993b) and 1995–96 (Clarke 1997b Volume 1 and Clarke 1997b Volume 2) were attached as documents within IADB as part of this process, thus making them accessible. The third task was to reassess the stratigraphy of both the 1992–93 and 1995–96 assessment reports, and to make any changes that were deemed necessary. At the same time various specialists analysed other components of the site record, notably the various categories of artefacts, and considered the results within a regional framework. Finally the web-text was prepared.

The following report includes a discussion of the problems encountered with the original site archive, which have undoubtedly hampered the interpretation of the site, and have led to a less than perfect IADB database and publication.

#### **3.1 Excavation archive assessment**

In terms of the IADB, the site is split into three projects (Whit92 containing data on the artefacts excavated in 1992, Whit93 containing data on the artefacts excavated in 1993 and Whit9596 containing all other data). This is because the recording methodology used on site, season by season, was not designed for computerised recording; specifically, each year’s record re-used similar sets of small find numbers, distinguished in the written record by the changing yearly prefix. The IADB projects cannot be merged as this would create problems with artefact lists, which would overwrite one another and thereby lead to substantial loss of data.

In terms of YAT project codes, the site is split into three projects (YAT project 0292 for the 1995 administrative work, YAT project 0374 for the 1996 administrative work and YAT project 1302 for all the work undertaken from 2006 onwards). YAT did not excavate the site in 1992–93, and therefore there are no YAT project codes for those years.

The archive for 1992–93 had already been ordered in 1998, but there was still a great deal of duplicated material from the 1995–96 excavations within the archive. A decision was therefore taken to keep just one printout of each document and both a bound and unbound version of the stratigraphic report. Extraneous material of no relevance (e.g. a file on accommodation containing details of holiday homes in the Whithorn area) was also discarded. Removal of surplus material reduced the number of archive storage containers to four 0.39 x 0.31 x 0.29m and one 1.25 x 0.31 x 0.29m boxes.

Having rationalised the archive, contents lists were prepared (92 archive contents.doc, 93 archive contents.doc and 9596 archive contents.doc). Copies of these lists were placed in the relevant storage boxes. Following the production of this web-based publication all the archive material has been returned to The Whithorn Trust.

### **3.2 Creation of the IADB record in 2006**

The IADB can be used to store all forms of data from archaeological sites including artefactual information, context data, site matrices, site plans, illustrations, photographic images and documents. All the information stored on IADB can be cross-linked (e.g. artefacts are automatically linked to the context from which they came) and any changes made to any part of the data (e.g. phasing changes) are automatically updated on all interconnected records, vastly improving the speed and accuracy of post-excavation analysis.

The IADB is used not only as a storage system for site data but also for the post-excavation analysis of sites. Obviously, the quality of the post-excavation analysis is totally dependent upon the quality of the inputted excavation data.

The way in which IADB is used for the analysis of stratigraphy is that stratigraphic contexts are placed into SETS (for example, a pit-cut and associated backfills), the SETS are then placed into GROUPS (for example, a number of post-holes clearly forming the outline of a building), and the GROUPS are then placed into PHASES which essentially reflect the chronological development of the site. A matrix is prepared for the contexts, a second matrix for the sets and a third for the groups. Phase matrices are so simplistic that they are not normally drawn. At the click of a button the contexts on the context matrix can be coloured in to show to which set, group or phase they have been allocated. Likewise the sets on the set matrix can be coloured to show to which group and phase they have been allocated, and the groups on the group matrix can be coloured by phase. This enables a researcher to check at a glance to ensure that all contexts have been allocated to sets, all sets to groups and all groups to phases. This system guards against the accidental omission of contexts from the stratigraphic analysis.

IADB has only three tiers of phasing, but in this report a fourth tier was thought necessary, and the phases were placed into chronological periods (see section 6).

A stratigraphic link recorded on a context record will be represented as a diagonal line between two contexts on the context matrix. Thus the matrices do not look like a conventional Harris Matrix (Harris 1989). The important thing for the reader to remember is that the IADB matrix does not have any horizontal lines within it; all lines represent a link between just two contexts, so crossing lines on the IADB matrix are of no relevance.

The IADB is a very rigorous system, reliant upon a thorough single-context-based recording system on site; it is simply not possible accidentally to allocate a context to more than one set,

a set to more than one group, or a group to more than one phase. Also, when drawing matrices, if a stratigraphic 'loop' has been input into the system (i.e. A is above B is above C is above A) the offending incorrect relationship (in this case C is above A) will show up on the matrix as a red rather than a black line, thus enabling the author to go back and check the original site records and/or the data entry for errors. This is especially useful on the set matrix, as IADB will automatically show up any stratigraphic 'loops' between sets and enable the work to be revised until it is utterly logical in terms of the site stratigraphy.

### 3.2.1 *The 1992-3 site data*

The bulk of the 1992–93 archive exists only on paper/photographic film. The problems associated with transferring the original site data onto IADB are detailed below. Despite these limitations, attempts were made to get enough information onto the IADB for readers to be able to get a feel for the 1992–93 archive. In addition, the interim reports for these seasons were scanned and attached as documents within IADB, again to enable their dissemination to a wider public.

The recording methodology used on site for the 1992–93 excavations had involved the site director making entries into A4 size notebooks on a daily basis; the entries consisted of a mixture of text and sketches (not to scale). This reliance on notebooks as the primary information source fell out of favour with most archaeological units (especially urban-based units such as YAT) by the early 1980s. The problems associated with such a system, and the reasons why it was replaced by single-context planning systems, have been discussed elsewhere (e.g. Barker 1998, 163–70). The resulting archive from 1992–93 inevitably caused problems for the creation of the IADB record. As there were no individual context cards/sheets, the individual context descriptions on IADB had to be taken from entries in the notebooks. In many cases the descriptions of contexts there were exceptionally brief, or consisted of a meaningless phrase such as 'Damian's pit'. A small number of contexts were not mentioned at all in the notebooks, and it was exceptional for a context to be recorded in detail. The quality of the on-site descriptions is inevitably reflected in the context descriptions now present on IADB.

In addition to the site notebooks there was a number of site plans within the archive. Each plan shows multiple features and contexts. There were relatively few plans (records reveal that originally there were just 54 for 1992 and 55 for 1993, though some of these are now missing from the archive). Furthermore, most of the plans lacked labels stating which contexts were depicted on them. Many contexts were never planned to scale. In the light of this it was impossible to create accurate scaled plans for the contexts on IADB, as the raw data was unavailable. As a result, no attempt was made to digitise any of the 1992–93 plans.

The Small Find numbers allocated at the time of excavation seem to have been duplicated. For this reason the finds information is in two separate IADB project areas (Whit92 and Whit93) to ensure that none of the data for these seasons was confused either between 1992 and 1993, or between these years and 1995–96 (which is in IADB project Whit9596). IADB projects Whit92 and Whit93 do not contain any other information besides finds information. They cannot be placed in a single project area due to the danger that one site will overwrite the other, with consequent massive loss of data.

There were serious problems in attempting to create a matrix for the 1992–93 excavations. Within the excavation archive a number of draft hand-drawn paper matrices existed. In addition

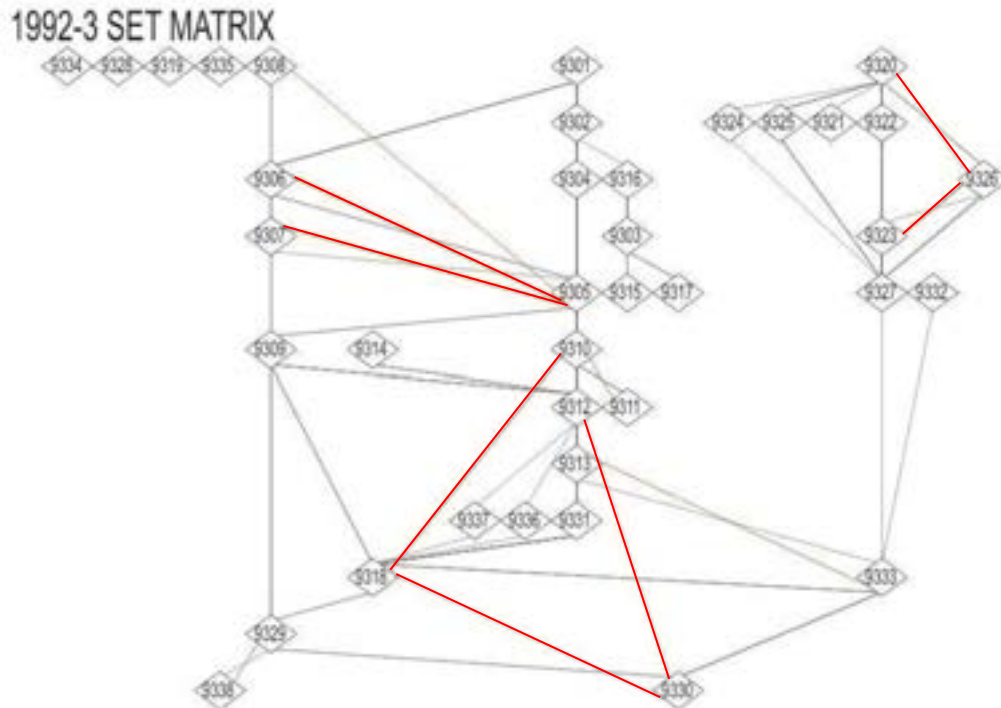
there was a series of mini-matrices for groups of related contexts (called 'blocks'). The 'blocks' were described in a series of handwritten notes within the excavation archive, each of which had a list of contexts and a mini-matrix. Unfortunately the differing matrices did not correspond. For example, on the main matrix Context 18 was depicted as being below Context 12 and above Contexts 116 and 108, while on the Block 6 matrix it was shown as being below Context 29, equated to Context 48 and above Context 45. The Block 8 matrix was different again, having Context 57 above Context 18.

In addition to the inconsistencies between the various matrices it was also difficult to interpret many of them due to the large numbers of crossing lines present. Other unexplained conventions used on these original matrices also hamper their interpretation. After much thought it was decided to add on to the IADB matrix only those relationships that were absolutely clear on the block matrices. Any doubtful relationships were omitted. The end result (the right-hand half of the Site Matrix on IADB) is less than perfect. Many contexts 'float' as their relationships to contexts above and below them are unknown; others are missing either a link to a context above or to contexts below. The IADB site matrix was, however, the best that could be achieved from the original site data. Without proper scaled plans for each context it was impossible to check the site matrix for accuracy.

During the early post-excavation work on the site Pollock had grouped the contexts from the site into 'blocks' of related contexts. As the term 'block' does not exist on IADB the 'blocks' from 1992–93 were converted into 'sets' within IADB. When the lists of contexts attributed to the various blocks/sets were entered on to the IADB this exposed further problems.

Firstly there are many contexts which have not been attributed to a block/set at all (see Appendix 1, 1). Secondly, the IADB set matrix for the contexts which had been placed into block/sets showed that there were many stratigraphic errors (all of which are indicated by red lines on the set matrix below). The large number of contexts that were unphased, together with the presence of so many stratigraphic 'loops', raises serious concerns about the reliability of the original phasing.

In the light of these concerns the decision was taken to remove the 1992–93 block/set allocations and the 1992–93 set matrix from within IADB, as there seemed little point reproducing material containing obvious stratigraphic errors. Only those contexts that could be clearly linked to 1995–96 contexts were then phased within IADB. Before stripping the 1992–93 block phasing out of the IADB a printout was made of the matrix coloured in by sets/blocks, and this is stored with the paper archive.



1992–93 Block/Set Matrix as generated by IADB. The red lines represent stratigraphic 'loops'

### 3.2.2 The 1995-6 site data

The 1995–96 data were recorded using a single-context recording system that YAT had been evolving for some twenty years. Over that time various attempts had been made to computerise these data, and several programmes had been written for this purpose which have eventually been developed and incorporated into IADB. At the time of the Whithorn excavations in 1995–96 the only two categories of records to be input on to computer were those relating to artefacts, using a programme called CIFR (which was later incorporated as a sub-programme within IADB), and the site plans, using a programme called Aegis (which eventually evolved into IADB). IADB itself has since undergone five major revisions. Inevitably, as programmes are rewritten there are problems of incompatibility between versions; every effort has been made to sort out these glitches.

The first task was to ensure that the IADB records for the site were as complete as possible. A careful trawl was made through the contexts from the 1995–96 excavations to check whether a context card and plan existed on IADB. This process showed that there were context numbers which were not used on site, and contexts where the coordinates on the original site plan were clearly wrong due to excavator error. In addition there were contexts that had plans on IADB but the original site plan for which has been lost, so these plans cannot be checked for accuracy. These contexts are listed in Appendix 1, 2–3.

An IADB context matrix was drawn in 1997, based on the original hand-drawn matrices (one for 1995 and one for 1996) from the archive; this was then checked against the digitised plans for accuracy. Any contexts omitted from the matrix are listed in Appendix 1, 4.



### 3.3 Reassessment of 1992–93 stratigraphy

As stated in 3.1, it is virtually impossible to get back from the published interim reports to individual records (either plans, sections or descriptions) within the archive. Despite prolonged efforts by Amanda Clarke in 1996–97 and further work by J. M. McComish in 2006, it has been impossible either to prove or refute the conclusions of the interim reports for the 1992–93 excavations using the original site data. For this reason there has been no attempt at major rephasing of this work, and the interim reports are simply reproduced in their original form within IADB ( Pollock 1993a and Pollock 1993b).

### 3.4 Reassessment of 1995–96 stratigraphy

Initially it had been hoped that the 1995–96 archive report would provide the basis of the publication report. However, an assessment of the 1995–96 archive report suggested that some refinements to the phasing were desirable.

In the 1995–96 archive report all the deposits of soil occurring between burials had been placed into a single group (Group 10), thereby effectively ignoring all the stratigraphic relationships between deposits and graves. It is difficult to phase cemetery soils, as they are often arbitrary spits of pre-determined depth rather than true layers. The decision was taken to use the stratigraphic relationships as recorded at the time of excavation, rather than disregarding these relationships as had been done in the initial post-excavation work. This caused discrepancies between the initial phasing and that done in 2006, which effectively split up the original Group 10 (Appendix 1, 5.1).

Some stratigraphic loops were also identified within the archive report: a small number of contexts had not been phased at all (see Appendix 1, 5.2) and some contexts had been phased twice (see Appendix 1, 5.3).

In the light of this, contexts were reallocated to sets. While for the most part the sets were identical to those from the original archive report, the allocation of the sets to groups sometimes differed. Despite this, however, there was broad agreement between the original phasing and the 2006 phasing in terms of the overall development of the site.

### 3.5 Artefact analysis

In 1996 YAT staff undertook an assessment of most of the artefacts from the 1992–93 excavations and all the material from the 1995–96 excavations. This analysis was used as the basis for the 2006 work in order to target research where it would be most beneficial to the project. Only those artefacts which had been singled out as of importance in 1996 were reassessed in 2006. The overwhelming majority of the stone finds from 1992–93 were never seen by YAT staff. The majority of the stone comprised unworked material (including pebbles, white stones and heat-affected stones), which did not require any further recording; the flints and roofing stones were analysed at the time of the original 1992–93 post-excavation work and the results of this research are incorporated into this text. A trawl of the original finds records was made for the remaining stone objects to single out any that were of potential importance. These were brought to York from Whithorn and assessed by N. Rogers, J. McComish and Dr R.A. Hall of YAT, and any resultant details were added to the IADB.

Appendix 4 explains the problems encountered by R. Cubitt when entering artefact information onto the Whithorn database.

## 4 LOCATION, GEOLOGY AND TOPOGRAPHY

By J. M. McComish

The Fey Field site in Whithorn is situated on the south-western slope of a low hill which rises about 6m above the surrounding landscape. The hill is bordered on the north-western and north-eastern sides by a small burn, the Ket. The later medieval Premonstratensian priory church was located at the top of the hill. To the south-east lies Whithorn's main street, George Street, with buildings fronting the street and associated gardens to the rear. To the south-west are fields. A narrow road, Bruce Street, running from George Street to The Manse, approximately bisects the hill.



*General view of Fey Field facing north*

The natural bedrock here is Silurian sedimentary rock comprising greywackes, mudstones and shales folded by tectonic action into sinclines and anticlines (troughs and arches). Subsequent glaciation has eroded the weaker portions of the bedrock, creating jagged parallel ridges of stone. One such ridge was located running across the excavation area; it is the north-westernmost of three such ridges noted by Hill (1997, 7 and fig. 1.5, Ridge A).

Trench A was a rectangular trench located immediately south-west of the ruined nave of Whithorn Priory. The south-eastern end of Trench A was located at the top of the hill at c.63.5m AOD, and the north-western end towards the base of the hill at c.60m AOD. Trench B was located 77m south-west of the southern end of Trench A, and the upper surface was at c.60m AOD.

## 5 ARCHAEOLOGICAL BACKGROUND

By J. M. McComish

The site of Whithorn is well known to historians, archaeologists and students of the medieval church thanks to earlier programmes of historical research and archaeological excavation, which were ultimately inspired by a remarkable series of documentary sources including Bede's

*Ecclesiastical History of the English Church and People* written c.731, a collection of early medieval inscribed and decorated stones, and the upstanding remains of the later medieval ecclesiastical complex.

In the 1880s the Marquess of Bute commissioned a local architect to carry out a programme of recording and restoration at the site, concentrating on the crypts below the demolished eastern end of the medieval priory church. A research programme was undertaken from 1949–51, and again in 1953, under the direction of C. A. Raleigh Radford, which included trial excavations at Whithorn Priory, at St Ninian's Cave and at a chapel on the Isle of Whithorn, 5.5km to the south-east. At this time it was unclear whether the early Christian community associated with St Ninian had been located at Whithorn or at the chapel on the Isle. Radford's excavations showed that while Whithorn had deposits of early medieval date, the chapel on the Isle was 13th century.

Further excavations in 1957–67 were undertaken by P. R. Ritchie; these yielded, *inter alia*, a number of burials, a collection of fine liturgical objects and an inscribed stele (Lowe (ed.) forthcoming). C. J. Tabraham directed excavations in 1972 in the fields to the south of the priory which recovered evidence for extensive stratified deposits that were interpreted as being of early medieval date. A further series of trenches were excavated by Tabraham to the north of the priory in 1975, revealing the foundations of the north range of the cloister. Large-scale excavations were conducted in Glebe Field to the south-east of the parish church in the 1980s, the results of which are presented in the monograph *Whithorn and St Ninian: The Excavation of a Monastic Town 1984–91* (Hill 1997). Hill provides details of earlier archaeological interventions together with details of historical research on the site (*ibid.*, 1–25).

Hill identified a number of phases of activity (*ibid.*, 26–66) which are summarised here to provide the context for this report. Evidence for the period up to AD 730 comprised a number of undated features, of possibly prehistoric date, and a scatter of Roman finds. These were beneath structures interpreted as the remains of a Christian community associated with St Ninian, which developed from the 6th century onwards. The second major period identified by Hill related to a phase of Northumbrian rule which dated to AD 730–c.845 (*ibid.*, 16 and 21), during which time the site was occupied by a minster church and its associated community. During Hill's third period, from AD 845 to 1000–1050, the monastic church survived but the precise political situation under which it operated is uncertain due to the lack of associated historical documents. A major expansion of the monastery was undertaken between c.1000–1050 and 1250–1300 (Hill's Period IV), creating a monastic community that continued until the dissolution in the late 16th century (Hill's Period V).

More recent work at Whithorn has included excavations undertaken by Headland Archaeology in Manse Field, to the north of the ruins of the Premonstratensian abbey, in 2001 and 2003 (<http://www.whithorn.com/archaeology.htm>). This work revealed further evidence of prehistoric activity, together with a structure dating to the last quarter of the first millennium AD and a building of early to mid-16th-century date.

## 6 THE EXCAVATION

By J. M. McComish

This report brings together the results of the 1992–93 and 1995–96 excavations in Fey Field, adjacent to Bruce Street, Whithorn.

The 1992–93 interpretations are based upon interim reports written by the excavation's director at the time (Pollock 1993a and 1993b), together with some additional information from the site excavation notebooks and archive. The two interim reports are presented in their entirety as attached documents within the IADB. Few context numbers for the 1992–93 excavations were noted in the interim reports; those listed below are taken from sketches in the site archive. The 1995–96 excavation results are based upon the single-context excavation archive which is presented in IADB. Nearly all of the contexts described below were located in the main trench excavated from 1992–96 (Trench A). There were also a small number of contexts excavated in a second trench (Trench B), located 77m south-west of the southern end of Trench A.

### **Terminology**

The terminology used in the report needs some explanation. The 1992–93 material is referred to as contexts or blocks. A context is defined as the archaeological evidence for an individual event or activity (for example, the digging of pit would be allocated a context number, as would each layer in its backfill) and a block is a number of related contexts. For reasons explained in the Methodology Report, it was not possible to put the 1992–93 blocks into IADB.

The 1995–96 material in IADB is organised in a hierarchical system of contexts, sets, groups and phases. Each context, as defined above, should be recorded with a card and a 1:20 plan at the time of excavation. A set comprises a number of related contexts (for example, a grave cut, the skeleton it contains and the grave's backfill layer(s) would be placed in a single set); a group is a number of related sets (for example, several graves in a row); and a phase is a number of related groups (for example, several groups of skeletons sealed by a single deposit and therefore stratigraphically related). Having taken account of the absolute and relative dating evidence, these phases can then be placed, with varying degrees of certainty, within the historic framework for the site and region. Effectively a block in the 1992–93 archive is equivalent to a group in the 1995–96 archive. Any contexts, sets, groups and phases from 1995–96 mentioned in the text are present in the IADB database. Within this report it was felt necessary to insert a fourth tier of groupings, namely periods. All phases were allocated to a chronological period. The periods do not appear in IADB as it only has three levels of groupings available (sets, groups and phases). Each individual artefact is referred to as 'SF000' (small find 0000) throughout the text.

#### **6.1 Period 1 – naturally occurring deposits**

The natural bedrock here is Silurian greywacke stone (1995–96 Phase 1). Above the natural bedrock were a number of stony clay deposits (1995–96 Phase 2), interpreted as boulder clay infilling the naturally occurring hollows within the bedrock.



*Greywacke outcropping during excavation*



*Greywacke outcrops at the northern end of the site*

A single sherd of western French E ware pottery (95/SF1578, see 7.4 Vessel 2) dated to the late 6th–7th centuries was present in one of these deposits (Context 2815), but this could have been introduced through intrusive contamination by later cut features in the area.



Figure 4 Period 1



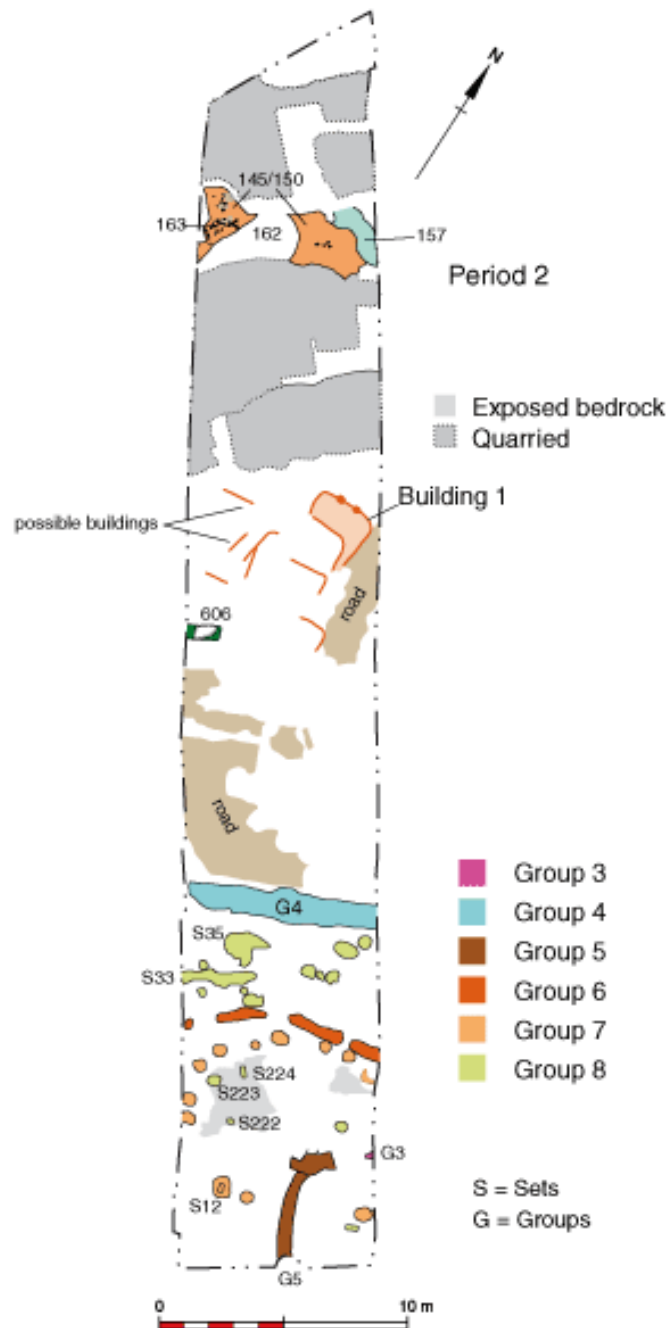
*Excavation of greywacke outcrops at the northern end of the site*

## **6.2 Period 2 – undated features directly above natural, pre-6th century in date**

Period 2 incorporates the earliest evidence for human activity, attested by a number of undated features dispersed across the site. As there are few direct stratigraphic links between these features it is impossible, in many cases, to be sure of the order in which they were created. Although no datable artefacts were recovered from these contexts, collectively they pre-date 6th-century features.

Probably the earliest feature seen was a prostrate stone slab 0.8 x 0.4m in area (Context 606) that may represent a buried standing stone (Pollock 1993b, 2–3). A similar stone was found in the Glebe Field excavations to the south-east (Hill 1997, 74 and fig. 3.5), and was also interpreted as a possible slighted standing stone.

A number of cut features in the southern half of the excavation were interpreted as the remains of two sub-circular buildings (1995–96 Groups 5 and 7). The Group 5 building was represented by a continuous curving slot 5m in length, 0.6m in width and 0.25m deep, presumably to support a wattlework structure. It was difficult to reconstruct the dimensions of this building as it was partially outside the area of excavation and was heavily truncated on the northern side, but a diameter of c.6.7m is suggested. The Group 7 building was a post-built structure, c. 8m in diameter. A larger post-hole on the south-western side may represent a door-post. No internal surfaces or hearths were identified within either of these buildings so their original function (domestic, industrial or both) is impossible to determine. Clearly these buildings cannot have been contemporaneous, as their ground plans overlapped.



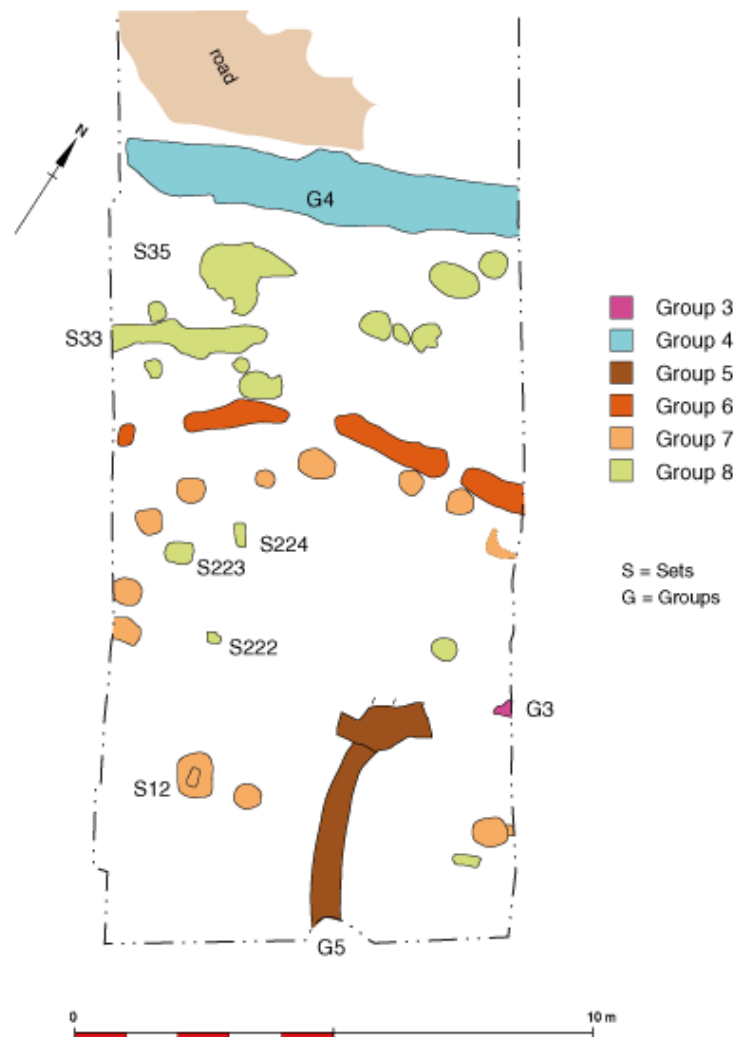
**Figure 5 Period 2**

A fragmentary possible round house, consisting of a stake-walled structure 6.5m in diameter, defined in part by a shallow groove and in part by an irregular arc of stake-holes, was identified in the Glebe Field excavations (Hill 1997, 121 [Structure 11] and fig. 2.1) and provides something of a comparison for the form of these Fey Field sub-circular structures. Collectively it is possible that these three buildings represent traces of an Iron Age settlement, but as no dating evidence was recovered this interpretation is speculative.

In addition to the sub-circular buildings in Fey Field there were various cut features dispersed across the southern portion of the site (1995–96 Groups 6 and 8) which may represent the partial remains of timber structures. Among these, Group 6 formed the most coherent pattern,



consisting of a series of arc-shaped slots, each up to 2.5 x 0.25m in size, and interpreted as a possible fence or boundary line. The Group 8 features comprised a number of post-holes and a linear cut (possibly a beam-slot), but they did not fall into recognisable patterns suggestive of buildings, largely because the areas between the features had been truncated by Period 3 grave cuts. Group 8 also included a large pit (Set 35) 1.2m in diameter and 0.31m deep, the backfill of which gave no clue as to its original function. It is impossible to determine if any of the Group 6 or 8 features was contemporaneous with the circular timber buildings (Groups 5 and 7), but the Group 6 slots skirted round the northern side of Group 7, and so may represent an associated fence.



**Figure 6 Detail of the Period 2 features in the southern portion of Trench A**

The 1992–93 excavations contained two converging paths or roads (Contexts 437 and 624) that had been made by scraping the bedrock along the required line and then mixing bedrock chippings with subsoil. The resultant material was then trampled into a compact surface which was bedded directly on the bedrock, or above a thin layer of boulder clay (Pollock 1993b, 2). The roads were aligned east–west and north–south respectively and, of the two, the east–west road (Context 437) seems to have been the wider. A small area of compacted small greywacke

stone pieces, seen further to the south-east (1995–96 Group 3), may represent the continuation of the east–west road. The road surfaces were described as having iron working fragments pressed into their upper surface from deposits above. It is therefore possible that any slag from these road surfaces (92/SF46601, 92/SF47500, 93/SF60702, 93/SF62600, 93/SF57000, 93/SF62300, 93/SF65200, 93/SF65201 see 9.2.4, 93/SF65202 and 95/SF1279) represents contamination from Period 3 rather than evidence for metal working in Period 2.

Another possible roadway was seen in the Glebe Field excavations (Hill 1997, fig. 2.1). This road was slightly different, in that it consisted of exposed bedrock worn away by prolonged use. This road pre-dated the late 5th century, while those in the 1992–96 excavations were pre-6th century in date. The difference between the surfaces of the Glebe Field road (worn bedrock) and those seen in Fey Field (with their deliberate surfacing) may suggest that these roads are unrelated, though it is not impossible that they form part of an integrated system.

To the north of the junction of the two roads seen in Fey Field there were traces of a number of buildings defined by lines of stake-holes (Pollock 1993b, 6), most of which seemed to be aligned with the roads. These structural remains were very poorly preserved and even the most complete (Building 1) consisted of just one gable wall and parts of two sides. The gable wall was 2.5m in length and comprised a line of stake-holes; two shallow post-holes midway along the wall may represent the positions of door posts. The structure's corners were rounded and lacked post-holes, implying that this was a wicker building, probably with a hipped gable. No traces of an internal floor or hearth were recognised.

The northern end of the 1992–93 excavation area was heavily damaged by later quarrying, which had largely removed any deposits of this period. There was, however, a small area of undisturbed deposits within which the earliest features were a number of stake-holes (Context 163). Given the limited area over which these were seen it was impossible to ascertain whether they were fence lines or part of a structure. In addition there was a deposit described in the site archive (1992 Block 15 description) as including in-situ 'smithy hearth bottoms' (Context 151). Unfortunately there is no plan of Context 151 in the excavation archive, so its size and precise location are unknown. Sealing the features described above was a surface of fragments of weathered greywacke pressed directly into boulder clay (Context 145/150). The surface of Context 145/150 had been worn into a linear hollow 1m wide and 0.2m deep (Context 157) which had been infilled with fine silt, and there was also a large shallow hollow (Context 162) of uncertain function. The truncated nature of these features makes them difficult to interpret; they are phased here because they were sealed by a deposit dated to the 6th century.

Also included with the Period 2 features was a linear ditch cut, c.1m in width and 0.28m in depth, aligned approximately north-west to south-east, and running roughly midway across the excavation area (1995–96 Group 4). A post-hole within the ditch may perhaps imply that it represents a wooden boundary fence. It is not known how long this ditch was in use, but it was recut at some stage, and it may have been a feature of the landscape for a considerable time.

The dating of this ditch is as uncertain as its function, and it could relate to either Period 2 or Period 3. The evidence linking the ditch to Period 2 largely rests upon a resistivity survey of the area carried out by Fraser Hunter and Bradford University (Pollock 1993b, 2–3). This shows an east–west road (see Fig. 3, in section 2) which seems to link the Ket Burn with a circular ditched enclosure to the south-east. The Group 4 ditch corresponds exactly with the line of the ditched

enclosure plotted in the resistivity survey, though it seems a little straighter than the slightly curving shape implied by the survey. The function and date of this ditched enclosure and associated road are unclear, largely because so little was excavated, but the road is similar to features seen in Period 2. For this reason the Group 4 ditch has been interpreted as belonging to Period 2.



*Ridge of Period 2 deposits (Contexts 145/150 and 162) located beneath the left-hand scale*



*Context 606 possible buried standing stone*



*Period 2 post-holes at the southern end of the site (post-holes marked by upturned buckets)*

The ditch could, however, equally relate to Period 3, serving as the boundary between an area of burials to the south and settlement to the north (see Period 3). It must be noted, however, that the burials did not follow the ditch in terms of alignment, which may imply they were not related in terms of date. If the ditch does relate to Period 3, it could be interpreted as the boundary of an early monastic enclosure similar to those boundary ditches seen in excavations at Glebe Field (Hill 1997, figs 2.4–2.6). It is also possible that the ditch may have originated in Period 2 and been recut in Period 3 to act as the monastic boundary.

Few of the contexts in Period 2 yielded any artefacts, and those that were recovered were for the most part undatable (iron nails 95/SF1396, 95/SF1406, slag fragments 95/SF1397, 95/SF1304 and 95/SF1540, and a crucible fragment 95/SF0689). There was also a plough pebble (95/SF1553) in the ditch fill of Group 4. Plough pebbles were in use at Whithorn from the late 5th/early 6th century to the 9th century (Hill 1997, 464), which is too broad a date range to be of any help in suggesting a date either for the ditch concerned or for the period as a whole.

It must be noted that residual Later Mesolithic (c.5500–5300 BC) and Later Neolithic–Early Bronze Age (c.3500–2500 BC) lithic remains were present across the excavated areas (see 9.5.1), suggestive of activity here at those periods, but the precise nature of any such activity or occupation is not known.

### **6.3 Period 3 – settlement and burial ground, 6th to early 8th century**

The Period 3 remains represent a major rearrangement of the site, with most earlier features being obliterated. The site was now divided into two zones, with settlement to the north and a burial ground to the south. These zones were separated by the Group 4 ditch (described in Period 2), and it would seem that this ditch was a feature in the landscape throughout most of Period 3. Despite the apparent use of the ditch to demarcate zones of land use, it did not influence the alignment of the graves within the burial ground, though the buildings in the settlement area do appear to respect its alignment.

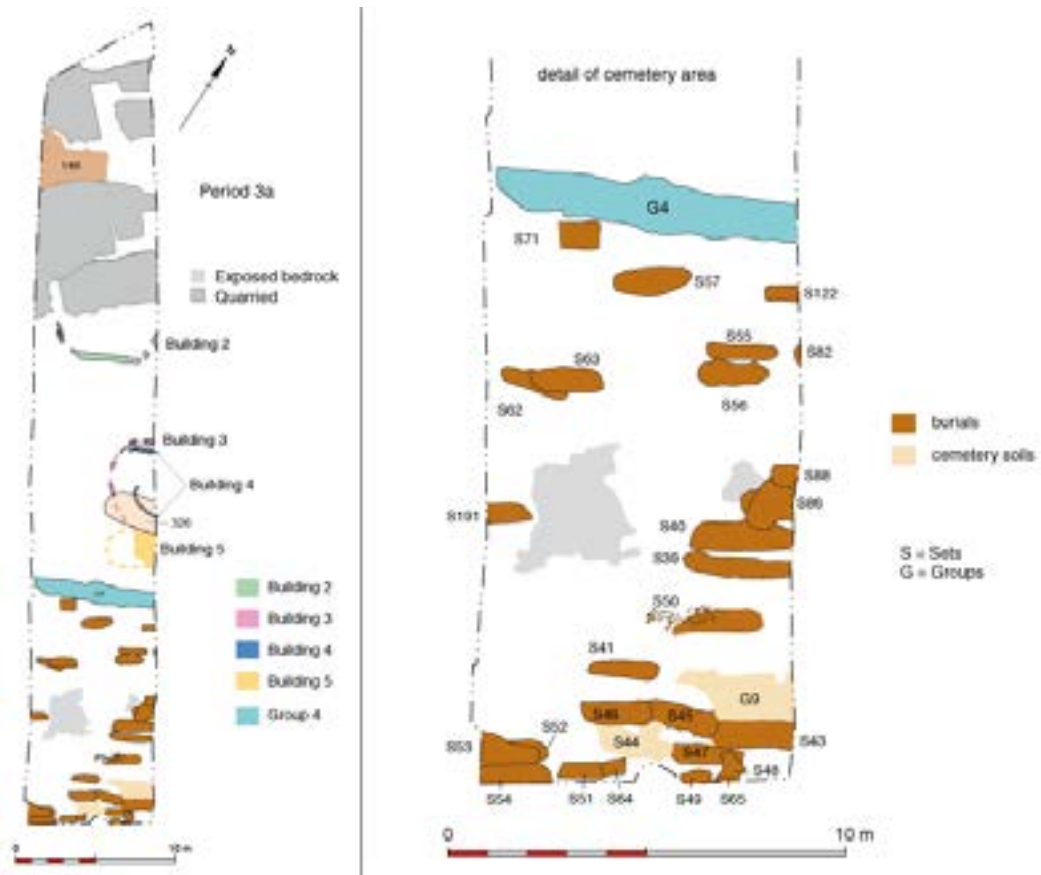
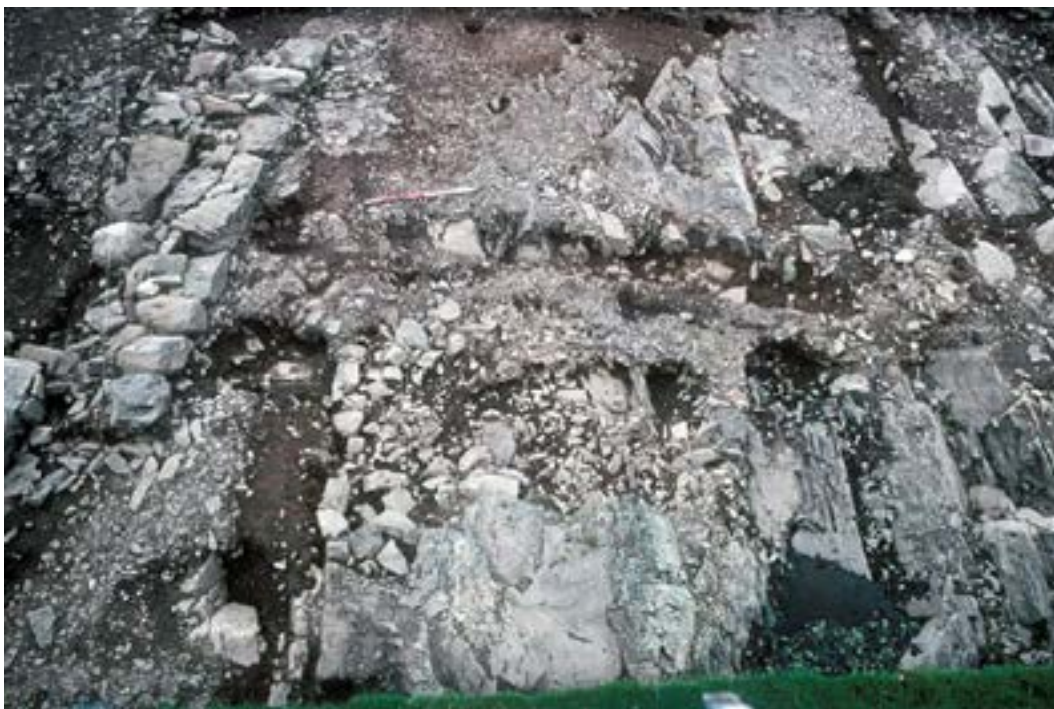


Figure 7 Period 3 with detail of the cemetery area



*The earlier Period 2 ditch (Group 4) reused in Period 3 as a boundary between the settlement and the burial ground.*



*Building 5 showing the stone outcrop in the eastern portion of the building (adjacent to the section) and the hollowed out floor beyond*



*Excavation of Period 3 burials showing the south-west to north-east burial alignment (parallel to the far trench edge)*

Although relatively few contexts within this phase contained datable artefacts, there were some that contained material which is dated from the 6th to early 8th centuries, that is, before the historically documented Northumbrian takeover of the site (see Period 4). These features are therefore probably broadly contemporary with others excavated elsewhere at Whithorn and interpreted as the remains of the early Christian community associated with Saint Ninian (Hill

1997, 67–133). In its early stages this community seems to have defined an enclosure, which was later surrounded by a second, larger outer enclosure. The inner enclosure was used for burials and religious buildings, while the outer zone was used for domestic and industrial purposes.

Hill suggested that parts of both zones would be located within Fey Field (*ibid.*, figs 2.4–2.6), and this does indeed seem to be the case. The boundary between the inner and outer zones seems to be represented by the Group 4 ditch, with the inner burial zone located to the south-east of the ditch, and the outer settlement zone to the north-west of it. Although there was no clear sign of an outer zone boundary within Fey Field, the northern portion of the excavated area had been very heavily disturbed by later activity, which may have removed any relevant evidence. It must also be noted, however, that no trace of an outer boundary zone ditch was identified in a resistivity survey carried out in Fey Field by Bradford University (see Fig. 3 in section 2).

### 6.3.1 *Period 3: settlement*

The remains of the Period 3 settlement were largely confined to the 1992–93 area of excavation (Pollock 1993b, 3 and 6–7). Parts of four buildings were present (Buildings 2–5); unfortunately these continued outside the area of excavation, or were heavily damaged by later features, and so their full ground plans are unknown. The buildings were not standardised, but exhibited varied construction techniques and sizes (see Fig. 7).



*Building 5*

Building 3, and its replacement Building 4, both comprised concentric paired gullies, which presumably carried stakes to support wattle and daub buildings. The stakes were over 0.05m in diameter and spaced at less than 0.1m intervals. Buildings 3 and 4 were c.5.8m and c.4m wide respectively. Their ground plans are uncertain as they were largely beyond the limits of

excavation; they could have been sub-oval or even circular. The absence of any larger post-holes suggests that their doorways were located outside the area of excavation. No internal floors or hearths survived, and no daub from the walling was found. Buildings 3 and 4 are comparable with a series of buildings identified in the Glebe Field excavations (Hill 1997, 123–33). The best preserved of those (Building 18; *ibid.*, 126–7) was a 7 x 4m structure with straight sides and rounded ends. The walls were constructed with double rows of stakes, the doors were in the straight sides of the building and there was both an internal partition and a hearth

Building 5 in Fey Field, located immediately south-east of Buildings 3 and 4, was a small sub-oval structure, in excess of 3m long and 2.2m wide. The eastern portion was built over a rock shelf but the western part was interpreted by the excavator as having been quarried out and then levelled up with small fragments of bedrock and weathered stones (Pollock 1993b, 7). It is not clear how the walls were created, but it was probably a wattle and daub structure. Shelves cut into the bedrock may mark the positions of the door posts; there was a pebble surface outside the building's western end. A broad gully or possibly a soakaway (Context 326), to the immediate north of Building 5, post-dated Buildings 3 and 4.

To the north of Buildings 3 and 4 was a structure (Building 2) which had been partly destroyed by later quarrying. This building was defined by a shallow gully 0.05m deep, with closely spaced stake- and post-holes in its western portion. It is unclear if the eastern portion of the gully also originally held posts and stakes, or was intended for a sleeper beam, but no other buildings with a sleeper beam have been identified in this period.

Close to the northern end of the 1992–93 excavation area was a heavily truncated deposit (Context 146) which was exceptionally rich in iron working waste, copper working waste and charcoal; the soil also contained 27 sherds of pottery of late 5th- or mid-6th-century date, and one sherd of pottery of late 6th- to 7th-century date, together with early 7th-century glass. In addition, there was an iron staple (92/SF39607, see 9.3.2) an iron punch (92/SF39606, see 9.3.1), an iron pennanular ring possibly of early 7th-century date (92/SF37101, see 9.3.4) and a copper alloy stud (92/SF39603). An iron buckle (92/SF39610) is of a form common on mid-9th- to 11th-century sites, and may represent intrusive material.

There were few if any occupation deposits that can be associated stratigraphically with any of these buildings, so the precise nature and function of the settlement is unclear. Pollock felt that Building 2 was probably used in the pre-Northumbrian period for smithing (*ibid.*, 13). Metal working debris was found in many of the Period 3 graves and in Context 146, which implies that industrial activity was taking place nearby. In part at least the settlement must have had a manufacturing function.

There were also features that were originally interpreted as belonging to a long-lived aqueduct system (Pollock 1993b, 3 and 10–11) constructed in Period 3 and continuing in use into Period 4. These comprised a small gully or drain (Context 573), a row of six post-holes (Context 400) and a slot (Context 424) containing a plank on edge, packed with stones. These features have been reinterpreted as dating to Period 4, both because some of them physically truncate Period 3 contexts and because they very clearly conform to the alignment of the Period 4 Northumbrian settlement. These contexts are therefore not discussed in detail here but as part of Period 4. The reasons for rejecting their interpretation as part of an aqueduct system are given in Appendix 2.



### 6.3.2 *Period 3: burial ground*

The burial ground lay entirely within the 1995–96 excavations (1995–96 Phase 4) see Fig. 7. The earliest features in the burial ground were a number of deposits (Group 9, Sets 37, 42 and 44) in the south-eastern portion of the excavated area that could represent either a gradual build-up of soil or an attempt at levelling up a small area before its use for burials. These deposits contained a few fragments of slag, suggestive of metal working in the vicinity, together with two smoothing stones (95/SF1569 and 95/SF1574) and a plough pebble (95/SF1061) of late 5th-/early 6th-century to 9th-century date (Hill 1997, 464). The evidence for metal working could represent residual material from Period 2.

There were 28 graves (each of which is referred to by its set number), which were all aligned approximately south-west to north-east except for Set 62, which was aligned east–west. There were few clear patterns chronologically or in terms of layout within the cemetery, save that the burials in Sets 51 and 64 overlay one another, as did the burials in Sets 62/63, 52/53 and 52/54. The burials in Sets 43, 45 and 46 seem to have been interred head to toe, while those in Sets 55/56, 39/40 and 86/88 were side by side. There were no clear paths or access routes between the graves.



*Skeleton 2704, the best preserved of the Period 3 burials*

Most of the skeletons had wholly decayed, and only four graves contained fragmentary skeletal remains; nothing meaningful can therefore be determined about the population represented in terms of sex, age or diseases/injuries, although the grave sizes imply that no children had been buried here. The four fragmentary skeletons were in Sets 39, 53, 64 and 122; three were of adults and one (Set 122) of an adolescent. Set 64 was a male skeleton, but the sex of the other skeletons could not be determined.

There was some variation in grave type, but most of the graves were simple rectangular cuts with no clear evidence for coffins or internal structures, implying that the majority of people were buried without coffins, possibly just in shrouds. The shape of the graves implies fully extended inhumations. There were three graves with evidence for internal structures: Set 43 was lined by stones that supported a timber lintel or lid, Set 46 contained the remains of a decayed timber lining, and Set 54 had a large stone at the foot of the grave which may have been either a grave marker or part of a stone lining. These three graves were very close to the south-eastern limits of the excavation, where the density of burial was greatest. This may imply that this was the most prestigious part of the cemetery, attracting both the most elaborate burials and the greatest number.

Set 54 was the only burial with good evidence for a coffin with iron fittings, which included an iron strap (95/SF1557, see 9.4.2), a corner bracket (95/SF1575, see 9.4.2), two nails and three iron fragments.

A number of the graves had artefacts within their backfills, but these were all undated. Slag was present in the burials of Sets 39, 41, 43, 57, 63, 57, 86 and 122. These graves were scattered across the excavated area and there is no indication that the slag represents anything other than material accidentally included in the grave fills. A fragment of copper working waste (95/SF1558, see 9.2.1) from Set 54 almost certainly also represents an accidental inclusion. These finds clearly imply that there was both iron and copper working in the vicinity (though the finds could be residual from Period 2). Iron nails or fragments were present in Sets 39, 50, 54, 86 and 122. In all these cases, with the exception of Set 54, there were up to three iron nails or fragments per grave, and it is unclear if this is evidence for nailed coffins or whether, like the slag, they simply represent material accidentally included in the grave. The only other grave finds were a fragment of worked bone from Set 43 (95/SF1533), a plough pebble from Set 46 (95/SF1524) and a stone hone from Set 50 (95/SF1550); it is unclear if these represented deliberately deposited grave goods.

Overall this group of burials is dated to the late 5th–7th centuries on the basis of pottery of this date range found in four grave fills (Sets 43, 53, 65 and 88); see Campbell, catalogue entries 95/SF01270, 95/SF01479, 95/SF01226 and 95/SF01539.

Comparing these graves with the contemporary burials seen in the Glebe Field excavations to the south-east (Hill 1997, 70–4), it is clear there are differences. The most striking is in terms of layout, with those excavated in Glebe Field falling, for the most part, into clear burial rows (*ibid.*, fig. 3.2) while those of 1995–96 were seemingly more randomly positioned. The presence of a lintel grave, a grave with a timber lining, and a grave with a possible marker stone in Fey Field are all matched by examples excavated in Glebe Field (*ibid.*, 72 and 114). What Fey Field lacked, however, were log coffin burials, burials in stone cists with lids at ground level, and pebble-

marked graves, all of which were seen in Glebe Field. There was also clearly less variation in orientation among the Fey Field graves than seen in the Glebe Field excavations (*ibid.*, 71).

### 6.3.3 *Period 3b: later use of the burial ground*

The burial ground of Period 3 seems to have gone out of use some time in the early 7th century (1995–96 Phase 5) and the area was then used less intensively.

Deposits in the south-eastern corner of the site may represent a deliberate attempt to raise the ground level and seal the underlying graves (Set 59). These deposits contained fragments of slag and a crucible fragment (95/SF1522) which could suggest metal working in the vicinity, but could simply represent residual material. It is unclear if these deposits represent the abandonment of the cemetery, or simply preparation of the ground for further burial by the deliberate importation of soil.

Above these deposits was a grouping of heat-reddened stones (Set 60), perhaps the remains of a hearth, but possibly simply a tip of stones from elsewhere, as there were no other traces of burning (such as deposits of ash or charcoal) associated with these stones. Two irregularly shaped pits (Sets 58 and 108) of uncertain function may have been quarry pits for stone extraction. It is even possible that Set 108 represents a grave cut from the Period 3 burial ground, though if so it would have been a large grave. Set 58 disturbed earlier graves, but Set 108 did not.

A large sub-rectangular pit 2.5 x 1.5m in size and 0.33m deep, dug into bedrock with a channel entrance/exit extending north-westwards beyond the limits of excavation (Set 129), seems to have had an industrial function. Samples taken from its backfill produced six well-preserved barley grains and one or two unidentified fragmentary cereal grains, several moderately preserved charred grains, including barley, and moderate quantities of charcoal. The feature was probably a cereal-drying oven; the stony nature of its backfills suggest that a stone superstructure had either collapsed or been dismantled. The presence of a corn-drying oven is of interest as it ties in with the presence of two millstones in the Glebe Field excavations (Hill 1997, 460–1). While the dating of these millstones is not entirely certain (they could be Roman or later), they were interpreted as relating to the pre-Northumbrian Christian community. The millstones and corn-drying oven together suggest that food was being prepared communally. This corn-drying oven was dug above the line of the earlier boundary ditch, implying that this feature had finally been infilled, either through natural processes or deliberate backfilling.

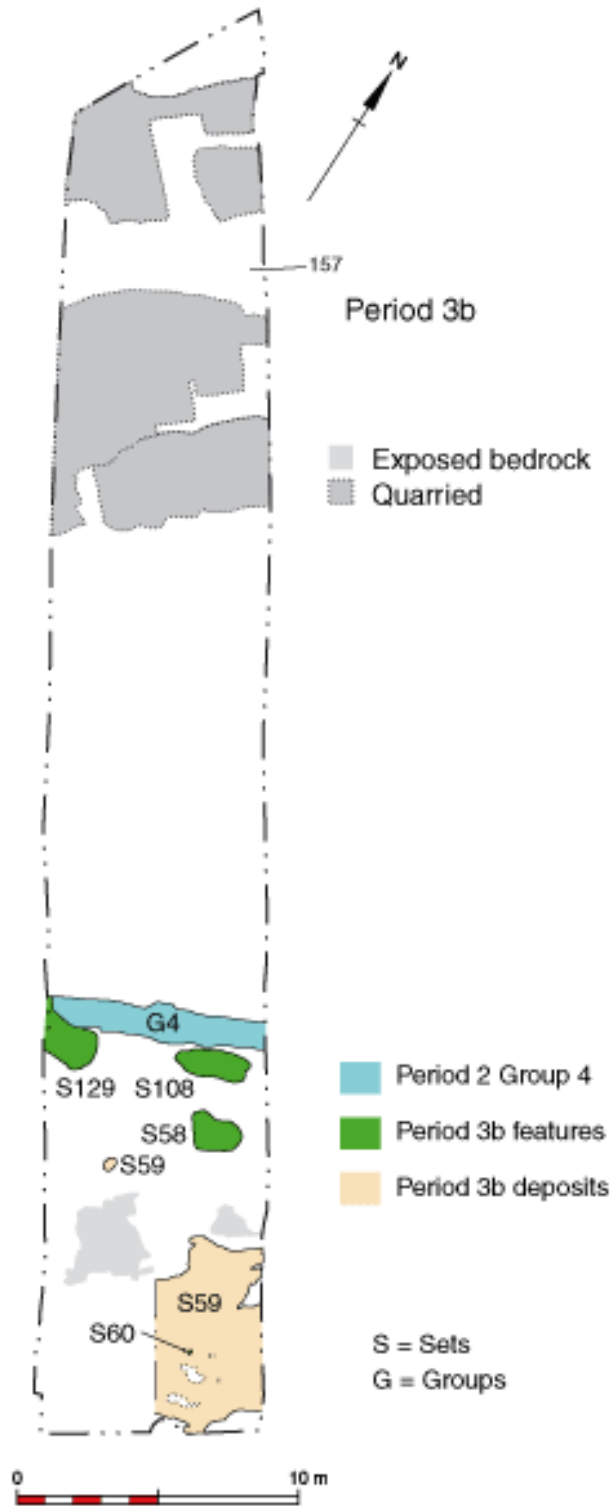
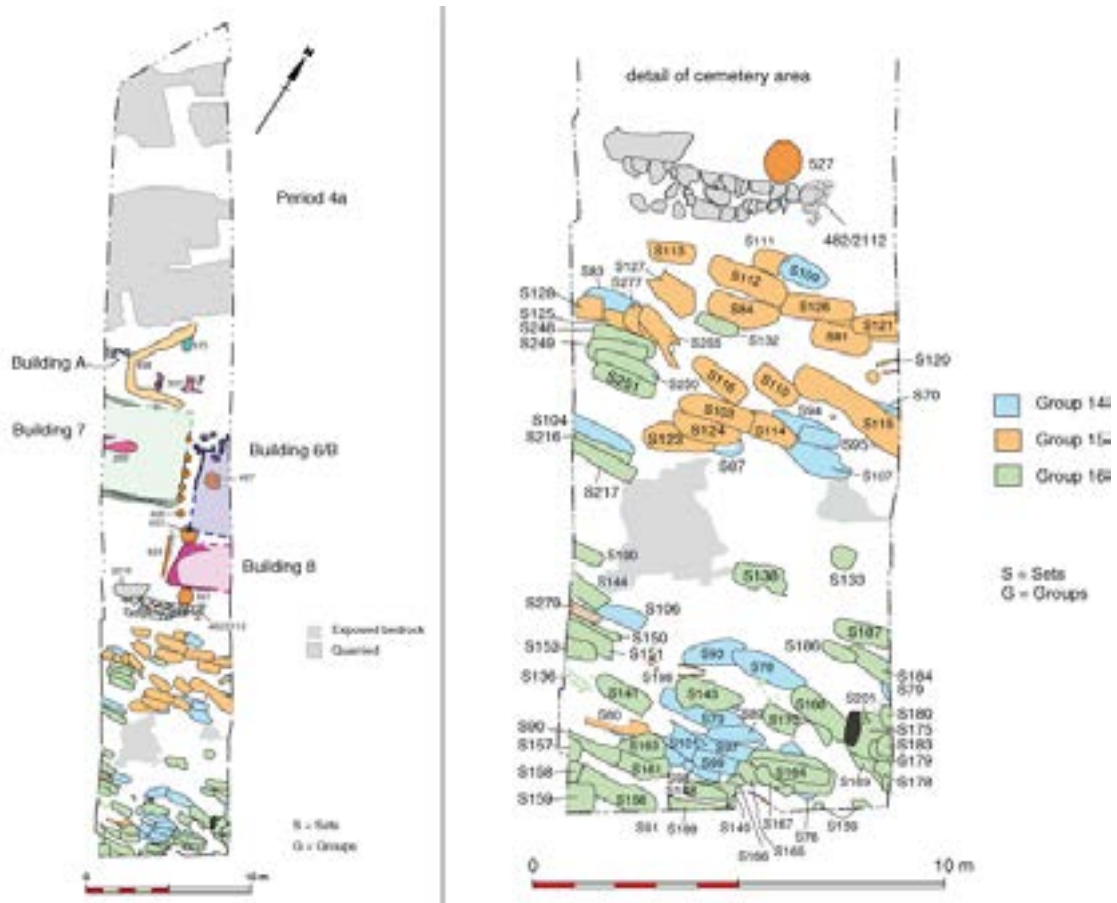


Figure 8 Period 3b

#### 6.4 Period 4 – Northumbrian monastery, c. AD 730 to c. AD 845

A large number of features have been attributed to the century or so of the Northumbrian period of control at Whithorn; these attributions are made on the basis of the (limited) dating evidence, coupled with a change in the alignment of graves in comparison with Period 3, and

the similarity of the features to those interpreted as being of Northumbrian date in the Glebe Field excavations. The Period 4 features comprised a stone boundary wall (Context 482/2112), a burial ground to the south-east and an area of settlement, on a rectilinear layout, to the north-west. There was evidence that both the settlement and burial ground underwent a major change in alignment within the Northumbrian period but, unfortunately, the dating evidence is insufficiently precise to date these changes. The period has been split into sub-periods 4a–e.



**Figure 9 Period 4a settlement and cemetery, with detail of cemetery**

Very few of the features attributed to Period 4 contained artefacts dated to the early 8th to mid-9th century; three of the Period 4a graves contained coffin fittings of 7th- to 9th-century date and five of the Period 4b graves contained material of 6th- to 9th-century date. Building D was associated 9th- to 10th-century pottery, and a drain associated with Building 9 contained three sherds of 9th-century pottery.

Some later material was also present, including a single sherd of 10th- to 11th-century pottery from Building 11/H, a coin dating to AD 1247–79 in Building D, and a single fragment of roofing stone of late 15th-century or later date from a drain associated with Building 9; these finds are interpreted as being intrusive.

It must be noted that some of the contexts described below were interpreted differently in each of the provisional interim reports (Pollock 1993a and 1993b). What were initially interpreted as elements of buildings (Pollock 1993a) were subsequently reinterpreted as parts of an aqueduct/water supply system (Pollock 1993b, 3–4 and 10–13). The interpretations in Pollock 1993a are preferred here. The reasoning for rejecting the idea of an aqueduct/water supply

system is given in Appendix 2. It must be also noted that many of the buildings described below were identified by letters in the 1993a interim report but by numbers in the 1993b interim report. Where duplication has occurred, both the letter and number are given (e.g. in the form Building 10/K).

#### 6.4.1 *Period 4a: initial demarcation of zones of use*

A number of stony deposits (Context 2215) seem to represent deliberate levelling prior to the construction of a stone wall aligned east-north-east to west-south-west (Context 482/2112, Fig. 9) which formed the boundary between a settlement area and a graveyard. The wall, of which only the lowest course survived, was 1.5m wide and was built from a series of shaped greywacke blocks. A sandy soil between the wall stones produced iron working debris, two fragments of hearth bottom and some crystalline cinder; this may imply that industrial activity was taking place in the vicinity at the time of construction, but the material could also be residual.



*Context 482/2112 The boundary wall*

Wall 482/2112 partially overlay the Group 4 ditch which was interpreted as the boundary of the inner monastic enclosure during Period 3; the wall is interpreted as perpetuating this boundary after a brief episode when it was apparently disrespected by the insertion of a corn-drying oven.

This wall may have formed the northern side of a rectilinear enclosure defined elsewhere by a similar stone boundary wall seen in Glebe Field, which was interpreted as the boundary of the inner zone of the Northumbrian monastery; this linking of the walls in Fey Field and Glebe Field was suggested at the time of excavation (Hill 1997, 41). There was some evidence that the outer face of the enclosure wall in Glebe Field may have been coated with lime plaster (*ibid.*, 143), but no clear evidence for this was found at Fey Field.

To the south-east of wall 482/2112 there were extensive deposits of varied character (1995 Group 12, see plan of Phase 6a on IADB) that seem to be a deliberate attempt to raise and level

the ground surface prior to the creation of a new cemetery. One of the Group 12 deposits contained Western French E ware pottery dated to the later 6th or 7th century (see 7.2).

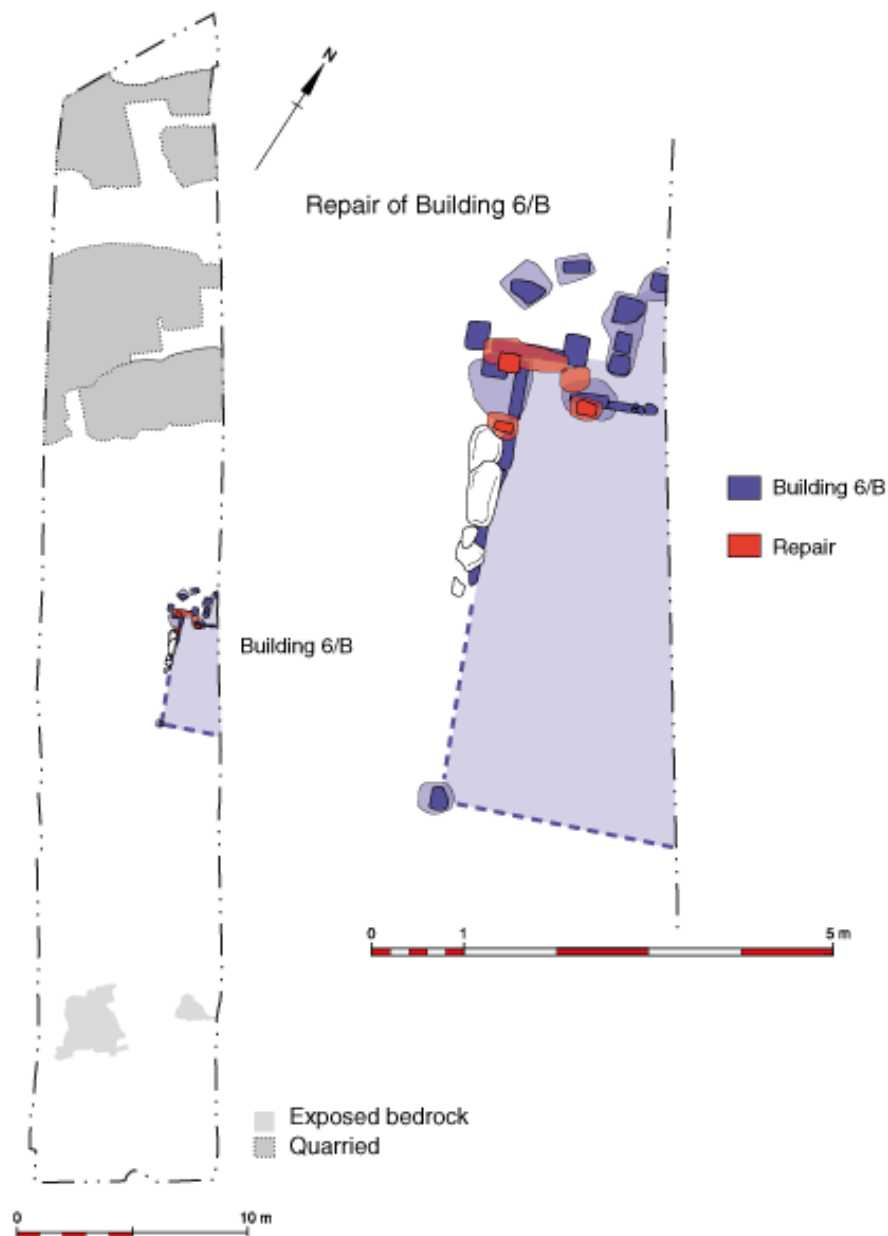
#### 6.4.2 *Period 4a: settlement*

A settlement established to the north-west of wall 482/2112 was characterised by new construction techniques, with rectangular buildings of varied sizes erected with walls of vertically set planks. The timbers were arranged side by side as vertical staves, and were represented in plan as square or narrow wedge-shaped casts, without pointed bases. Whether these staves were jointed together, e.g. by a tongue and groove system, or were nailed to cross beams, is unknown. Some of the timbers were placed directly on the ground or in shallow slots, while some posts, notably corner posts, were set into post-holes. See Fig. 9.

These buildings were constructed with their long axes parallel to the boundary wall 482/2112 (i.e. east-north-east to west-south-west), and seem to have been placed to either side of an access route or path aligned at right angles to that wall. To the north-east of this path were Buildings 6/B and 8, while to the south-west was Building 7, together with traces of two possible further buildings. The arrangement of the buildings implies an organised rectilinear layout. All of the buildings continued beyond the limits of excavation, so only their widths are known. A similar rectilinear layout of buildings, with long axes parallel to the boundary wall of the inner monastic zone, was also evident in the Glebe Field excavations (Hill 1997, fig. 4.1).

Building 6/B was 5.4m wide, and while a number of the timbers, notably at the corners, were set in post-holes, most were in shallow slots just 0.05m deep. To the north of the building was a group of post-holes which could represent part of an external porch or arcade; the use of an arcade is paralleled in the interpretation of Halls 6 and 7 of the Glebe Field excavations (*ibid.*, 174–5) which had linear arrangements of post-holes slightly to the north of the buildings. In all three cases the possible arcade is on the northern side of the building, which was presumably the coldest side; perhaps the use of arcades was to give some measure of protection against the weather. Fey Field Building 6/B fits comfortably into the range of widths seen in the Northumbrian halls in Glebe Field, where the halls range from 5–6m. Unlike the Glebe Field halls it does not have deeply bedded wall timbers, which may suggest it was less well built and/or of lesser status.

Building 6/B was later repaired (Fig. 10); the lower portions of the corner planks on the northern corner were removed and a stone course was inserted at the base of the walls, thus keeping the wall timbers off the ground, making them less prone to rot. In addition some replacement timbers were inserted. A comparable insertion of a stone sleeper wall was seen in the Glebe Field excavations, where the southern wall of the church was repaired in a similar way (Hill 1997, 151).



**Figure 10 Repair of Building 6/B**

Building 8, which was approximately 3m wide, was not strictly rectangular; uniquely at Whithorn the gable end was not aligned at right angles to the side walls. The north-west corner survived in unusually good condition with shallow-bedded stave-built walls. The staves were partly charred. Traces of two floors survived in the corner of the building, both made of pebbles; the earlier of these floors was scorched, presumably relating to the fire that also charred the wall timbers. It is impossible to determine whether this fire is linked to the one which destroyed the chapel in Glebe Field c.AD 845.

The earliest feature to the west of the path/access route was a line of six post-holes (Context 400). Their position and alignment vis-à-vis the north-eastern gable end of Building 7 suggest that they were in some way connected with that building. Alternatively, the posts may have



been part of a boundary fence, or part of another building of which no other traces remain, although none of the broadly contemporary buildings in the Glebe Field excavations included circular upright posts (Hill 1997, 138–9 and 172–7). There was, however, an alignment of posts and stones at Glebe Field which were interpreted as forming a boundary (*ibid.*, 112) and, by analogy, this may suggest that the Fey Field posts could be interpreted as a boundary feature which was later replaced by Building 7. The posts could also be interpreted as buttresses for Building 8.

Building 7 was the best preserved of the buildings from this period. It was over 4.7m in length and 5.6m wide, comparable in width to the halls seen in Glebe Field. Its remains comprised a shallow slot on the south side, and casts of staves and occasional larger timbers on the north side, while the east gable end was only visible as a narrow line of disturbance. None of the timbers was set any deeper than 0.2m into the ground, and the building lacked major posts at the corners. The occasional larger timbers within the northern and southern walls did not fall into opposing pairs and cannot, therefore, be seen as representing a framed structure (one of the buildings in Glebe Field was cruck built; Hill 1997, 177). No internal floor levels survived.

To the south-east of Building 7 were the remains of a slot with timber planking along the south-western edge of the cut (Context 424); the slot had then been infilled with stone. This may be the eastern wall of a building occupying the otherwise featureless area to the south-east of Building 7. Equally it could be part of a boundary feature running north-west to south-east. If it does represent part of a building the construction method is unlike any other building of this period.

To the north of Building 7 was a small rectangular post-built structure (Contexts 507–9, 571, 587 and 594, Site Notebook 1993 AA, 29), henceforth referred to as Context 507 (Fig. 9). This was originally interpreted as having been added on to Building 2 (Fig. 7), which therefore continued in use from Period 3 into Period 4 (Pollock 1993b, 8–9). If Building 2 did continue in use, it would parallel several structures in Glebe Field that were also interpreted as continuing in use from the pre-Northumbrian period, namely Glebe Field Building 24, together with a shrine and a series of aligned posts and stones (Hill 1997, 132–3, 139 and 141). Neither Glebe Field Building 24 nor Fey Field Building 2 was arranged on the rectilinear system and they were both located at the edge of the outer zone of settlement.

An alternative explanation is that Building 2 went out of use and was replaced by a building north of Building 7 of which only part survives. This putative structure is represented by Context 507 and a short length of stave walling adjacent to the south-western limits of excavation which was originally interpreted as the corner of a separate building numbered Building A (Pollock 1993a, 8).

A number of gullies may relate to Buildings 2 and 6–8. Context 299 was on the same alignment as, and inside, Building 7, but it is unclear how they relate to one another stratigraphically. It is possible that this gully represents a drain running along the centre of the building, or a trench for a medial set of posts supporting the roof, although none of the Northumbrian buildings in Glebe Field had centrally placed roof supports (Hill 1997, 172–82). Context 573 was a small gully near the northern limits of surviving structural remains, which was at right angles to boundary wall 482/2112. It was largely destroyed by later activity so its precise function is unclear, though it may represent an internal drain for Building 2. Gully 498 seems to have been extended on

various occasions; the earliest version of the cut was right-angled in plan, but it was later extended at the western end by a cut aligned south-west to north-east, which was in turn extended to the north-east. In its final form therefore it ran parallel to and just to the north of the north-western wall of Building 7 before changing direction twice to give a U-shaped ground plan. The gully was 0.03–0.24m deep and 0.4–0.8m wide.

In addition to the buildings and gullies described above there were three small sub-circular pits, each approximately 1m in diameter, located at approximately equal intervals on the north-eastern side of the access pathway. The most southerly pit (Context 527) was originally interpreted as a possible cesspit relating to Building 8 to the immediate north. The northernmost pit (Context 487), described as ‘unfinished’ in the interim report (Pollock 1993b, 11), was located within the area occupied by Building 6/B; the absence of internal floors within the building made it impossible to determine whether this pit was part of an internal feature relating to the building or was unconnected to it. The third pit (Context 653) was located directly beneath the south-western corner of Building 6/B; this position may indicate that it was a large post-hole, in some way connected to the construction or repair of the building.



*Stone-lined cut Context 424 (centrally across the photo), with Building 8 beyond*

The Period 4a settlement zones seen in Fey Field and Glebe Field shared a number of characteristics, notably the construction of new rectilinear plank-walled structures laid out on a grid pattern (cf. Hill 1997, figs 2.9–2.11 and 4.1). In both the Fey Field and Glebe Field excavations the buildings were aligned parallel to the inner enclosure wall, but there were, however, some differences. For example, there is no evidence for a path or access route immediately outside the inner enclosure wall in Fey Field, as was seen in Glebe Field (*ibid.*, 42). Whereas the settlement in Glebe Field comprised a row of halls interpreted as possible guest quarters to the south of the inner enclosure, with a zone of smaller structures beyond, in the case of Fey Field smaller and larger buildings seem interspersed and more closely spaced. This may imply that the settlement overall was divided into different zones of use, with Fey Field

being industrial and Glebe Field possibly being a higher-status residential site. There was no evidence within Fey Field for an outer zone boundary as suggested by Hill (*ibid.*, figs 2.9–2.10), though whether this was due to later damage or because no such boundary ever existed is impossible to determine.



*Building 8 (rear wall located beneath the scale) with stone-lined cut Context 424 beyond*

#### 6.4.3 Period 4a: burial ground

The method of excavation of the Period 4a burial ground deserves some comment. The grave cuts were extremely difficult to determine, so all graves initially visible (Group 16) were excavated, then an arbitrary spit of soil was removed (Set 130) to reveal further graves (Group 15). Following excavation of these graves a second arbitrary spit of soil (Set 110) was removed to reveal a third group of burials (Group 14), which were in turn excavated. The spits of soil, which were on average 0.1m thick, are best interpreted as accumulated upcast from the repeated excavation of graves in the area. (For clarity Sets 110 and 130 have been omitted from Fig. 9.)

The soil deposits all built up against the boundary wall, which was clearly in use throughout the lifespan of the cemetery. The cemetery soils contained abundant evidence for industry in the form of slag, crucible fragments, furnace lining fragments, hearth base fragments, copper-alloy metal working debris and glass working slag. Presumably this material originated from the settlement to the north-west, but some could also represent residual Period 3 material. These deposits also contained various artefacts including an iron padlock key (95/SF1127), an iron object (95/SF1360), an iron lock bolt (95/SF1373, see 9.4.1), a copper-alloy object (95/SF573) and a smoothing stone (95/SF1307).

The three groups of burials contained 26, 24 and 50 graves respectively. The overwhelming majority were aligned west–east, but there were some minor variations of alignment ranging from south-west/north-east to south-east/north-west. Alignment overall reflected that of the cemetery wall, and differs slightly from that of contemporary burials in Glebe Field which were

north-west to south-east (Hill 1997, fig. 4.27). In both cases, however, the burials seem to align with the nearest major structural wall.

Most of the skeletal remains were very badly preserved, and it was therefore difficult to determine the burial positions of the skeletons (save that the grave cuts clearly imply fully extended burials). The only burial positions that could be determined were: both arms extended at the sides (Set 109); right hand on pelvis [the left arm was not present] (Set 80); left hand on pelvis, right hand by the side (Set 119); and both hands on the pelvis (Set 161). Clearly there was no uniformity of position for the arms at burial. A burial in Set 159 had flexed legs, but this may have been due to disease rather than a deliberate choice of a flexed position (see Appendix 5, Context 2359). Similar poor preservation in the Glebe Field excavations made determination of burial positions equally impossible there.

Given the fragmentary nature of many of the skeletons, it was often impossible to determine the sex of the individual or age at death. Eleven burials were identified as male or possibly male (Sets 91, 109, 118, 119, 126, 159, 161, 163, 164, 175 and 255), eleven as female or possibly female (Sets 72, 73, 89, 101, 105, 124, 143, 156, 186, 198 and 278) and twelve were identified as children or adolescents (Sets 98, 99, 101, 120, 138, 156, 165, 179, 217 [2 skeletons] and 259). Clearly this was a mixed population. The male burials were scattered randomly across the site, and two of the more important burials in terms of grave size and grave structure were of males (Sets 175 and 164). Both these burials apparently acted as foci for subsequent burials. The only notable cluster among the child/adolescent burials is that Sets 98, 99 and 165 were all positioned around the male burial of Set 164. The female burials showed a very distinct cluster towards the southern end of the site, comprising Sets 72, 73, 89, 101, 105, 143 and 198.

Four graves proved to have the remains from two separate individuals present (Set 72 an adult and an adult female; Set 101 an adult female and an adolescent; Set 156 an adult female and a child; and Set 217 a child and an adolescent). All four of these graves truncated earlier burials. In the case of Sets 72, 101 and 217 there was no mention at the time of excavation of two skeletons within a single grave, so in each of these cases one set of the skeletal remains within the grave probably represents disarticulated remains from an earlier, disturbed, burial. Set 156 was thought at the time of excavation to contain two burials, and it is possible that for pragmatic, familial or cultic reasons the child was interred in the grave of an adult who died at approximately the same time.

Corpses were interred in a number of ways. While most were probably buried in shrouds, there was also one burial with stones to either side of the head ('ear-muffs') that were presumably designed to keep the skull in position. Both uncoffined and coffined bodies were present. The grave cuts were treated in a number of ways, including examples with turf-lined bases, a charcoal-rich grave fill, timber linings and graves with stone cists/linings. Few of the graves were associated with any clear evidence for markers, but there were examples with stony mounds above the grave, marker posts and a headstone. (Those burials specifically mentioned in the text below are illustrated on Fig. 9.)

This is a far greater variety of burial types than were present among the approximately contemporary burials in Glebe Field (Hill 1997, 169–71), where burials were either coffined or uncoffined, and the only possible example of a grave structure was in a burial where the head was overlain by a greywacke slab that may have been part of a stone structure set into the floor

of a chapel. The difference in the number of burial types seen in the two excavations could be accounted for, however, by the distinctive nature of the burials in Glebe Field, some of which were related to the use of a burial enclosure/chapel, and some of which were part of a cemetery devoted to child burial. No such particular status can be accorded to the Fey Field burials, which seem to be of a more mixed population, and possibly of lower status than those buried within the Glebe Field burial enclosure.



*Burial in Set 97*

The overwhelming majority of the burials seem to have been within simple grave cuts, with no evidence for internal structures or coffins. Of these burials, three may have been bound or wrapped tightly in a shroud, judging from the position of the jaw and/or feet (Sets 136, 168 and 251). Three uncoffined graves were slightly more elaborate. The first (Set 126) had stones to either side of the skull (called ear-muffs), and a very distinctive charcoal-rich backfill. Set 127 had a deposit of dark soil in the base which was interpreted as a layer of turf, placed within the cut as 'bedding' for the burial. Set 97 had a thin skim of fine dark brown/black silt along the north-west and south-east edges of the grave fill, again interpreted as a possible layer of turf within the grave.

Several graves contained evidence for timber features. Nine graves contained numerous iron coffin fittings and/or nails indicative of wooden coffins or chests (Sets 73, 106, 109, 115, 132, 167, 190, 249 and 250). Of these, Set 167 was also associated with a fragment of a padlock key (95/SF1127), which may imply that this burial was in a locked chest. Coffins with small straps and angle brackets, and possible associated keys, were also present in the contemporary cemetery in Glebe Field (Hill 1997, 414–15).

Set 73 had twenty iron nails within the grave fill which seemed to form four lines of nails, three at the base of the coffin (one down each edge of the coffin and one running lengthways down the middle) and one from the south edge of the lid. The implication is that the base of the coffin was made from two planks, possibly jointed in some way and held together by the nails. It was impossible to reconstruct the lid, however, due to disturbance in the upper portions of the grave.



*Burial in Set 73*

The fittings and nails in Set 115 were from the lower portions of the coffin. There were two angle brackets on the north-west corner and one on the south-west corner. They were at 62.63, 62.75 and 62.69m AOD, and so did not seem to form a regular set of fittings carefully matched at the corners. The nails within the grave were in two lines, one along each side of the base of the coffin (the lid of the coffin had been truncated).



*Corner brackets from coffin fittings in the Set 115 grave cut*

Set 132 contained six fragments of iron straps, one corner bracket and two nail fragments. Only three of the straps are shown on the original site plan; they were in the uppermost portion of the grave fill, and presumably from the lid of the coffin. Two were found along the northern edge of the grave, and the third was located centrally within the grave; it may have been displaced from the sides, or represent some form of decoration on the coffin lid.

Grave Set 167 contained six nail fragments, five iron strips, one iron staple and one hinge strap. It was severely truncated by later activity and the coffin cannot be reconstructed.

The single bracket present in Set 249 was located at the base of the grave, on the northern edge, midway along its length. This bracket presumably linked the base and side of the coffin together.

Sets 106, 109, 190 and 250 each contained a single iron fitting or iron plate, but as there were no other fittings or nails these coffins are impossible to reconstruct. Other burials had up to four nails within the grave fill (Sets 74, 84, 126, 128, 143, 151, 157, 160 and 175), but it was unclear if these were evidence of coffins or simply accidental inclusions within the grave. The nail in Set 84 had a copper head.

Set 164 had medium to large packing stones 0.2 x 0.1m in size against the edges of the grave cut. These are interpreted as packing stones external to a timber grave lining; a void between the packing stones was probably left by the decay of the timber lining. A fragment of wood identified as oak (sample 95/SF1002) was found within the grave fill, but whether this implies the presence of an oak timber lining or not is unclear.

A few graves had evidence for stone linings or markers: there were three poorly preserved stone-lined graves (Sets 74, 259 and 278), but the precise form of the lining is unclear (Set 259 was not planned at the time of excavation so does not appear on Fig. 9). A fourth grave (Set 143) had a cluster of stones over the chest area of the skeleton, containing a possible squared-off grave marker stone.

Two graves had evidence for both internal timber and stonework. The grave cut for Set 73 was lined at one end by a box-like structure made from stone slabs placed around the skull. The skeleton was in a wooden box or coffin, the position of which was indicated by a number of aligned iron fittings/nails (see above). The skeleton may have been tightly bound in a shroud, to judge from its closed jaw. The stony backfill of the grave was mounded up over the head end of the grave, possibly marking its position, i.e. the mound protruded at surface level.

More elaborate still was the burial in Set 175. Within the large grave cut, wedged into position with small fragments of greywacke stone, was a millstone fragment (95/SF1146), which acted as a headstone. Two other sloping slabs of greywacke, one at the head of the burial, the other by the left humerus, may be all that remains of a cist or lining structure. A layer of charcoal overlay one of these stones, and this seemed to have a grain pattern aligned parallel to the longitudinal axis of the grave, suggesting it was the remains of a timber lintel or lid resting on the cist/lining. A small post-hole close to the head end of the grave may have held a wooden grave post or marker; a single nail from within the grave fill may indicate a wooden coffin, though it may be an accidental inclusion within the backfill.



*Burial in Set 175 with millstone grave marker*

Set 116 contained metal working debris in the backfill, together with a smooth granite cobble that may also have been associated with metal working (95/SF747). It is unclear if these items were deliberately placed in the grave or simply represent accidental inclusions.

The burials with grave structures (Sets 72, 74, 97, 126, 127, 143, 164, 175, 259 and 278) were largely concentrated close to the south-eastern limits of excavation (only Sets 126 and 127 were located at the northern end of the cemetery). As with the earlier Period 3 burials, this may have been the most prestigious part of the cemetery. Sets 72, 97 and 164 were aligned almost head to toe; it is possible that they were aligned on a building or structure to the south-east of the excavation area that was related to the use of the cemetery.



There was little attempt to avoid disturbing earlier burials during the cemetery's period of use, with 88% being intercut/overlain. Whether this represents deliberate attempts to bury individuals close to relatives or people of importance, or simply a failure to mark adequately earlier graves, is unclear. There seem to be clusters of burials around Sets 72 and 175, the two most elaborate graves; it seems these burials were of people valued by the community and that their burials acted as foci for later graves. This may imply that the overriding factor for grave location was proximity to an important burial, irrespective of any intercutting necessitated thereby. Other sites in Britain reveal a similar pattern, with burials clustered around a special grave (Hill 1997, 34).

The Group 14–16 burials covered most of the area excavated in 1995–96, but there were a few spaces lacking burials. The largest was a broad strip up to 4m wide aligned roughly west–east above a bedrock outcrop; there were also smaller areas void of graves, including a 1.5m<sup>2</sup> area to the north-east of Set 116, and a 1m wide strip between the graves in Sets 140 and 251. The only clear evidence for burial rows was associated with Sets 140/216/217, Sets 82/84/132 and Sets 125/248/249/250/251. The graves closest to the south-eastern limits of excavation were so densely packed that it was impossible to determine any clear patterns, or to see any clear access routes between the graves. This contrasts to the careful arrangement of the child cemetery seen in Glebe Field where the burials were in neat rows (*ibid.*, 170).

Most of the artefacts recovered from the graves related to metal working. Fragments of slag were present in Sets 70, 72, 74, 94, 99, 106, 109, 114, 116, 120, 128, 151, 164, 175 and 255, while slag hearth base fragments were recovered from Sets 128 and 143, a furnace lining fragment was found in Set 121, crucible fragments in Sets 74, 97, 163 and 188, a mould fragment in Set 277 and a fragment of iron concretion in Set 175. Coal, possibly relating to metal working, was found in Sets 75 and 183. It is impossible to know if this material is residual or not, but metal working must have been a common activity in the vicinity either at this stage or in earlier phases on the site.

The only other objects recovered from the graves were a copper-alloy nail from Set 84 (95/SF1171, see 9.2.1), a stone hone and a residual prehistoric saddle quern fragment from Set 115 (95/SF627 and 95/SF626, see 9.3.1), a granite smoothing stone from Set 116 (95/SF747), a lock bolt from Set 121 (95/SF1106), a plough pebble and a stone disc from Set 156 (95/SF1070 and 95/SF1079) and a shale spindle whorl from Set 255 (95/SF619, see 9.3.1). Of these finds only two may be deliberate inclusions within the grave: the lock bolt may imply a wooden chest/coffin within the grave, and the smoothing stone may be associated with metal working debris in the grave. There is no indication that any of the remaining artefacts were deliberate grave goods; indeed, the fact that the spindle whorl was in a grave containing a male skeleton suggests that it was an accidental inclusion.

Several grave fills contained fragments of residual late 5th- to 7th-century pottery (Sets 99, 116, 138, 144, 156, 160, 163 and 249), or residual 6th- to 7th-century glass (Sets 76, 127, 183, 249 and 250). The coffin fittings mentioned above in Sets 115, 132 and 249 were dated to the 7th–9th century. Clearly there is more residual material present within these graves than material directly dating to the Northumbrian period, but this is hardly surprising, given that the Northumbrian graves heavily truncated the earlier cemetery on the site.

#### 6.4.4 *Period 4b-e: later Northumbrian settlement*

At some stage within the mid-8th to mid-9th centuries the settlement was rearranged. New buildings were constructed with their long axes aligned north-east to south-west, as compared to the east-north-east to west-south-west alignment of Period 4a. They were therefore on a divergent alignment from the boundary wall, which was, however, still in place.

#### 6.4.5 *Period 4b*

Two rectangular structures, defined by stone footings, protruded from the south-western edge of the excavation (Contexts 379–80, Fig. 11). Context 380 was 3.4m wide, but the original dimensions of 379 are unknown as it petered out on the south-eastern side. The form of the structures above these footings is impossible to determine (Site archive, notebook AA, 28). Context 363/380 sealed Building 7. No other structures were clearly contemporary with these footings. An associated knife is of a type in use in the Anglo-Saxon and medieval periods (92/SF36700, see 9.3.1), and there was clearly some contamination of these deposits as shears of a 13th-century type (92/SF44800, see 9.3.1), a pricket of 12th- to 14th-century type (92/SF34201, see 9.3.2) and a mid-14th- to 16th-century lace tag (93/SF1200, see 9.3.4) were recovered from these contexts.



*Floor surface 380 (located behind and between the two women trowelling)*

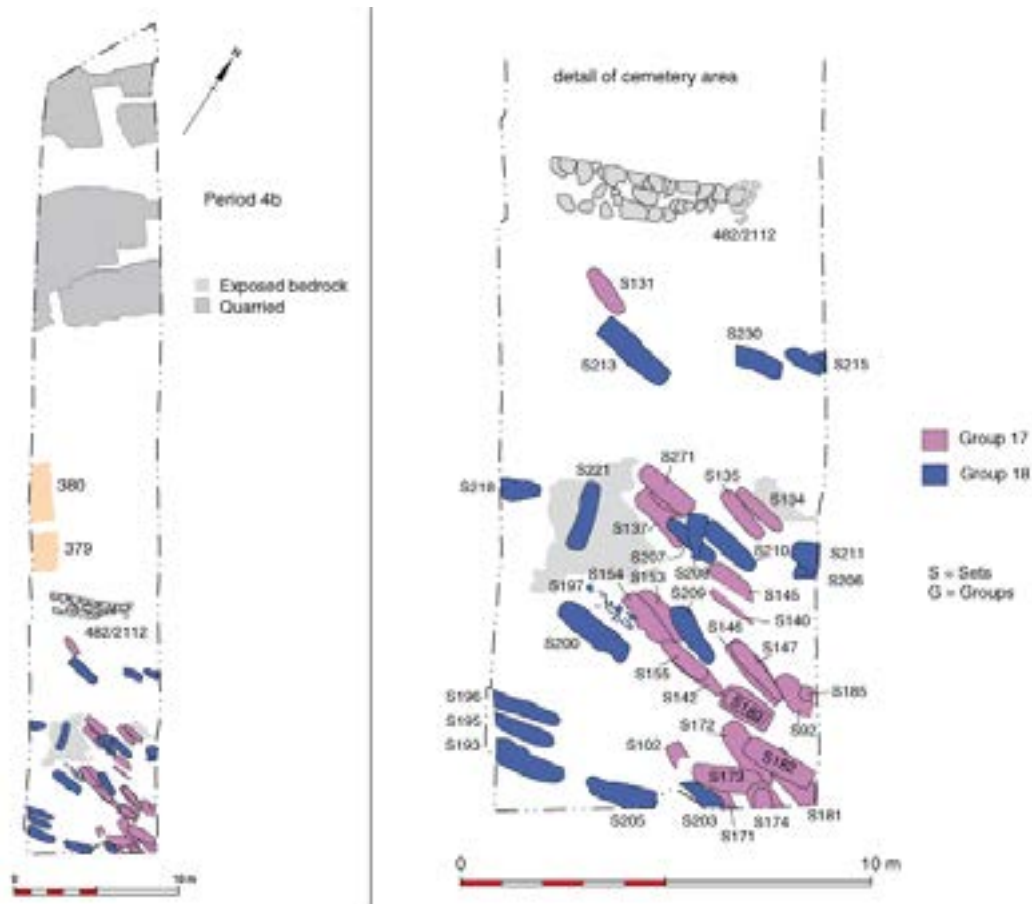


Figure 11 Period 4b with detail of cemetery

#### 6.4.6 Period 4c

Footings 380 was sealed by a new building (Building 9, Fig. 12); it was not well preserved, represented only by some timber impressions, and its precise layout is unclear. The north-western wall corresponded exactly to the limits of the earlier stone footing 380, and represents the continuation of a property line. The north-western wall comprised a stave-built wall (Context 362), together with a series of posts (Contexts 599 and 313–14). To the south-east were traces of two further parallel walls, presumably internal walls. The northern consisted of stave walling (Context 543) and posts (Contexts 546, 385–6), while the southernmost was very fragmentary with only traces of the impressions of stave walling surviving (Contexts 673). Four of the larger posts (Contexts 546 and 599, and 314 and 386) were almost exactly opposed within the building, which may imply that two frames supported the roof truss; Contexts 314 and 386 were both placed diagonally to the wall line, suggesting that they formed a pair of related posts. The similarity in timber size and spacing suggests the possibility that panels of walling from Building 7 were transplanted directly into Building 9 (Pollock 1993b, 8). A possible floor surface was identified within Building 9 (Context 365). (The context numbers for the stone footings and Building 9 were retrieved from sketches in Site Notebook 1993 AA, 28 and 55).

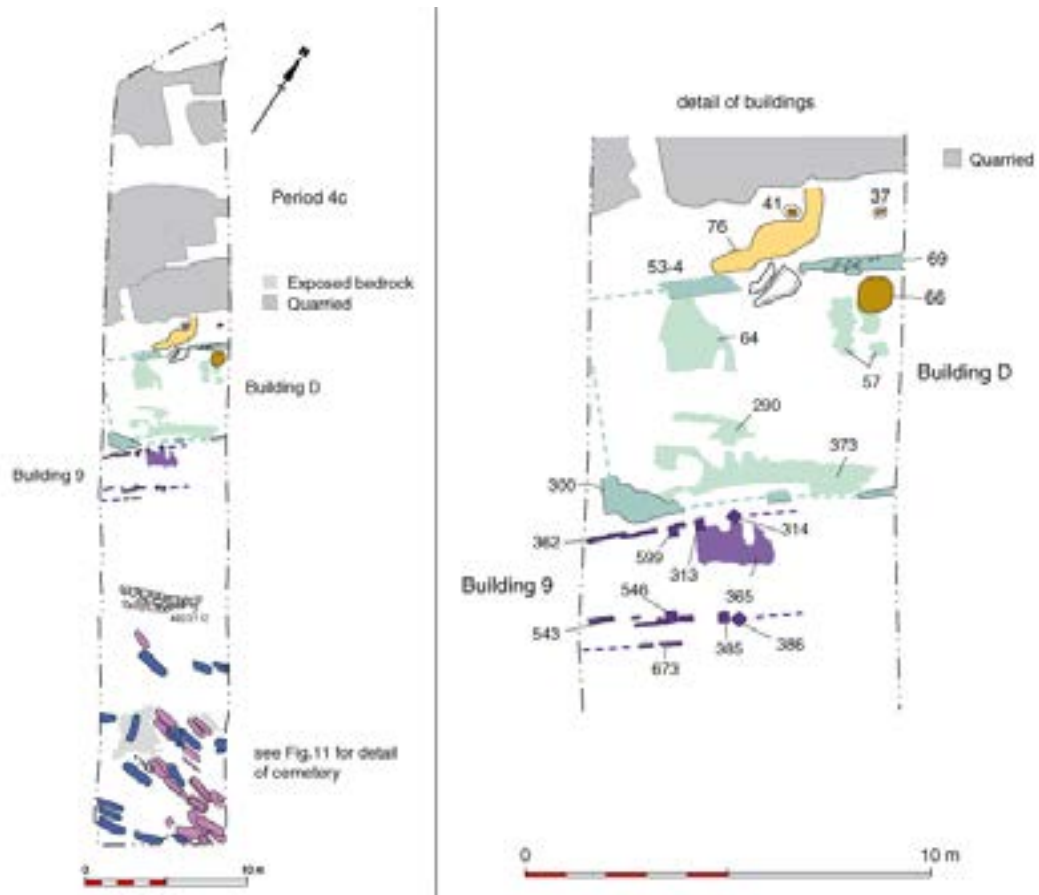


Figure 12 Period 4c



Building D facing north-west

Another new building (Building D, Fig. 12) was constructed immediately to the north of Building 9. Pollock's two interim reports describe this building in differing ways, but in both reports it

was interpreted as a smithy because of the presence of a quenching pit encrusted with hammerscale (Context 66) and iron working waste, together with an adjacent charcoal-rich deposit (Context 57) which contained abundant slag. An outcrop of bedrock in the northern side of the building, which interrupted the wall foundation, may have been used as an anvil base (Pollock 1993b, 14).

Building D had slots for stave walling defining three of its sides (Contexts 300, 53–4 and 69), and part of an internal floor surface also survived (Contexts 64, 290 and 373). An associated drain was located immediately to the north (Context 76). Two post-holes located parallel to and c.1m north of the northern wall of the building (Contexts 37 and 41) were interpreted as part of an arcade, broadly comparable to the features interpreted as arcades in other Northumbrian buildings (see Building 6/B above).



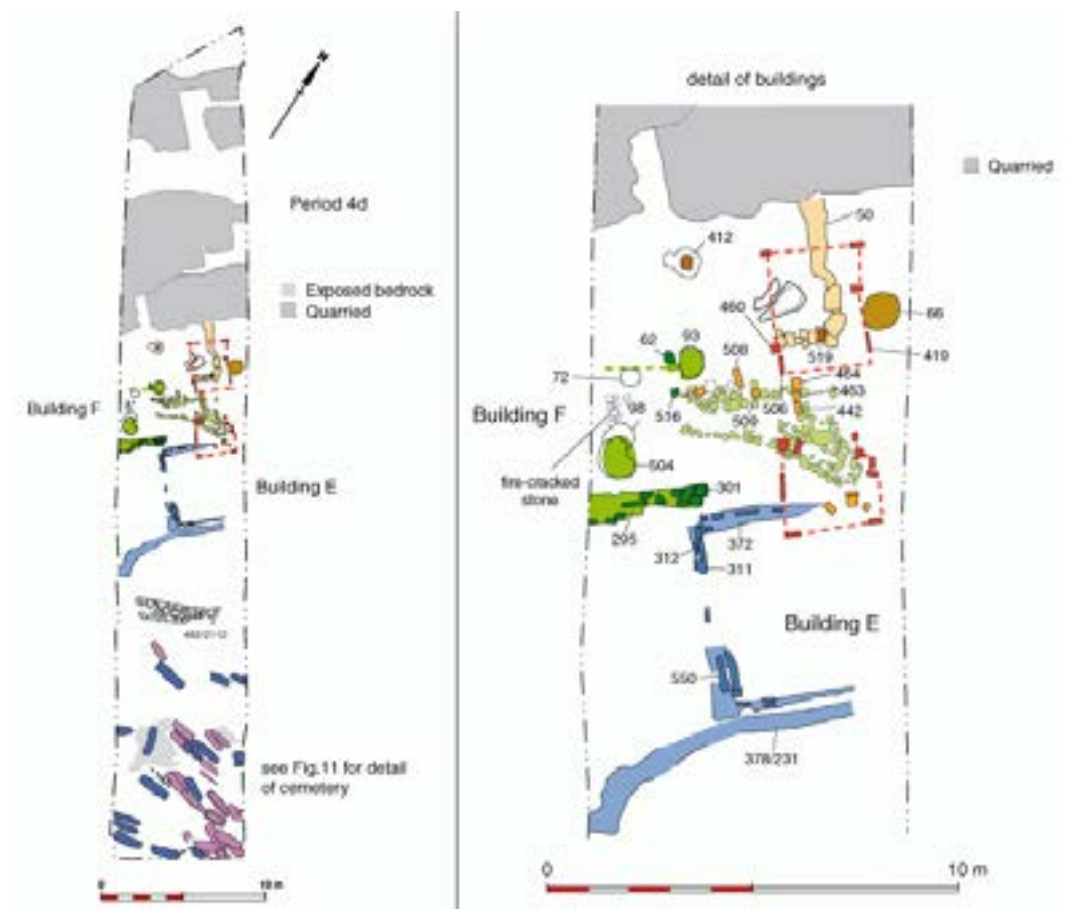
*Context 66, quenching pit*

Building D was associated with seven sherds of 9th- to 10th-century pottery and a lead weight (92/SF46400). An English silver cut half penny that dated to the reign of Henry III (1247–79) was found in one of the wall slots for Building D (92/SF24700). This is clearly a much later date than that suggested for Period 4 as a whole, and this coin must represent contamination from

deposits above. In the interim report (Pollock 1993a, 14) this coin was identified as being from the reign of William I. Buildings 9 and D were immediately adjacent to one another, implying that they were contemporaneous, and they were on a different alignment to the earlier Period 4a buildings.

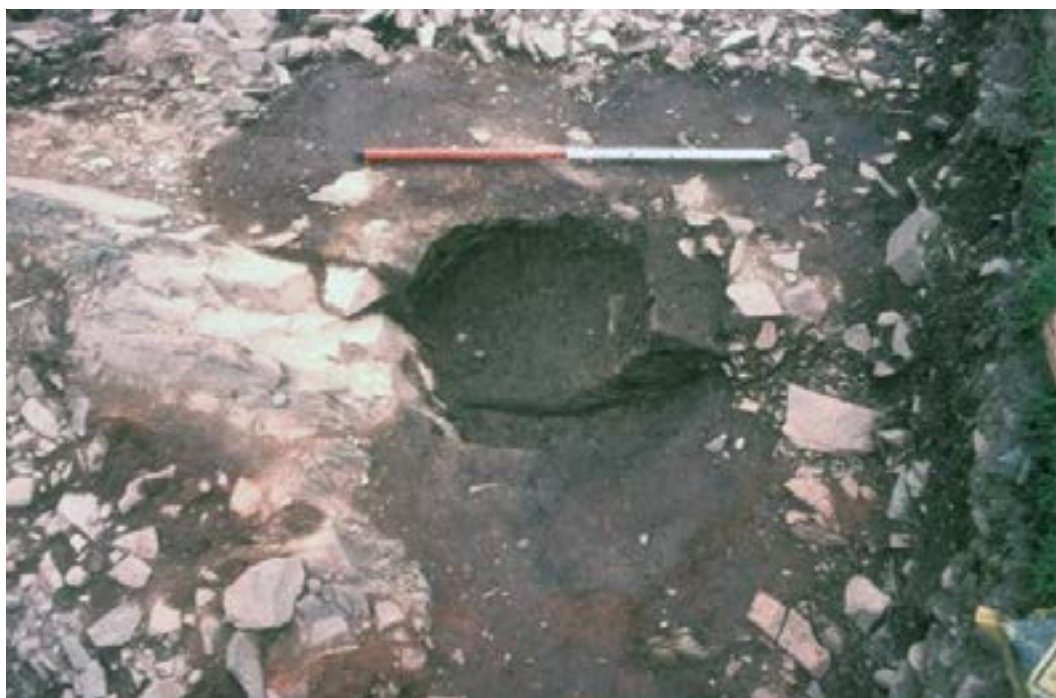
#### 6.4.7 Period 4d

Buildings D and 9 were eventually replaced by a number of structures. At the time of the original post-excitation analysis the structures were interpreted as two rectangular frames associated with metal working, an open-ended smithy building (Building F) with an associated exterior stone surface, a rectangular structure (Building E), and various other unconnected timbers, pits and post-holes.



**Figure 13 Period 4d**

Various squared timbers (Fig. 13) were interpreted as forming two rectangular frames (Pollock 1993b, 4). Some of the timbers in the south-easternmost rectangular frame were later replaced after damage by fire. Other adjacent timbers may have formed parts of other similar structures. These features were interpreted (*ibid.*, 13) as being associated with smithing, but their precise function is unclear. They were also interpreted as relating to Building D (*ibid.*, 9) but since the frames extended beyond both the northern and southern walls of Building D, this seems very unlikely.



*Context 504 furnace re-using an earlier pit with wall 301 of Building F to the rear*

Building F was interpreted at the time of excavation as a small structure associated with metal working. It had traces of heavy timberwork on the south-eastern wall (Contexts 295 and 301), while the north-western wall had a short length of stave walling terminating at the northern end with a squared post and a large post-hole (Contexts 62 and 93). No clear trace of a north-eastern wall was found, but the heavy posts at the gable ends (Contexts 301 and 62/93) may imply an open-ended shed. It is, however, possible that a squared timber, Context 516, may have been part of a north-eastern wall for the building. Abundant evidence of metal working was recovered within the building. There was a furnace c.1m in diameter (Context 504) set into the ground and possibly re-using an earlier pit (Context 98) which had absorbed molten lead. Nearby were fire-cracked stones, which may represent a raised hearth or anvil base, and a pit 0.45m in diameter (Context 72), associated with copper working waste. The area immediately east of the smithy was roughly paved. (There were context numbers for Building F on sketches in Site Notebook 1993 AA, 1).

To the north of Building F was a post-hole (Context 412), the shape of which implied a large post placed centrally within the cut, and a second adjacent smaller upright post. These features were similar in size and arrangement to those in the northern end of the northern wall of Building F, and it is possible that they may represent all that remains of the south-eastern wall of a building to the north-west of Building F.

There are, however, at least two other ways in which the features described above can be interpreted (Fig. 14). It is possible that the north-western wall of Building F is in fact marked by Context 412, and that Contexts 62 and 93 represent the remains of the central wall (rather than the north-western wall) of the building. This is plausible because Contexts 412, 93 and 301 are perfectly aligned. Alternatively it is possible that the northernmost rectangular frame relates to Contexts 62, 93 and 412, as again the contexts seem to be aligned, in which case they may represent a small rectangular building, measuring 4.4 x 3m in area.

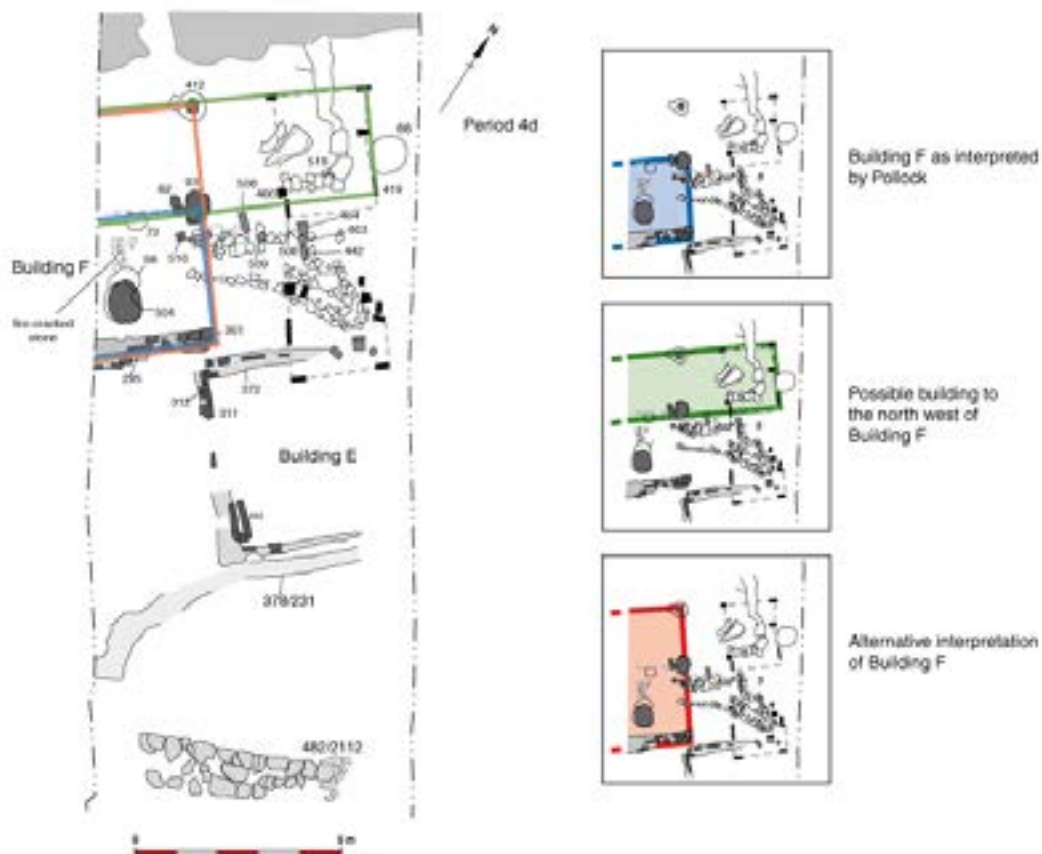


Figure 14 Possible interpretations of building F



*The various post-holes of Building F and the rectangular frames*



Building 9 was replaced by Building E (Pollock 1993a, 9). This building contained a mixture of upright planks (e.g. Context 312) which, in the north-western wall at least, were spaced c 0.2m apart, and squared timbers (e.g. Context 311). The south-eastern corner of the building was marked by a deep post-hole with the casts of vertical planking (Context 550).



*Gully 378/231 curving around a naturally occurring outcrop of stone*

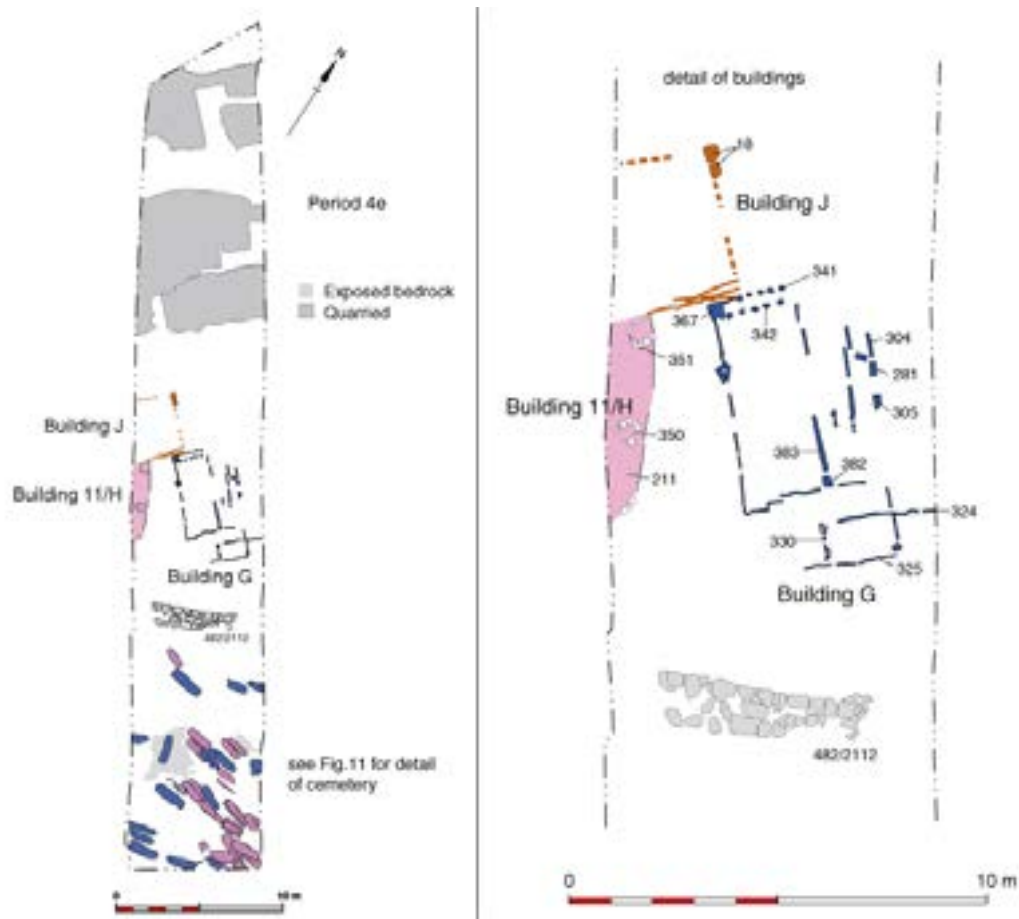
A length of curving gully, presumably serving as a drain (Context 378/231, Site Notebook 1993 AA, 50), seemed to relate to the south-eastern wall of Building E and truncated the southernmost stone footing (Context 379 Fig. 11), showing that it had gone out of use by this stage. The drain was associated with three sherds of late 9th-century pottery (Block 33) and a single fragment of roofing stone of late 15th-century or later date that presumably represents contamination (92/SF42904). Buildings E and F were not situated side-by-side, but were offset from one another, although they did both have the same axial alignment.

#### 6.4.8 *Period 4e*

Building F was in turn replaced by Building J (Pollock 1993a, 11). The illustration in the interim report implies walling on three sides, the southernmost wall being of wattle, with the northern wall and gable end looking as though they were constructed of stave walling. In addition there are two stones (Context 18) located at the north-western end of the gable wall which look as if they are in some way connected with this building. The accompanying text, however, states that this building was of wicker, plastered on the inside.

Building E was replaced by Building G, which combined wattle work and heavy timberwork (Pollock 1993a, 10). The north-western wall incorporated two parallel stake-built alignments c.0.3m apart (Contexts 341–2). The gable end of the building on the south-western side incorporated two post-holes, one of which (Context 367) was at a corner. The remaining walling seems to have been of upright planks, though there was a larger squared post in the south-eastern wall (Context 382)

which may mark the position of a doorway. There were several possible internal partitions, including Contexts 304/281/305 and 383, which may have formed a passageway through the building (leading from the doorway if Context 382 is interpreted as the position of a door-post). Additionally, a number of features were interpreted as a possible porch (Contexts 324-25) on the south-eastern side of the building (*ibid.*, 10–11). A further length of wattle to the south-east of the building (Context 330) may be associated with it, but this is unclear. Within the building were the fragmentary remains of a floor (Contexts 205, 339 and 237). Traces of gold thread (93/SF4700, see 9.3.4) possibly of late 7th-century date were recovered from associated Context 331, which was located to the immediate south-east of the porch.



**Figure 15 Period 4e**

Building 11/H was represented only by a mud floor (Context 211) bordered by wattle walling (Context 210). There were also two small round stony platforms (Contexts 350–1) built into the mud floor which may represent cruck-beam bases (Pollock 1993a, 11). A single sherd of 10th- or 11th-century pottery was recovered from Context 211, but this could represent contamination.

The variety of building techniques apparently utilised within these individual buildings is remarkable.

#### **Period 4b–e: burial ground**

The later graves of Groups 17–18 (Figs. 11 and 15) were in two tiers, their grave cuts separated by deposits of stony soil (Group 18 Set 192, not illustrated here, see IADB) that may have been intended to raise and level the site in order to create more space for burials. The soil contained

some slag, furnace lining fragments and hearth base fragments, all of which could have originated from the settlement to the north-west, or could represent residual Period 3 or Period 4a material. An unfinished stone spindle whorl (95/SF496, see 9.3.1) and an iron knife (95/SF732, see 9.3.1) were also recovered from these contexts; neither of these objects was closely datable. It is impossible to relate individual burials precisely to Periods 4b–e, and they are best interpreted as continuing throughout those periods.

The two tiers of burial each contained 23 graves, the overwhelming majority of which were aligned west-north-west to east-south-east, though there was considerable variation, with Sets 208 and 221 standing out as they were aligned north-north-west to south-south-east. The variation in alignment seemed to increase through time, with those burials in Groups 18 showing the most variety in terms of orientation.

As with the earlier burials, many graves contained only fragmentary skeletal remains, so it was impossible to determine burial positions, though, given the shape of the grave cuts, they were fully extended. The burial positions that could be determined were: right hand at the side and left hand on pelvis (Set 134); left hand on pelvis (Set 142); both arms at the sides (Set 172); both hands on pelvis (Set 181); both arms folded over the chest (Set 182); and left hand at the side and right hand on pelvis (Set 205).



*From left to right: Set 213 burial with stones to either side of the skull, Set 181 burial with both hands on the pelvis, Set 182 burial with arms folded over chest*

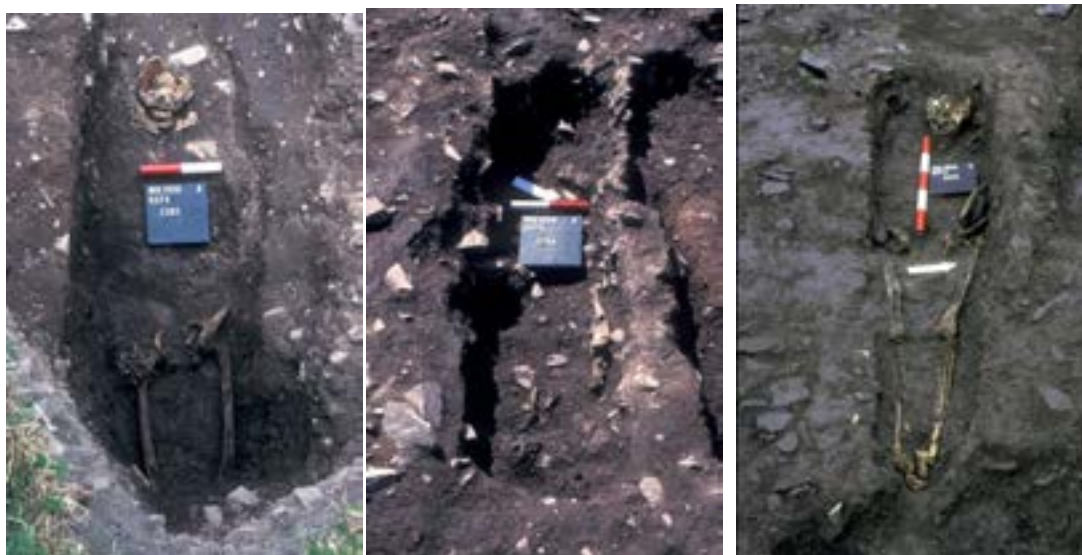
Seven burials were identified as male or possibly male (Sets 102, 142, 172, 174, 193, 197 and 211), twelve as female or possibly female (Sets 82, 155, 181, 182, 189, 200, 206, 207, 209, 210, 213 and 271) and five as children or adolescents (Sets 134, 135, 153, 193 and 203). The sex of the remainder of the burials could not be determined. The proportion of females is slightly higher than in Period 4a, though this could simply be an accident of survival. None of the burials was grouped in significant clusters.

One grave proved to contain the remains from two separate individuals (Set 205: a female and a skeleton which could not be sexed). The site archive shows that the unsexed burial clearly represents disarticulated remains redeposited within this grave.

There was far less variety in the grave types than in the earlier Group 14–16 burials. There was, however, evidence for coffins, shrouds, stone linings and wooden marker posts. With greater variety in terms of alignment, religious rituals were also changing, leading to a more egalitarian burial rite, perhaps because the community represented here was becoming poorer and less able to undertake elaborate burials.

Coffins were identified in a variety of ways, most obviously through lines of nails and/or fittings (Sets 181 and 213). Set 181 had an iron hinge strap and nail present, but as this burial continued beyond the limits of excavation it is impossible to reconstruct the coffin. Set 213 had two hinges and an iron plate which were located at the head end of the grave, near the northern side and southern side respectively. A number of graves contained up to three iron nails or a single iron fitting in the fill (Sets 147, 193, 214, 219 and 221), but it is unclear if these represent evidence for coffins or were simply accidental finds.

Coffins were also identified by the shape of the grave fills (Sets 181–2 and probably 189), by organic, coffin-shaped layers (Set 172), or by the fact that the skull had separated from the body and rolled sideways, implying that there was a clear void (coffin interior) in which this could occur (Set 153). One burial had the shoulders hunched tightly to the skull, which may imply the binding of the burial or its wrapping in a tight shroud (Set 174).



*From left to right; Set 189 burial the grave fill of which implied a wooden coffin, Set 135 burial which had a stone beneath the skull, Set 142 burial which had a stone above the skull*

Only four graves had evidence for stones deliberately placed within the grave cut: Set 131 had occasional large stones lining the base of the grave to create an even surface; Set 135 had a stone beneath the skull which may have been a deliberate ‘pillow-stone’; and Set 142 had a single stone over the skull as if to protect it. Set 213 had stones to either side of the skull to keep it in position.

There were more areas devoid of burial than in Period 4a, but this could be a reflection of greater disturbance by post-cemetery features, or a far shorter period of use. Sixteen of the 47 graves (34%) were not intercut/overlap, as compared with 88% in Period 4a. Whether this shows that more care was taken to avoid earlier graves, or simply that there were fewer graves and therefore less opportunity for intercutting, is unclear.

As with the Period 4a burials, many of the artefacts recovered from the grave fills were related to metal working. Fragments of slag were found in Sets 140, 147, 171, 174, 193, 196, 200, 213, 214, 230 and 271, while a slag hearth base fragment was present in Set 181, crucible fragments were found in Sets 142, 173, 189 and 205, and coal, possibly relating to metal working, was found in Set 176. In addition, an iron punch was recovered from Set 213 (95/SF677, see 9.3.1). There is no indication that any of these finds were deliberately included in the graves, but they could indicate that metal working was a common activity in the vicinity. Equally they could simply represent residual finds from earlier metal working on the site. The only other finds recovered from the graves were a few fragments of pottery (Sets 174 and 209) and glass (Set 142), which again seem to represent accidental inclusions.

In terms of dating, five graves contained material from the 6th to 9th century (two also had residual late 5th- to mid-6th-century material). A single burial (Set 174) contained a sherd of possibly medieval pottery, but this may have been the result of contamination.

#### 6.4.9 *Period 4 development*

The overall development of Fey Field in the Northumbrian period can be directly related to the results of the earlier Glebe Field excavations to the south-east (Hill 1997, 134–82). In both fields the zones of land use previously established were largely maintained during this period. The most notable example of this continuity was the overall arrangement of the monastery into an inner religious zone and an outer settlement zone, mirroring that seen in Period 3. The inner Northumbrian zone was, however, rectilinear in shape, unlike the earlier Period 3 enclosure which was sub-circular. There were sub-phases within the Northumbrian period in the Glebe Field excavations, but these cannot be directly compared with sub-periods 4a–e in Fey Field due to the lack of good dating evidence on the latter site.

It was difficult to compare directly the buildings seen in Fey Field with those of the earlier excavations, largely because no complete ground plans were recovered. For example, the position of the doorways into most of the Fey Field buildings lay outside the area of excavation, so it is impossible to say if they were deliberately aligned along the axes as with Glebe Field (*ibid.*, 135). The construction methods used in Fey Field were not identical to those seen in Glebe Field, but given that there was considerable variation among the buildings in both excavation areas this is hardly surprising (*ibid.*, 138–9 and 172–7). For example, while upright staves were used in walling in both the Fey Field and Glebe Field excavations, none of the buildings in Glebe Field had continuous plank walls (*ibid.*, 138–9 and 172–7) similar to those seen in Fey Field. Instead, the Glebe Field buildings were interpreted as having closely spaced uprights supporting either plank or wicker linings.

The burial ground was located to the south-east of wall 482/2112. Within this cemetery there were two clearly differing sets of burials; those in Groups 14–16 were aligned broadly west–east, while those of Groups 17–18 were mainly on a west-north-west to east-south-east alignment. In the 1995–96 archive reports this change in alignment was seen as highly significant, with the earlier west–east burials being interpreted as the remains of a Northumbrian burial ground of 7th- to 9th-century date and the later west-north-west to east-south-east burials being interpreted as 11th century or later. There is, however, no over-riding reason to date these burials to the 11th century or later; other than the possibly medieval sherd from Set 74 no dating material any later than the 9th century was recovered from any of the

graves. Three of the burials in Groups 17–18 contained good evidence for coffins, with fittings of similar types to those seen Groups 14–16, which may suggest the two groups are related. For these reasons the change in grave alignment is now seen as occurring within the Northumbrian period, and the graves of Groups 17–18 are classed as Period 4b.

## 6.5 Period 5 Settlement and burial, c. AD 845 to c. AD 1250-1300

As with Periods 3 and 4, the remains from Period 5 include both burials and settlement activity. In the settlement there was a dramatic change from post-built to wattle and daub buildings. The remains of many small structures were identified, but the survival of most was poor, and often the walls were indicated only by internal or external surfaces laid against them, or by sub-rectangular hollows and in rare instances by patches of clay which had presumably eroded from their daub coatings. The buildings were smaller than those of Period 4, and had rounded corners suggestive of wattle buildings. Notably, they lacked any major upright timber supports; no associated post-holes or timber casts were found. The small size of the buildings (3–4 x 4–8m) would have negated the need for large internal timbers, and the shallow hollows into which many of the buildings were set would have helped to stabilise the structures.

The buildings compare well with examples from the Glebe Field excavations which were dated c.AD 845 to c.AD 1250–1300 (Hill 1997, 183–236). They were divided into two periods (Periods III and IV) on the basis of both subtle structural changes in the shape of the buildings (those of Period III being sub-rectangular and those of Period IV being smaller and squarer), and on the basis of layout, with the Period IV buildings being arranged radially (*ibid.*, fig. 2.16). This change was cautiously assigned to c.1000–1050, and was interpreted as suggesting Irish influences on the site (*ibid.*, 183). A similar change in building type and layout seems to have occurred in Fey Field in Period 5e.

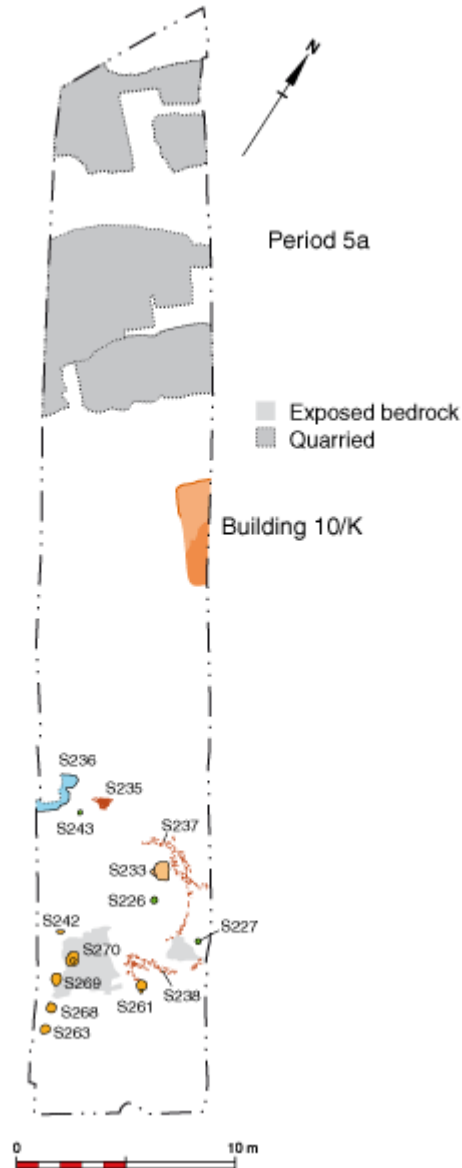
During Period 5 the southern end of the Fey Field site switched repeatedly between structural activity and use as a graveyard. It is not clear why the graveyard should have repeatedly gone out of use in this way, but it echoes a pattern of disuse and re-establishment of the cemetery that was seen between the end of Period 3 and Period 4a. It also has implications in terms of the consecration and deconsecration of the area.

The remains of Period 5 were very difficult to date precisely, but the number of buildings recovered suggests that this was a prolonged period of activity. A radiocarbon date of the late 11th/early12th century (GU-3965/6 cal AD 980–1170, 2 sigma) was obtained from the remains of a fire which destroyed Building 10/K (Period 5a). In addition, a sherd of Beverley ware dating to c.1100 was recovered from Building 22/L (Period 5e), suggesting an early 12th-century date for its occupation.

(The context numbers for many of the features listed below were based on sketches in Site Notebook 1993 AB, 5, 23 and 25.)

### 6.5.1 *Period 5a: structural activity largely at the southern end of the site*

The southern portion of the site saw the abandonment of the Period 4 cemetery and use of the area for structural activity (1995–96 Phase 7).



**Figure 16 Period 5a**

The earliest features were a number of levelling deposits across the site (Group 19, not illustrated here, see IADB). The uppermost of these deposits was very pebbly in nature, which may suggest an attempt to create a good surface ready for the construction of buildings. These deposits were largely to the south-east of the earlier cemetery boundary wall 482/2112, except at its western end where they overlay the walling, indicating that, although still partially visible, it had gone out of use. These levelling deposits contained a number of artefacts including an iron key (95/SF295, see 9.4.1), a possible stone anvil (95/SF374), a lead object (95/SF682), an incised stone slab (95/SF432) and a jet tessera (95/SF410, see 9.3.7). Jet is exceptionally rare in Scotland in the early medieval period. There was also residual late 5th- to mid-6th-century pottery (95/SF00280, see 7.4 Vessel 1).

Three arc-shaped lines of stones (Sets 237–8 [Set 237 was two lines and Set 238 one line]) may be all that remain of circular wattle structures. Two of these were 4.5m and 3.5m in diameter, but the diameter of the third was impossible to determine. As two of these structures overlap they cannot have been contemporaneous. Their form is difficult to interpret, as there was no

trace of supporting stake- or post-holes suggestive of fences being driven into the ground, but the flanking pebble surfaces suggest that there were fences or walls of some kind. Similar features were identified in the Glebe Field excavations, and the difficulty of locating any stake-holes associated with these features was described in the following terms: 'These putative fences would have been supported on stakes driven through worm-sorted strata and frequently into the complex strata of [Pre-Northumbrian] features and would have been difficult to detect in either medium' (Hill 1997, 135).

Three post-holes (Sets 226–7 and 243) seemed to form an almost straight line, but if this was a fence line, it bears no relationship to the layout of the possible wattle structures described above, implying that they had gone out of use when the fence was erected. The alignment of these post-holes almost corresponds to that of a fence line within the later burial ground of Period 5b, so it is also possible that the stratigraphic relationships recorded at the time of excavation were wrong and that these features should move up the stratigraphic sequence into Period 5b.

In addition to these possible structures, there was a large, irregularly shaped robbing trench (Set 236) which cut into an earlier oven structure (Set 129) and into the western end of wall 482/2112. This may have been intended to rob out the stone or to create an entrance way across the boundary wall, at a spot which was used for a path in Period 5b.

Nearby was a metal working hearth (Set 235), consisting of a stone base associated with abundant slag and hearth base (95/SF353 and 95/SF356). An isolated post-hole (Set 242) and larger post-hole or small pit (Set 233) were also recognised.

These features were sealed by extensive levelling deposits (Sets 240–1, not illustrated here, see IADB) that contained lead working waste (95/SF198), an incised stone slab (95/SF155) and a possible touchstone (95/SF405). It is unclear if these objects originated from this period or were simply residual finds. There was a sherd of residual late 6th- or 7th-century pottery. The levelling deposits were in turn beneath a group of large post-holes arranged in a right-angled configuration (Sets 261, 263 and 268–70). Two of the post-holes (Sets 268 and 270) seem to have held square timbers, but the shape of the timbers in the remaining cuts was unclear. Set 270 contained a re-used fragment of a possible stone anvil (95/SF176) as post-packing. These post-holes may have formed the corner of a building in excess of 3.5 x 4m in area, but there are no other examples of buildings constructed solely from large posts. No associated surfaces survived. It is also possible that the post-holes could represent two fences at right angles to one another.

A sub-rectangular structure 4.5m in width had rounded corners (Building 10/K), suggesting a wattle and daub building. It had a scorched clay floor (Context 240), and fired daub with wicker impressions was recovered from the area, showing that the building had burnt down (Pollock 1993a, 11). This was the building mentioned above from which a radiocarbon date of late 11th/early 12th century (GU-3965/6 cal AD 980–1170, 2 sigma) was obtained.





*Post-holes with stone packing, Set 270*

Too few buildings were present in this sub-period to allow comment about the overall layout of the settlement, or to compare it with the remains from the earlier Glebe Field excavations.

The only artefactual dating evidence recovered from these contexts was of 6th- to 9th-century pottery and coffin fittings of 7th- to 9th-century date, but this material could all be residual.

#### *6.5.2 Period 5b with detail of cemetery*

After the Period 5a structures described above went out of use the southern portion of the site was again used as a burial ground. The 26 graves in this cemetery formed the interface between the 1992–93 and 1995–96 excavations, some being investigated in the 1992–93 seasons and some in 1995–96. The burials seem to have been enclosed by a series of boundary fences aligned almost west–east, running more acutely across the excavation area than did the earlier boundary wall. In 1992–93 a shallow gully and series of post-holes were located, forming a fence line running diagonally across the excavated area (Context 1023). A second fence line seems to have existed c.1m to the south-west of this (Context 1166). In 1995–96 an angled slot, up to 0.10m in depth and c.0.10m wide (Set 276), was recorded. This slot may have contained a wattle hurdle, representing part of a fence line or windbreak. The absence of stake-holes in its base argues against this, but in terms of alignment it does seem to relate to the other fences in the area.

Burials were located to the south of the fence lines. There was a suggestion of a single nailed coffin to the north of the fence lines (Pollock 1993b, 14) but this was not seen in the 1995 season. Most of the graves were aligned west–east, but one (Context 1064) was aligned west-south-west to east-north-east and one (Set 254) was south-west to north-east. The skeletons were very badly preserved and the burial positions were impossible to reconstruct.

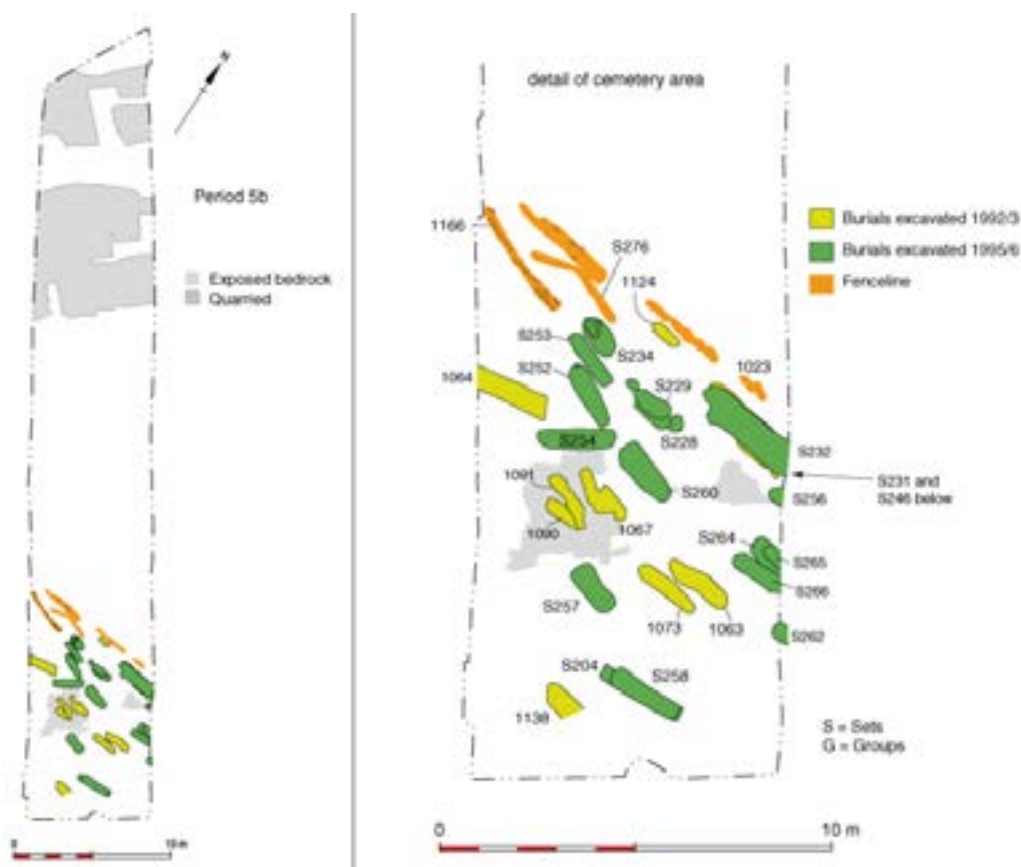


Figure 17 Period 5b with detail of cemetery

Seven graves contained the remains of adults whose sex could not be determined (Contexts 1052, 1067, 1090, 1091, and Sets 252, 254, 262); four were of adult females (Contexts 1063, 1073 and Sets 234 and 266); three were of males or possible males (Sets 231, 264 and 174); and three were of children or adolescents (Sets 253, 256 and 260). Although the numbers are small, there is clearly a fairly even mix of males, females and children. The numbers are too small to assess if there are any particular clusters by age or sex (the totals above exclude the human remains in grave 1064 which is discussed separately below).

One burial (Set 260) had stones to either side of the head ('ear-muffs') and a second, of a child, had post-holes marking both the head and foot of the grave (Sets 228–9 and 244). It was impossible to tell if the post-holes were for stone or wooden markers. A further grave (Context 1087) seems to have been marked by quartz pebbles spread across its surface.

Grave 1064 was singled out at the time of excavation as being of particular interest. The original interim report (Pollock 1993b, 14) stated that 'Grave 1064 was the best-preserved of the burials excavated. It contained parts of at least six individuals. The original grave contained a wooden box, probably assembled in the ground with sides approaching ground level. A considerable accumulation of silt between individual skeletal groups suggests that burials took place over a period. No complete individual was represented, but rather a number of articulated pieces (with soft tissue present). When the grave was finally sealed it was marked with a stone or post'. This seems to imply that the grave was interpreted as having contained a well-constructed box that was periodically re-opened to take new burials, although the mention of silt between skeletal groups suggests that the box cannot have been fully sealed.



*Burial in Set 253, showing the general level of bone preservation*



Grave 1064, originally interpreted as having been re-opened on numerous occasions



*Grave 1087 prior to excavation, with white stones (located diagonally across the centre of the photo)*

Assuming that all burials on site were normally placed with the head close to the western end of the grave and were buried fully extended, there are three individual burial contexts within this grave where the bones occur at the expected position, represented by a child's cranium (Context 1077), an adult head and articulated vertebrae (Context 1078), and adult lower right leg bones (Context 1081). However, the proximity of 1078 and 1081 suggests they were not from the same individual. This may indicate that three burials were placed within the grave cut, with the child interred beneath the adults. It is equally possible, however, that the child and at least one of the adults represent the fragmentary remains of earlier burials that had been disturbed when grave 1064 was dug. Most of the other fragments within the grave (adult cranium fragments Contexts 1079 and 1076; adult tibia fragments Context 1075; and infant teeth Context 1082) can be explained as purely accidental inclusions, as they are simply too fragmentary to suggest full skeletons. The remaining bones within the grave comprise part of an articulated adult right leg (Context 1080) and part of a flexed leg joint (Context 1084), presumably not fully decomposed when buried. The burial of additional fragments within grave 1064 could have taken place at the time the grave was dug and need not necessarily imply that the grave was repeatedly re-opened.

The practice of disinterring bones for reburial is known from other sites. At Addingham, West Yorkshire, for example, there were the remains of at least 80 individuals, 27 of which represented secondary deposition of bones. Generally the secondary burials there occurred as scatters of bones within grave fills, with no clear suggestion that they were still articulated at the time of reburial (Adams 1996, 165–6). Among the burials in the Glebe Field excavations (Hill 1997, 189) was a neat bundle of bones containing the remains of two adults, and a cow forelimb. The remains of one of these adults, consisting of a radius and a few ribs, were in the correct

anatomical relationships, suggesting that the body was incompletely decomposed when buried. It is unclear if this burial represented remains brought from elsewhere for burial at the site, or whether they were the continuation of a burial practice seen in the earlier Northumbrian period in association with a burial chapel (*ibid.*, 169). The deliberate burial of semi-decomposed remains at Glebe Field does, however, raise the possibility that Contexts 1080 and 1084 from Fey Field represent a similar practice. Alternatively Contexts 1080 and 1084 could represent the intrusion of a later grave into parts of earlier, fairly recent graves, and the subsequent reinterment of displaced bones within the new grave.

Artefacts within these graves included a heat-affected stone (95/SF493) from Set 204, possible anvil stones from Sets 234 (95/SF301) and 246 (95/SF175), an incised stone (95/SF433) from Set 252, a smoothing stone (95/SF235) from Set 256, a plough pebble of late 5th- to mid-9th-century date (95/SF106) from Set 257 and smoothing stones from Sets 253 and 266 (95/SF376 and 95/SF912). With the exception of the plough pebble none of these objects are datable. There was also a fragment of a stone roofing slab (Context 1023 93/SF38504) of late 15th-century or later date, which presumably represents contamination.

Artefacts of late 5th- to 9th-century date (pottery, glass, hinge straps, a key and the plough pebble) were recovered from six of the graves, but all could have been residual. A single copper-alloy pin from Set 253 (95/SF375) dated to the 9th–12th centuries, and six sherds of 10th- to 11th-century pottery were recovered from these graves in 1993.

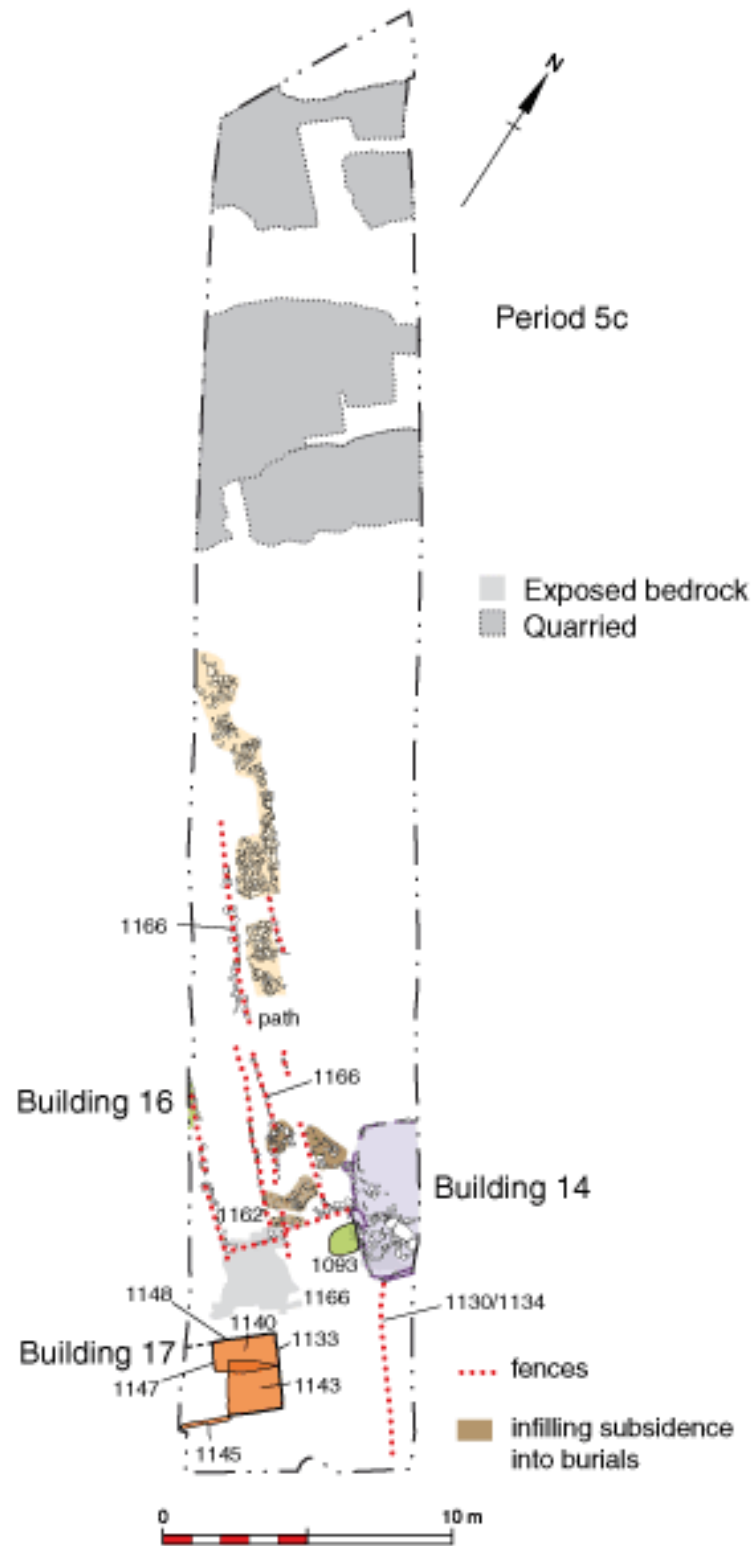
Few burials of comparable date have been excavated at Whithorn; only a small number of contemporary graves lay within the Glebe Field excavations (Hill 1997, 189). In addition to the bundle of bones from Glebe Field mentioned above, there was an infant with two beads, one of amber and one of shale, on its chest. No evidence for the deliberate placing of burial goods was found in Fey Field. At Glebe Field there was also a spread of cremated human bone fragments from four individuals which, it has been suggested (*ibid.*, 189), reflects pagan burial practice and may be due to Scandinavian influences in the later 9th century. Nothing similar was seen in Fey Field.

Also attributed to Period 5b were the deposits that were removed at the start of the 1995 season of excavation (Group 22, not illustrated). These deposits represent levelling across the site, but they also represent the interface between the 1992–93 and 1995–96 excavations. An iron staple (95/SF180, see 9.3.2) was also recovered. The dating of these deposits is uncertain as they were clearly contaminated by post-medieval and modern material as a result of the delay between the two campaigns of excavation here.

It is difficult to define either Period 5a or 5b activity at the northern end of the trench, due largely to the lack of clearly datable deposits in the area. Most of the Period 5a and 5b contexts were, however, clearly sealed by sub-period 5c.

### 6.5.3 *Period 5c: further structural activity across the site*

The graveyard contracted again, and a series of wicker fences and buildings were laid out across the southern half of the excavated area. A path (Context 275) and a number of associated wicker fences were aligned north-west to south-east; the path and at least one of the fences (Context 1166) continued to either side of the earlier cemetery boundary wall (Context 482/2112).



**Figure 18 Period 5c**

The new axis created by these fences was followed by other structures (Buildings 14 and 16), while fence line 1162 was aligned at right angles to it. A fence line (Context 1130/1134) in the south-eastern part of the area was, however, on a slightly different alignment.

The buildings of this phase were largely outside the area of excavation, so their complete ground plans are unknown. Building 14 was rectangular with rounded corners and was 5.2m in width. There was no indication of doors, implying that these were outside the area of excavation. A small area of clay outside Building 14 (Context 1093) may represent daub that had eroded from the walls of the building. Building 16 was represented only as a sliver of mud floor in the south-western edge of the excavation.

Building 17 had stake-built walls (Contexts 1145, 1148 and 1133), and was over 3.80m long and 2.6m wide. The eastern portion of the building was occupied by a timber-revetted cut, 1.7 x 1.2m in area (Context 1143), and a stony floor surface (Context 1140). The cut is similar to cuts seen beneath the floors of some buildings tentatively dated to the period AD 845 to c.1000–1050 in Glebe Field (Hill 1997, Building 18, 199). A fence line along the south-western edge of 1140 implies the building was at least partially divided by an internal screen. Four sherds of possibly medieval pottery and lead working waste (93/SF17405, see 9.2.2) were associated with this building.

In addition to the building activity described above there were also clearly deliberate attempts to level the ground where it was slumping into earlier graves.

The overall pattern of the Period 5c settlement is difficult to determine due to the partial survival of many of the buildings. The settlement pattern present does, however, seem a better match for that seen in Period III/1 and III/2 in Glebe Field than for Period III/3, which had buildings arranged radially (*ibid.*, figs 2.14–2.15).



*General view across Period 5c buildings, facing north*



*Building 14 in foreground with Building 16 beyond, facing south*

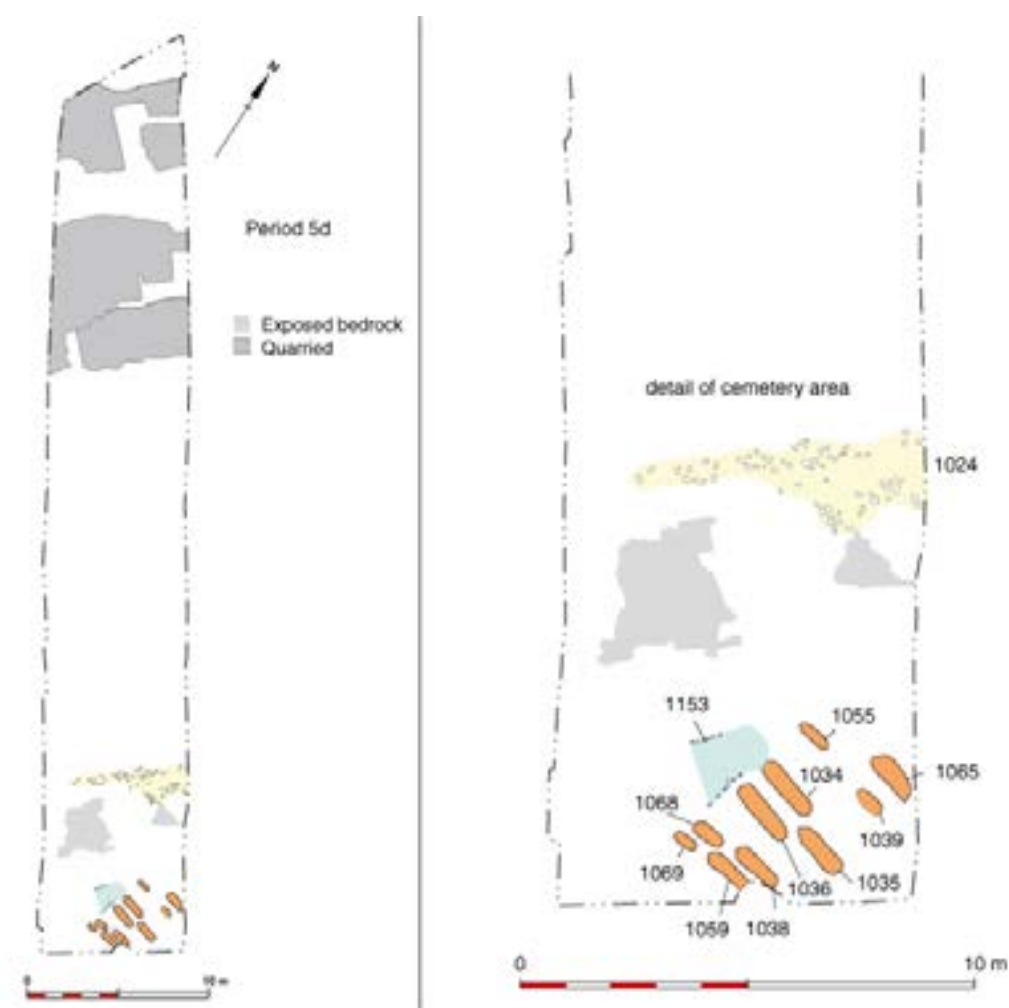


*Detail of Building 14, facing south*



#### 6.5.4 Period 5d: re-establishment of a cemetery at the southern end of the site

A new path (Context 1024) was established towards the southern end of the site, aligned roughly north-east/south-west, with a graveyard to its south. There were ten graves, but due to poor preservation traces of human bone were recovered from only five. At the time of excavation it was thought that the small size of the grave cuts (up to 1.4 x 0.4m in size) implied that these were all child burials, but the analysis of the human remains has shown that three graves contained adult remains (Contexts 1035–6 and 1039), one had adolescent remains (Context 1038) and only one contained a child (Context 1059). It may be that all the graves were originally intended for children, but that these skeletons have wholly disappeared, and that the adult/adolescent bones present are simply stray finds within the grave cuts. It is also possible that the graves were originally for adults and were larger, but have had their upper portions ploughed away.



**Figure 19 Period 5c with detail of cemetery**

A stake-lined pit (Context 1153) was interpreted by the excavator (Pollock 1993b, 15) as being the eastwards extension of the pit beneath the floor of Building 17 (Period 5c, above). There is, however, no other clear evidence for Building 17 being extended eastwards, and cut 1153 could simply represent a pit that accidentally truncated the earlier Building 17.

The graveyard was later replaced by cultivation soil, which also seems to have respected the southern edge of the path.



*General view of the Period 5 graves*

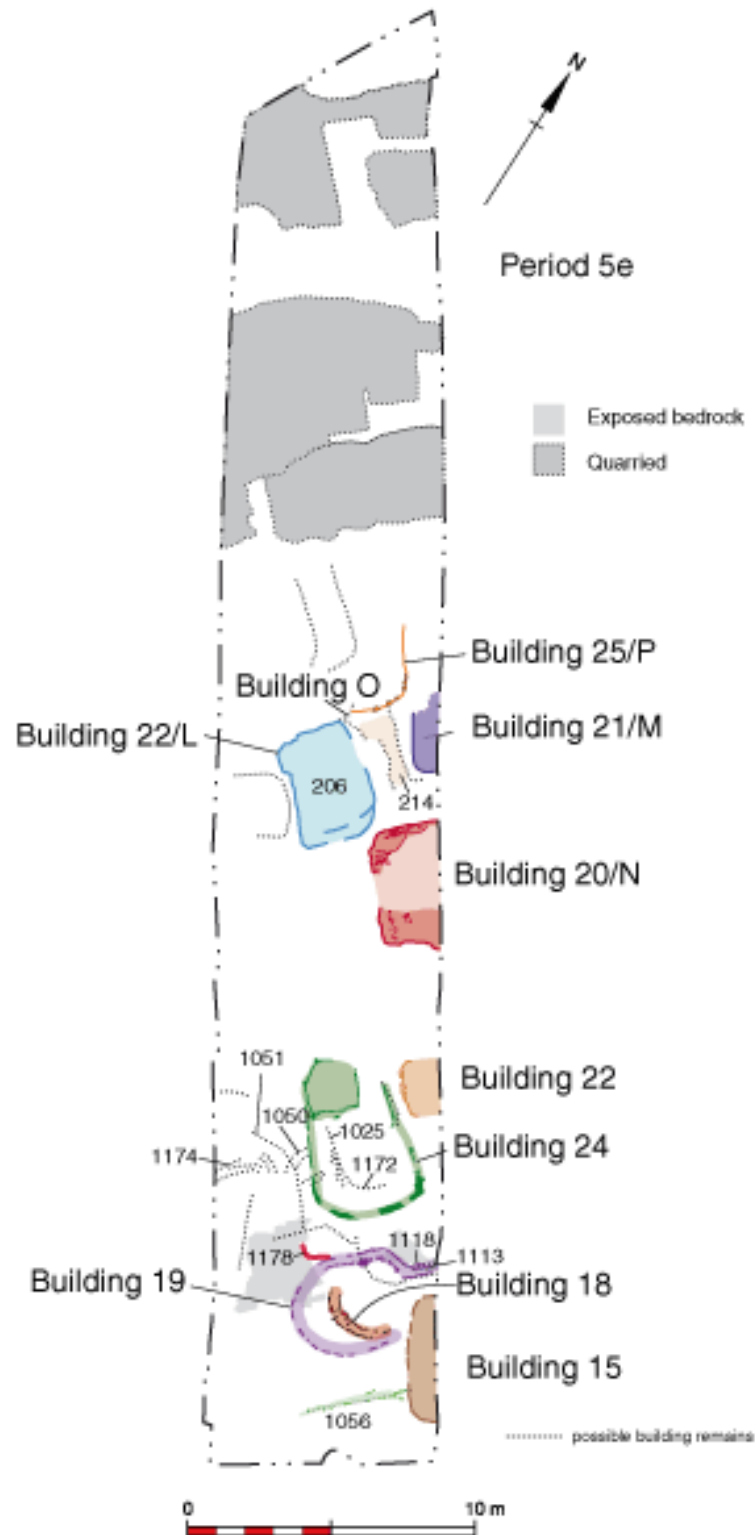
#### 6.5.5 *Period 5e: structural activity, predominantly wicker buildings*

The Period 5d cemetery does not seem to have remained in use for long before buildings again encroached on to the area. These buildings are part of a group of small wattle and daub structures that continued the forms and construction methods used in Periods 5a and 5c. The lack of coherent ground plans makes these structures very difficult to interpret, but the sheer number of fragmentary buildings identified clearly shows intensive activity on the site.

Buildings 15 and 24 were rectangular with rounded corners; Building 24 had a revetted pit below the floor and the wattle walls rested in part in shallow slots. Building 21/M was seen only as a mud floor with rounded corners. There were also areas which had been quarried away to create rectangular building platforms with rounded corners (Block 7, Buildings 20/N, O, 22/L and 25/P). Of these Building 20/N had a distinctive deep corner cut to retain the wall stakes. In all these cases the rounded corners suggest wicker buildings. Two of the buildings (Buildings 18 and 19) were sub-circular.

There were clearly a large number of other buildings, attested by numerous segments of wicker walls and rounded building corners represented by pitched stones or hollows (e.g. Contexts 1025, 1050–1, 1113, 1118, 1174 and 1178). Traces of a metalled surface between some of these wicker segments were also found (Context 214).

The overall pattern of the settlement, notably at the southern end of the site, seems to be of densely packed small, almost sub-square, buildings. These may relate in form to Glebe Field Period III/3 (Hill 1997, figs 2.14–15), where the buildings were laid out on a radial arrangement. It is difficult, however, to determine if the arrangement in Fey Field was radial.



**Figure 20 Period 5e**

A sherd of Beverley ware dating to c.1100 and a silver halfpenny dating to 1180–1247 (92/SF29700) were both recovered from Building 22/L, suggesting this structure at least was probably contemporaneous with the 12th- or early 13th-century priory (Pollock 1993a, 14, identified the coin as dating to 1066–1100, but further cleaning allowed re-examination and gave a later date). The most recent building in this group was Building 21/M. This building was

bordered by a drain which seems to have continued in use into Period 6. A single fragment of roofing stone of late 15th-century or later date probably represents contamination (92/SF42000).

A large number of other artefacts were recovered in Period 5 levels but were difficult to link firmly to specific structures (1992–93 Site Archive, Blocks 23 and 34). They included 11th- to 15th-century pottery, an iron punch (93/SF247), a lead came (93/SF13700 see 9.3.2), a medieval arrowhead (93/SF24411, see 9.3.7) and a medieval iron buckle (93/SF26406, see 9.3.4). Pottery of 11th-/12th-century date was found in contexts sealing Building 11/H of Period 4b, together with a lead weight (92/SF38400), lead working waste (92/SF21406, see 9.2.2), horseshoe fragments of mid-11th- to mid-13th-century type (92/SF41300 and 93/SF14717, see 9.3.7), a stylus (92/SF28500, see 9.3.5) and a copper pin of post-mid-9th-century date (92/SF32500, see 9.3.4). Five artefacts from Context 1012 in Block 23 of a later date include a mid-14th- to 16th-century lace tag (93/SF27700, 9.3.4), three late 15th-century or later stone roofing slabs (93/SF34301, 93/SF17305 and 93/SF19403) and a coin of James III (1418–1513) (93/SF34100); these probably represent contamination from ploughsoils above.



*Wicker buildings of Period 5e, facing north*

## 6.6 Period 6 – Priory c. 1250-1300 to 16<sup>th</sup> century

Only fragmentary remains that can be associated chronologically with the Premonstratensian priory were found in the Fey Field excavations, and they were all located at the northern end of the trench; the lack of structures at the southern end may suggest that this area was used for cultivation throughout this period. Abundant dating evidence from contexts at the northern end of the trench ranged from 12th–15th century to 15th–16th century in date, but most of the structures identified seem to be late 15th century or later in date.



*Later medieval quarry pits, at the northern end of the site*



*Cross-section through the later medieval quarry pits*



*Later medieval quarry pits, partly excavated*

#### 6.6.1 Period 6a

The earliest structure of this period was a pair of stone plinths (Contexts 19 and 21) to either side of a stone-capped drain (Context 50). This drain respected the line of Building 21/M in Period 5e, suggesting that this structure was still standing when the drain was built. Wattle walling adjacent to the drain incorporated pink sand, a residue from working sandstone imported for the construction of the priory. This sandstone is unlikely to have been present on the site before the 12th century (Pollock 1993a, 6). Seven sherds of 12th- to 15th-century pottery and a coin dated to c.1470 (92/SF16500) were recovered from contexts within this group. There were also four fragments of stone roofing slabs of late 15th-century type (92/SF23603, 92/SF35105–6 and 93/SF10103). A further three stone roofing slabs were found in Context 226, a stony surface adjacent to, and possibly associated with, this drain (92/SF37002–4). There was also a fragment of undated copper metal work waste (92/SF7202) and a copper-alloy pin (92/SF07201, see 9.3.4) of a type which can occur in medieval deposits but is usually 16th century or later.

A large stone-capped drain (Context 103) was located at the extreme northern end of the excavation area. It was 0.75m deep and 0.5m wide beneath the capstones, increasing to 0.75m wide at the base. The precise construction date for this drain is uncertain, but it is likely to have been a major priory drain (*ibid.*, 5) leading southwest from the claustral buildings. Pottery (4 sherds) of 12th–15th century date was found within this drain, in addition to a copper alloy tweezer (92/SF12400, see 9.3.4) and a (residual) medieval arrowhead (92/SF833).

The northern portion of the site was heavily quarried, and the resultant quarry pits were backfilled with waste comprising platey greywacke stone. The quarries respected the line of the main drain, which continued in use after the quarry pits had been infilled (*ibid.*, 5). The quarries clearly dated to the 14th–16th centuries, as they contained abundant sherds of 14th- or 15th-century pottery and roofing stone fragments of late 15th-century date. The quarry backfills also

produced a number of objects including residual pottery, residual fragments of iron working waste, lead working waste, copper working waste, a copper-alloy pin (92/SF05200, see 9.3.4), a copper-alloy belt fitting (92/SF09500, see 9.3.4), a strap-end (92/SF2900, see 9.3.4), a 12th- to 14th-century candle holder (92/SF6202), numerous mid-14th- to 16th-century lace tags (92/SF5700, 92/SF8401, 92/SF8600, 92/SF9200, 92/SF9300, 92/SF9301, 92/SF11801, 92/SF11200, 92/SF11201, 92/SF15905 and 92/SF16800, see 9.3.4), medieval window glass fragments (92/SF8900, 92/SF9100, 92/SF11100–2, 92/SF11800, 29/SF19904 and 92/SF24300, see 9.3.2), a medieval knife (92/SF9700, see 9.3.1), a medieval buckle (92/SF26404) and three coins (92/SF8400, 92/SF8700 and 92/SF9400) from the reigns of James II and/or James III (1430–88).

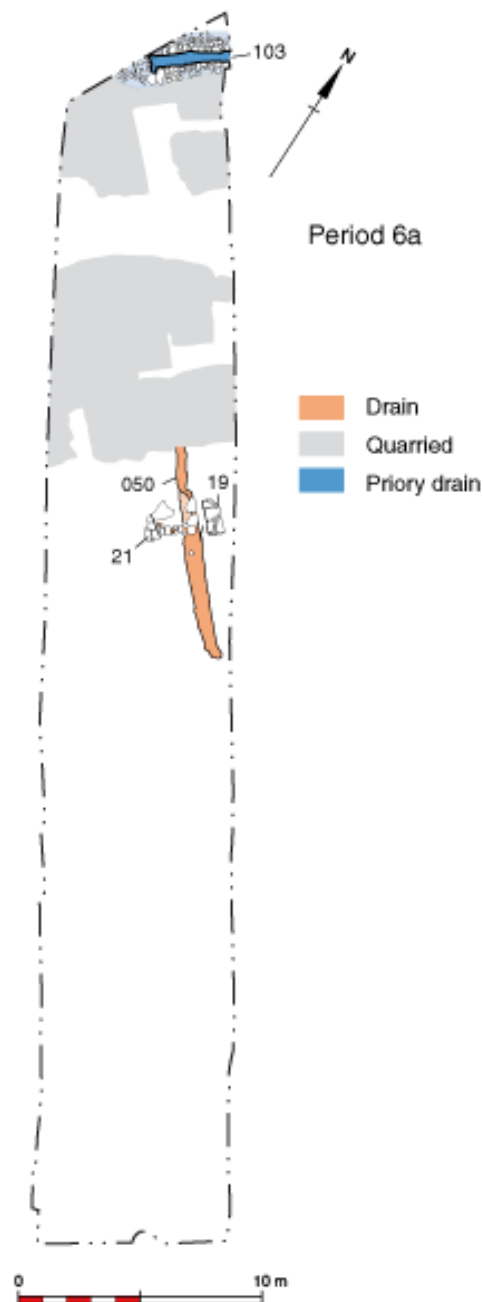
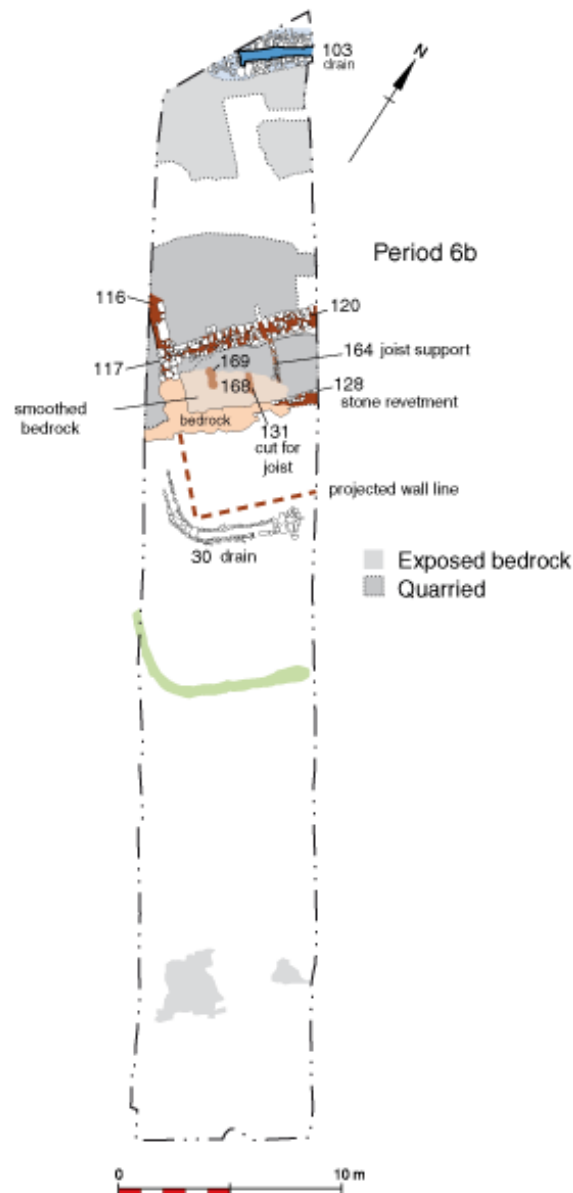


Figure 21 Period 6a

### 6.6.2 *Period 6b*

A large building was constructed above the infilled quarry pits. Only the north-western portion of this building survived, due to severe plough damage. Initially the bedrock was levelled and the earlier quarries infilled. An unstable area resulting from this process was given a stone revetment (Context 128). The north-western side of the building had a stone wall (Context 120) pierced by drainage outlets; the western wall of the building (Context 117) survived to a height of three courses. The upper courses of walling were narrower than the base and suggest that the wall cannot have supported stonework to roof height. The building is therefore likely to have been a timber-framed construction resting on a stone footing. Within the western end of the building the bedrock was worn smooth, not just on the floor but also by up to 0.2m up the sides of the walls. The heavy wear, coupled with the frequent drainage holes through the wall, suggests that the building was used for housing animals; it is therefore interpreted as a byre or stables.



**Figure 22** Period 6b



A possible joist cut (Context 131) and a joist support (Context 164) suggest that the building had a wooden floor at some stage; a wooden floor seems to imply a change of use for the building. Two small hollows, possibly post-holes, may relate to internal features for the building (Contexts 168–9). An associated stone drain (Context 30) indicates the south-eastern limits of the byre buildings, and a badly plough-damaged course of stones extending from the north-western corner of the building (Context 116) may represent the footings for an attached shed (Pollock 1993a, 4). The bedrock shelf also continued to the south-west of the building; it is unclear whether this ‘extension’ also represents a building foundation or not.

Pottery of possibly 15th-century date and a coin dating to c.1559 (92/SF3800) were recovered from contexts associated with this building, as well as copper-alloy dress fittings and pins (92/SF07100, 92/SF9800 and 92/SF23804, see 9.3.4), a medieval arrowhead (92/SF0888), a wire loop fastener of 15th- to 16th-century type (92/SF2400, see 9.3.4), medieval window glass fragments (92/SF8804, 92/SF10811, 92/SF13804, 92/SF15504, 92/SF17202 and 92/SF17500, see 9.3.2), lead window came fragments (92/SF8801) and four mid-14th- to 16th-century lace tags (92/SF5503, 92/SF14102, 92/SF10307 and 92/SF11404, see 9.3.4). Six stone roofing slabs of late 15th-century or later date were present in Contexts 33 and 35, which were stony surfaces adjacent to and probably contemporary with the drain (92/SF19808–9, 92/SF26607, 92/SF38505, 92/SF21408 and 92/SF22303).

Garden soil was present to the north of the byre/stables; animal bones and pottery dated to c.1400 were scattered through this deposit, creating a midden which may represent kitchen waste from the priory. Ploughing during the life of the byre/stables subsequently dispersed the midden (*ibid.*, 2 and 5).

In addition to the features described above, a number of undated features from 1995 Trench B have been assigned to Period 6. Many were exposed over only a very limited area of Trench B, and for this reason plans are not included here. The earliest of these features (Group 41) resembled natural boulder clay, but contained flecks of charcoal. As this was the earliest deposit reached in Trench B it is impossible to say whether it was disturbed natural or a later deposit. Above Group 41 were two bands of compact clay with frequent stones forming surfaces. To the north-west was a second stony area with some wear, indicating use as a path. These features may represent two stone paths (Group 42) leading to the Ket Burn. There were three small ditches or gullies (Group 43) parallel to and respecting the edge of one of the stone paths described above, which may have been either for drainage or hedge lines. A small deposit of silt within the trench was interpreted as the remains of flooding (Group 44). This was sealed by more extensive deposits of silt containing large flat stones tipped at various angles.

## **6.7 Period 7 – 16th century to the present**

Following the demolition of the byre/stable building the entire area of Trench A was ploughed. The ploughing was represented by a stony deposit and a series of plough-scores aligned approximately north-east to south-west. A patch of stones which had been trampled into a path running obliquely across the excavation area may represent stones cleared prior to ploughing. The path was itself heavily damaged by later ploughing (Pollock 1993a, 2) which continued to the present. Similar plough soils were present in Trench B (Groups 46–8). These plough soils had built up from the 16th century to the present time and were beneath the modern topsoil deposits, together with two telegraph post-holes and their associated backfills.

Many of the objects recovered from the excavations were from deposits of this period, including modern pottery, copper-alloy objects (buckles, belt fitting, lace tags, vessel fragments, thimbles, pins, a book clasp, a hinged clasp, a gilded mount fragment, a strap-end, and waste from copper-alloy working), lead-alloy objects (a pistol ball, weights, a net sinker, lead waste and came fragments), iron objects (pierced plate, hook, hasp, horseshoes, punches, buckles, a medieval arrowhead, padlock spring, keys and knives), incised stone slabs, an incised stone possibly associated with needle making, a rotary quern fragment, smoothing stones, hones, iron working debris, copper-alloy working debris, medieval window glass fragments, two slate pencils, a stone marble and both residual pottery and glass. There were also many coins, including Scottish coins from the reigns of James II (92/SF18800), James III (92/SF1100, 92/SF2200), James IV (92/SF2600), Mary (92/SF3900, 93/SF3100) and James VI (92/SF0700), and a base bullion penny of 15th- to 16th-century date (92/SF3400), English coins from the reigns of Elizabeth I (92/SF0600, 92/SF1600), and British coins from the reigns of Charles I or II (92/SF1500), Victoria (93/SF2400 and 93/SF3200) and George V (93/SF4801). The overwhelming majority of these finds were probably residual.



*Trench B topsoil and ploughsoil*

## 7 EARLY MEDIEVAL IMPORTED POTTERY

By E. Campbell

### 7.1 Late Roman amphorae (LRA)

All these imported amphorae sherds are highly abraded and many are small, suggesting they are residual material and not in situ. The assemblage thus differs from that of Hill's excavations, where quantities of large sherds were found in associations which suggested contemporary breakage and disposal in that part of the site (Campbell 1997, 316–18, fig. 10.13). Only Riley's LR1 and LR2 amphorae are represented, both of which were imported from the Eastern

Mediterranean in a restricted period from the late 5th to the mid-6th century. Given the abrasion of the material, these dates only represent *termini post quem* for their contexts.

There are two sherds of LR2 (British Bi), and 43 sherds of LR1 (British Bii) which may be from two separate vessels. One of these latter vessels has a distinctive fabric which may match that of Vessel 3 from the earlier excavations (Campbell 1997, 318). The sherds from the other LR1 vessel were all found in Context 146. The only distinctive feature present is the scar of a handle attachment. There are also two sherds from unidentified Late Roman amphorae, possibly North African, and one other possible example.

## 7.2 E ware

There are 26 sherds of E ware, from at least three vessels. This compares to the 74 sherds from sixteen vessels from the previous excavations, which itself constituted the second largest assemblage of E ware from the Atlantic west (Campbell 1997, 176). This quantity of material emphasises Whithorn's importance in the early medieval trading system, which brought this pottery from western France in the later 6th and 7th centuries. It is not possible to say if any of the material from the 1992-6 excavations comes from the same vessels as those excavated by Hill, as the two assemblages could not be compared directly.

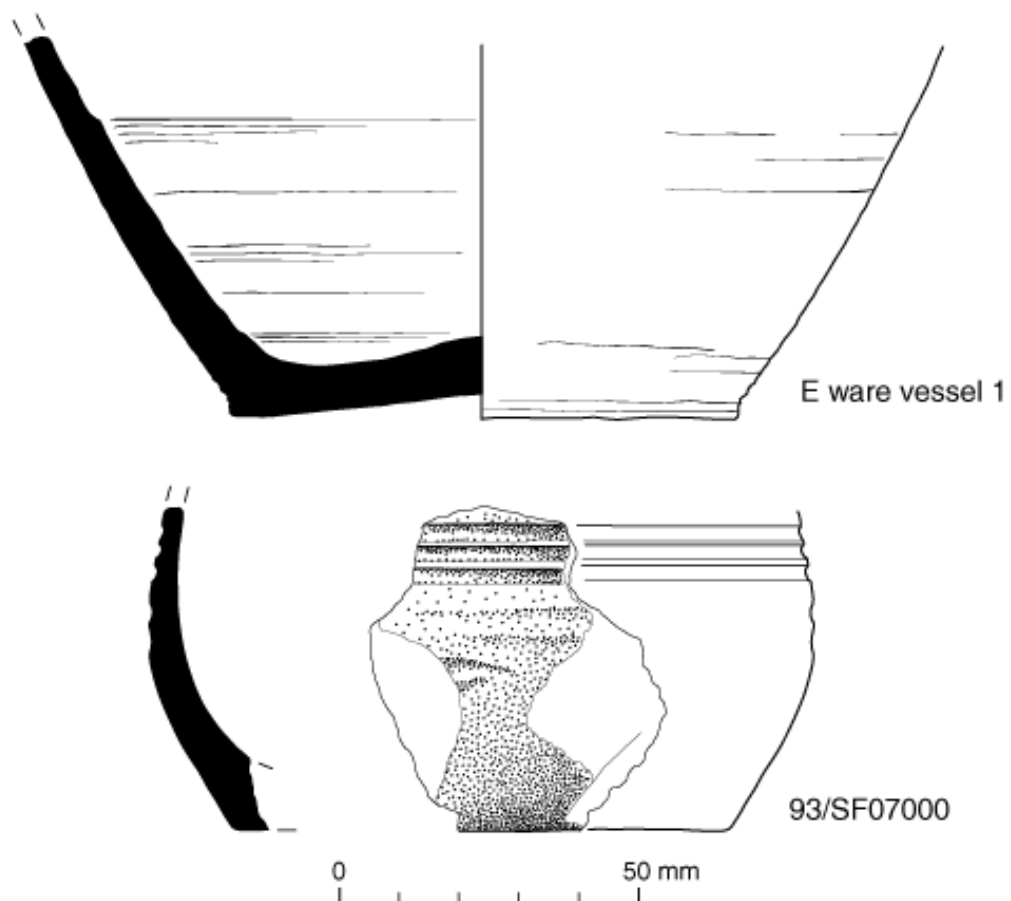


Figure 23 E ware vessel 1 and 93/SF07000

The lack of rim sherds is noticeable compared with the earlier assemblage, but it is difficult to assess what this means in taphonomic terms. Many of the sherds are large and unabraded, suggesting that the material is not residual and is likely to be contemporary with the deposits in

which it is found. This picture is reinforced by the fact that a large portion of the base of one vessel can be reconstructed (Vessel 1), and the presence of a group of nine sherds in a distinctive pink fabric which may all be from one vessel (Vessel 2). This vessel is either an E1 jar, or, perhaps more likely, an E4 jug, as the base is rather narrower than most E1 jars. Jugs are rare in E ware assemblages, usually being restricted to high-status secular sites, though a small example was found in the previous excavations (*ibid.*, vessel 6). Most of the other sherds are undiagnostic bodysherds, but there is a basal sherd from an E2 beaker (Vessel 3). One sherd has very rare grooved decoration, a feature seen in one sherd from the previous excavations. None of the sherds shows clear signs of sooting, unlike many of the examples from the previous excavations, perhaps suggesting that this area was closer to the primary place of use of the vessels. Vessel 1 has traces of colourless glaze on the underside of the base. Analysis confirmed that this was not a lead glaze, and was probably accidentally produced from wood ash in the kiln. Similar spots have been previously noted in the Mote of Mark assemblage (Campbell 2006, 112).

### 7.3 Unidentified pottery

93/SF07000 is the lower part of a small biconical wheel-thrown beaker with horizontal grooved decoration on the neck. If this is not a medieval vessel (it is not recognised as such by medieval specialists), it may be a rare early imported glazed ware, but it is unparalleled in the Insular import assemblages.

### 7.4 Catalogue

#### Late Roman amphorae

LR2 (Bi)

92/SF08314 Bodysherd of LR2 amphora with combed ribbing. 25 x 14mm, T 7mm. WH92/083/14, Context 113.

95/SF00140 Bodysherd of LR2 amphora with combed ribbing. 46 x 38mm, T 11mm. WH95/140, Context 2006.

#### LR1 (Bii) Vessel 1

95/SF01209, Context 2557.

92/SF32800, 146.

92/SF32801, 146.

92/SF32802, 146.

92/SF33900, 146.

92/SF33901, 146.

92/SF35200, 146.

92/SF35201, 146.

92/SF42600, 146.

92/SF42601, 146.

92/SF43700, 146.

92/SF43900, 146.

92/SF45600, 146.  
 92/SF45601, 146.  
 92/SF45602, 146.  
 92/SF45603, 146.  
 92/SF45604, 146.  
 92/SF45605, 146.  
 92/SF45606, 146.  
 92/SF46000, 146.  
 92/SF46001, 146.  
 92/SF46002, 146.  
 92/SF46100, 146.  
 92/SF46101, 146.  
 92/SF46200, 146.  
 92/SF46700, 146.  
 92/SF46701 Shoulder sherd with scar of handle attachment. 146.

#### **LR1 Vessel 2**

95/SF00049, 2030.  
 95/SF00280, 2071.  
 95/SF00381, 2142.  
 95/SF00726, 2277.  
 95/SF01058, 2355.  
 95/SF01080, 2388.  
 95/SF01082, 2388.  
 95/SF01168, 2018.  
 95/SF01270, 2614.  
 95/SF01479, 2703.  
 92/SF43400, 146.

#### **LRA (Bmisc)**

95/SF00101 Rim of ?amphora. Fabric orange, soft, with sparse sub-rounded quartz and other dark minerals and voids. Rim D 100mm, 33 x 28mm, T 12mm.  
 93/SF61900 Bodysherd of amphora. Fabric orange, soft, with some rounded quartz up to 1mm. 65 x 45mm, T 13mm. WH93, 293.

92/SF43600 and 92/SF43601 Two joining body sherds of amphora. Fabric orange, soft, with some rounded quartz up to 1mm. 55 x 30mm, T15mm. WH92 293.

### **E ware**

Vessel 1 Three joining sherds of basal part of E1 jar or E4 jug, and one other bodysherd. BD 85mm, T 5–10mm. Base with string cut-off, small accretions on exterior, possibly spacers for kiln stacking. Fabric white, some grey on exterior, large pieces of haematite. Traces of colourless glaze on lower surface. No sooting. Sizes 87 x 65mm; 67 x 42mm; 67 x 49mm; 36 x 33mm; T 7–12mm. 92/SF28200, 92/SF32600, 92/SF32700, 92/SF32701. WH92, 146.

Vessel 2 Nine bodysherds of thin-walled vessel. Fabric pink/yellowish buff. 27 x 22mm; 26 x 25mm; 27 x 15mm; 20 x 23mm; 40 x 25mm; 28 x 26mm; 17 x 15mm; 10 x 13mm; 25 x 32mm; T 4–9mm. 95/SF00018, 2004; 95/SF00126, 2033; 95/SF00430, 2160; 95/SF00722, 2293; 95/SF01226, 2577; 95/SF01326, 2634; 95/SF01487, 2653; 95/SF01512, 2709; 95/SF1578, 2815.

Vessel 3 Basal sherd of E2 beaker, with strong internal rilling. 30 x 22mm, T 5–9mm. 95/SF00365. WH95, 2099.

### Unassigned sherds

95/SF01091 Large bodysherd of E ware. Fabric buff with black exterior. 44 x 38mm, T 6mm. WH96, 2327.

95/SF00693 Bodysherd from large E ware vessel. Fabric creamy/buff. 50 x 20mm, T 9mm. WH95, 2234.

95/SF01539 Bodysherd from thin-walled E ware vessel. Fabric buff. 48 x 27mm, T 4mm. WH96, 2781.

95/SF01180 Bodysherd of E ware. Fabric light/dark grey. 31 x 22mm, T 5mm. WH96, 2512.

95/SF01097 Bodysherd of E ware, with two combed grooves on exterior. Fabric cream/grey. 22 x 16mm, T 5mm. WH96, 2407.

95/SF00775 Bodysherd of E ware. Fabric buff/black. 40 x 32mm, T 5mm. WH95, 2281.

93/SF10900 Bodysherd of E ware. Fabric cream/buff. 24 x 17mm, T 3mm. WH93, 1005.

95/SF01452 Bodysherd of E ware. Fabric cream/grey. 22 x 20mm, T 4mm. WH96, 2653.

95/SF01480 Bodysherd of E ware. Fabric pink/black. 42 x 27mm, T 6mm. WH96, 2709.

95/SF01472 Bodysherd of E ware. Fabric pink/grey. 21 x 13mm, T 4mm. WH96, 2653.

### **Unidentified early pottery**

93/SF07000 Lower part of small wheel-thrown beaker with grooved decoration on the neck. Fabric medium hard gritty, orange/black. The inclusions are well-sorted small rounded to sub-rounded grains of quartz, sandstone and rock fragments. The vessel is spalled and sooted on the exterior due to secondary re-use. A white deposit on the exterior is very decayed lead glaze. The interior has carbonised remains. 55 x 46mm, BD 70mm, body D 90mm, T 4–8mm. WH93, 1003.

95/SF00690 Bodysherd of closed globular form such as flagon. Interior rilled, exterior irregular. Fabric oxidised, pale orange, soft, fine, no visible inclusions. ?Romano-British. 74 x 53mm, T 4–9mm, Body D c.160mm. WH95, 2142.

95/SF00461 Bodysherd of thick gritty oxidised ware. ?Medieval. WH95, 4001.

95/SF01092 Bodysherd of soft, fine, oxidised ware. ?Romano-British. WH96, 2404.

95/SF00492 Very abraded sherd with part of handle attachment. Fine soft, slightly gritty oxidised orange fabric. ?Romano-British. WH95, 4002.

95/SF00460 Edge of strap handle. Fabric white, fine with sparse grits of sub-angular quartz and dark rock fragments. Probably medieval. 42 x 25mm. WH95, 4001.

95/SF01149 Strap handle fragment, wheel thrown. Broad flat handle, showing part of attachment. Fabric orange, fine, soft, no visible inclusions, possibly same vessel as SF00690. ?Romano-British. Width 35mm, T 7–8mm. WH96, 2487.

95/SF00179 Bodysherd of large vessel, very abraded. Fabric brick-red, soft, scattered inclusions of quartz. 25 x 17mm, T 12mm. WH95, 2045.

95/SF01081 Sherd from ?rim or edge of thick ceramic object. Fabric hard, purplish/grey, with large inclusions of rock. ?tile, ?amphora. 21 x 18mm, T 14–18mm. WH96, 2388.

95/SF01207 Bodysherd. Fabric hard, gritty, laminated scattered sub-angular quartz. Pink with white surface. ?E ware. 23 x 17mm, T 5mm. WH95, 2537.

## 8 LATER MEDIEVAL, POST-MEDIEVAL AND MODERN POTTERY

By J.M. McComish

### Medieval pottery

503 small finds from 1992 and 188 from 1993 were recorded as medieval pottery. The number of sherds present is slightly higher since a few small find numbers from 1993 represent up to five sherds of medieval pottery from a single context.

Most of the material recovered was residual in contexts of post-medieval or modern date (Blocks 1 and 20). The second largest grouping was from contexts associated with the Period 6 quarries, drains and byre (Blocks 2–4, 16–17 and 21), while only 82 sherds (78 small finds) were associated with the Period 5 deposits (Blocks 5, 7, 22–3, 25–7 and 34–5). The majority of the sherds from Periods 5–6 are very small, often abraded, featureless body sherds. The assemblage appears to be domestic in character, comprising glazed jug fragments and cooking vessels, and repeats the pattern of ceramic development seen previously on the Glebe Field site. A small number of sherds were intrusive into earlier phases (one sherd in Context 211, six sherds in Context 223 and one sherd in Context 495, all in Period 4 Blocks 6 and 12; one sherd in Block 67 in Period 3; one sherd in Context 146, Block 15; and one in Set 67 both in Period 3). The presence of six sherds in Context 223 may imply that the original phasing of this context is incorrect.

NO. OF CONTEXTS	NO. OF SMALL FIND NUMBERS	BLOCK NUMBER	DATE OF PERIOD
19	30	Unstratified	
10	182	Block 1	16th century to the present
10	104	Block 2	c.1250–1300 to 16th century
8	157	Block 3	c.1250–1300 to 16th century
5	6	Block 4	c.1250–1300 to 16th century

5	16	Block 5	c.AD 845 to c.AD 1250–1300
2	7	Block 6	c.AD 730 to c.AD 845
2	12	Block 7	c.AD 845 to c.AD 1250–1300
1	1	Block 12	c.AD 730 to c.AD 845
1	1	Block 15	6th to early 8th century
2	4	Block 16	c.1250–1300 to 16th century
3	3	Block 17	c.1250–1300 to 16th century
4	107	Block 20	16th century to the present
2	9	Block 21	c.1250–1300 to 16th century
1	4	Block 22	c.AD 845 to c.AD 1250–1300
8	28	Block 23	c.AD 845 to c.AD 1250–1300
1	2	Block 25	c.AD 845 to c.AD 1250–1300
1	1	Block 26	c.AD 845 to c.AD 1250–1300
4	6	Block 27	c.AD 845 to c.AD 1250–1300
3	10	Block 34	c.AD 845 to c.AD 1250–1300
1	1	Block 35	c.AD 845 to c.AD 1250–1300
1	1	Set 10	c.AD 730 to c.AD 845
1	1	Set 67	6th to early 8th century

**Table 2 Medieval pottery from the Fey Field excavations (contexts not allocated to a block/set are classed as unstratified)**

### Post-medieval pottery

345 small finds from the site were recorded as post-medieval pottery, though the number of sherds is higher since a small find number could represent several sherds from a single context. Most of the material recovered in 1992–93 was from the Period 7 cultivation soils or topsoil. There were a small of small finds (eight sherds in total) that were intrusive in contexts of an earlier date, notably from the Period 6 buildings and quarry (Contexts 104–5, 129, 141 and 1145,) and from Period 5 deposits (Contexts 203, 480, 1010, 1016, 1089 and 1110). Given that the site had a very shallow build-up of deposits, which had been extensively ploughed from the time of the dissolution onwards, this is hardly surprising. The post-medieval pottery recovered in 1995–96 was all from Period 7 plough-soils and the topsoil in Trench B. This material was assessed in 1996 and was not thought to merit any further research.

YEAR	CONTEXT AND PERIOD	NUMBER OF SMALL FINDS
1992–93	Unstratified	38
1992	1 Period 7	2
1992	2 Period 7	2
1992	5 Period 7	5
1992	7 Period 7	1
1992	11 Period 7	49 (including one sanitary ware)



1992	101 Period 7	14
1992	104 Period 6 priory	1
1992	105 Period 6 drain	12
1992	106 Period 7	3
1992	115 Period 6 quarry	1
1992	129 Period 6 drain	1
1992	141 Period 6 quarry	1
1992	200 Period 7	26 (including one pipe)
1992	203 Period 5	1
1992	216 Period 7	28
1992	360 Period 7	5
1993	480 Period 5	1
1993	1000 Period 7	100 (including one pipe and two sanitary wares)
1993	1001 Period 7	2
1993	1002 Period 7	4
1993	1003 Period 7	24
1993	1010 Period 5	2
1993	1016 Period 5	2
1993	1089 Period 5	2
1993	1110 Period 5	1
1995/6	4000 Period 7	6
1995/6	4001 Period 7	1
1995/6	4002 Period 7	4
1995/6	4004 Period 7	1
1995/6	4007 Period 7	4
1995/6	4009 Period 7	1

**Table 3 Post-medieval pottery from the Fey Field excavations (contexts not allocated to a block/set are classes as unstratified).**

## 9 THE ARTEFACT ASSEMBLAGE

The artefact assemblage includes an important collection of early medieval glass objects and metal working debris. The remaining material (metal work and other finds comprising tools, structural fittings, dress accessories and other items) is generally very similar to material recovered in previous excavations at Glebe Field in 1984–91 (Hill 1997) and of types fairly commonly found on sites of the early medieval and medieval periods.

### 9.1 Early medieval imported glass

By E. Campbell

#### 9.1.1 Vessel Glass

There are 25 sherds of early medieval imported glass, and a further ten sherds which possibly belong to this class. These have been assigned to Campbell's groups (Campbell 2000), and to

individual vessels. As with the pottery imports, it is not possible to say whether these vessels are additional to those found in Hill's excavations as they could not be compared side by side. The vessels belong to Groups A–D, with none being from Group E which may have been made at Whithorn. This perhaps supports the view that the Group E vessels were being produced in the vicinity of the Glebe Field concentration of Group E sherds, which was associated with fused glass (Campbell 1997, illus 10.9). The range of vessel forms and colours present is otherwise similar to that in Hill's excavations.

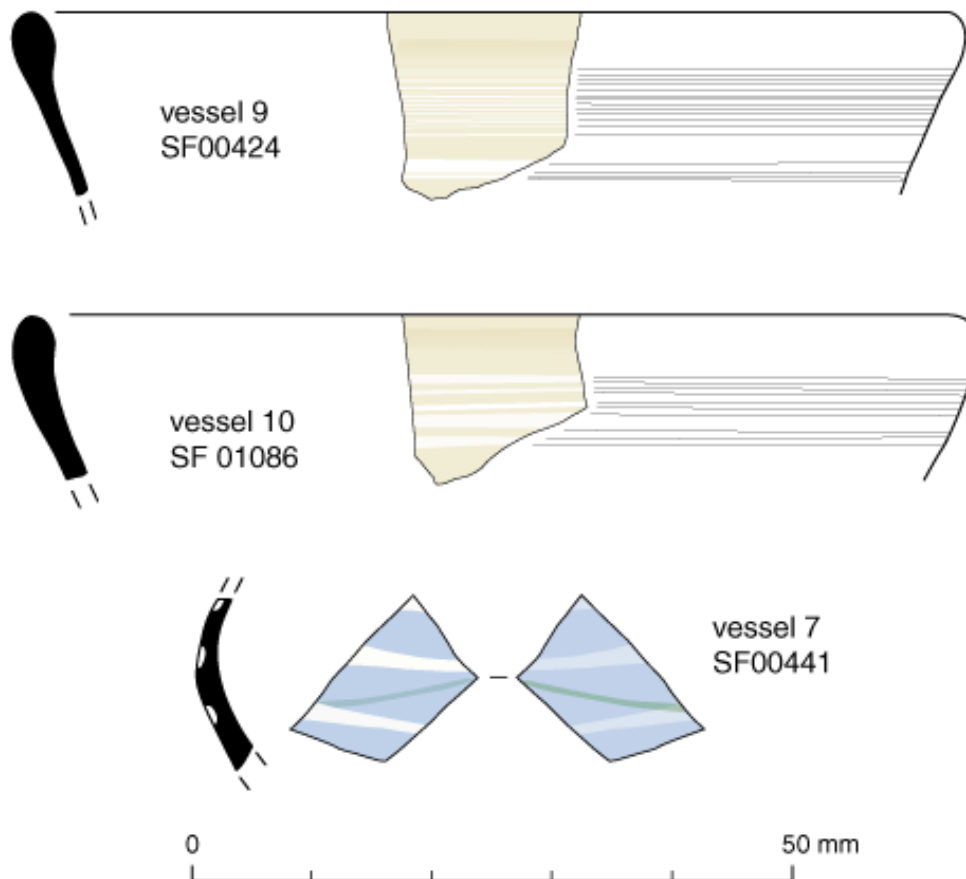
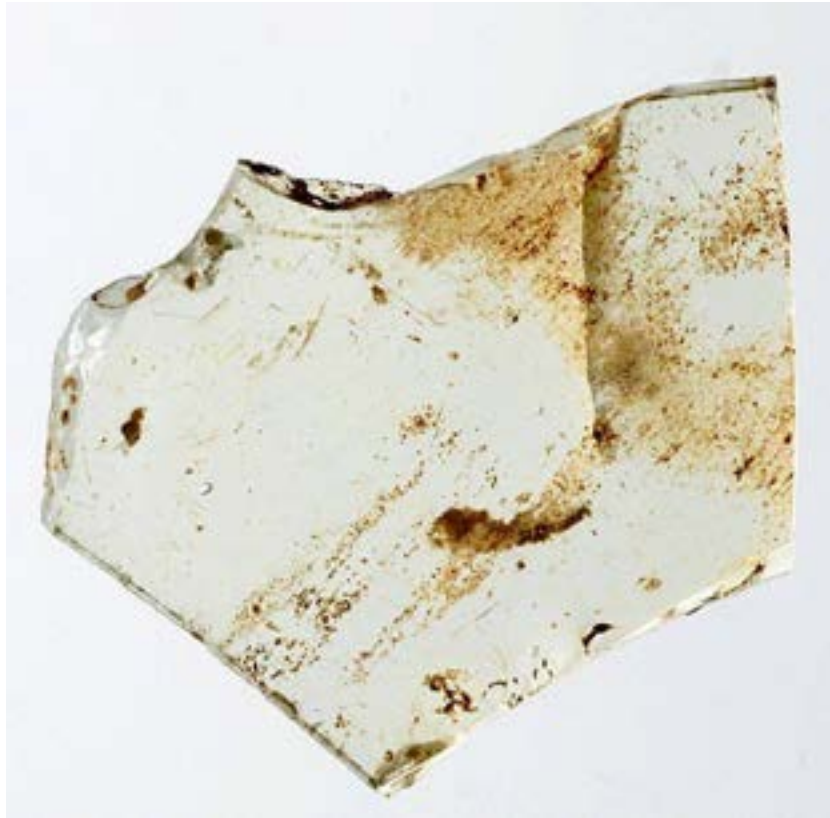


Figure 24 Vessels 8-10



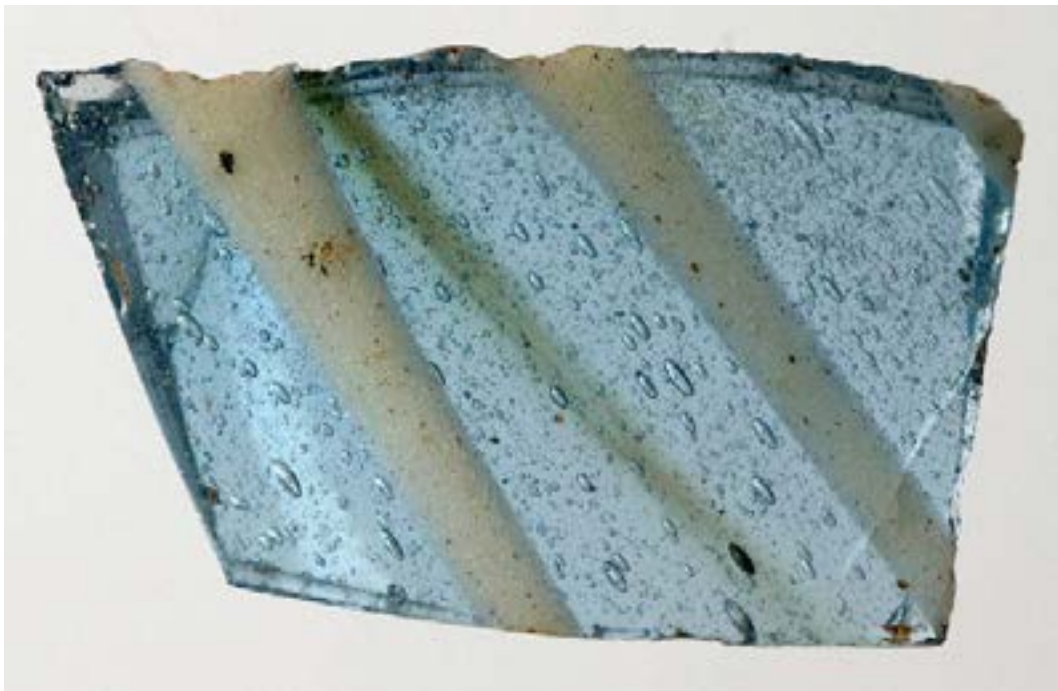
*Vessel 2 SF00411*



*Vessel 4 SF01222*



*Vessel 6 SF36400*



*Vessel 8 SF00441*



*Vessel 9 SF00424*



*Vessel 10 SF01086*

There are sherds from two vessels of Group A Mediterranean tradition (Vessels 1 and 2). These vessels, with wheel-cut, abraded or engraved decoration including inscriptions, are a feature of Late Roman Britain and the Continent (Price 1995), but they are also found in post-Roman contexts in Britain, for example in 5th- and 6th-century Anglo-Saxon graves (Price 2000), as well as in the Atlantic area at Tintagel, Cadbury Congresbury and Trethurgy (Campbell 2007, 56–8). The quantity found at Whithorn supports the view that these are imports of the 6th century, brought in alongside the Mediterranean pottery. The production area is unknown, but they are found throughout the western Mediterranean, Iberia and western France.

The Group B Germanic tradition is represented by one vessel. Vessel 3 has mould-blown decoration, and is probably from a 6th-/7th-century palm cup similar to Vessel 9 from the Glebe Field excavations (Campbell 1997, illus 10.5). This vessel could have been imported from the Continent, or overland from Anglo-Saxon England by routes which brought an increasingly recognised quantity of material to Atlantic areas (Campbell forthcoming).

Group C, the decorated Atlantic tradition, is represented by ten sherds from at least seven vessels. Vessel 4 is in an unusual pale wine colour, which is matched at the Mote of Mark (Campbell 2006, 108, vessel 2). The other vessels are decorated with opaque white trails, characteristically marvered into the surface of the vessel. Vessel 6 belongs to the group with pulled festoons (Group Cc), and Vessel 8 to those with vertical chevrons (Group Cb). Vessel 8 is a rare blue version of this type, matching two from the earlier excavations (Campbell 1997, 303, vessels 18 and 19). All these vessels appear to have been produced in western France, and date to the 6th and 7th centuries (Campbell 1995). Group Cb can be shown to be contemporary with the main phase of importation of E ware at Whithorn, probably in the early 7th century (Campbell 2007, 106–7). The Group Cc vessels may be slightly earlier, belonging to the later 6th century, overlapping in date with the Mediterranean pottery imports.

The final sherds belong to the undecorated Group D Atlantic tradition, and comprise twelve sherds from at least three vessels. Again these are 6th-/7th-century imports from western France.

These vessels are fragile luxury items, and their presence in large numbers at Whithorn is perplexing if the site was purely monastic in function.

### 9.1.2 *Beads and other glass objects*

95/SF00191 is a large black annular bead decorated with a running wave in opaque white. This general type is common in pagan Anglo-Saxon graves, Guido's type 2via (Guido 1999, 20, pl 2). The type is widely distributed in England, though this example is unusual in its wide perforation, and it remains a possibility that this is a 'Celtic' local bead.

95/SF00563 is a turquoise biconical bead of a widespread early medieval form. Similar colours of glass were seen in unstratified beads from Dunadd (Guido in Lane and Campbell 2000, 176, nos 154, 155). Guido considered these might be 8th-/9th-century Scandinavian or Frankish imports, but they may be local products as similar coloured vessel sherds were found at Dunadd and Birsay (Campbell 2007, 63–4).

93/SF07700 is a globular yellow translucent bead of Guido's type 1v, a type common in pagan Anglo-Saxon 5th-/6th-century graves, though these are usually annular in form (Guido 1999, 14).

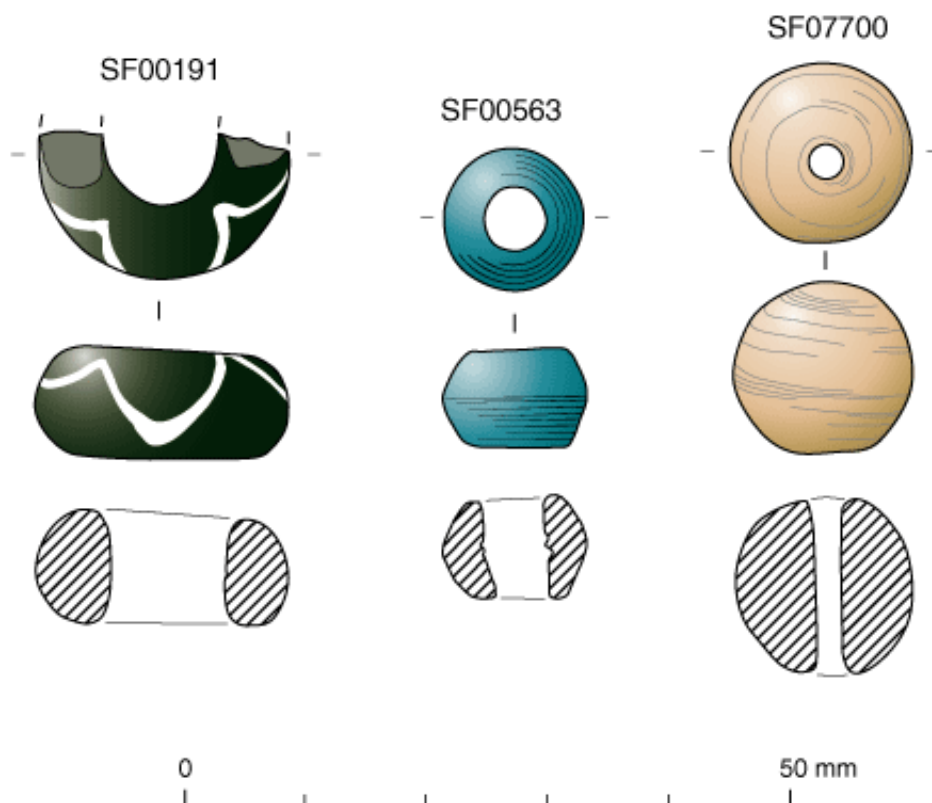


Figure 25 Glass Beads



SF00191

92/SF03000 is a blue biconical bead of a long-lived type. It is not culturally diagnostic, though it is crudely formed and may have been locally made. 92/SF47101 may also be locally made, but is too decayed to be diagnostic.

93/SF02100 is an opaque yellow glass tessera. A dozen examples in various colours, including one in yellow, came from the Glebe Field excavations, mainly from the Period IV 12th-/13th-

century deposits, though one comes from Period 1 (Hill 1997, 296). Their ultimate origin lies in the mosaics of the Mediterranean region, and many were imported into Scandinavia in the 8th/9th century for bead making at sites like Ribe, Jutland. Other examples of these glass tesserae have been found at Dunadd in a 7th-century context (Lane and Campbell 2000, 173) and Brough of Birsay (Hunter 1982, 47; Campbell 2007, 78). Thus although this tessera was probably made in the Late Antique period, its date of importation to Whithorn cannot be determined.



SF00563





SF03000



SF07700



SF02100

That there are two or three possible Anglo-Saxon or Frankish beads in the assemblage is perhaps surprising, but these could have been imported by the same overland route as the glass vessels of Group B (Campbell forthcoming). Glass beads of Anglo-Saxon type have been found at numerous localities in Scotland, mainly in the south-east, but in other regions as well (A. Blackwell pers. comm.). Dunadd has produced at least one (Guido in Lane and Campbell 2000, 176). It is unfortunate that the beads from Hill's excavations have not been studied for comparative material (Hill 1997, 292).

### 9.1.3 *Catalogue*

#### **Imported glass vessels**

##### **Glass Group A**

###### Vessel 1

93/SF32700 Bodysherd of wheel-engraved glass forming pattern of parallel lines. Very pale blue-green. 13 x 10mm, T 1mm. WH93, 1009.

###### Vessel 2

95/SF00411 Bodysherd with wheel-engraved decoration, probably part of a letter. Colourless. 11 x 14mm, T 1mm. WH95, 2150.

**Glass group B**

## Vessel 3

95/SF00395 Bodysherd with moulded rib. Metal pale yellow, fine. 8 x 11mm, T 1mm. WH95, 2151.

**Glass Group C**

## Vessel 4

95/SF01222 Bodysherd of wine-coloured glass. Metal fine, few bubbles. 20 x 22mm, T 1–2mm. WH96, 2576.

## Vessel 5

92/SF43701 Bodysherd from near rim of decorated cone-beaker. Metal pale yellow, few bubbles. Decoration of horizontal marvered opaque white trails in two bands, the upper with four trails. 39 x 7mm, T 1.5–2mm. WH92, 146.

## Vessel 6

93/SF36400 Bodysherd of vessel with decoration of marvered opaque white trails pulled into festoons. Metal fine, colourless. 10 x 16mm, T 0.5mm. WH93, 565.

## Vessel 7

92/SF30000 Bodysherd from near rim of cone beaker. Decorated with bands of marvered horizontal opaque white trails. Metal very pale yellow-green, few bubbles, surfaces cloudy. Rim D 80mm, 24 x 15mm, T 2mm. WH92, 146.

## Vessel 8

95/SF00441 Bodysherd from near base of cone beaker. Decorated with marvered opaque white trails in vertical chevrons. Metal French blue, fine, bubbly. Basal D c.25mm, 9 x 14mm, T 1–3mm. WH95, 2161.

92/SF42100 Bodysherd with decoration of bands of marvered horizontal opaque white trails. Metal blue, fine. 9 x 4mm, T 1mm. WH92, 271.

## Vessel 9

95/SF00424 Rim of cone beaker, decorated with bands of marvered horizontal opaque white trails. Metal pale yellow, fine. Rim inturned and thickened. Rim D c.80mm, 14 x 15mm, T 1–3mm. WH95, 2150.

## Vessel 10

95/SF01086 Rim of cone beaker, decorated with bands of marvered horizontal opaque white trails. Metal pale yellow, fine. Rim inturned and thickened. Rim D c.70mm, 13 x 14mm, T 1–3mm. WH96, 2333.

**Unassigned sherds**

95/SF00371 Bodysherd with vertical opaque white marvered trail. Metal pale yellow. 11 x 12mm, T 1mm. WH95, 2099.

95/SF01240 Bodysherd with part of vertical chevron in opaque white part-marvered trail. Pale green, with black impurity. 7 x 9mm, T 1–2mm. WH96, 2591.

#### **Glass Group D**

##### Vessel 10

95/SF00678 Large sherd from near base of heavy cone beaker. Pale aquamarine, fine, no bubbles. D 30mm, 36 x 25mm, T 3mm. WH95, 2142.

95/SF01077 Bodysherd of cone beaker. Surface discoloured. Pale aquamarine. 18 x 20mm, T 2–2.5mm. WH96, 2333.

95/SF01275 Bodysherd of cone beaker. Surface discoloured. Pale aquamarine. 29 x 16mm, T 1.5–2mm. WH96, 2333.

##### Vessel 11

92/SF34304 Rim of cone beaker. Rim fire-rounded and thickened. Light olive green, fine, few bubbles. Surfaces cloudy. Rim D 80mm, 18 x 13mm, T 1–2mm. WH92, 360.

##### Vessel 12

95/SF00512 Bodysherd. Metal fine, bubbly, shiny surface. Very pale greenish-yellow. 15 x 16mm, T 1mm. WH95, 2190.

#### **Unassigned sherds**

95/SF00560 Bodysherd. Pale green. 10 x 8mm, T 1mm. WH95, 2207.

95/SF01121 Bodysherd from near base of cone beaker. Yellow, abraded. 25 x 15mm, T 2mm. WH96, 2442.

95/SF01225 Tiny bodysherd. Pale green-yellow. 7 x 5mm, T 1mm. WH96, 2571.

95/SF01508 Bodysherd. Pale yellow. 23 x 10mm, T 1mm. WH96, 2709.

93/SF29500 Bodysherd. Pale yellow. 13 x 14mm, T 1mm. WH93, 1032.

93/SF33900 Bodysherd. Colourless. 11 x 7mm, T 1mm. WH93, 1037.

93/SF43600 Bodysherd. Pale yellow. 14 x 15mm, T 1mm. WH93, 1066.

#### **Unidentified or uncertain early glass**

95/SF00409 WH95, 2150.

92/SF00506 WH92, 5.

95/SF00586 Rim, inturned with internal lip. Black, fine, shiny. ?modern. 13 x 6mm, T 2mm. WH95, 2112.

95/SF00706 WH95, 2234.

92/SF00800 WH92, 11.

92/SF01340 WH92, 11.

93/SF14800 WH93, 523.

93/SF25400 WH93, 552.

92/SF29605 WH92, 216.

93/SF49800 WH93, 1074.

### **Beads and miscellaneous glass**

95/SF00191 Half of a large annular glass bead. Black (actually very dark green) body with opaque white wave decoration. D 20mm, H 9mm, perforation 10mm. WH95/0191, 4000.

95/SF00563 Complete biconical wound glass bead. Turquoise bubbly glass. D 11mm, H 7mm, perforation 5mm. WH95/563, 2170.

93/SF02100 Irregular tessera of opaque yellow glass. 9 x 8mm, T 7 mm. WH93/021, 415.

92/SF03000 Complete irregular biconical small glass bead. Bright blue with many bubbles. Has marks of tongs and is distorted. D 10mm, H 6mm, perforation 2mm. WH92/030/00, 101.

93/SF04800 Complete barrel-shaped glass bead. Bright blue transparent glass, few bubbles. Probably modern. D 8mm, H 7mm, perforation 2mm. WH93/048/00, 1000.

93/SF05919 Complete elongated bead, black opaque glass. Probably modern. L 20mm, D 7mm, perforation 2mm. WH93/059/19, 1000.

93/SF07700 Complete irregular large globular wound glass bead. Amber translucent glass, surface devitrified. D 14mm, perforation 3mm. WH93/077, 1003.

93/SF18700 Sherd of thick layered glass. Pale blue-green, badly decayed and devitrified. 17 x 11 mm, T 11mm. WH93/187/0, 1003.

92/SF47101 Complete small annular glass bead. Glass bubbly, decayed and devitrified, original colour perhaps translucent green. D 9mm, H 4mm, perforation 4 x 2mm. WH92/471/01, 240.

## **9.2 Metalworking waste**

### **By C. Mortimer**

[J. M. McComish writes: *The large amount of metal working debris included much that was effectively unstratified. Very large quantities also came from contexts, such as the various cemeteries and the later medieval quarries, where they were clearly residual. It was therefore decided to concentrate analytical effort on material emanating from well-stratified contexts associated with metal working, found among the settlement deposits excavated in 1992–93. The data show that metal working was carried out here as early as Period 3 (6th–early 8th centuries). In terms of numbers of small finds, there is more debris from Period 4 (c.730–845) than from Period 3, and Period 5 (c.845–1250/1300) has approximately the same amount as Period 4. How much of the Periods 4 and 5 material is residual from Period 3 is unknown. There are also substantial quantities of debris from the Period 6 (c.1250/1300–16th century) quarry pits and from Period 7 (16th century onwards) horticultural soils; these items too are thought to be residual. The metal working debris is listed by period in Appendix 8 ].*

The excavations yielded a range of metal working debris types, mainly relating to high-temperature working of iron and copper alloys. Sketch plans show significant remains of iron working hearths in Blocks 9 and 15 (Contexts 98 and 146). The samples have had a chequered post-excavation history. In particular, some classes of debris were reported on in detail at interim stages, e.g. crucibles from 1995 (A. Nicholson archive report), others were catalogued

and examined but not collated into a final report, e.g. iron working debris (R. Chadburn archive reports), and some material types just have catalogue entries, e.g. lead working waste. In earlier catalogues, quantification for slag and furnace lining is available mostly in the form of number of 'lumps', rather than weights, although some samples were certainly weighed at the time. There are variable amounts of context information available. This report is an attempt to collate what evidence is available.

#### 9.2.1 *Copper-alloy waste*

Material from the 1992–93 excavations was examined, comprising 29 small finds (30 individual pieces). Several of the fragments were too small to weigh with the available scales, but the other fragments have a total weight of 92g. The material proved to be approximately equal amounts of sheet metal and casting waste. The thickness of the sheet metal samples range from 0.3–1.8mm, mostly irregular in outline, but there are folded (92/SF16225) and triangular (92/SF20105) examples and one item which is a folded circle (93/SF12702). Sheet fragment 92/SF45200 has an irregular outline but was cut by shears or snips along one side and has a sub-rectangular hole punched in the middle. Casting waste is in the form of drops and short runs. One piece (from 92/SF16225) has tool marks on it. One item may be a crushed cast from the ingate area (92/SF45400) and another could be a poor-quality casting (92/SF5404). A small bar (92/SF40000) could be an ingot. The material thus demonstrates both casting of copper alloys and sheet metal working.

Of the 22 copper alloy fragments that the 1995–96 excavations produced, only two were identified as copper-alloy slag (96/SF667) and working waste (95/SF1398). These items were catalogued earlier but not re-examined for this report.

#### 9.2.2 *Lead-alloy waste*

Material from the 1992–93 excavations was examined, comprising 36 small finds (about 112 individual fragments) with a total weight of 658g. For the purpose of this report, lead alloys include any metals which appear lead-rich; without analysis it is normally impossible to tell whether an artefact is mainly lead, a lead-tin alloy or mainly tin. Within the 1992–93 excavations, there are two main types of lead waste: casting waste and sheet metal. Casting waste, in the form of dribbles and irregular blobs, is the more common type. In many cases, it is not possible to say much about the processes involved in producing these items and they may be due to accidental melting of lead artefacts or spillage during casting (see e.g. 93/SF17405). However, it is noticeable that there are several examples with tong-like tool marks (92/SF5412, 93/SF10313, 93/SF12016, 92/SF16225 and 92/SF22514), so these pieces were evidently worked after melting. One small chunky piece of waste seems to be an offcut (92/SF41000). The sheet or strip metal fragments have a range of thicknesses, from 0.6 to 4.0mm, although most are between 1.0 and 3.0mm. Some of the sheet pieces are folded (93/SF7261, 92/22515) or exhibit cut marks or cut edges (93/SF4818, 92/SF21406, 92/SF22514 and 93/SF56102). A few have distinctive shapes, for example circular (93/SF12702) or triangular (93/SF12017, 93/SF12018 and 92/SF20105), and one is a rectangle with a circle cut from it (93/SF12017). Finally, there is a small collection of lead ore, probably galena (92/SF34801). The material thus demonstrates sheet metal working and the probable casting of lead alloys.

Six lead alloy items were noted from 1995, including waste in the form of spillage; these items were not re-examined for this report. Two pieces of sheet (95/SF1053 and 95/SF1131) and one

spillage (95/SF1425) were noted from 1996. Both sheet fragments were folded and one had cut marks.

### 9.2.3 *Crucibles and fired clay*

The 1992–93 and 1995–96 excavations yielded an important collection of crucibles and other fired clay items relating to metal working. The approximate number of crucible small finds are listed below (Table 4) by excavated date, along with the other relevant fired clay items. The number of small finds is only partial evidence; normally the weight of the material would be presented but this was not possible. There is also some confusion in initial catalogue listings where items are noted as slag, but further detail in the catalogue suggests that they are in fact crucibles, vitrified furnace lining or other fired clay. However, where the listing gives first ‘slag’ then ‘hearth lining’ this is taken to mean vitrified hearth lining (see below).

Form	Date of excavation	
	1992–93	1995–96
Crucible	4+17 (7 +1?)	36
Mould	1+2 (3?)	2+2?
Furnace lining/ vitrified furnace lining	70 (29)	59 (4)
Tuyère	0 (1? Reclassified)	8*
Other probable refractories		1

**Table 4 Number of small finds linked to metal working, identified as crucible, possible crucible (?) etc., with (in brackets) the number of small finds examined for this report**

\* three appear under the keywords as tuyères and five have tuyère mentioned in the description.

#### Crucibles

From the 1992–93 excavations, seven crucible fragments and one possible crucible fragment were examined for this report; a further fifteen examples from these excavations were listed earlier and not available for re-examination. An archive report was available for the fourteen crucibles and one possible crucible from the 1995 excavations (Nicholson 1996); these samples were not re-assessed for this report. There seem to have been about fourteen further crucibles in 1996 (giving a total of 29 for 1995–96), but there is no report and these were not available for examination.

The examined examples from 1992–93 are of at least two different types. One crucible fragment (93/SF401) has a very thick wall (13.7mm). It has distinctive layers of external slagging and was so heavily fired that it now has an irregular shape, but it is possible to estimate a diameter of about 80mm at the opening. 93/SF47800 is a fragment from a similar crucible. 92/SF13022 is a small baggy, thumb pot style, with vitrification inside and out. Of a comparable size and form, 92/SF33000 is a lid with a handle. 93/SF04303 is a tiny fragment of a similar form. 93/SF21800 is a complete example of a tiny (33mm high) thumb pot style crucible with an oval cross-section. Its surfaces are covered in red vitrification and copper-alloy deposits. Fragment 92/SF42708 is from the pouring lip area of a small crucible with relatively thin walls (4.3mm). 92/SF44006 is too small to discuss in detail but it has red glazing on one side.

Some of the 1992–93 examples are likely to be very similar to those from the 1995 excavation (Nicholson 1996), which were described as ‘lengthened hemispherical type lacking handles (Tylecote [1986] type B1)’ although no crucibles with lids were found in 1995. Crucibles with lids

were a distinctive feature of early medieval metal working in Scotland and Ireland, and were the most common type found at Dunadd (e.g. Lane and Campbell 2000, 106–33). Lids prevented debris falling into the melt and allowed the melt to retain some more volatile elements, such as zinc in zinc-containing alloys.

Crucibles found in the Glebe Field excavations had their metallic deposits investigated using X-ray fluorescence analysis (XRF) by Gilmour (1993) and Gooder (1993). These studies showed that copper alloy, silver and gold were melted in the crucibles. A similar range of metals were melted at Dunadd, with the lidded crucibles often being preferred for silver alloys, whereas copper alloys were equally likely to be melted in either lidded crucibles or more bowl-like crucibles (Lane and Campbell 2000, table 5.5).

### **Moulds**

Two clay moulds were reported (95/SF681 and 95/SF702) from the 1995–96 excavations; a further item initially identified as a stone mould (93/SF 66003) is a plough-damaged stone. Two possible clay moulds were also identified in the 1995–96 excavations (95/SF223 and 95/714). None of these pieces was re-examined for the current report. A further three pieces of fired clay (92/SF38103, 93/SF400 and 93/SF18602) from the 1992–93 excavations were identified as possible moulds during the re-examination.

Fired clay moulds are well known from contemporary sites, such as earlier excavations at Whithorn (Hill and Nicholson 1997) and Dunadd (Lane and Campbell 2000).

### **Other refractory items**

Nicholson (1996) suggests that one of the items identified above as a mould (95/SF681) could alternatively have been a cupel or parting vessel. Cupels and parting vessels were used for working precious metals. Cupellation (separating precious metals from base metals) relied on heating the impure alloy with plentiful lead, which, on heating, would react with the less noble metals and separate them off from the gold or silver. Parting (separating silver and gold) relied on the reaction between silver and salt in a sealed container. 16–22 Coppergate, York, is the classic early medieval site for cupels and parting vessels (Bayley 1992, 748–54).

A further three ceramic pieces have vitrification; their colour suggests connection to non-ferrous metal working (95/SF1, 95/SF1376 and 92/SF13124). These may be refractories of some sort or just furnace lining.

#### *9.2.4 Ironworking slag and vitrified furnace lining*

Some 813 small finds were initially identified on catalogue listings as ‘slag’. Although it was not possible to re-examine all this material, it is obviously important to establish what types of slag material were present. In about 72 cases, the slag finds are also given a ‘furnace lining’ description, making it clear they are related to furnace or hearth lining, with the initial identification of ‘slag’ relating to the evidence of vitrification due to contact with high temperatures. A re-examination of 29 samples, mostly from the 1992–93 excavations, made it clear that vitrified furnace lining is also to be found listed under ‘glassy cinder’. This latter term is used about 88 times in the 1993 catalogue, but not in the 1992 or 1995–96 catalogues, so this material type was probably more frequently found, although sadly not recorded. In fact the 1995–96 listings rarely have any details of the type of slag, apart from the occasional comment ‘hearth bottom’ (fifteen times) or ‘furnace lining’ (three times), which tends to imply that the



remainder is iron working slag of some kind. Furthermore, not all the re-examined items listed as 'furnace lining' proved to be vitrified or even highly fired and thus, without context evidence, it would only have been possible to classify them as 'fired clay'. Two 1993 samples are described as 'bear' (93/SF 43902 and 93/SF59004). These are 'materials other than furnace lining that has been used in construction of a furnace or hearth' (Chadburn 1993), and is probably material such as stones, pebbles, or possibly mortar, used as packing. It would seem that 'about 200' small finds relating to furnace lining would be a good estimate.

The archive report (Chadburn 1993) shows that furnace lining samples from the 1992 excavations were all weighed at the time, totalling 4.154kg; it should be noted that these are likely to be just the items listed as 'furnace lining' in the initial catalogue. Most of this material came from Blocks 3 and 15 (with 1.382kg and 2.142kg, respectively), where furnaces/hearths were recorded. The 1993, 1995 and 1996 material may also have been weighed previously but this data is not available. However, 'furnace lining', as well as 'glassy cinder' (some of which may be vitrified furnace lining), was quite common in the 1993 listings, suggesting that at least another 4kg may have been excavated during this year's excavations. As noted above, 'slag' with the further detail of 'furnace lining' was rare amongst the 1995–96 small finds.

Vitrified furnace linings, as with slag, had no use after the metal working process finished, and so tended to be cleared away from the working area as far as possible. The presence of 8kg or more supports the idea of intense metal working activity at the site, and could be used to suggest that the furnaces were quite substantial or were replaced quite frequently.

Much of the vitrified furnace lining at the site was found attached to iron working slag. These are quantified and discussed under 'slag', below, where iron working slag forms the majority of the sample. Five samples from 1992 have the additional detail of 'bronze' or 'copper' noted in the initial catalogue. In some other cases, it is not possible to tell whether the vitrification is the result of iron working or non-ferrous metal working, either because it was not recorded or because there is no attached iron working slag or traces of copper alloy debris. Both iron working and copper alloy melting would produce quantities of vitrified furnace lining, as the clay lining of the furnace or hearth walls reacted with ashes at a high temperature.

### **Tuyères**

A tuyère is the hole in the side of the furnace or hearth, through which air is forced to increase the temperature inside. Tuyères were often made of clay and fired as separate units, and then placed in the furnace wall as it was built up; these could be replaced when burnt out. Alternatively a hole could simply be bored through the furnace wall. One cylindrical fired clay item from 1995 (95/SF43) was described as 'possibly caused by the boring out of a hole in the wall of a furnace to allow insertion of the tuyère' (not re-examined). In the 1995 excavations, there were a further eight items noted as tuyère fragments amongst the furnace lining and fired clay material (Nicholson 1996). Three of these (95/SFs158, 216 and 519) are described as having a smooth curved face representing the tuyère hole. These were not re-examined. A further vitrified clay sample (93/SF03900) from the 1993 excavations was initially identified as a tuyère; this was re-examined and certainly seemed to have been deliberately shaped, although it was not particularly diagnostic, in that no distinct hole area could be seen.

### **Other fired clay**

Some of the other fired clay at the site had been fired at a high temperature, so may have been produced during metal working, although there is no clear evidence for this, in the form of metallic deposits.

### **Ferrous metal working slags**

Iron smelting removes the majority of the unwanted material from the ore, allowing the iron to form a 'bloom' within the smelting furnace. This bloom would be further refined to remove more of the slag inclusions, and then worked up by the smith to form iron artefacts. Iron smelting, refining and smithing each create iron working slags; it is usually difficult to tell which process created an individual piece of slag although some deductions can be made when there is a larger collection, as at Whithorn. The classic slag for iron smelting is tap slag, characterised by a ropey structure, which can sometimes be found as runners, small cakes or as large blocks. Iron ores, where found, are also diagnostic of iron smelting. The classic slag for iron smithing is the smithing hearth bottom, the slag formed just under the tuyère, often of a plano-convex form. Microscopic slags in the form of hammerscale are also important diagnostic iron smithing slags. Smelting, refining and smithing will all produce many other slags which are less easy to categorise.

When the furnace lining samples are removed from the 813 'slag' entries, together with the slag/vitrified furnace lining samples which are predominantly furnace lining, there are over 600 samples which are likely to be iron working slags. In the 1992 listing, these are mainly described as 'lumps' or 'crumbs', with occasional 'hearth bottom.' In the 1993 listing, these terms are used again, with the addition of 'glassy cinder' (probably mostly furnace lining (see above)) and 'crystalline cinder.' In 1995–96, the 'slag' material is mainly qualified only with 'fragment', but it seems reasonable to assume that much of this is probably small pieces of iron working slag of some sort.

Thirty samples from 1992, 29 from 1993 and 41 from 1995–96 were re-examined and identified as being iron working slag, or predominantly so (where attached to furnace lining). The total weight of these 100 samples was 24.6kg. The key iron working activities were within the areas excavated in 1992 and 1993, so we can assume that average sample weights in 1995–96 were likely to have been smaller. Even allowing for this, the total weight of iron working slags recovered may have been as much as 100kg, which is a considerable amount.

The re-examined samples mainly consisted of slags most likely to have come from smithing (including some smithing hearth bottoms) and less diagnostic iron working slags. There was a sample of spherical hammerscale (93/SF5001) to add to four other samples of hammerscale (95/SF01298, 92/SF10923, 92/SF03505 and 93/SF62201) previously identified but not re-examined. There were no clear examples of iron ore.

Most notable was the very large hearth bottom fragment (92/SF42705). Although this was not complete, it weighed 2.1kg, and was at least 155mm wide and 90mm deep. This was found in Context 146, Block 15, the iron working hearth, along with at least another 7kg of iron working slag (including two further partial hearth bottoms weighing 174g and 99g (92/SF47700)) and more than 2kg of furnace structure. Six other large smithing hearth bottoms range from 302g (93/SF65201) to 1.2kg (92/SF18404).

Finally, there are 54 samples of slaggy material (1.8kg) which are not clearly derived from iron working. Some of these are very likely to have resulted from iron working, which can produce a wide variety of slag types. A few samples were noted to have a 'runny' texture (92/SF1170, 95/SF1313 and 95/SF1444), but these only weigh 37g together, so could have been one of the wide range of iron smithing slags, rather than relating to irons melting.

#### 9.2.5 *Resources available for study*

Clarke, A, 1996. 'Whithorn Priory: 1995 Excavations Archive Report Volume 1', *York Archeological Trust Field Report*; Finds catalogues for slag (8.3.3) and fired clay (8.3.4)

Clarke, A, 1997. 'Whithorn Priory, Dumfries and Galloway', *York Archaeological Trust Field Report Number 23*; includes finds catalogues for copper alloy, lead alloy and slag.

Chadburn 1993 'Phase 2 Slag categories, January 1993'.

- List of categories of metal working waste, with some explanations of terms.
- Hearth bottom, furnace lining and smithied iron debris. Tabulated by block number, giving number [of lumps?]; same data also in graph form.
- Furnace lining. Tabulated by block number, giving number [of lumps?] and weight; same data also in graph form.
- Furnace lining. Data for above.
- Metal working finds and evaluation, conclusion and plans'. General outline of iron production, with some reference to Whithorn.
- Sketch plan of metal working hearth in Block 9, Context 00072.
- Sketch plan of 'smithy hearth on 146 next to section' Block 15.

Chadburn 1992–93 'Furnace on eastern edge of excavation'.

- Half page written summary of observed features.
- Sketch plan and section showing relined furnace/hearth (with metre scale).
- Sketch plan of 'Area B' (no scale, contexts, or north given).

### 9.3 **The Artefacts**

**By N. S. H. Rogers**

A report on selected small finds

#### 9.3.1 *Craft and industry*

##### **Metal working**

These tools took two main forms, either tapering from one end to the other, and being struck on the head, or having two tapering arms, one being a tang for a handle (Ottaway 1992, 515). Two punches without tangs were identified: 95/SF677 was found in Set 213 (Fig. 26), Period 4, grave fill, although it seems unlikely to relate to the burial, while 93/SF24700 was found in a Period 5 level. These tools would have been used by a smith, being either held in the hand, or gripped by tongs, and used to make holes in hot iron.

There were two possible tanged punches, 92/SF17815 and 92/SF39606, the latter being found in an area associated with smithing in Period 3. While possibly used in metal working, other potential functions include wood, leather or bone working (Ottaway 1992, 517).

Thirty-three punches were recovered from previous excavations at Whithorn (Hill 1997, 421–2).

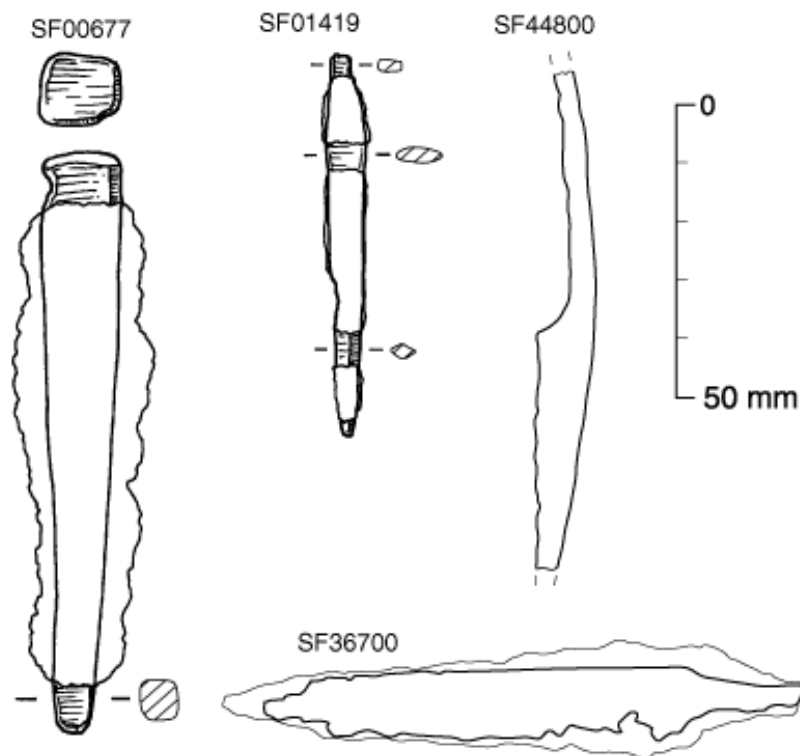


Figure 26 Iron tools

### Leather working

#### Awl

95/SF1419 (Fig. 26) is a tanged awl, unstratified, but similar to tanged awls found previously in levels of the Northumbrian period (Glebe Field Period II) at Whithorn (Hill 1997, 422). The diamond-shaped section of the working arm of 95/SF1419 indicates that it was used in leather working (Ottaway 1992, 552–4).

### Textile manufacture

#### Spindle whorls

Two stone spindle whorls (92/SF11904, 95/SF496) are both discoidal, and both poorly made. 95/SF496 is a crudely cut disc, which may be unfinished, while 92/SF11904 has an off-centre perforation. The whorls weigh 20g (92/SF11904) and 27g (95/SF496), and have diameters of 39.5mm and 38.5mm respectively. These both fall into the range of weights of 4.1–29g and diameters of 36–40mm noted on a group of 23 stone whorls found in previous excavations, all of which were thought to have been used in the spinning of fine threads (Hill 1997, 449). 95/SF496 was recovered from a Period 4 graveyard levelling deposit, and may pre-date most of the whorls from the earlier excavations which were concentrated in late 9th- to mid-13th-century levels (Hill 1997, 450). A third stone spindle whorl (92/SF1390, not seen) was present in the topsoil. A shale spindle whorl (95/SF619) was also recovered from a Period 4 grave (not seen).

## Thimble

93/SF07168 (Fig. 27) is a fragmentary copper-alloy thimble which appears to be hand-made rather than machine-made, suggesting a possible medieval date.

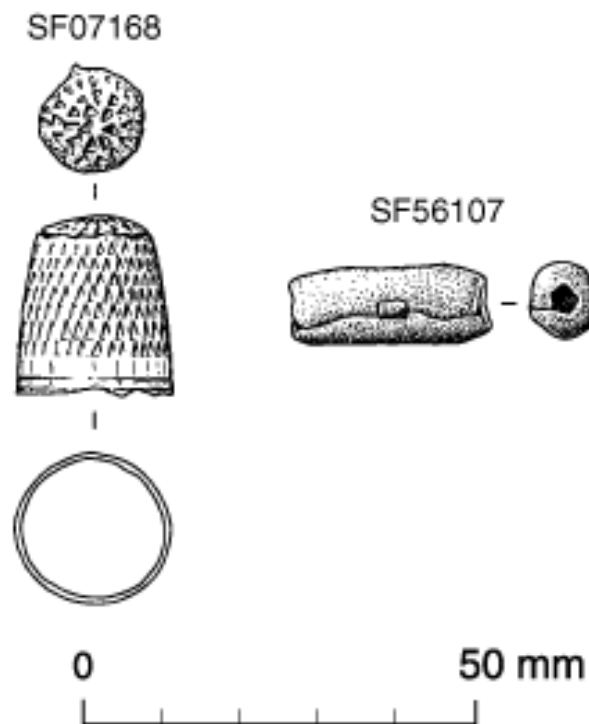


Figure 27 Non-ferrous metal tools

## Other tools

### Hones

A hone, in two adjoining fragments (93/SF22400/SF22401) is incomplete, with the lower end broken off, but the upper end retains a perforation which contains an iron loop for suspension. Other possible hones and hone fragments include 93/SF08701, 93/SF04305 and 95/SF00627. 95/SF00627 was found in Period 4 grave fill. Almost 100 hones were recovered in previous excavations at Whithorn, including beach cobbles which were thought to have been deliberately collected for use as hones, with many apparently unworked cobbles considered to be 'hone blanks' (Hill 1997, 453). Very large non-portable bar hones thought to have been used in workshops (ibid., 454) were also identified, and chronological distributions of all the hones suggested concentrations in Glebe Field Periods I and III. (Cobbles and/or pebbles were also found in the 1992, 1993 and 1995–96 excavations, but these have not been individually studied.)

A further five hones were identified by Nicholson during the 1995–96 post-excavation work. 95/SF9 was a quadrilateral flake of greywacke (which occurred as a residual find in the topsoil), and 95/SF22 a greywacke cobble with fine longitudinal scratches found during the initial cleaning of the trench in 1995. Neither of these two hones required any additional shaping prior

to use. The third hone (95/SF210) had a squared section, tapering squared off ends and a biconical perforation for a suspension thong. Nicholson noted that this find was mislaid during the course of the excavations. The fourth hone (95/SF1550) was a fragment of greywacke with several light score marks which occurred as parallel lines 1.22mm apart. 95/SF627 was a quadrilateral fine-grained greywacke hone with longitudinal striations.

An additional eleven stones may represent hones, though these were not seen during the 2007 research. 92/SF14910 was a fractured fragment of a hone, 92/SF59300 was an unstratified fragment of grooved greywacke, 92/SF06203 and 92/SF44200 were quadrilateral stones, and 92/SF9032 was a possible fragment of a rounded hone as was 92/SF21604. 92/SF45303 was a fragment with possible sharpening grooves, and 92/SF51600 was an ovoid stone with a smooth surface and possible striations. Less certainly hones, 92/SF24100 was a possibly natural stone and 93/SF14723 and 93/59300 were grooved fragments. Most of these were unstratified or from topsoil, but two were from Period 4 (93/SF24100 and 93/SF44200), one from Period 5 (93/SF51600) and one from Period 6 (92/SF14910). 92/SF57203 was a quadrilateral fragment, possibly a hone.

### Knives

Whittle tang knives incorporate a tapering tang which was driven into a socketed handle. Only two knives with identifiable whittle tangs were found at Whithorn. On 95/SF732 most of the blade has been broken off, but remains of the wooden handle survive; it was recovered from Period 6 levelling. 92/SF36700 (Fig. 26) retains its blade, which has a back which appears horizontal before the blade tapers to the tip. Ottaway divided whittle tang knives into five forms, A–E, and 92/SF36700 is most similar to his form C (Ottaway 1992, 559). This form was the most frequently identified amongst knives from both Anglo-Scandinavian and medieval levels at sites in York (Ottaway 1992, 584; Ottaway and Rogers 2002, 2753), and amongst knives recovered in previous excavations at Whithorn (Hill 1997, 427).

Scale tang knives had a handle formed from two plates which were riveted to a flat tang, this form being an innovation of the 13th century (Ottaway and Rogers 2002, 2751), and in use alongside whittle tang knives in the medieval period and beyond. Both scale tang knives found at Whithorn (92/SF04101 and 92/SF9700) could be medieval or later.

### Shears

An arm fragment from shears (92/SF44800, Fig. 26) has a triangular blade; similarly shaped shears' blades found in London dated to the 13th century (Cowgill *et al* 1987, 106). A complete pair found in previous excavations at Whithorn was also thought to be 13th century (Hill 1997, 429–30), and two shears' blades, and a third possible shears' blade which were found together in Period IV buildings were taken as indications of cloth processing (Hill 1997, 429–30). Other possible applications include cutting leather or use in personal grooming (Ottaway and Rogers 2002, 2749).

### Fishing weights

A cylindrical lead-alloy weight, formed from rolled sheet (93/SF56107) (Fig. 27) is probably a net sinker, used to weight down a hand net (Rogers 1993, 1320). Other possible fishing weights are 92/SFs22516, 92/SF38400, 92/SF39800, all of which are perforated lead-alloy discs, weighing

12–51g. Previous excavations at Whithorn produced five cylindrical weights, three of which came from early 8th-century graves (Hill 1997, 394), and also one discoidal weight (Hill 1997, 395, LD09.10). 92/SF38400 was found in a Period 5 level.

#### Querns

A possible prehistoric saddle quern (95/SF00626) was found in a Period 4 grave fill, and a possibly contemporary rubbing stone (95/SF00039) was found in a Period 5b level. A rotary quern fragment (95/SF00532), thought to be part of an upper stone, was found in modern levels. If contemporary with rotary querns previously recovered on the site, 95/SF00532 is likely to date from the period of the 10th–14th centuries (Hill 1997, 459).

Nicholson identified a possible rubbing stone from a saddle quern during the 1996 post-excavation analysis. This fragment, 95/SF00039, was a coarse-grained quartz sandstone cobble of volcanic origin, which is fractured on several faces. A broad convex face shows evidence of wear, probably attributable to a grinding process.

### 9.3.2 *Structural items*

#### Window lead

Fragments of medieval window lead or ‘comes’ were found during both the 1992 and 1993 excavation campaigns (92/SF02700, 92/SF 07914, 92/SF08810, 92/SF16107, 92/SF16226, 92/SF16227, 92/SF20117, 92/SF24514, 92/SF26027, 92/SF30501, 92/SF31600, 92/SF39318, 92/SF40306, 93/SF10312, 93/SF11904, 93/SF2015, 93/SF13700 and 93/SF15612).

#### Window glass

Fragments of medieval window glass were also recovered (92/SF8804, 92/SF8900, 92/SF9100, 92/SF10811, 92/SF11100–2, 92/SF11800, 92/SF13804, 92/SF15504, 92/SF17202, 92/SF17500, 92/SF19000, 92/SF19904, 92/SF24300, 93/SF06437 and 93/SF07600). Most of the fragments are unfortunately in poor condition, and the original surface has often been lost, so no traces of painted motifs or designs survive.

The glass and window comes probably represent fragments discarded during the replacement of windows, but no clear distribution of the fragments is evident to indicate whether any of the comes and glass are from the same episode of building work. It seems most likely that the majority of the glass and comes were associated with the structures of the medieval priory (Period 6), although at least one window come fragment was retrieved from a Period 5 deposit (93/SF13700).

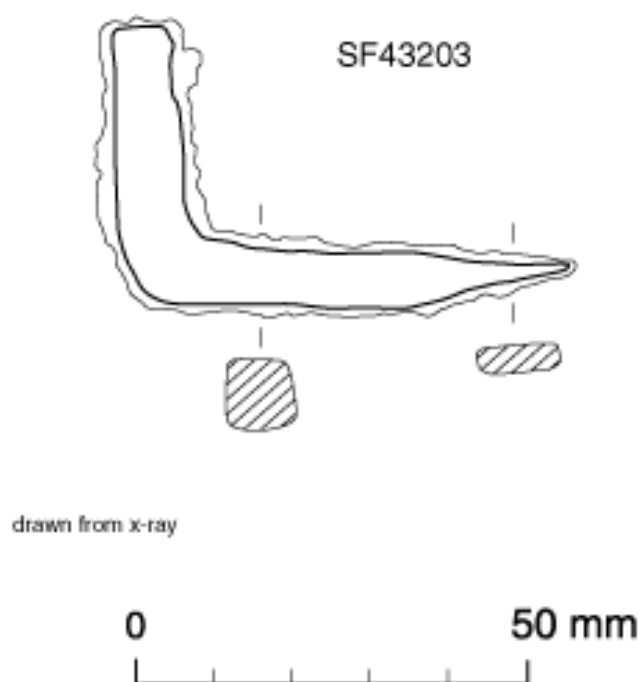
It should be noted that 8th- to 9th-century window glass was recovered during previous excavations at Whithorn (Cramp 1997, 326–32).

### **Other structural items and fittings**

#### Hinge pivots

Two iron hinge pivots were recovered (92/SF40201, 92/SF43203; Fig. 28). 92/SF40201 is fragmentary, but 92/SF43203 appears largely complete. These fittings comprise a shank, which would be driven into a jamb or frame, and a guide arm, which fitted into the eye of the hinge.

They were used on gates, doors and shutters; 92/SF43203 appears to be the right size for hanging a shutter.



**Figure 28 Iron hinge pivot**

#### Stapled hasp

92/SF24511 is a fragmentary iron stapled hasp, which would have secured the lid of a chest or casket. The staple slotted into the face of the box, while the upper end of the hasp was attached to the lid. It appears to have been plated, probably for decorative purposes; the use of tin plating was also noted on most of the stapled hasps found on three medieval sites in York (Ottaway and Rogers 2002, 2844).

#### Staples

Four U-shaped staples were found (92/SF39607, 95/SF180, 95/SF00347 and 95/SF01340). The earliest is probably 92/SF39607, which came from a Period 3 deposit.

#### Nails

Large quantities of nails were found, but are not detailed here. Nails associated with coffins are discussed in section 9.4.

#### Clench bolts

Six clench bolts and a separate rove were found across the site: 92/SF09612, 92/SF 13306, 92/SF14004, 92/SF22102, 92/SF39500, 92/SF40203 and 93/SF38100. These bolts were used for joining timbers in ships, doors and other items (Ottaway 1992, 615–18).

#### Lighting



Two iron fittings comprise two different forms of candleholder. 92/SF06202 has a socket into which a candle could be inserted, while 92/SF34201 is a pricket, with a central spike onto which the candle would be impaled, and decorative scrolled arms to each side of the spike. What both forms have in common is a shank, which could be driven into a wooden base. Both forms were identified on medieval sites in York, coming mainly from 12th- to 14th-century deposits (Ottaway and Rogers 2002, 2855–6), while a pricket similar to 92/SF34201 was found in medieval levels in previous excavations at Whithorn (Hill 1997, 430, 76.1).

### 9.3.3 Security

92/SF20114 (Fig. 29) is an iron key which would have opened a fixed lock with a sliding bolt held secure by a tumbler (a possible tumbler fragment, 95/SF647, was recovered from Set 115 grave fill, and may have been from a lock on a chest re-used for burial). 92/SF20114 is complete apart from the bow, which was originally oval, and has a bit in line with the end of the stem which is hollow. This form of key was used in the Northumbrian period, but also continued on in use into the medieval period (Ottaway and Rogers 2002, 2867). Five similar keys were found in the previous excavations, the earliest dating to the 12th–13th century (Hill 1997, 416).

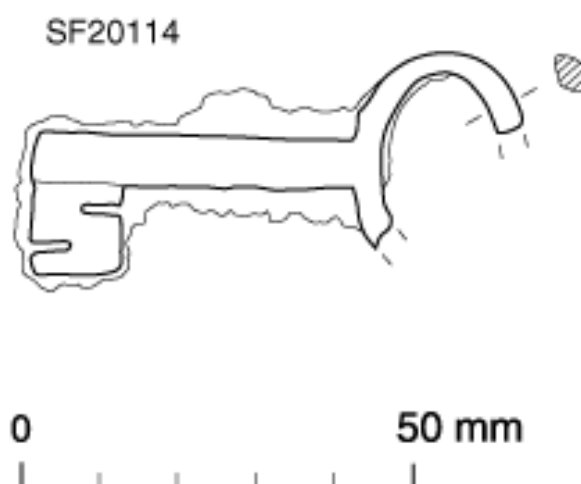


Figure 29 Iron Key

### 9.3.4 Dress and dress accessories

#### Gold and silver threads

Numerous lengths of spirally twisted gold strip were found alongside several short fragments of possible silver wire (93/SF04700). The tiny gold foil strips may originally have been twisted around a fibre core, which has now disintegrated, and may have been used in weaving or applied embroidery (Cramp 2006, 229).



*Some of the gold thread of SF04700*

Spiralled gold thread came into use in the late 7th century, and similar threads to 93/SF04700 have been found in a Saxon burial at Wearmouth, where it was thought they may have formed part of a gold woven headband (Cramp 2006, 229). Gold threads found at Barking Abbey, Essex, were thought to have been part of a nun's apparel or ecclesiastical vestments (Webster and Backhouse 1991, 88–9, 67a). It is likely therefore that 93/SF04700 represents a fragment of high-status woman's clothing.

### **Buckles**

Buckles of iron and of copper alloy were found. 92/SF39610 is an iron D-shaped buckle, found within the remains of the Period 3 settlement; the D-shape is a long-lived buckle form, frequently found in the Roman period (Manning 1985, 147), and common on mid-9th- to 11th-century sites (Ottaway 1992, 683).

A medieval buckle (92/SF26808; Fig. 30) is of copper alloy, and is sub-oval with an offset pin bar. This form was identified in deposits of the 12th–early 15th century in York (Ottaway and Rogers 2002, 2889). Also possibly medieval, 92/SF26406 is an annular iron buckle with central pin bar; it was found in a Period 5 level.

The double-looped copper alloy shoe buckle (92/SF07600) has decorative notching on all sides, and is mid-16th- to mid-17th-century in date.

### Strap-end

92/SF2900 (Fig. 30) is a two-piece strap-end, with a thick rectangular terminal decorated on all four sides with incised cross-hatching. The two pieces have been riveted together at both ends, and unusually the cross-hatching had been done after the riveting together of the two pieces, as the decoration cuts into one of the rivets. No parallel for this strap-end has been identified, but two-piece strap-ends appear to be typically 13th- to 15th-century in date (Ottaway and Rogers 2002, 2902).

### Penannular ring

An iron penannular ring (92/SF37101; Fig. 30) was found in the same Period 3 deposit as the iron buckle 92/SF39610 (see above). One terminal has broken off, but the other is spirally coiled in the same plane as the ring, which has been formed from a twisted rod or wire. This ring is possibly part of a penannular brooch which has lost its pin, being similar to one of three iron penannular brooches recovered in the previous excavations at Whithorn and dated to the earlier 7th century (Hill 1997, 419, IN42.1).

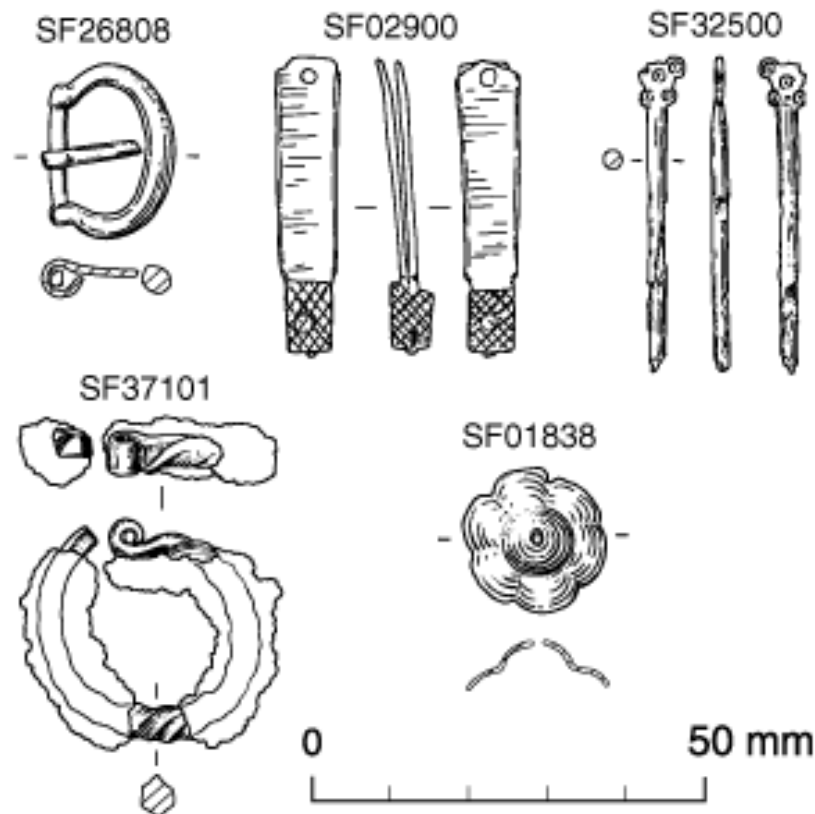


Figure 30 Dress accessories

### Pins

#### Dress or stick pin

92/SF32500 (Fig. 30) is a copper-alloy dress pin with a decorative head, which was found in a context sealing Building 11/H of Period 4b. The head takes the form of an inverted flattened trapezium with rounded projections at the four corners, although one projection has been broken off. Each projection has a ring-and-dot motif within it; a fifth ring-and-dot is in the centre of the head. Although over 50 copper-alloy pins were found in previous excavations at

Whithorn, including several with flattened or spatulate heads, none precisely parallels 92/SF32500, and most came from levels dated to Glebe Field Periods IV or V (Hill 1997, 365, BZ14.12–23), which considerably post-date the context in which 92/SF32500 was found. There also appears to be a lack of parallels for 92/32500 from other sites, but a post-mid-9th-century date may be proposed based on its context.

#### Pins with wire wound heads

Five copper-alloy pins with this head form were recovered, all from contexts associated with the Period 6 priory (92/SF4100, 92/SF7201, 92/SF9800, 92/SF23804, 92/SF5200). Although such pins are found in medieval levels, these pins are more typically of 16th-century or later date (Ottaway and Rogers 2002, 2915–16). Similar pins found in previous excavations at Whithorn were thought to have continued in use on the site into the 18th century (Hill 1997, 361).

#### Lace tags

In the medieval period, laces were used to fasten clothing and on accessories such as bags, and were tipped with copper-alloy tags to prevent the ends fraying. These tags are often recovered, and the 1992 and 1993 excavations produced a total of 22 (92/SF1001, 92/SF2100, 92/SF2300, 92/SF4000, 92/SF5503, 92/SF5700, 92/SF8401, 92/SF8600, 92/SF9200,

92/SF9300, 92/SF9301, 92/SF10307, 92/SF11200, 92/SF11201, 92/SF11404, 92/SF11801, 92/SF14102, 92/SF15905, 92/SF16800, 92/SF27000, 93/SF1200 and 93/SF27700), most coming from levels associated with the Period 6 priory. Previous excavations at Whithorn produced 144 such tags, the earliest of which appeared to date to the mid-14th century, their use continuing on to the 16th century (Hill 1997, 375).

#### Wire loop fasteners

These simply made copper-alloy loops with twisted ends are thought to be another form of medieval dress fastening, typically appearing in 15th- and 16th-century contexts (Ottaway and Rogers 2002, 2921). Three examples were found in the 1992 and 1993 excavations (92/SF2400, 93/SF11300 and 93/SF11700). Of seventeen found in previous excavations at Whithorn, eight were thought to have come from burials (Hill 1997, 384).

#### Mounts

Decorative copper-alloy mounts were applied to various items of dress including belts and girdles, as well as to harness, books and small pieces of furniture. None of the Whithorn mounts was recovered in situ, but similar examples from York were found on a possible sword-belt, girdle and dog collar (Mould, Carlisle and Cameron 2003, 3393–5).

Five copper alloy mounts from the 1992 excavations (92/SF07100, 92/SF08110, 92/SF09500, 92/SF20104, 92/SF39602) and one from 1993 (93/SF09835) are domed, all with an integral rivet or central perforations for insertion of a rivet. These were recovered from deposits of Period 3 (92/SF39602) to Period 6 (92/SF07100 and 92/SF09500) at Whithorn, while similar mounts were found in Saxon and medieval deposits in Jarrow (Cramp 2006, 242, CA75–85).

A variant is the circular petalled mount, such as that with six-petals (sexfoil), of which 92/SF01838 (Fig. 30) is an example. Five similar mounts were recovered in previous excavations at Whithorn, and were all thought to have come from a belt of the late 14th or early 15th century (Hill 1997, 375–6).

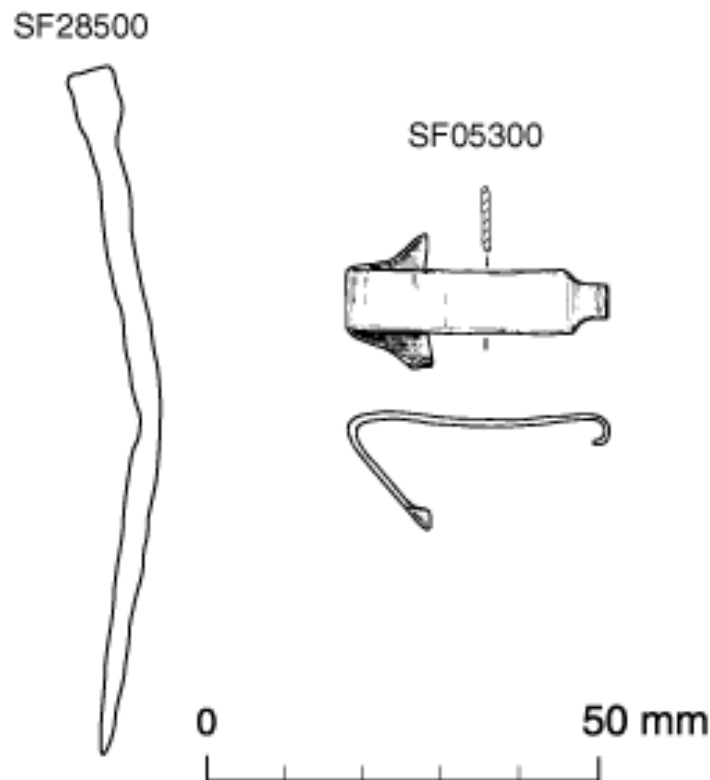
Two other incomplete mounts were found: 92/SF17802 may be a bar mount, a narrow rectangular form which often extended the complete width of a strap (Ottaway and Rogers 2002, 2907), while 92/SF18801 may have been circular originally, and appears gilded.

### Tweezers

A pair of copper-alloy tweezers (92/SF12400) was recovered from the probable main priory drain dating to Period 6. Simple tweezers such as 92/SF12400 are difficult to date, as the form is essentially the same in the Roman and medieval periods (Egan and Pritchard 1991, 383); the paucity of other Roman material from the site suggests perhaps that it is more likely that these are medieval. 92/SF02800 may also be a tweezers fragment.

#### 9.3.5 *Objects associated with literacy*

92/SF28500 (Fig. 31) was identified from an X-ray plate as an iron stylus with a wedge-shaped eraser at one end, the shank tapering to a point at the other. This form was in use in both pre- and post-Conquest periods for writing on wax tablets (Ottaway 1992, 607; Goodall 1991, 132), although T-shaped styli are more common in the medieval period (Goodall 2006, 287). Similar iron styli recovered from the previous excavations at Whithorn were thought to derive from disturbed Period IV workshop debris, and were interpreted as possible tools for marking out masonry (Hill 1997, 425).



**Figure 31 Stylus and book clasp**

A copper-alloy book clasp fragment (93/SF05300; Fig. 31) is of a form seen on a book at Sudeley Castle, Gloucestershire, dated 1429, and typically recovered archaeologically from 15th- or 16th-century contexts (Ottaway and Rogers 2002, 2938). Such clasps have been found on both ecclesiastical sites, such as the College of Vicars Choral, Bedern, York (Ottaway and Rogers

2002, 2936–8, 14480), and on secular sites, including 31–51 Pottersgate, Norwich (Margeson 1985, 58, fig.39, 28).

Two slate pencils were found in the topsoil deposits (92/SF3637 and 93/6502).

### 9.3.6 *Gaming*

A stone fragment (93/SF09400) has an inscribed miniature gaming board on it. The board is of the form used to play merels or nine men's morris, a game played with pebbles or counters, and popular across Europe in the medieval period (Brown 1990, 695). The stone fragment is approximately 75mm across, but a full-size board could measure approximately 400mm across. It seems possible that the fragment provides a diagram from which a full-sized version could be copied. A second stone fragment with possible incisions may represent a gaming board: 93/SF13111 has some incised lines, but it is unclear if these were part of a gaming board or are tally marks of some kind.

A stone marble (92/SF1856) was present in the cultivation soils of Period 7.

### 9.3.7 *Other finds*

A possible tessera, made of jet probably from the Whitby area of North Yorkshire, was recovered during the 1995 excavations (95/SF410) from a Period 5a build-up deposit. The use of jet is very unusual in Scotland, particularly in a context of this date (Hunter in 1995/96 Whithorn Assessment Report), although another fragment of Whitby jet was recovered from the previous excavations (Hunter and Nicholson in Hill 1997, 441–3).

### **Arrowheads**

Three iron arrowheads were identified. From X-ray it can be seen that 92/SF24411 (Fig. 32) is barbed and socketed; it was found in a Period 5 level. This form of arrowhead has been described as multi-purpose, because it could have been used for hunting or warfare (Jessop 1996, 197, MP6). This form may have had a long period of use, as Jessop suggests it originated in the mid-12th century (Jessop 1996, 197), but several examples found in York came from 14th- and 15th-century levels (Ottaway and Rogers 2002, 2967–9). The other two arrowheads (92/SFs08808, 16220) have blades of square or rectangular section which taper to a point, and are more likely to have been used militarily (Jessop 1996, 197–8, M5/6). 92/SF08808 (Fig. 32) was recovered from a Period 6 building. This form of arrowhead originated in the pre-Conquest period (Ottaway 1992, 714), but continued in use into the 14th century (Jessop 1996, 198).

Both of these forms of arrowhead have been found previously at Whithorn: most of the fourteen arrowheads recovered were thought to have originated in Period IV debris, and eleven were of Jessop's military form M5/6 (Hill 1997, 430).

### **Horse equipment**

Fragments of three horseshoes were found, and these have been typed according to the forms identified by John Clark in his study of medieval horse equipment from London (Clark 1995, 85–91). Two of the fragments (92/SF41300 Fig. 32; 93/SF14717) are of Clark's Type 2 (Clark 1995, 86), with their characteristic wavy outer edges and countersunk nail holes. The third fragment (92/SF24408) is of his Type 3, also with countersunk nail holes, but a smooth outer edge (Clark 1995, 86–8). Horseshoe nails associated with these forms of horseshoe were also recovered: nineteen nails had fiddle-key shaped heads (see for example 92/SF17811), a form of nail used

on horseshoes of both Types 2 and 3 (Clark 1995, 86–7). Twenty-three nails had trapezoidal heads (see for example 92/SF07909), associated with Type 3 horseshoes only (Clark 1995, 87). Clark dated his Type 2 horseshoes from London to the mid-11th to the mid-13th century, and Type 3 to the 13th–14th century (Clark 1995, 96).

Horseshoes from previous excavations at Whithorn included one fragment possibly dated to the 8th century (Hill 1997, 421, IN48.1), although horseshoes of pre-mid-11th-century date are rare (Ottaway 1992, 709). Fiddle-key headed nails were concentrated in Period IV deposits, however, and some were thought to indicate possible farriers' workshops (Hill 1997, 407–8).

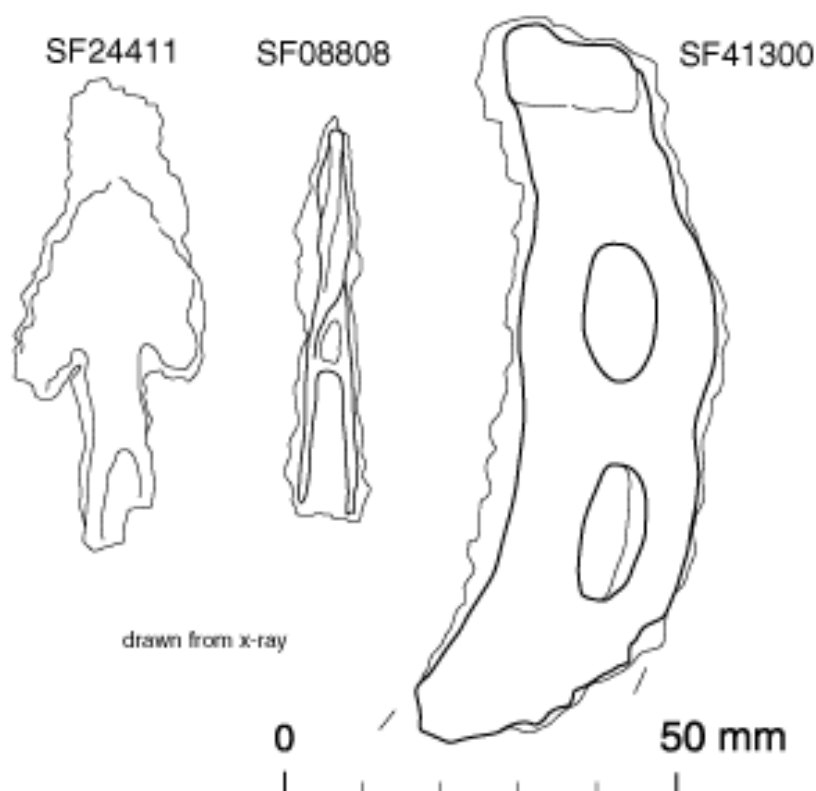


Figure 32 Arrowheads and a horseshoe

#### 9.4 Chest and coffin fittings from the 1995-96 excavations

By N.S.H. Rogers

Iron fittings from chests were recovered from two burials of Period 3 (Sets 39, 54), and from eleven burials dating to Periods 4a (Sets 73, 106, 115, 132, 167, 190, 249, 250), and 4b (Sets 181, 213, 219). Other types of deposit dating to Periods 4 or 5 also produced similar fittings; these include spoil, graveyard levelling and deposits of intergrave material, some – or all – of which probably derived from disturbed burials

The fittings include corner brackets (also known as angle irons), hinge straps, and parts of other straps which would have bound wooden chests. These chests were probably re-used as coffins.

##### 9.4.1 The fittings

###### Corner brackets

Thirteen corner brackets were identified; these would have been used to strengthen the joins at corners of chests. The brackets consist of two arms at right angles to each other, with rounded terminals at each end which were nailed to the chest. Four of the surviving brackets are complete (95/SF633 Fig. 33, 95/SF634, 95/SF641, 95/SF644 Fig. 33), and all come from the same burial (Set 115). Three of the four brackets (95/SF633, 95/SF634, 95/SF641) have arms of unequal length, while those of 95/SF644 are roughly equal. Similar brackets were found in burials at Whithorn in earlier excavation campaigns of 1984–91 (Hill 1997, 412–15); study of these brackets suggested that where the arms were of unequal length, the longer arm corresponded to the longer face of the chest (*ibid.*, 413). Most of the thirteen brackets recovered in 1995–96 differ slightly in form from the brackets found previously at Whithorn, which were described as typically having arms which narrowed to the terminals (*ibid.*, 415). The arms of the brackets found in 1995–96 appear predominantly straight and parallel to each other. This straight-sided form has been seen elsewhere on chest burials, however, at Monkwearmouth (Clogg 2006, 300), Ailcy Hill, Ripon (Ottaway 1996, 101–3), Dacre, Cumbria (Ottaway forthcoming b), and Thwing, East Yorkshire (Ottaway forthcoming a). At Thwing, both forms were recognised in use (*ibid.*).

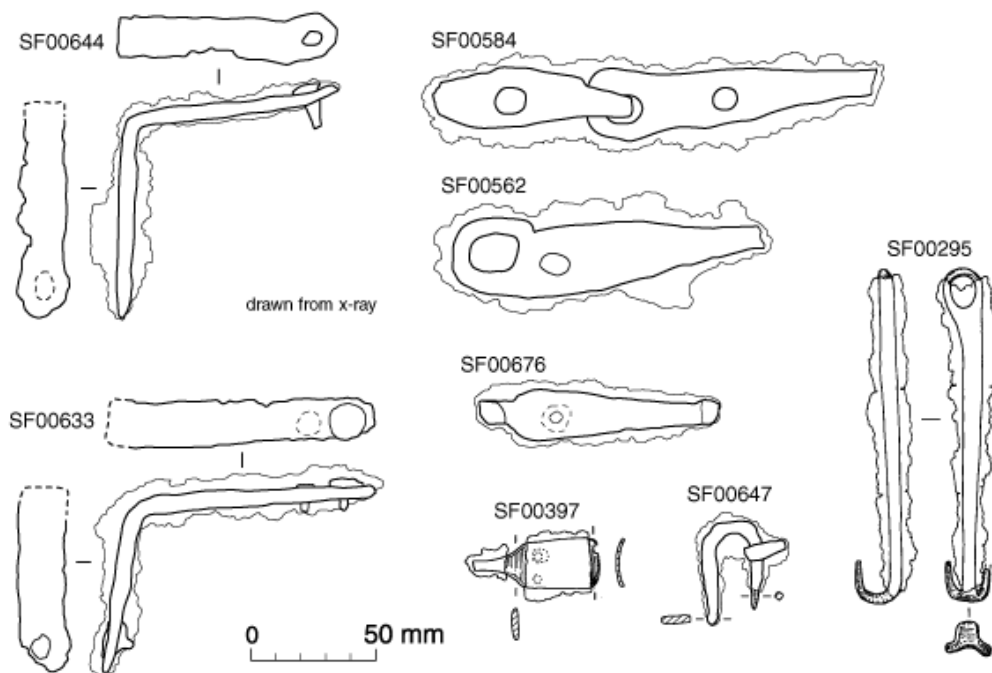


Figure 33 Coffin fittings

### Hinge straps

Pairs of hinge straps were used on chests to attach the lid to the main body. One strap, component A, was curved over at the head to form a loop which was linked to an eye at the head of the second strap, component B. This eye was formed by drawing out the head of the strap, looping it round and then welding the tip back onto the strap; this formed a stronger eye



than that created by punching a hole in the strap which could lead to the splitting of the metal. Component A straps were nailed to the lid of a chest and component B straps to its rear. Twenty seven finds from Whithorn represent hinge straps, including three pairs of linked straps (95/SF584 Fig. 33, 95/SF616, 95/SF629), six component A straps (95/SF446/637, 95/SF545/582, 95/SF589, 95/SF676 Fig. 33, 95/SF1253, 95/SF1413), two possible component A straps (95/SF214, 95/SF345), and five component B straps (95/SF296, 95/SF562 Fig. 33, 95/SF1252, 95/SF1083, 95/SF1438). Straps 95/SF1253 (A) and 95/SF1252 (B) were found together and may have originally been linked. 95/SF 637 comprises linked ends from which the straps have broken off.

For both components, the commonest form of the strap has straight sides which taper slightly from the head to the base, which comprises a rounded, perforated terminal (95/SF676, 95/SF296), but other examples appear to have parallel sides (95/SF1412), and one possible strap fragment has a squared-off end (95/SF1254). These forms have been noted elsewhere, in the cemeteries cited above (see corner brackets), although only the component B form of strap appears to have been identified previously at Whithorn (Hill 1997, 413). Conversely, figure-of-eight-shaped hasps recorded previously at Whithorn (*ibid.*), were not identified amongst the 1995–96 material.

### **Other strap fragments**

Twenty-two finds are of strap fragments. Most of these comprise one rounded perforated terminal, with the remainder of the strap or bracket broken away. These may have originally been part of hinge straps or corner brackets, or possibly other forms of strap; some of the chest burials at Ailcy Hill appeared to have straps with rounded terminals at both ends which may have acted as strengthening straps (Ottaway 1996, 106, fig. 25).

### **Locks and keys**

#### Locks

Two forms of fixed lock were in use at this period; both employed a sliding bolt, which in one form was held secure by a tumbler, and released by a key which was twisted in the lock, and in the other was secured by springs and released by a slide key. The way in which the bolts worked has been described by Ottaway (1996, 108–10).

Elements from both types of lock, and also a slide key, were found at Whithorn.

#### Lock with tumbler

95/SF647 (Fig. 33) is probably a tumbler fragment, with part of the stem and looped end surviving. It was recovered from Set 115 grave fill, and is presumably from a lock on the chest re-used for burial.

#### Locks with sliding bolts and springs

Two bolt fragments from this form of lock were found (95/SF397, Fig. 33), one (95/SF397) being from the Set 250 grave. 95/SF397 has two holes in it, into which a slide key with two prongs on an L-shaped bit would have been inserted. Holes are not visible on 95/SF1373, but its form indicates that this was also part of such a lock bolt, and a similar bolt was found in earlier

Whithorn excavations (Hill, 1997, 413–15, 5.14). 95/SF1373 was found in Period 4 intergrave material, so may derive from a disturbed burial.

#### Key

95/SF295 (Fig. 33) is a slide key, which would have operated a lock with sliding bolt and springs. It was found in Period 5a levelling over the graveyard, and could derive from a disturbed burial; a similar key was found resting on the base of a coffin in a burial uncovered in earlier excavations at Whithorn, where it was thought to have fallen from the decayed lid (Hill 1997, 413, 2.20).

#### Nails

Amongst the nails recovered was a copper-alloy nail found in the Set 84 burial (95/SF01171, see 9.2.1), although it is unclear whether it was from a chest. 95/SF498 is the only nail with plating from a phased deposit, in Period 4 levelling for the graveyard. The head appears to have been tinned. Plated nails were found in burials uncovered previously at Whithorn, where they were thought to have been used on some coffin brackets and hinges (Hill 1997, 413). 95/SF498 may derive from a disturbed burial.

Ottaway notes that the tinning of iron objects developed during the 8th century (Ottaway 1996, 100).

Although nails were found in a number of burials, it is most likely that these were used to attach fittings such as hinges and brackets rather than in the construction of the chests themselves (see below).

#### 9.4.2 *Coffin fittings in relation to stratigraphy*

##### **Period 3**

Set 54 was the only burial from this period with good evidence for a coffin. Iron fittings comprise 95/SF1557 and 95/SF1575, both of which are parts of corner brackets or hinge straps, a further perforated strap fragment (95/SF1476), and three nails (95/SF1088 [2 nails] and 95/SF1476). Set 39 produced a nail (95/SF1494), and a perforated strip (95/SF1561), both of which are less certainly parts of coffin fittings.

##### **Period 4a burials**

Six burials from this period produced probable coffin fittings, some of which had been recorded on plans as they were recovered.

Set 115 contained six corner brackets, one pair of linked hinge straps, and a fixed lock fragment. Recording on site at the time of excavation noted two angle brackets on the north-western corner and one on the south-western corner (see 6.4.3).

Another burial with several coffin fittings was Set 132 in which three hinge straps, a corner bracket, and three other strap or bracket fragments were found. Three of the straps are shown on the original site plan, located in the uppermost portion of the grave fill and presumably originally attached to the coffin lid. Two were placed along the northern edge of the grave, and the third was located centrally within the grave (see 6.4.3).

Sets 167, 190 and 250 each produced one strap, while a corner bracket was found in Set 249. According to site records, the single bracket present in Set 249 was located at the base of the

grave, on the northern edge midway along its length (see 6.4.3). Set 250 also produced a lock bolt.

Most burials also produced a small number of nails; these were most likely to have been used to attach the fittings to the coffins, which were probably jointed together with wooden dowels or pegs (Watson 1996, 113). The large number of nails (seventeen) found in Set 73, however, may suggest that the chest was, at least in part, nailed together. Site records of the nails within the grave fill of Set 73 suggest that the nails seemed to form four lines, three from the base of the coffin (one down each side of the coffin and one running lengthways down the middle) and one along the southern side of the grave from the lid of the coffin (see 6.4.3). No other coffin fittings were found in this burial.

Other probable coffin fittings were found unassociated with a grave, although some of these almost certainly derive from disturbed burials. These include a linked pair of hinge straps (95/SF584) from possibly redeposited grave fill, and a corner bracket (95/SF611) from levelling for the graveyard.

#### **Period 4b burials**

Three burials from this period produced probable coffin fittings.

Sets 181 and 219 both produced a single strap or corner bracket fragment. Three hinge straps were recovered from Set 213; site records note these were all located at the head end of the grave (see 6.4.8). Another possible hinge strap fragment was found in levelling associated with the cemetery (95/SF695).

#### **Coffin fittings from post-cemetery levels**

Seven hinge straps, two corner brackets and three strap terminals, all possibly from disturbed burials, were found in these levels.

#### *9.4.3 The construction of the chests*

The type of chest used in the burials would probably have been an oblong box with a lid, the corners strengthened by brackets, and the lid attached to the box by pairs of hinge straps. As at least one burial contained six corner brackets (see Set 115 above); this suggests that this chest – and possibly others – may have had two brackets on each corner, or that some of the corner brackets were used at the joins of the long sides to the base. None of the burials contained more than one complete pair of hinges, that is both component A and component B, although Set 132 had an additional component, a strap as well as three further fragments, either of straps or brackets. At least two pairs of hinge straps would presumably have been required for attachment of the lids.

Where it has been possible to determine the methods of construction of chests found in burials – for example at Ailcy Hill – they have been shown to have been jointed and dowelled using wooden pegs (Watson 1996, 113). It seems most likely that the chests used at Whithorn may also have been formed from planks or boards jointed together using wooden dowels, but there is one possible exception: the large number of nails (seventeen) found in Set 73 (Period 4a), suggests that this chest was, at least in part, nailed together. This interpretation was also provided for a burial at Thwing, from which 21 nails were recovered (Ottaway forthcoming a), and another at Ailcy Hill which was interpreted as a chest made with the sides held together

with dowels, but reinforced with nails (Watson 1996, 113). One of the chests found in the 1984–91 excavations at Whithorn was shown to have been made of wooden planks on which the running of the wood grain could be identified; the long sides and base were made of planks set lengthways along the long axis, whilst the ends were of planks with the grain running vertically (Hill 1997, 413, fig.10.93, chest/coffin 2). It was not clear how the planks had been joined.

#### Construction of other chest burials from Whithorn

Six possible chest burials were identified from Period II levels in the 1984–91 excavations at Whithorn, all being thought to date from the 8th century (Hill 1997, 412). The chest burial with the highest number of surviving fittings had fourteen corner brackets; these appeared to have comprised two brackets on each of the four vertical edges, and three along each of the two long lower edges (*ibid.*, 413, fig. 10.93, chest/coffin 2). This burial also had three component B straps representing the remains of three sets of hinges for attachment of the lid. A second burial appeared to have had a similar set of fittings, although figure-of-eight-shaped hasps rather than linked hinges acted as lid fittings, one of which appeared to have been missing at the time of burial. This chest also had a lock, its key also present, probably having been placed on top of the chest (*ibid.*, chest/coffin 4).

#### 9.4.4 *Conclusions*

The earliest example of a chest burial appears in the Period 3a cemetery (Set 54), the group of burials being dated to the 6th century. This dating seems early, given that elsewhere, certainly in England, the earliest examples of this form of burial have been dated to the mid–later 7th century (Ottaway 1996, 112). Given that this grave was heavily truncated by later features it is possible that metal work in question represents contamination of the grave, however, it is worth noting that in the earlier excavations at Whithorn, finds from the Period I (early 6th- to early 8th-century) Glebe Field graves included some iron objects with mineralised wood impressions which were interpreted as probably the remains of decayed timber fittings (Hill 1997, 74).

Seven burials of the Period 4a cemetery contained evidence for the use of chests, five of the seven coming from Group 16 burials, while three burials in the Period 4b cemetery appeared to make use of chests. Chest burials were never common in mid–late Anglo-Saxon cemeteries, and in many they are unknown. It has been noted that where the custom does occur, however, it often appears to be concentrated in certain locations within the cemetery (Ottaway forthcoming a), and it has further been suggested that the custom was reserved for people of distinct status, probably of high social rank (Ottaway 1996, 113).

None of the burials at Whithorn produced a complete set of iron fittings; this may not necessarily be the result of failing to find them, nor lack of preservation. It has been suggested elsewhere that chests used for burial might have been missing some of their fittings at the time of interment (Ottaway forthcoming a). There are several possible explanations for this: chests may no longer have been serviceable as furniture and were, therefore, consigned to funerary purposes. Alternatively, before a chest was used for burial, fittings may have been deliberately removed for re-use or recycling of the iron.

The earliest examples of the use of chest burials in Britain are probably Romano-British (Ottaway 1996, 112), but the 8th–10th century appears to be the period of the greatest popularity of this burial custom (Ottaway forthcoming a). Within the period of its use the majority of chest burials

appear to come from the northern half of England; sites which have produced these burials include Ailcy Hill, Ripon (Ottaway 1996), Thwing, E. Yorkshire (Ottaway forthcoming a), Dacre, Cumbria (Ottaway forthcoming b), Norton, Teesside (Rogers in prep.) and Spofforth, North Yorkshire (Ottaway pers. comm.) The chest burials from all these sites were dated from the 8th to the mid-9th centuries.

## 9.5 The stone objects

### 9.5.1 *The struck lithic remains*

#### By P. Harrington

The excavations in 1992–93 and 1995–96 recovered and recorded 198 struck lithic fragments of flint, chert, limestone, jasper, quartz, greywacke and schist, of which one possible flint object was missing. Two more recorded objects, one of kaolinite (lithomarge) and another possibly of fired clay, are also assessed. It is likely that all of the struck lithic material is residual and not directly associated with the remains of Early Christian and later activities on the site. This material was submitted for examination under hand lens and low-powered microscope magnifications. In general the struck lithic material could be described as small flakes and chunks, predominantly of nearly equal distributions of grey, polychrome and white colours, not often translucent, and obtained from small local beach-size pebbles. With few exceptions, all the lithic remains could be ascribed to human activity, and hence were brought onto the site. The general nature of the industrial remains is indicated in Table 5, and the range of implement types and debitage is provided in Table 6.

In summary, the early implement typologies suggest that some occupation of the site could be assigned to the Later Neolithic–Early Bronze Age, c.3500–2500 BC, and to the Later Mesolithic, c.5500–3500 BC. The nature of the debitage suggests that some processing of flint was also carried out on site. Also the possibility that more than transitory early prehistoric occupations at Whithorn were partly or wholly destroyed by subsequent Early Christian activities must be considered.

	chert	flint	quartz	limestone	jasper	greywacke	schist	kaolinite	clay?
FLAKE							1		
Primary	2	28							
Secondary	4	15							
BLADE									

Primary		5							
Secondary	5	12							
CHUNK			3	2					
Primary	14	50			1				
Secondary	14	17							
PEBBLE									
Fractured	2	8	1						
Unfractured	1	7	3						
SLAB						1			
ROD						1			
CHIP								1	1
Average length in mm	22.5	24.7	30.9	26	27	76.5	43	24	13
<b>TOTAL</b>	<b>42</b>	<b>142</b>	<b>7</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>

Table 5 General nature of the Whithorn Priory lithic industry

STONE AXE? HAMMER	1
SERRATED BLADE SAW	1
BURNT FLINT	9
CORE	6
CORE (TOOL)	3
KAOLINIITE	1
STONE FILE	1
FIRED CLAY?	1
WASTE FLAKE	56
FLAKE KNIFE	6
MISSING	1
NATURAL PEBBLE FLINT	18
NATURAL PEBBLE QUARTZ	4
ARROWHEAD POINT	11
KNIFE POINT	7
GRAVER POINT	23
LATHE TOOL? POINT	1
PIERCER POINT	10
END SCRAPER	8
SIDE SCRAPER	19
BLADE SEGMENT	4
HINGED SEGMENT	2
TOOTH SEGMENT	7
<b>TOTAL</b>	<b>200</b>

Table 6 Implement types and debitage in the Whithorn Priory lithic industry

(Missing = number allocated in small finds register on site but subsequently mislaid)

Find	Context	Name	Details
92/SF01399	11	Knife	Primary blade. Length: 31mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Straight-edged

			blade flake knife. Catalogue number 1 in the original site archive.
92/SF01742	11	Side scraper	Secondary flake. Length: 22mm. Colour code: Polychrome 2 – flint, light pink. Convex-edged side scraper. Catalogue number 5 in the original site archive.
92/SF01743	11	Retouched fragment	Secondary chunk. Length: 20mm. Colour code: Grey 7 – flint, matt grey, white spots. Simple unclassified burnt flint (retouched). Catalogue number 6 in the original site archive.
92/SF02004	11	Retouched fragment	Secondary chunk. Length: 33mm. Colour code: White 1 – chert, white. Simple unclassified burnt flint (retouched). Catalogue number 7 in the original site archive.
92/SF03736	101	Waste flake	Secondary chunk. Length: 17mm. Colour code: White 1 – chert, white. Core waste flake. Plano-convex, carries preparation platform blunting. Catalogue number 8 in the original site archive.
92/SF05311	101	Knife	Primary flake. Length: 25mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Conchoidal notch-backed flake knife. Domed. Catalogue number 9 in the original site archive.
92/SF05312	101	Side scraper	Primary chunk. Length: 17mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Notched side scraper (?). Catalogue number 10 in the original site archive.
92/SF06110	24	Piercer	Primary chunk. Length: 38mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Splintered chunk piercer point. Tapered punch. Catalogue number 11 in the original site archive.
92/SF06111	24	Pebble	Pebble unfractured. Length: 14mm. Colour code: White 3 – chert, 'blue', grey-white. Flat angular natural pebble flint. Catalogue number 12 in the original site archive.

Find	Context	Name	Details
92/SF06515	105	Pebble	Pebble unfractured. Length: 20mm. Colour code: White 2 – flint, white patinated, exterior

			(familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Sub-rounded natural pebble flint. Catalogue number 13 in the original site archive.
92/SF08327	113	Borer	Primary chunk. Length: 43mm. Colour code: White 1 – chert, white. Borer point core (tool). Point runs off platform. Catalogue number 14 in the original site archive.
92/SF08328	113	Arrowhead	Primary flake. Length: 15mm. Colour code: Polychrome 2 – flint, light pink. Dart-like arrowhead point. Catalogue number 15 in the original site archive.
92/SF11618	105	Graver	Primary chunk. Length: 23mm. Colour code: W1 – chert, white. Simple graver point. Catalogue number 16 in the original site archive.
92/SF12103	27	Waste flake	Primary flake. Length: 14mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Domed waste flake (retouched). Catalogue number 17 in the original site archive.
92/SF13100	11	Waste flake	Secondary chunk. Length: 21mm. Colour code: Polychrome 2 – flint, light pink. Core waste flake (retouched). Preparation platform channels. Catalogue number 2 in the original site archive.
92/SF13101	11	Side scraper	Primary chunk. Length: 30mm. Colour code: Grey 7 – flint, matt grey, white spots. Straight-edged side scraper. Catalogue number 3 in the original site archive.
92/SF13102	11	Fragment	Secondary chunk. Length: 15mm. Colour code: White 1 – chert, white. Simple unclassified burnt flint (retouched). Subsequent use retouched. Catalogue number 4 in the original site archive.
92/SF13122	115	Graver	Primary chunk. Length: 24mm. Colour code: White 1 – chert, white. Simple graver point. Catalogue number 18 in the original site archive.
92/SF13315	113	Fragment	Primary chunk. Length: 51mm. Colour code: White 4 – chert, coffee-white. Simple unclassified burnt flint. Catalogue number 19 in the original site archive.

Find	Context	Name	Details
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92/SF13319	113	Side scraper, piercer	Primary flake. Length: 22mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Notched side scraper (w/piercer point). Inverse notch, twist drill piercer. Catalogue number 20 in the original site archive.
92/SF14912	105	Waste flake	Primary chunk. Length: 23mm. Colour code: White 4 – chert, coffee-white. Chunk waste flake. Catalogue number 21 in the original site archive.
92/SF15209	115	Core	Primary chunk. Length: 62mm. Colour code: Grey 7 – flint, matt grey, white spots. Bipolar conchoidal flake core. Catalogue number 22 in the original site archive.
92/SF15807	115	Side scraper	Primary flake. Length: 16mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Straight-edged side scraper. Snapped back, inverse retouched straight distal end. Catalogue number 23 in the original site archive.
92/SF15808	115	Tooth segment	Primary chunk. Length: 20mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Simple tooth? segment. Catalogue number 24 in the original site archive.
92/SF15809	115	End scraper	Primary chunk. Length: 27mm. Colour code: Polychrome 6 – jasper, red. Angled-nosed end scraper. Catalogue number 25 in the original site archive.
92/SF15810	115	Waste flake	Secondary chunk. Length: 23mm. Colour code: Polychrome 2 – flint, light pink. Core waste flake (retouched). Carries original core prepared platform. Catalogue number 26 in the original site archive.
92/SF15917	121	End scraper	Secondary blade. Length: 33mm. Colour code: Grey 7 – flint, matt grey, white spots. Angled rounded end scraper. Bronze Age? Catalogue number 27 in the original site archive.
92/SF19643	115	Side scraper	Primary chunk. Length: 21mm. Colour code: Grey 7 – flint, matt grey, white spots. Straight-edged side scraper. Plano-convex. Catalogue number 28 in the original site archive.

Find	Context	Name	Details
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92/SF19644	115	Strike-a-light?, fabricator?	Pebble fractured. Length: 43mm. Colour code: Polychrome 2 – flint, light pink. Angular natural pebble flint (utilised). Strike-a-light? Fabricator? Catalogue number 29 in the original site archive.
92/SF19645	115	Graver	Primary chunk. Length: 35mm. Colour code: Grey 7 – flint, matt grey, white spots. Simple graver point. Catalogue number 30 in the original site archive.
92/SF20219	122	Pebble	Pebble unfractured. Length: 35mm. Colour code: Polychrome 0 – misc, pink and mauve, covers non-flint material, e.g. kaolinite and fired clay? Angular natural pebble flint. Catalogue number 31 in the original site archive.
92/SF20518	133	Graver	Primary chunk. Length: 30mm. Colour code: Grey 7 – flint, matt grey, white spots. Simple graver point. Catalogue number 32 in the original site archive.
92/SF21302	29	Kaolinite	Kaolinite lump. Length: 24mm. Colour code: Polychrome 0 – misc, pink and mauve, covers non-flint material, e.g. kaolinite and fired clay? Pinkish-mauve lithomarge decorative soft stone. Brittle, unworked. 11/12th century AD, Low Knockglass near Stranraer. Catalogue number 33 in flint specialist report in the original site archive.
92/SF22006	35	Blade	Secondary blade. Length: 16mm. Colour code: Polychrome 2 – flint, light pink. Simple blade segment. Catalogue number 34 in the original site archive.
92/SF22401	35	Retouched fragment	Primary chunk. Length: 18mm. Colour code: White 1 – chert, white. Simple unclassified burnt flint (retouched). Subsequently broken. Catalogue number 35 in the original site archive.
92/SF26042	200	Waste flake	Primary chunk. Length: 27mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake, Catalogue number 36 in the original site archive.
92/SF26504	33	Side scraper	Primary flake. Length: 27mm. Colour code: White 4 – chert, coffee-white. Concave side scraper. Catalogue number 37 in the original site archive.
92/SF26505	33	Waste flake	Primary chunk. Length: 25mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Chunk waste flake (retouched). Push plane end scraper. Catalogue number 38 in the original site archive.

Find	Context	Name	Details
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92/SF27806	52	Waste flake	Secondary chunk. Length: 12mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake (retouched). Catalogue number 39 in the original site archive.
92/SF28304	51	Side scraper	Primary chunk. Length 21mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Chunk-nosed side scraper. Catalogue number 40 in the original site archive.
92/SF28838	200	Knife	Primary chunk. Length: 29mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Bifacial straight-edged flake knife (w/scraper point). Straight bifacial retouched right side, point distal end. Catalogue number 41 in the original site archive.
92/SF29208	137	Pebble	Pebble unfractured. Length: 45mm. Colour code: White 0 – flint, pebble, natural. Sub-angular natural pebble flint. Catalogue number 42 in the original site archive.
92/SF30222	43	Fragment	Clay? chip. Length: 13mm. Colour code: Polychrome 0 – misc, pink and mauve, covers non-flint material, e.g. kaolinite and fired clay? Misc yellow-red fired like clay? chip brittle. Catalogue number 44 in flint specialist report in the original site archive.
92/SF32206	203	Retouched fragment	Pebble fractured. Length: 27mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Angular natural pebble flint (retouched). Catalogue number 44 in the original site archive.
92/SF34011	227	Pebble	Pebble fractured. Length: 32mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Sub-angular natural pebble flint. Catalogue number 45 in the original site archive.
92/SF34802	360	Waste flake, graver?	Limestone chunk. Length: 19mm. Colour code: Grey 4 – limestone, grey with black patches, opaque. Chunk waste flake (utilised?). Graver point?, fire glazed. Catalogue number 46 in the original site archive.
92/SF35409	223	Side scraper	Primary chunk. Length: 19mm. Colour code: White 3– chert, 'blue', grey-white. Angled side scraper. Catalogue number 47 in the original site archive.

Find	Context	Name	Details
92/SF35410	223	Blade	Primary blade. Length: 21mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Simple blade segment. Trimmed. Catalogue number 48 in the original site archive.
92/SF37104	146	Side scraper	Secondary flake. Length: 29mm. Colour code: White 4 – chert, coffee-white. Notched side scraper. Catalogue number 49 in the original site archive.
92/SF37601	227	Core, strike-a-light?	Primary chunk. Length: 51mm. Colour code: Polychrome 2 – flint, light pink. Simple platform core. Subsequent core tool?, strike-a-light? Catalogue number 50 in the original site archive.
92/SF37602	227	End and side scraper	Primary chunk. Length: 29mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Simple end and side scraper. Blunt left side back, inverse notch right side. Microwear on steep cortex edge. Catalogue number 51 in the original site archive.
92/SF37603	227	Waste flake	Primary chunk. Length: 20mm. Colour code: Polychrome 4 – flint, yellow. Flat waste flake. Catalogue number 52 in the original site archive.
92/SF37806	206	Waste flake, scraper	Secondary chunk. Length: 29mm. Colour code: Grey 7 – flint, matt grey, white spots. Core waste flake (retouched). Concave scraper. Catalogue number 53 in the original site archive.
92/SF37807	206	Waste flake	Primary chunk. Length 22mm. Colour code: Polychrome 8 – chert, cream, opaque. Chunk waste flake (retouched), Catalogue number 54 in the original site archive.
92/SF38003	144	Waste flake	Primary flake. Length: 21mm. Colour code: Polychrome 4 – flint, yellow. Splintered waste flake. Catalogue number 55 in the original site archive.
92/SF39900	69	Core	Pebble fractured. Length: 30mm. Colour code: Polychrome 2 – flint, light pink. Microflake disc core. Mesolithic. Catalogue number 56 in the original site archive.
92/SF40406	227	Piercer	Primary chunk. Length: 34mm. Colour code: Grey 7 – flint, matt grey, white spots. Simple piercer point. Catalogue number 57 in the original site archive.
92/SF41802	70	Waste flake	Pebble fractured. Length 26mm. Colour code: White 4 – chert, coffee-white. Core waste flake (refit). Join to core 92/441/3. Catalogue number 58 in the original site archive.

Find	Context	Name	Details
92/SF41903	53	Waste flake, scraper	Primary flake. Length: 57mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Core rejuvenation waste flake (retouched). Subsequent use as notched scraper. Catalogue number 59 in the original site archive.
92/SF42405	146	Knife, arrowhead?	Primary chunk. Length: 23mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Convex-edged flake knife. Also arrowhead? Catalogue number 60 in the original site archive.
92/SF42707	146	Core	Primary chunk. Length: 31mm. Colour code: Polychrome 2 – flint, light pink. Microflake platform and bipolar core. Mesolithic. Catalogue number 61 in the original site archive.
92/SF43905	146	Piercer	Secondary chunk. Length: 21mm. Colour code: Polychrome 2 – flint, light pink. Simple piercer point. Originally waste retouched. Catalogue number 62 in the original site archive.
92/SF44004	286	Tooth segment	Secondary flake. Length: 24mm. Colour code: Grey 7 – flint, matt grey, white spots. Simple tooth segment. Microwear lustre on one edge. Catalogue number 63 in the original site archive.
92/SF44005	286	Waste flake	Secondary chunk. Length: 21mm. Colour code: White 4 – chert, coffee-white. Chunk waste flake. Catalogue number 64 in the original site archive.
92/SF44103	87	Core	Pebble fractured. Length: 30mm. Colour code: White 4 – chert, coffee-white. Microblade unipolar core (refit). Join to flake 92/418/2. Mesolithic? Catalogue number 65 on paper site archive.
92/SF44401	287	Graver?	Primary chunk. Length: 22mm. Colour code: Polychrome 2 – flint, light pink. Flat chunk faceted graver? point. Faceted like point. Catalogue number 66 in the original site archive.
92/SF45507	146	Graver	Primary chunk. Length: 23mm. Colour code: Polychrome 4 – flint, yellow. Splintered chunk graver point. Catalogue number 67 in the original site archive.

Find	Context	Name	Details
92/SF45508	146	Piercer	Secondary chunk. Length: 24mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Splintered chunk piercer point. Retouched distal left corner, trimmed back distal end. Catalogue number 68 in the original site archive.
92/SF45509	146	Blade	Secondary blade. Length: 11mm. Colour code: White 1 – chert, white. Serrated blade segment. Fine retouch on another edge. Catalogue number 69 in the original site archive.
92/SF45705	146	Side scraper	Secondary flake. Length: 29mm. Colour code: Grey 7 – flint, matt grey, white spots. Concave side scraper. Catalogue number 70 in the original site archive.
92/SF45706	146	Waste flake	Secondary chunk. Length: 11mm. Colour code: White 3 – chert, 'blue', grey-white. Core waste flake. Inner chunk, carries prepared platform. Catalogue number 71 in the original site archive.
92/SF45707	146	Pebble	Pebble unfractured. Length: 17mm. Colour code: Grey 2 – flint, grey, translucent, small white spots. Flat angular natural pebble flint. Catalogue number 72 in the original site archive.
92/SF46010	146	Waste flake	Primary chunk. Length: 17mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake. Catalogue number 73 in the original site archive.
92/SF46108	146	Waste flake	Primary chunk. Length: 23mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Conchoidal waste flake (retouched). Faceted dorsal hinge distal end left side pointed. Catalogue number 74 in the original site archive.
92/SF46109	146	Waste flake	Primary chunk. Length: 20mm. Colour code: Polychrome 4 – flint, yellow. Chunk waste flake. Abraded. Catalogue number 75 in the original site archive.
92/SF46110	146	Waste flake	Primary chunk. Length: 20mm. Colour code: Grey 7 – flint, matt grey, white spots. Splintered waste flake. Catalogue number 76 in the original site archive.

Find	Context	Name	Details
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92/SF46206	146	Waste flake	Primary flake. Length: 30mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Conchoidal waste flake (retouched). Minimal, inverse notch distal end left side back. Catalogue number 77 in the original site archive.
92/SF46207	146	Waste flake	Primary chunk. Length: 13mm. Colour code: White 3–chert, 'blue', grey-white. Chunk waste flake. Catalogue number 78 in the original site archive.
92/SF46710	146	Waste flake	Primary flake. Length: 20mm. Colour code: Polychrome 4 – flint, yellow. Conchoidal waste flake (retouched). Inverse notch left side proximal end, steep-nosed distal end. Catalogue number 79 in the original site archive.

**Table 7 Catalogue of the 1992 struck lithic remains**

Find	Context	Name	Details
93/SF01405	248	Waste flake	Primary flake. Length: 16mm. Colour code: Grey 7 – flint, matt grey, white spots. Flat waste flake. Catalogue number 80 in the original site archive.
93/SF01601	403	Graver	Secondary flake. Length: 19mm. Colour code: Grey 7 – flint, matt grey, white spots. Conchoidal flake graver point. Edge trimmed and blunted back. Catalogue number 81 in the original site archive.
93/SF03774	1000	Pebble	Quartz flake. Length: 43mm. Colour code: White 5 – quartz pebble, natural, and struck lithics. Angular natural pebble, quartz, red. Catalogue number 82 in the original site archive.
93/SF04098	1000	Pebble	Pebble fractured. Length: 25mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Angular natural pebble flint. Catalogue number 83 in the original site archive.
93/SF04204	408	Waste flake, scraper	Secondary flake. Length: 15mm. Colour code: Polychrome 4 – flint, yellow. Flat waste flake (retouched). Notched scraper. Catalogue number 84 in the original site archive.
93/SF04306	416	Waste flake	Primary flake. Length: 12mm. Colour code: Grey 7 – flint, matt grey, white spots. Flat waste flake. Catalogue number 85 in the original site archive.
93/SF04611	1000	Arrowhead	Primary chunk. Length: 22mm. Colour code: Polychrome 4 – flint, yellow. Single barbed-like arrowhead point. Catalogue number 86 in the original site archive.
Find	Context	Name	Details

93/SF4612	1000	Knife	Limestone chunk. Length: 33mm. Colour code: Grey 4 – limestone, grey with black patches. Double convex-edged flake knife. Catalogue number 87 in the original site archive.
93/SF04900	46	Tooth segment	Primary flake. Length: 18mm. Colour code: Grey 2 – flint, grey, translucent, small white spots. Simple tooth segment. Catalogue number 88 in the original site archive.
93/SF05221	1000	Waste flake	Primary chunk. Length: 15mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake. Catalogue number 89 in the original site archive.
93/SF05222	1000	Pebble	Pebble unfractured. Length: 13mm. Colour code: Polychrome 4 – flint, yellow. Sub-angular natural pebble flint. Catalogue number 90 in the original site archive.
93/SF06462	1000	Graver	Primary chunk. Length: 24mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk graver point. Trimmed backs. Catalogue number 91 in the original site archive.
93/SF06902	331	Waste flake	Primary chunk. Length: 12mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Chunk waste flake. Catalogue number 92 in the original site archive.
93/SF09521	1002	Waste flake	Secondary chunk. Length: 11mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Chunk waste flake. Catalogue number 93 in the original site archive.
93/SF09901	1003	Fragment	1 fragment like a flint flake of chalcedony, with two highly polished surfaces, in pink, cream and orange. This object does not feature in the flint specialist's report (R. S. Cubitt 3/12/07).
93/SF13651	1003	Fragment	Primary chunk. Length: 21mm. Colour code: White 1 – chert, white. Simple unclassified burnt flint. Glazed. Catalogue number 94 in the original site archive.
93/SF13652	1003	Arrowhead	Secondary blade. Length: 46mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Serrated edge arrowhead point. Catalogue number 95 in the original site archive.



Find	Context	Name	Details
93/SF14235	1003	Notched Scraper	Secondary blade. Length: 33mm. Colour code: ?White 4 – chert, coffee-white. Modified blank burnt flint (retouched). Subsequent use as notched scraper. Catalogue number 96 in the original site archive.
93/SF14516	1003	Waste flake	Primary chunk. Length: 22mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Core waste flake (retouched). Catalogue number 97 in the original site archive.
93/SF14724	1003	Waste flake	Primary chunk. Length: 43mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Core waste flake (retouched). Catalogue number 98 in the original site archive.
93/SF14725	1003	Blade	Secondary blade. Length: 23mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Hafting notched serrated blade saw. Catalogue number 99 in the original site archive.
93/SF17902	442	Waste flake	Secondary chunk. Length: 9mm. Colour code: White 3– chert, 'blue', grey-white. Chunk waste flake. Catalogue number 100 in the original site archive.
93/SF19610	451	Piercer	Primary chunk. Length: 23mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Simple piercer point. Mesolithic. Catalogue number 101 in the original site archive.
93/SF21706	1032	Waste flake	Primary chunk. Length: 20mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake. Catalogue number 102 in the original site archive.
93/SF23004	501	Waste flake, scraper	Primary chunk. Length: 27mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake (retouched). Notched? scraper. Catalogue number 103 in the original site archive.
93/SF28805	1039	Fragment	Primary chunk. Length: 15mm. Colour code: White 1 – chert, white. Simple unclassified burnt flint. Catalogue number 104 in the original site archive.

Find	Context	Name	Details
93/SF32201	941	Graver, Scraper	Secondary chunk. Length: 17mm. Colour code: White 1 – chert, white. Chunk flake graver point (w/side scraper). Straight-edged scraper. Catalogue number 105 in the original site archive.
93/SF32602	1009	Tooth segment	Secondary chunk. Length: 16mm. Colour code: White 1 – chert, white. Simple tooth segment. Catalogue number 106 in the original site archive.
93/SF37805	424	Waste flake, Piercer	Secondary flake. Length: 11mm. Colour code: White 3– chert, 'blue', grey-white. Splintered waste flake (utilised). Piercer point. Catalogue number 107 in the original site archive.
93/SF38201	1052	Knife	Secondary blade. Length: 31mm. Colour code: Grey 7 – flint, matt grey, white spots. Transverse blade knife point. Catalogue number 108 in the original site archive.
93/SF38400	449	Waste flake	Secondary chunk. Length: 20mm. Colour code: Grey 6 – flint, grey white, no spots, translucent. Chunk waste flake (utilised). Catalogue number 109 in the original site archive.
93/SF38509	1023	Graver	Secondary chunk. Length: 18mm. Colour code: White 1 – chert, white. Simple ?graver point. Catalogue number 110 in the original site archive.
93/SF39000	1046	Side scraper	Primary chunk. Length: 17mm. Colour code: Grey 7 – flint, matt grey, white spots. Straight-edged side scraper. Catalogue number 111 in the original site archive.
93/SF39105	1012	Waste flake	Primary chunk. Length: 24mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake. Catalogue number 112 in the original site archive.
93/SF39402	1064	Waste flake, scraper?	Primary chunk. Length: 23mm. Colour code: White 4 – chert, coffee-white. Chunk waste flake (utilised?). Concave scraper? Catalogue number 113 in the original site archive.
93/SF40103	1036	Waste flake	Primary chunk. Length: 19mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake. Catalogue number 114 in the original site archive.
93/SF41604	1072	Waste flake	Secondary blade. Length: 14mm. Colour code: White 3– chert, 'blue', grey-white. Core waste flake. Carries prepared platform and edge blunting. Catalogue number 115 in the original site archive.

Find	Context	Name	Details
93/SF42900	481	Pebble	Primary flake. Length: 27mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Plano-convex natural pebble flint. Catalogue number 116 in the original site archive.
93/SF45002	1085	Graver	Primary chunk. Length: 17mm. Colour code: Grey 5 – flint, yellow-red (iron stain?) colouring bled into dark grey interior, translucent. Chunk graver point. Catalogue number 117 in the original site archive.
93/SF45900	437	Arrowhead	Secondary blade. Length: 27mm. Colour code: White 3 – chert, 'blue', grey-white. Short single-shouldered arrowhead point. Catalogue number 118 in the original site archive.
93/SF47504	1074	Pebble	Pebble fractured. Length: 31mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Sub-rounded natural pebble flint. Catalogue number 119 in the original site archive.
93/SF48203	1021	Waste flake	Primary flake. Length: 15mm. Colour code: Polychrome 4 – flint, yellow. Plano-convex waste flake. Catalogue number 120 in the original site archive.
93/SF48403	1064	Waste flake	Primary chunk. Length: 18mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake. Catalogue number 121 in the original site archive.
93/SF48805	1067	Waste flake, fabricator?	Primary flake. Length: 26mm. Colour code: White 4 – chert, coffee-white. Flat waste flake (utilised). Fabricator? point. Microwear gloss on cortex edge. Catalogue number 122 in the original site archive.
93/SF49904	1074	Side scraper	Primary flake. Length: 28mm. Colour code: Polychrome 2 – flint, light pink. Concave side scraper. Originally waste retouched. Catalogue number 123 in the original site archive.
93/SF50005	1085	Thumbnail end scraper	Primary flake. Length: 25mm. Colour code: Grey 1 – flint, grey, shiny, translucent, occasional patchy white spots. Steep-angled thumbnail end scraper. Late Neolithic/early Bronze Age. Catalogue number 124 in the original site archive.
93/SF53207	1089	Pebble	Pebble unfractured. Length: 35m. Colour code: White 0 – flint, pebble, natural. Sub-rounded natural pebble flint. Catalogue number 125 in the original site archive.

Find	Context	Name	Details
93/SF53208	1089	End and side scraper	Secondary chunk. Length: 24mm. Colour code: White 1 – chert, white. Simple end and side scraper. Catalogue number 126 in the original site archive.
93/SF53209	1089	Flake	Secondary chunk. Length: 19mm. Colour code: W1 – chert, white. Flat chip natural pebble flint. Catalogue number 127 in the original site archive.
93/SF58406	1089	Waste flake, side scraper	Secondary flake. Length: 14mm. Colour code: White 1 – chert, white. Plano-convex waste flake (retouched). Straight-edged side scraper. Catalogue number 128 in the original site archive.
93/SF62100	1111	End and side scraper	Secondary chunk. Length: 36mm. Colour code: White 1 – chert, white. Simple end and side scraper. Angled end and concave side scrapers. Catalogue number 129 in the original site archive.
93/SF62203	595	Arrowhead	Secondary chunk. Length: 29mm. Colour code: White 1 – chert, white. Short single-shouldered arrowhead point. Catalogue number 130 in the original site archive.
93/SF65205	624	Pebble	Pebble fractured. Length: 23mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Angular natural pebble flint. Chunk. Catalogue number 131 in the original site archive.
93/SF65300	1111	Side scraper	Primary chunk. Length: 34mm. Colour code: White 3– chert, 'blue', grey-white. Convex-edged side scraper. Blunt. Microwear back from convex edge. Catalogue number 132 in the original site archive.
93/SF66005	611	Object	1 flake with cortex, worked. Recorded missing. Struck? lithic object. Catalogue number 133 in the original site archive.

**Table 8 Catalogue of the 1993 struck lithic remains**

Find	Context	Name	Details
95/SF00007	2000	Waste flake	Primary flake. Length: 15mm. Colour code: G7 – flint, matt grey, white spots. Flat waste flake. Catalogue number 134 in the original site archive.
95/SF00016	2000	Waste flake, scraper	Primary chunk. Length: 22mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Chunk waste flake (retouched). Steep concave scraper. Catalogue number 135 in the original site archive.

Find	Context	Name	Details
95/SF00033	2013	Pebble	Primary chunk. Length: 18mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Chunk natural pebble flint. Catalogue number 136 in the original site archive.
95/SF00138	2045	Waste flake	Primary chunk. Length: 18mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake. Catalogue number 137 in the original site archive.
95/SF00278	2071	Waste flake, scraper with graver	Secondary chunk. Length: 16mm. Colour code: Polychrome 4 – flint, yellow. Chunk waste flake (retouched). Concave scraper with graver point. Catalogue number 138 in the original site archive.
95/SF00281	2071	Scraper	Primary flake. Length: 30mm. Colour code: Grey 1 – flint, grey, shiny, translucent, occasional patchy white spots. Angled nose end scraper core (tool). Originally microblade single platform core. Mesolithic. Catalogue number 139 in the original site archive.
95/SF00283	2071	Waste flake	Primary chunk. Length: 19mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake (retouched). Push plane end scraper. Catalogue number 140 in the original site archive.
95/SF00337	2119	Core	Secondary chunk. Length: 29mm. Colour code: White 3 – chert, ‘blue’, grey-white. Microflake platform core. Catalogue number 141 in the original site archive.
95/SF00343	2059	Knife	Secondary flake. Length: 21mm. Colour code: Grey 6 – flint, grey-white, no spots, translucent. Slice knife point. Catalogue number 142 in the original site archive.
95/SF00344	2117	Tooth segment	Secondary flake. Length: 13mm. Colour code: Grey 7 – flint, matt grey, white spots. Simple tooth segment. Catalogue number 143 in the original site archive.
95/SF00350	2071	Knife	Primary flake. Length: 36mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Flake knife point. Microwear haft mark. Catalogue number 144 in the original site archive.

Find	Context	Name	Details
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95/SF00364	2131	Waste flake	Secondary flake. Length: 17mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Splintered waste flake. Catalogue number 145 in the original site archive.
95/SF00372	2099	Pebble	Pebble unfractured. Length: 26mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Angular natural pebble flint (retouched?). Catalogue number 146 in the original site archive.
95/SF00391	2142	Side scraper	Primary blade. Length: 32mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Straight-edged side scraper. Snapped distal end back, trimmed left side. Catalogue number 147 in the original site archive.
95/SF00434	2150	Arrowhead	Secondary blade. Length: 28mm. Colour code: Grey 1 – flint, grey, shiny, translucent, occasional patchy white spots. Tanged? arrowhead point. Broken? Catalogue number 148 in the original site archive.
95/SF00476	4002	Side Scraper	Primary flake. Length: 44mm. Colour code: Polychrome 3 – flint, yellow-red, white spots (an imported flint, not a local beach flint). Thin convex-edged side scraper. Thin left side. Microwear on inverse proximal right side. Catalogue number 149 in the original site archive.
95/SF00510	2187	Graver, Knife?	Primary chunk. Length: 23mm. Colour code: Polychrome 4 – flint, yellow. Notched-backed graver point. Unretouched slice knife? edge. Microwear on unretouched edge. Catalogue number 150 in the original site archive.
95/SF00558	2207	Tooth segment	Secondary flake. Length: 10mm. Colour code: Polychrome 4 – flint, yellow. Simple tooth segment. Microwear on one edge. Catalogue number 151 in the original site archive.
95/SF00590	2112	Graver	Secondary chunk. Length: 14mm. Colour code: Grey 7 – flint, matt grey, white spots. Splintered chunk graver point. Catalogue number 152 in the original site archive.

Find	Context	Name	Details
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95/SF00687	2142	Blade	Secondary blade. Length: 21mm. Colour code: Grey 1 – flint, grey, shiny, translucent, occasional patchy white spots. Curved blade segment lathe tool? point. Snapped proximal end, point runs off proximal end right side. Catalogue number 153 in the original site archive.
95/SF00705	2277	Side scraper	Primary flake. Length: 39mm. Colour code: Grey 7 – flint, matt grey, white spots. Angled convex-edged side scraper. Catalogue number 154 in the original site archive.
95/SF00721	2281	Tooth segment	Secondary flake. Length: 18mm. Colour code: White 3– chert, 'blue', grey-white. Simple tooth segment. Catalogue number 155 in the original site archive.
95/SF00745	2234	End scraper	Primary chunk. Length: 30mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Angled convex-edged end scraper. Catalogue number 156 in the original site archive.
95/SF00905	2142	Pebble	Quartz unfractured. Length: 35mm. Colour code: White 5 – quartz pebble, natural, and struck lithics. Sub-rounded natural pebble quartz. Catalogue number 157 in the original site archive.
95/SF00927	2059	Piercer	Secondary chunk. Length: 22mm. Colour code: Grey 5 – flint, yellow-red (iron stain?) colouring bled into dark grey interior, translucent. Twist drill piercer point. Leaf shape, blunt. Pennines late Neolithic/ Early Bronze Age? pebble tool. Catalogue number 158 in the original site archive.
95/SF00928	2139	Side Scraper	Primary flake. Length: 22mm. Colour code: Grey 7 – flint, matt grey, white spots. Convex-edged side scraper. Catalogue number 159 in the original site archive.
95/SF00929	2059	Graver	Secondary chunk. Length: 17mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Chunk graver point. Catalogue number 160 in the original site archive.
95/SF00930	2257	Knife	Primary flake. Length: 31mm. Colour code: Grey 7 – flint, matt grey, white spots. Convex-edged flake knife. Catalogue number 161 in the original site archive.

Find	Context	Name	Details
95/SF00931	2059	Scraper, lathe tool?	Primary chunk. Length: 30mm. Colour code: White 3–chert, 'blue', grey-white. Core waste flake (retouched). Scraper, lathe tool?. Microwear on retouched edge. Catalogue number 162 in the original site archive.
95/SF00932	2059	Waste flake	Primary chunk. Length: 24mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Chunk waste flake. Catalogue number 163 in the original site archive.
95/SF00933	2000	Knife	Schist flake. Length: 43mm. Colour code: G0 – misc, grey or black to cover non-flint struck lithic material, e.g. greywacke and schist. Schist flake knife point. Trimmed and blunted backs. Catalogue number 164 in the flint specialist report in the original site archive.
95/SF00934	2000	Knife, strike-a-light?	Secondary flake. Length: 44mm. Colour code: Grey 7 – flint, matt grey, white spots. Spurred knife point. Susequent use as a strike-a-light? Catalogue number 165 in the original site archive.
95/SF00935	2000	Piercer	Quartz chunk. Length: 29mm. Colour code: W5 – quartz pebble, natural, and struck lithics. Splintered quartz piercer point. Sharp. Catalogue number 166 in the flint specialist report in the original site archive.
95/SF00936	2000	Graver	Quartz chunk. Length: 25mm. Colour code: W5 – quartz pebble, natural, and struck lithics. Splintered quartz graver point. Faceted point, blunt. Catalogue number 167 in the original site archive.
95/SF00937	2000	Graver	Quartz chunk. Length 31mm. Colour code: W5 – quartz pebble, natural, and struck lithics. Tabular snapped quartz graver point. Snapped backs, point runs off straight edge. Catalogue number 168 in the original site archive.
95/SF00938	2000	Graver	Quartz unfractured. Length: 38mm. Colour code: W5 – quartz pebble, natural, and struck lithics. Sub-rounded natural pebble quartz. Catalogue number 169 in the original site archive.
95/SF01064	2362	Graver	Primary flake. Length: 13mm. Colour code: Grey 5 – flint, yellow-red (iron stain?) colouring bled into dark grey interior, translucent. Chunk dihedral graver point. Concave trimmed left side proximal end forming point left side. Catalogue number 170 in the original site archive.
Find	Context	Name	Details



95/SF01135	2461	Graver	Secondary chunk. Length: 24mm. Colour code: G7 – flint, matt grey, white spots. Chunk dihedral graver point. Lathe tool?, untrimmed back on ventral face. Microwear with striations on dorsal face, haft? marks on butt and use wear off point. Catalogue number 171 in the original site archive.
95/SF01138	2217	Piercer	Primary chunk. Length: 21mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Splintered chunk piercer point. Blunted ventral edge concave back, notched left side of point. Microwear direction on ventral face consistent with use of piercer point. Catalogue number 172 in the original site archive.
95/SF01142	2428	Graver	Secondary chunk. Length: 22mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Chunk graver point. Flake scars accent blunt-looking sharp point. Microwear carries residual? striations and other use wear consistent with graver point. Catalogue number 173 in the original site archive.
95/SF01143	2473	Arrowhead	Secondary flake. Length: 20mm. Colour code: Grey 5 – flint, yellow-red (iron stain?) colouring bled into dark grey interior, translucent. Single barbed-like arrowhead point. Snapped trimmed left side proximal end, straight bifacial retouched left side distal end, straight inverse retouched right side point distal end, barb right side, bifacial retouch right side proximal end. Catalogue number 174 in the original site archive.
95/SF01239	2531	Graver	Secondary blade. Length: 25mm. Colour code: Grey 7 – flint, matt grey, white spots. Blade chunk faceted graver point. Blunt left side, facet scare left side distal end, fine retouched right side distal end point distal end, blunt convex right side. Microwear dorsal right side distal end on side of point, in facet flake scare ventral right side proximal end corner. Catalogue number 175 in the original site archive.

Find	Context	Name	Details
95/SF01272	2579	Graver	Secondary blade. Length: 22mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Snapped backed and notched graver point. Battered blunt left side, dorsal notch right side distal end forms burin/graver point right side distal end, battered right side proximal end. Microwear on ventral face set back from graver point. Catalogue number 176 in the original site archive.
95/SF01274	2579	File	Greywacke slab. Length 83mm. Colour code: G0 – misc, grey or black to cover non-flint struck lithic material, e.g. greywacke and schist. Greywacke furrowed stone file. Long flat file-like furrow left side distal end and right side distal end forming point distal end. Catalogue number 177 in the original site archive.
95/SF01280	2579	Waste flake	Secondary chunk. Length: 13mm. Colour code: Polychrome 2 – flint, light pink. Splintered waste flake (utilised?). Microwear with slight evidence of gloss? Catalogue number 178 in the original site archive.
95/SF01327	2492	Arrowhead	Secondary blade. Length: 43mm. Colour code: Grey 5 – flint, yellow-red (iron stain?) colouring bled into dark grey interior, translucent. Single shouldered and tanged blade arrowhead point. Retouched proximal end forms shovel point, battered left side with inverse retouch left side distal end, convex distal end, bifacial retouch right side proximal end, battered ventral right side proximal end. Microwear on ventral face of tang, evidence of hafting? Catalogue number 179 in the original site archive.
95/SF01332	2637	Serrated hinged segment	Primary flake. Length: 11mm. Colour code: Grey 5 – flint, yellow-red (iron stain?) colouring bled into dark grey interior, translucent. Serrated hinged segment. Serrated proximal end. Microwear gloss on serrated edge. Catalogue number 180 in the original site archive.

Find	Context	Name	Details
95/SF01352	2492	End and double-sided scraper	Primary chunk. Length: 34mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey-white interior. Upside down end and double-sided scraper. Fine retouch with notch left side proximal end, fine retouched proximal end, fine retouched dorsal edge of straight right side. Microwear glassy polish with striations on dorsal face consistent with notched scraper edge left side proximal end. Catalogue number 181 in the original site archive.
95/SF01353	2492	Graver	Secondary balde. Length: 14mm. Colour code: Grey 5 – flint, yellow-red (iron stain?) colouring bled into dark grey interior, translucent. Snapped blade chunk graver point. Catalogue number 182 in the original site archive.
95/SF01357	2492	Arrowhead	Primary blade. Length: 34mm. Colour code: Grey 5 – flint, yellow-red (iron stain?) colouring bled into dark grey interior, translucent. Straight base and notched arrowhead point. Blunt trimmed left side proximal end, bifacial trimmed right side proximal end, dorsal notches left side, inverse retouch left side distal end – distal end left side and right side distal end. Microwear with dorsal striations left side distal end set back from second dorsal notch on convex left side. Catalogue number 183 in the original site archive.
95/SF01361	2492	Side scraper	Primary flake. Length: 21mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Straight-edged side scraper. Plano-convex, fine retouched straight right side. Microwear gloss back of right edge on dorsal and ventral faces. Mesolithic. Catalogue number 184 in the original site archive.
95/SF01400	2492	Axe	Greywacke rod. Length: 70mm. Colour code: G0 – misc, grey or black to cover non-flint struck lithic material, e.g. greywacke and schist. Greywacke stone axe? hammer. Bifacial straight-edged distal end, thin left side, thick trimmed quartz right side. Catalogue number 185 in the original site archive.
95/SF01403	2492	Blade	Secondary flake. Length: 15mm. Colour code: Polychrome 2 – flint, light pink. Serrated blade segment. Catalogue number 186 in the original site archive.

Find	Context	Name	Details
95/SF01405	2000	Pebble	Pebble fractured. Length: 27mm. Colour code: Grey 7 – flint, matt grey, white spots. Flat sub-rounded natural pebble flint. Microwear possibly resulting from use in surface makeup. Catalogue number 187 in the original site archive.
95/SF01437	2690	Graver	Primary chunk. Length: 28mm. Colour code: G7 – flint, matt grey, white spots. Chunk graver point. Thin curved bifacial prepared right side proximal end edge forming graver point right side. Microwear on two edges leading up to hooked point. Catalogue number 188 in the original site archive.
95/SF01445	2653	Knife	Secondary flake. Length: 36mm. Colour code: Polychrome 5 – flint, yellow-red (iron stain?) outer skin colouring bled into grey white interior. Hafted flake knife point. Plano-convex, inverse retouch to form point distal end. Microwear glassy bulb and ventral left side proximal end haft? marks, gloss dorsal face left side distal end. Catalogue number 189 in the original site archive.
95/SF01471	2653	Waste flake	Secondary chunk. Length: 15mm. Colour code: Grey 7 – flint, matt grey, white spots. Chunk waste flake. Catalogue number 190 in the original site archive.
95/SF01478	2707	Waste flake	Primary chunk. Length: 18mm. Colour code: G7 – flint, matt grey, white spots. Chunk waste flake (utilised?). Angular. Microwear carried shows possible residual use of piece from which flake was struck. Catalogue number 191 in the original site archive.
95/SF01485	2694	Knife	Primary flake. Length: 26mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Flake knife point. Blunt bifacial retouch left side proximal end and left side distal end forms convex knife point mid left side. Microwear haft? mark on dorsal face right side proximal end near cortex, use wear on dorsal transverse distal end, striation right side greater than left side. Mesolithic? (patination). Catalogue number 192 in the original site archive.

Find	Context	Name	Details
95/SF01490	2709	Hinged segment	Primary flake. Length: 22mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Simple hinged segment. Fine retouched and notched ventral edge distal end. Microwear gloss dorsal and ventral faces. Mesolithic? (patina). Catalogue number 193 in the original site archive.
95/SF01518	2694	Pebble	Quartz unfractured. Length: 15mm. Colour code: White 5 – quartz pebble, natural, and struck lithics. Sub-rounded natural pebble quartz. Catalogue number 194 in the original site archive.
95/SF01543	2576	Double-sided end scraper	Primary chunk. Length: 24mm. Colour code: Grey 7 – flint, matt grey, white spots. Angled double-sided end scraper core (tool). Fine retouch on ventral left side and dorsal left side proximal end and right side proximal end forms point on dorsal proximal end. Microwear on retouched edges. Catalogue 195 in the original site archive.
95/SF01545	2785	Fragment	Secondary blade. Length: 12mm. Colour code: White 1 – chert, white. Simple unclassified burnt flint. Catalogue number 196 in the original site archive.
95/SF01576	2674	Piercer, knife	Secondary flake. Length: 36mm. Colour code: Grey 7 – flint, matt grey, white spots. Twist drill piercer point. Concave trimmed left and right distal backs, retouched left distal and distal left forms drill point, retouched proximal end left side forms knife. Microwear on edges forming drill point left side distal end, and on slice knife edge proximal end left side. Catalogue number 197 in the original site archive.
95/SF01577	2719	Piercer	Primary blade. Length: 24mm. Colour code: White 2 – flint, white patinated, exterior (familiar to local raised beach sites, e.g. at Sheddock, and a time marker of the local Mesolithic). Delicate blade piercer point. Serrated left side, fine bifacial retouched right side. Microwear gloss on serrated left ventral side. Mesolithic? (patina). Catalogue number 198 in the original site archive.

Find	Context	Name	Details
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95/SF01579	2816	Arrowhead	Secondary blade. Length: 28mm. Colour code: Grey 5 – flint, yellow-red (iron stain?) colouring bled into dark grey interior, translucent. Transverse blade arrowhead point. Blunting of left side and ventral edge of snapped distal end. Microwear on edge of retouch scar on inverse right side, use wear on dorsal left side before point left side proximal end show position of haft? marks. Catalogue number 199 in the original site archive.
95/SF01585	2825	Arrowhead	Secondary flake. Length: 34mm. Colour code: Grey 7 – flint, matt grey, white spots. Transverse flake arrowhead point. Battered left side proximal end and right side, snapped distal end, slice edge on left side runs to sharp point on left side distal end. Microwear on dorsal right side. Catalogue number 200 in the original site archive.

**Table 9 Catalogue of the 1995-6 struck lithic remains**

### 9.5.2 *The millstone grave marker*

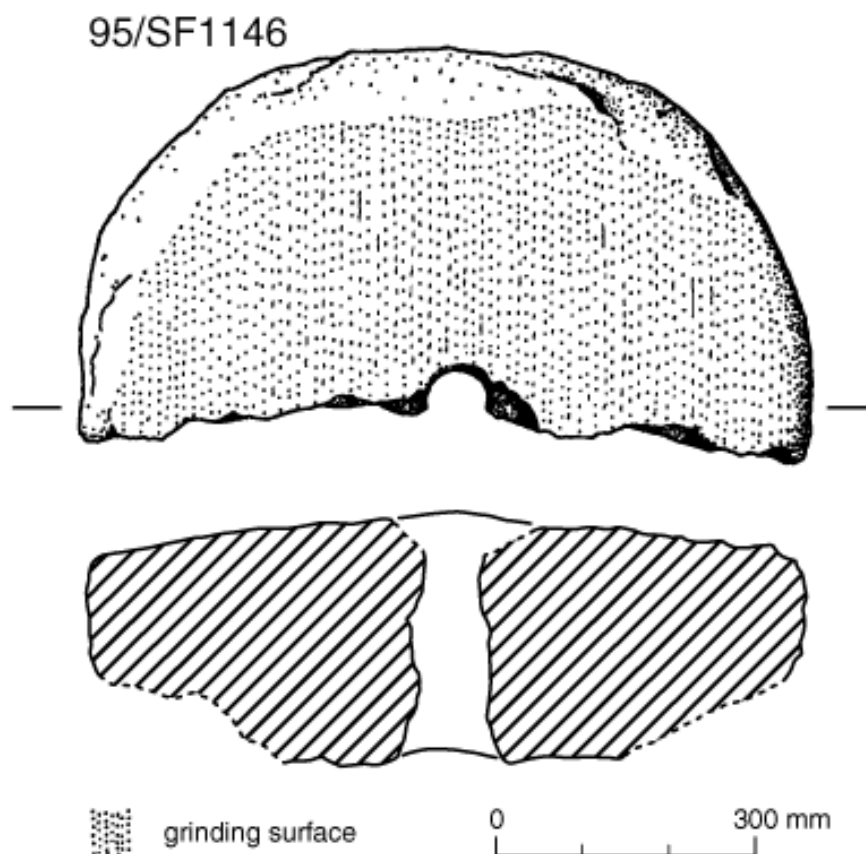
By J. Pickin

Half of a granodiorite millstone (surviving diameter 870mm; breadth/height 550mm; thickness 290mm) found re-used as the marker for an 8th-century grave (95/SF1146, Context 2478). The millstone has been roughly worked and has straight sides, a convex grinding surface and an irregular, edge-damaged base. The socket is exposed in section along the fracture line; it has an irregular profile and expands from 70mm diameter at the grinding surface to 120mm diameter at the opposing end where areas of close pecking survive. The inner face of the socket is highly polished, presumably caused by the rotation of a wooden or metal shaft. The grey granodiorite used for the millstone is visually similar to the granite of the Criffel–Merrick intrusions of central Galloway (R Chadburn, pers. comm.). Granodiorite erratics are found throughout the Wigtownshire Machars and provide a possible local source for this millstone.

The massive nature of the millstone suggests it was a lower stone or bedstone. This identification is supported by the concave grinding surface and the absence of any slots or cuts around the socket for a rhynd (the metal support which connects a top stone to the vertical drive shaft).

This is not the only millstone from early levels at Whithorn. Two large, fragmentary sandstone millstones of ‘Roman type’ were found during the Glebe Field excavations and Hill (1997, 29) has used these to suggest the presence of a Roman or, more plausibly, an early medieval watermill at Whithorn; both stones appear to belong to Hill’s Period I. The millstone described above was found re-used in a Northumbrian context but could have derived from earlier deposits and be contemporary with the other Period 1 millstone fragments. The Whithorn mill site has not been located but presumably stood on or close to the Ket Burn, which is the only source of water power in the immediate vicinity.

The millstone could have been used in either a horizontal or vertical watermill. There is good evidence for the use of horizontal watermills in early medieval Ireland (e.g. Glanmire Co. Cork; Raystown, Co. Meath; Nendrum, Co. Down; cf. McErlean and Crothers 2007) and England (e.g. Corbridge, Northumberland; Tamworth, Staffordshire) and a vertical mill was associated with the royal complex at Old Windsor, Berkshire, in the 7th century. The only early medieval mill site known in Scotland is at Portmahomack, Tarbat Ness, where a horizontal mill forms part of the monastic settlement's industrial and craft working complex (Carver 2004, 19). There is no obvious correlation between millstone diameter and types of mill but it is interesting to note that the Whithorn stone is slightly larger than those from the Tamworth horizontal mill where the average diameter was 650–800mm (Rahtz and Meeson 1992, 176).



**Figure 34 Millstone grave marker**

### 9.5.3 *The stone artefacts*

By J.M. McComish with contributions from D. Craig

A large number of stone objects were retained as small finds; 927 from 1992, 651 from 1993 and 214 from 1995/96 (these totals do not include the spindle-whorls, hones and querns described in 9.3.1, slate pencils described in 9.3.5, gaming boards and marble described in 9.3.6, or the millstone described in 9.5.2). The largest groups recovered were white stones (37% of the total) and roofing stone fragments (28% of the total).

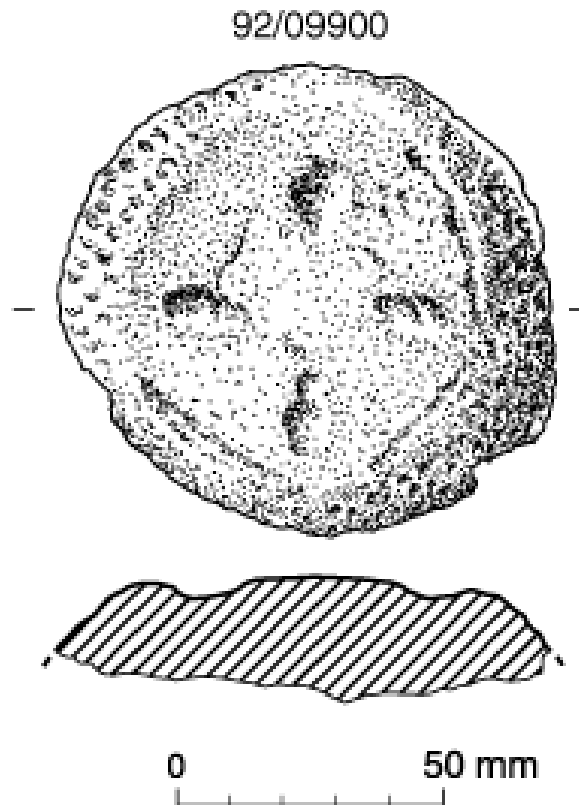
The roofing stone from 1992 was analysed by J. Rogerson at the time of excavation, and the stone artefacts from 1995–96 were researched by A. Nicholson and R. Chadburn as part of the 1996 post-excavation work; their identifications are included in this text. Few of the remaining

objects were reviewed in 2007, though a sample of 23 stone objects excavated in 1992, 41 from 1993 and one from 1995/96 were re-examined. All other identifications given below are based on the site archive small find registers.

### 9.5.3.1 Carved and incised stone

#### **Relief stone**

The only example of a relief carved stone is 92/SF9900 (Fig. 35). Dr Derek Craig contributes the following information regarding this piece: A cross with expanded equal arms is carved in relief within a circular pecked border on the remains of a rounded stone which tapers away to the broken edges. The back appears to be a broken surface with no evidence of dressing. This is the remains of a raised boss, broken away from the centre of the head of one of the disc-headed crosses of the Whithorn School. Identical bosses with crosslets are found on two cross-heads of this type, one from Whithorn itself, and the other from Kirkinner, not far to the north of Whithorn.



**Figure 35 Relief stone**

The Whithorn example is now in the Museum of Scotland (cat. no. IB 35), and is photographed in Crowe (2003, 198, plate 12.1). This cross-head measures 640mm in diameter, so 92/SF9900, at 93mm in diameter, would easily fit at the centre of the head. There are also similar crosslets in all four of the armpits. The Kirkinner example is on display in the parish church (NX 42315148), and differs slightly in having pierced armpits, but the crosslet at the centre of the head is of exactly the same type. The cross-head there is 590mm in diameter.

The Whithorn School crosses appear to date from the 10th century, and are found at a number of sites in the Whithorn area, but only these two are decorated with crosslets. However, this crosslet-boss appears



to have been chiselled away from its cross-head (possibly as an act of iconoclasm), and was almost certainly buried in a residual context.

The fragment was residual within a Period 6 deposit.

#### Incised stones

92/SF10000 (Figs 36-7), from Context 115, a Period 6 quarry context, is a fragment 148 x 112 x 10mm, covered with incised decoration on both surfaces. Dr Derek Craig contributes the following information regarding this piece: The foliate patterns on this stone appear to have been drawn out as exemplars or experiments, as on the motif pieces of slate or bone discussed by Uaininn O'Meadhra (1979; 1987). Similar patterns can be found in the surviving pages of a Carolingian model book of the early 10th century. Scheller (1963) drew attention to an illustrated manuscript of the *Psychomachia* of Prudentius which now survives in two separate parts (Paris, Bibliothèque Nationale, MS lat. 8318; Rome, Biblioteca Apostolica Vaticana, MS reg. lat. 596). He illustrated two line drawings from this, one from the Vatican manuscript showing plant ornament (his Fig. 4 on p. 50), and another from the Paris manuscript showing a bound plant-trail as well as an animal (his Fig. 8 on p. 52). Scheller compared this to several ivories of the Metz and St Gallen schools, one an ivory book cover from St Gall, the other part of an ivory casket now in Berlin (*see O'Meadhra 1987, fig. 60*). This binding of a plant trail can also be found in early medieval metalwork, as well as on the architectural openings of the church tower at Barnack, Northants. However, the piece may be later medieval in date. Similar bound or foliate patterns occur in 13th-century metalwork, for instance on the iron grille across the south entrance to the choir of Lincoln Cathedral (Geddes 1999, 142, fig. 4.227), or the grille over the tomb of Queen Eleanor in Westminster Abbey (Geddes 1991, 180-1, fig. 85).

92/SF22209 is a discoidal stone 51mm in diameter with an incised design of a possible shield-like object with a double-branched cross within. This was from the Period 6 quarry deposits.

A small disc, 92/SF19100, 21mm in diameter, has a central rectangular hole that has been chipped out as opposed to being drilled. Radiating out from the central hole are six lines, resembling spokes on a wheel. Over these is carved what may be a letter S. This object was residual in Period 7 cultivation deposits.

A fragment of greywacke (92/SF14804), 90 x 47mm, has an incised design resembling a whetsheaf on one side. Much of this design has broken off. This was found in the drain associated with the Period 6 byre/stable building. A second greywacke fragment, 92/SF14211, 130 x 93mm, has shallow grooves on one side in what may be a figure of eight shape. This was from a context associated with the Period 6 priory.

93/SF19600 is a greywacke fragment, 128 x 115mm, with a possible cross incised on one side; all the edges are broken off. This was found in Context 451, which is unstratified.

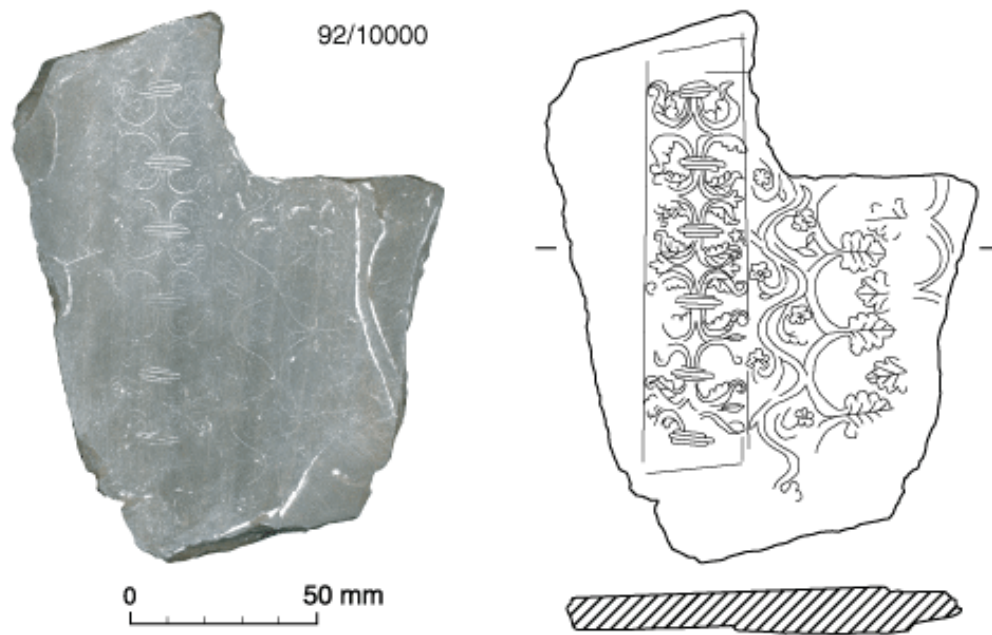


Figure 36 Incised stone 92/SF10000

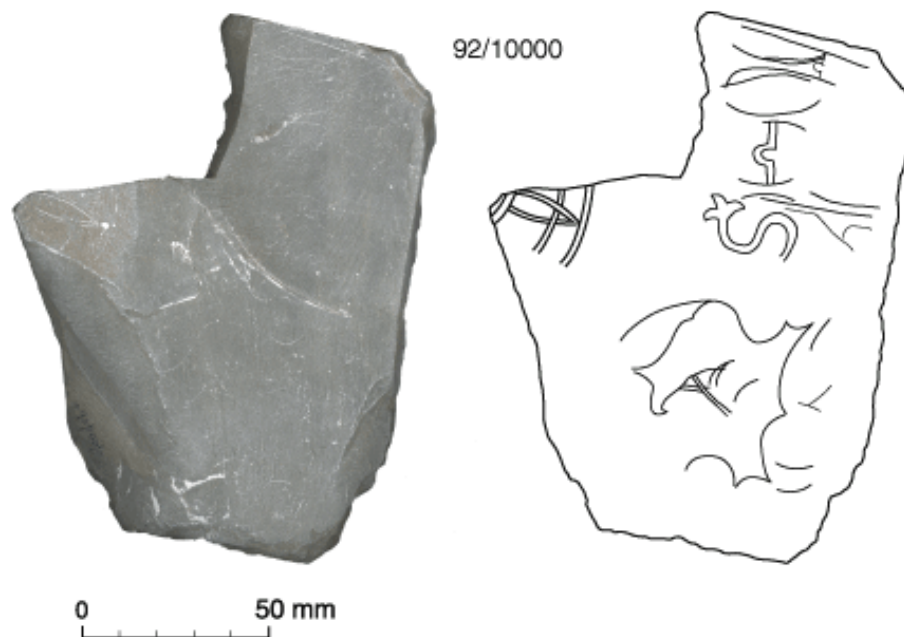


Figure 37 Incised stone 92/SF1000

Two other stones showed deliberate markings. A greywacke fragment, 95/SF433, had two fine parallel incised lines, while 95/SF516 had shallow V-section scores in the form of a horizontal bar over an inverted V, sometimes seen in Anglo-Saxon coins as a form of the letter A. The reverse of the fragment had two fine radiating lines, similar to those on a postulated sundial from the Glebe Field excavations (Hill 1997, 462–3).

### Compass-drawn decoration

Two of the incised stones, 92/SF1385 and 92/SF1386 (Figs 38-9), possibly originated from a single piece, though they were not adjoining. They are 188.5 x 133.5 x 2.7mm and 109 x 105 x 20.5mm respectively. 92/SF1385 has a compass-drawn incised convex groove at one edge, and other shallow scratches, while 92/SF1386 has a slightly convex groove close to one edge and a second possible groove on the same face. The pieces are too fragmentary to determine the original overall design; they were both residual in Period 7 cultivation deposits. Two other stones (92/SF1383-4) were originally interpreted as being associated with 92/SF1385 and 92/SF1386, but re-examination in 2007 suggested that they are of natural origin.

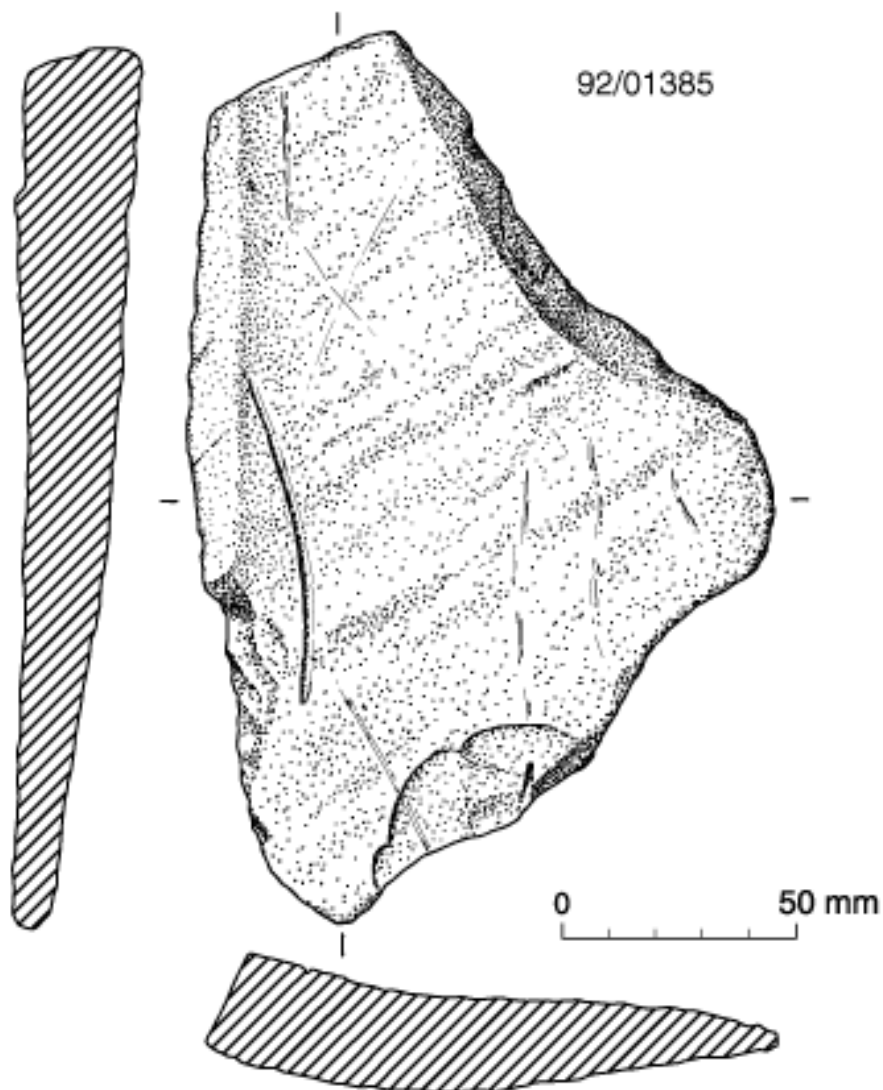
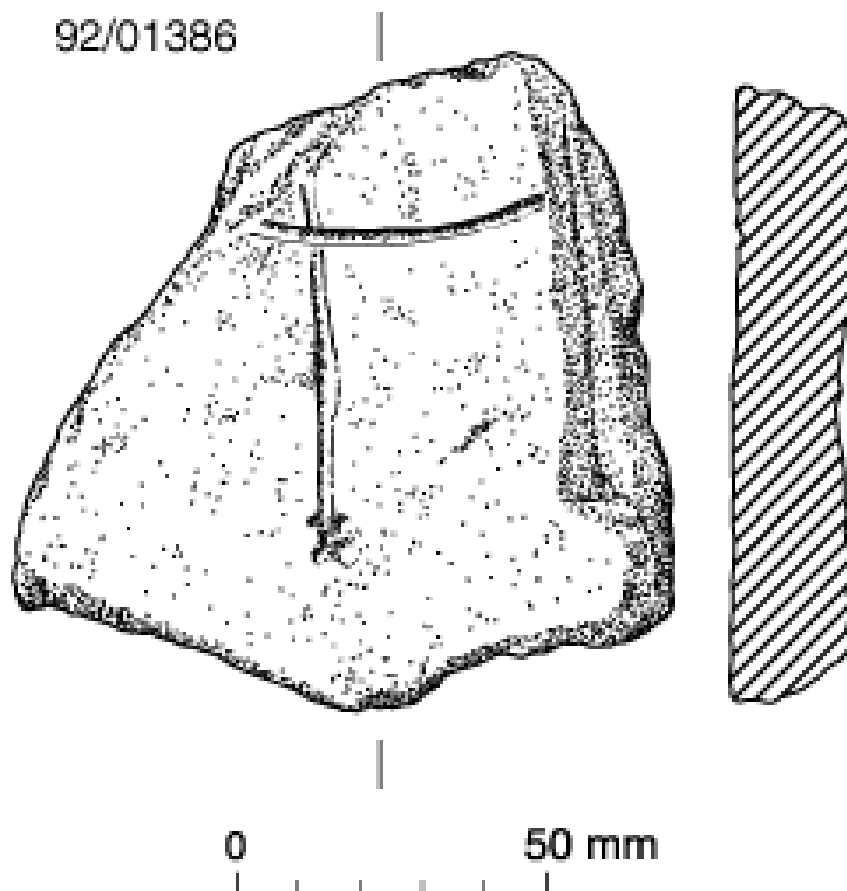
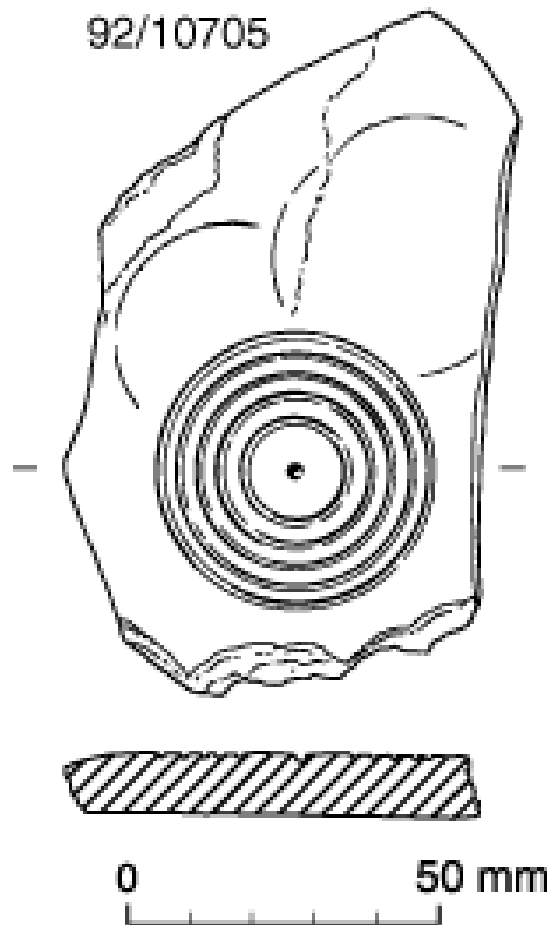


Figure 38 Incised stone 92/SF1385



**Figure 39 Incised stone 92/SF1386**

A stone fragment 115.5 x 68 x x9.5mm, 92/SF10705 (Fig. 40), has five concentric compass-drawn circles, and may be a measuring device or gauge for use in an industrial or craft process. While it could be a doodle, the even spacing and fairly deep incisions, not scratched but gouged out to a similar depth throughout, suggest that it was made for a functional purpose. It was from Context 105, which was associated with the Period 6 byre/stable building.



**Figure 40 Incised stone 92/SF10705**

#### 9.5.3.2 Architecturally utilised fragments

Several stone objects were thought at the time of excavation to represent possible architectural fragments or architecturally utilised stones. These were not seen in the 2007 post-excavation work so their precise form is unknown.

A sandstone block (92/SF12000), 550 x 550x 600mm, is dressed on two adjoining faces that subsequently eroded to a smooth finish. This stone was residual in the Period 7 cultivation soils, but probably originated from the priory buildings.

A fragment of fire-cracked sandstone, 92/22304, is described in the site small finds register as being 'architecturally utilised'. This was one of a number of fragments of stone found within a Period 5 clay deposit (Notebook Wh92 Book 1, 3) possibly as some kind of footing.

Two sandstone fragments (92/SF38601–2) are from a stony deposit associated with Building H in Period in Period 5 (see 6.5.1). They are described as 'possibly architecturally dressed' in the site small finds register. No mention of architectural stones is made in the site notebook (Notebook Wh Book 1, 8), which may suggest that they were misidentified when logged in as finds.

92/SF39614 is a 'possibly architectural moulding with iron concretions'. This was from Context 146 in Period 3, which is a black soil notable for containing abundant metal working waste and E ware pottery. No mention of an architectural stone in association with this context is made in the site archive (Notebook Wh92 Book 2, 9–11) or in Pollock's interim report (Pollock 1997b, 7), perhaps suggesting that the fragment was misidentified as architectural when excavated.

The site small finds register describes 93/SF36500 as 'a fractured fragment with one smooth and roughly rounded edge. Possibly architecturally moulded'. This was from Context 424, a slot with timber planking along the south-western edge of the cut, and stone-packing, interpreted as being in Period 4 (see 6.4.2). No mention of an architectural fragment is made in the site archive (Notebook Wh93 Book AA, 40–1) nor in Pollock's interim report (Pollock 1997b, 3) again, perhaps, suggesting that the fragment was misidentified as architectural when excavated.

Stone fragment 93/SF36600 is described in the site small finds register as a 'fractured fragment with a large area smoothed and rounded. Possibly architecturally moulded'. This was from Context 537 from Building 5 in Period 3 (see 6.3.1). No mention is made in the site archive (Notebook Wh93 Book AA, 26–7) nor in Pollock's interim report (Pollock 1997b, 7) of architectural fragments in association with this building. It seems unlikely that such a simple building would contain a moulded fragment.

A red sandstone 93/SF06457 interpreted at the time of excavation as being 'architecturally utilised' was residual in the topsoil.

In addition, there were a number of fragments from the Period 6 deposits which may represent masons' waste (92/SF15517, 92/SF13311, 92/SF14209, 92/SF14210, 92/SF16324, 93/SF57902).

#### **Pivot stones**

93/SF67500 was described as '1 possible pivot stone with round hole'. This was from Context 455 which was described in the site notebook as a possible doorway, but there is no specific mention of a pivot stone, and there is no mention of a doorway or pivot stone in either of the interim reports (Pollock 1997a and 1997b). Presumably the stone had been discounted as evidence of a possible door by the time the interim reports were written. Re-examination of the stone in 2007 suggested that the irregular surface of the stone, including the supposed circular hole, was entirely natural in origin.

#### **Stone roofing tiles**

A total of 472 roofing stone fragments were recovered from the 1992 excavations, 67 from the 1993 season and two from the 1995–96 work. In addition, 92/SF34310 was a fragment of greywacke which may have been a roofing stone. Most of the roofing stones recovered in 1992 (461 examples) were examined in detail (by J. Rogerson), as were the two 1996 examples (by A. Nicholson). As this represent the overwhelming bulk of the roofing stone recovered from the site it was taken as a representative sample and the remaining roofing stones were not examined in 2007.

Five different stone types are present: greywacke (214 examples from 1992 and 28 from 1993), meta-sediment (128 examples from 1992 and 22 from 1993), siltstone (69 examples from 1992, eleven from 1993 and one from 1995/6), phyllite (37 examples from 1992 and four from 1993)

and blue slate (one from 1993 and one from 1995–96). The stone types of the remaining examples are unidentified.

The locally available greywacke clearly represents the dominant stone type used, but as this stone is difficult to cleave it is not ideal for the manufacture of roofing stones. Siltstone is also a locally available stone, being found in beds interleaved with the greywacke. Meta-sediment is found in the Rhinns of Galloway (Rogerson 1993 site archive) and phyllite occurs to the north-west of Whithorn (Hill 1997, 446). The blue slate is probably from North Wales.

Rogerson noted both fine-grained and coarse-grained greywacke stone. The fine-grained greywacke stones have the greatest range of sizes (75–300mm wide, 200–350mm long and 7–34mm thick), while the coarse-grained are 150–200mm wide, 250–300mm in length and 10–35mm in thickness. The siltstone examples are 50–300mm wide and 7–13mm thick, though one is 20mm thick. The meta-sediment stones were grouped into four sizes, the smallest being 50–75mm wide and the largest 200–350mm wide with estimated lengths of 175–300mm. The longest examples were the narrowest stones, with the wider stones being almost square in shape. The single siltstone tile from 1995–96 (95/SF327) fitted into this size range. The meta-sediment stones range from 5–19.5mm in thickness, with a few examples being over 20mm thick. The phyllite stones fall into two groups, one 75–100mm wide, the other 125–150mm wide, with estimated lengths of 100–250mm and thicknesses of 5–12mm; four examples were slightly thicker at 12–18mm.

### 9.5.3.3 Stone artefacts

#### **Graffiti**

In addition to the roofing slate with graffiti (see 9.5.3.2), there was one other fragment from the site with possible graffiti of random incisions on both surfaces (93/SF47603). This was from a stony deposit in Period 5.

#### **Grave markers**

Seven stones from the 1993 excavations were identified at the time of excavation as grave markers (SF93/38000, 93/SF38804, 93/SF45800, 93/SF49300, 93/SF59200 and 93/SF66901–2). Of these four were within the grave cuts and one was in a post-hole adjacent to a grave. The remaining two were from Context 573, described as a rubble drain in the site notebook (Notebook AA, p43); this was a Period 2 feature. Why these latter two stones were felt to be grave markers is unclear, but this may represent a recording error. Six of these stones were re-examined in 2007 and were found to be fragments of stone of natural origin, ranging in size from 160 x 170 x 60mm to 400 x 240 x 70mm, and neither worked nor shaped.

#### **Discoidal stones**

Forty-one stones were described in the archive as discoidal; some may be of natural origin. The discoids are in a variety of stone types (phyllite, greywacke, meta-sediment and black basalt). These could have been used for a variety of purposes such as gaming counters, pot lids or weights, depending upon their size.

The discoidal stones are: 92/SF03218–20, 92/SF08323, 92/SF09618, 92/SF12102, 92/SF15803, 92/SF15804, 92/SF16014, 92/SF17218, 92/SF18317, 92/SF19920, 92/SF20514, 92/SF22902, 92/SF26037, 92/SF26417, 92/SF28832, 92/SF28833, 92/SF29930, 92/SF31729, 92/SF31730,

92/SF32204, 92/SF33302, 92/SF33500, 92/SF34703, 92/SF37803, 92/SF39204, 92/SF44501, 93/SF03764, 93/SF05910, 93/SF06312, 93/SF07179, 93/SF07180, 93/SF10124, 93/SF19303, 93/SF24001, 93/SF34900, 93/SF36601, 93/SF46907, 93/SF56201 and 95/SF1079.

### **Perforated stones**

Five stone fragments from 1992–93 (92/SF03636, 92/SF19919, 92/SF21102, 92/SF46707 and 93/SF50705) have perforations, but in most cases these occurred on the edges of badly broken fragments, making the original function unclear. 92/SF03636 was a flat piece of stone 13mm thick, pentagonal in plan, with an 8mm diameter hole drilled partially through the stone on the two opposing flat faces; the holes were slightly off-centre and the original function of this piece is unclear. In addition, three fragments of greywacke from 1995–96 (95/SF8 which was 26 x 33 x 5mm, 95/SF491 which was 27 x 17 x 4mm, and 95/SF1509 which was 80 x 80 x 20mm) have circular perforations made by some sort of drill or auger. The precise function of these three stones is unclear, but 92/SF21102 and 92/SF19919 were not thought by Nicholson to be spindle whorls.

### **Rubbing and smoothing stones**

Fifty-five cobbles and pebbles were interpreted as smoothing stones, the large number being a reflection of the industrial usage of the site. Those from 1995 were examined in detail by A. Nicholson, and those recovered in 1996 by A. Nicholson and R. Chadburn. They found that the smoothing stones have small areas of wear which were often associated with longitudinal striations, and in two cases with a yellow-brown discolouration or staining (95/SF912 and 95/SF915). Some of these stones are pebbles which had been selected for use as smoothers because their shape facilitated a good grip between the thumb and the first two fingers (e.g. 95/SF235). Similar stones found in Hill's excavations are interpreted as possibly associated with metal working.

The rubbing and smoothing stones are: 92/SF10825, 92/SF11527, 92/SF13510, 92/SF17003, 92/SF19407, 92/SF19508, 92/SF21409, 92/SF22208, 92/SF22903, 92/SF24007, 92/SF26101, 92/SF26418, 92/SF28410, 92/SF30300, 92/SF33604, 92/SF37006, 92/SF42304, 92/SF42804, 92/SF40401–2, 93/SF06308, 93/SF07337–8, 93/SF22301, 93/SF34603, 93/SF62001, 95/SF28, 95/SF114, 95/SF127, 95/SF235, 95/SF405, 95/SF908–15, 95/SF919, 95/SF921–2, 95/SF924, 95/SF926, 95/SF1075, 95/SF1087, 95/SF1144, 95/SF1167, 95/SF1191, 95/SF1197, 95/SF1307, 95/S1338, 95/SF1346, 95/SF1569 and 95/SF1574.

In addition, there are three granite cobbles (95/SF376, 95/SF521 and 95/SF747) with glossy smoothed surfaces resulting from polishing. The latter two of these were fire-damaged/cracked. As with the smoothing stones, these may have been associated with metal working in some way. Unfortunately, none was found in association with furnaces or metal working areas, being from a Period 4 grave fill, Period 7 ploughsoil and a Period 5b grave fill respectively.

There was a fine-grained, black-purple basalt stone, 95/SF01569, with smoothed edges, one smoothed face, and one possibly smoothed face. The smoothed face has fine longitudinal and transverse striations. As this stone is too soft for use in metal working it must have been used for smoothing some other substance; Nicholson and Chadburn suggest leather or parchment.



### Pin-sharpener

Three incised fragments (95/SF00155, 95/SF00432 and 95/SF00799) have V-sectioned scores and grooves, together with fine scratched lines on one surface. Nicholson interprets these as pin-sharpener, used to put points on various implements such as pins, awls and knives. They might have been used in either domestic or industrial contexts.

### Miscellaneous artefacts

Various stone fragments were found which had clearly been used in some way, though their precise function is unclear.

92/SF25500 had a series of serrations around the edges suggesting that it may have been a tool. It was residual within Period 7 cultivation soils. Three stones (92/SF51000, 93/SF46401 and 93/SF31900) have pecked surfaces. Six fragments of greywacke (two adjoining) have notches cut into one edge (93/SF05907–8, 93/SF17206, 95/SF1137, 95/SF925 and SF95/1562), and a further nine stones seem to have been deliberately worked on the edges (93/SF49402 and 93/SF56709) or shaped (92/SF65400, 92/SF06831, 93/SF10125, 93/SF17012, 93/SF17205, 93/SF57200 and 93/SF57205). One stone, 93/SF64501, has one completely smooth end and one partially smooth end suggesting it may have been used for polishing or rubbing, and 92/SF30506 comprised two fragments of possibly utilised quartz. One stone has pecked notches along one edge (95/SF259), with worn grooves radiating from the notch, suggesting a line under tension had been passed through it. A sandstone pebble with a worn facet may have been used in some way (95/SF923). It lacks the distinctive striations suggestive of either rubbing stones or plough pebbles, but may have been used for rubbing a non-abrasive material. A small rounded basalt ball (95/SF405) had been faceted to improve its roundness, a feature also seen on a larger basalt ball from the Glebe Field site (Hill 1997, 459). The precise function of this stone is unclear. A sandstone pebble has a tooled tapering notch (95/SF231).

A large number of flat stones had randomly arranged incised grooves/lines on one or both flat surfaces. The grooves/incisions suggest use, possibly for industrial functions, though the precise usage is unclear.

The incised or grooved stones are: 92/SF01739, 92/SF01844, 92/SF01845, 92/SF01919, 92/SF03221–2, 93/SF03602, 92/SF03733, 92/SF04509, 92/SF05308, 92/SF08520, 93/SF09027, 92/SF14107–8, 92/SF14911, 92/SF16911, 92/SF17709–11, 92/SF22305–6, 92/SF23105, 92/SF23207, 92/SF25606, 92/SF26814, 92/SF27418, 92/SF28836, 92/SF32308, 92/SF33502, 92/SF34401, 92/SF35018, 93/SF36501, 92/SF36800, 92/SF37007, 92/SF37802, 92/SF40403, 92/SF46303, 93/SF01101, 93/SF01801, 93/SF04824, 93/SF05909, 93/SF06301, 93/SF06461, 93/SF06832, 93/SF07336, 93/SF08702, 93/SF09025, 93/SF09026–9, 93/SF12120, 93/SF12224, 93/SF13200, 93/SF16300, 92/SF16912–14, 92/SF17320, 93/SF18107, 93/SF25603, 93/SF22709–10, 93/SF22714, 92/SF33503, 92/SF34006, 93/SF36803, 93/SF3170193/SF37500, 93/SF38900, 93/SF39600, 92/SF42001, 93/SF46402, 93/SF46705, 93/SF47402, 93/SF47602, 93/SF47604, 93/SF50003, 93/SF50100–1, 93/SF56711, 93/SF57204, 93/SF57703, 93/SF59800, 93/SF59900, 93/SF60703 and 93/SF64300.

#### 9.5.3.4 Utilised stones

### Plough pebbles

A total of 28 plough pebbles were recovered (92/SF46011, 93/SF16602, 93/16702, 93/SF23003, 93/SF24404, 93/SF25906, 93/SF32805, 93/SF36605, 93/SF36900, 93/SF37200, 93/SF38508, 93/SF42901, 93/SF45602, 93/SF47100, 93/SF 47200, 93/SF50400, 93/50600, 93/SF60709, 95/SF37, 95/SF106, 95/SF907, 95/SF1057, 95/SF1061, 95/SF1070, 95/SF1175, 95/SF1489, 95/SF1524 and 95/SF1553). Plough pebbles were inserted into wooden plough mouldboards to protect them from erosion. Four were of quartz, four of granite and six of quartzite, while the geology of the remainder is unidentified.

Six of these finds occurred in Period 2, three in Period 3, one in Period 4a, four in Period 5, one in the Period 6 cemetery, one in topsoil and the remainder were unstratified. The Period 2–4a plough pebbles range in date from the pre-6th century to AD 730–845, while the remaining examples are probably residual.

Far greater numbers of plough pebbles (329 examples) were found in the Glebe Field excavations (Hill 1997, 464), which may indicate different activities on the two sites. The use of plough pebbles at Whithorn has been dated to between the late 5th–early 6th century and the mid-9th century (*ibid.*, 464).

### Hammer and anvil stones

Two stones from 1993 may be hammer stones: 93/SF379 and 93/19500. The first of these was residual in the topsoil, but the latter was associated with Building 17 in Period 5c (see 6.5.3). A greywacke boulder (95/SF176) has both grooves and hammer marks, suggesting it may relate to metal working. A further three ‘anvil’ stones with hammer marks were found (95/SF48, 95/SF175 and 95/SF301). A greywacke fragment (95/SF374) with hammer marks along its obtusely angled edge may have been used for folding or bending sheet or strip metal. A further greywacke fragment had been chiselled off bedrock (95/SF524) and has a V-section transverse groove cut into it. It is similar to an iron anvil with transverse grooves from Coppergate (Ottaway 1992, 512), which was thought to be for needle manufacture or wire-drawing. An elongated stone 92/SF21501 seemed to have been shaped for use as a pounder.

### Marked stones

One stone from 1992 and four from 1995/6 were accidentally marked, probably as a result of plough damage.

### Heat-affected stones

A large number of fire-cracked or burnt stone fragments were retained. None of the material from 1992–93 is recorded as coming from hearths, but rather occurred randomly in deposits of soil, post-hole backfills, wall foundation trenches, ditch backfills, topsoil, grave backfills etc. The 1995–96 burnt stones (95/SF353 and 95/SF356) were hearth assemblages from Context 2103, Period 5a, and comprised fourteen stones in total. They are associated with pebbles covered in boulder clay (95/SF917–19).

The burnt or fire-cracked stones are: 92/SF20808–9, 92/SF25408, 92/SF31504, 92/SF27309, 92/SF35500, 92/SF33303, 92/SF37303, 92/SF30508, 92/SF33402, 92/SF33810, 92/SF37204, 92/SF39400, 92/SF44003, 92/SF01387, 92/SF13312, 92/SF15915, 92/SF16407, 92/SF17321, 92/SF19923, 92/SF25928, 92/SF25309, 92/SF26208, 92/SF26907, 92/SF28414, 92/SF28607, 92/SF29102, 92/SF37103, 92/SF45506, 92/SF45704, 92/SF46009, 92/SF46205, 92/SF28837,

92/SF29932, 92/SF35807, 92/SF33605, 92/SF36502, 92/SF19706, 92/SF28900, 92/SF25022, 92/SF21011, 92/SF26307, 92/SF29207, 92/SF34009, 92/SF42605, 92/SF43904, 92/SF28720, 93/SF1103, 93/SF1600, 93/SF2700, 93/SF2900, 93/SF3000, 93/SF3765, 93/SF3770, 93/SF6311, 93/SF8801, 93/SF17408, 93/SF18106, 93/SF18204, 93/SF19606, 93/SF22105, 93/SF22902, 93/SF23002, 93/SF23600, 93/SF30300, 93/SF36604, 93/SF44402, 93/SF48402, 93/SF49401, 93/SF51505, 93/SF53003, 93/SF53205, 93/SF57302, 93/SF57501, 93/SF58405, 93/SF59008, 93/SF60400, 93/SF60501, 93/SF60800, 93/SF62202, 93/SF62701, 93/SF64209, 93/SF64403, 93/SF65204 and 93/SF65905.

Five stone fragments/pebbles (92/SF8117, 92/SF8325, 93/SF30500, 93/SF46103, 95/SF493) have vitrified surfaces indicating that they had been subjected to intense heat. The first of these were residual in the topsoil, two were from the Period 6 later medieval quarry deposits, while the latter was from the Period 5 cemetery.

### **White stones**

Large numbers of small finds were recorded as white stones (214 in 1992, 339 in 1993 and 115 in 1995–96). These totals are somewhat misleading; the actual number of fragments retained is far higher as many of the small finds were for groups of quartz rather than for individual objects. For example, 93/SF46707 comprised 128 fragments of quartz. These white stones included quartz fragments and pebbles, calcium carbonate encrusted or stained pebbles, and granite pebbles and cobbles. The excavations at Glebe Field recovered large quantities of white stones that were interpreted as having ritual significance, possibly being used to cover graves (Hill 1997, 472–3).

### **Other stone**

Three pieces of burnt limestone (95/SF252, 95/SF313 and 95/SF314) may represent material added to the fields to be broken down and act as fertiliser.

Two fragments of haematite were recovered, together with a fragment of stone and a pebble covered in haematite (92/SF26038, 92/SF25405, 92/SF26502 and 92/SF26905). A fragment of kaolinite was also recovered (92/SF21302), together with a fragment of blue-grey quartz with iron-derived colouration which may have been brought onto the site with ore (95/SF19). 92/SF08521 and 93/SF24600 are fragments of agate or chalcedony. Haematite is an iron oxide, occurring in some sedimentary rocks. In the past it has been used in iron smelting, but its use at Whithorn is more likely to have been as pigment, in cosmetics or as jeweller's rouge (Rogers 1993, 1316).

Six stone fragments and two pebbles from 1993 had plaster adhering to them (93/SF58900, 93/SF2701, 93/SF28803, 93/SF62004, and pebbles 93/SF56707 and 93/SF60707). Three of these were unstratified and one was from modern topsoil. SF/9360707 is from a Period 2 context while 93/SF28803 is from a context associated with the Period 5 graveyard, but it is unclear if this represents intrusive material.

A number of stones were seemingly natural in origin, some of which had been taken as stone samples (92/SF29000, 92/SF13310, 92/SF28834, 92/SF34005, 93/SF56710, 93/SF62900, 93/SF10131, 93/SF62801, 93/SF57702, 93/SF60704, 95/SF1100, 95/SF1389, 95/SF117, 95/SF1676, SF95157, 95/SF553, 95/SF1470 and 95/SF1499).

In addition, 45 pebbles from the 1992 excavations, 44 from the 1993 season and two from 1995–96 were retained.

## 10. THE COINS

### By C. Barclay

There were 44 coins from the excavations; these were identified as far as was possible. Twenty-eight were Scottish issues of 15th- to 17th-century date, whilst the English material comprised three cut halfpennies of 12th- to 13th-century date, an Edwardian sterling, an early 15th-century groat and three Elizabethan coins.

Later material comprised three coins of 19th- to 20th-century date and a modern copy of a Saxon-period sceatta. The only foreign coin recovered was a 17th-century French double tournois.

Most of the coins were recovered from topsoil or have no phasing information. The exceptions are 92/SF9400, 92/SF8400 and 92/SF8700 (uncertain, c.1466, 1460–88 respectively) which are from a Period 6 midden; 93/SF34100 from Period 5, 92/SF16500 from a gully fill in Period 6; 92/SF3800 from a priory building Period 6, and 92/SF24700 (1247–70) in Period 4c (which must represent contamination).

Find	Context	Material	Name	Details
92/SF29700	206	Silver	Coin, halfpenny	Henry II–Henry III?; cut halfpenny short-cross coinage; 1180–1247 0.75g  Originally identified as a cut halfpenny, probably of the reign of William I (the Conqueror).
92/SF24700	53	Silver	Coin, halfpenny	Henry III; cut halfpenny long-cross coinage; 1247–79 0.80g  Originally identified as a cut halfpenny, probably of the reign of William I (the Conqueror).
93/SF09300	929	Silver	Coin, halfpenny	Henry III; cut halfpenny long-cross coinage, class V; Canterbury: 1251–72 0.66g Originally recorded as halfpenny EDWARD I 1272–1307
93/SF27400	935	Silver	Coin, penny	Edward I/II; penny uncertain class; Canterbury; post-1279 0.87g (fragment)
Find	Context	Material	Name	Details
92/SF03400	101	Copper alloy	Coin, penny	Uncertain base billion penny counterfeit?; C15th–16th facing bust, crown of cross and 4 pellets / long cross with 3 pellets in

				each angle 0.37g
93/SF09100	929	Silver	Coin, groat	Henry VI; groat Annulet issue; Calais; 1422–27 3.79g
92/SF18800	200	Copper alloy	Coin, penny	James II; billion penny 2nd coinage, 2nd issue; uncertain mint; 1451–60 S.5250 ff. 0.47g  Originally recorded as a silver James VI twelvepence.
92/SF09400	115	Copper alloy	Coin, penny	James II/III?; billion penny Uncertain issue 0.35g
92/SF01100	11	Copper alloy	Coin, penny	James III; copper penny 'Crosraguel' type I; St Andrews?; 1460– 88 S.5307 1.24g
92/SF06300	901	Copper alloy	Coin, penny	James III; billion penny type A; Edinburgh; 1460–88 S.5299 0.49g  Originally recorded as James IV penny.
92/SF08700	115	Copper alloy	Coin, penny	James III; copper penny 'Crosraguel' type IIa; St Andrews?; 1460–1488 S.5309 1.33g
92/SF19200	908	Copper alloy	Coin, penny	James III; copper penny 'Crosraguel' uncertain type; St Andrews?; 1460–88 S.5307 ff. 0.73g
92/SF20000	200	Copper alloy	Coin, penny	James III; billion penny type C; Edinburgh; 1460–88 S.5301 0.26g  Originally recorded as James IV billion penny.
92/SF08400	115	Copper alloy	Coin, farthing	James III; copper farthing 'Black money' type I; Edinburgh; c.1466 S.5305 0.16g

Find	Context	Material	Name	Details
92/SF13200	904	Copper alloy	Coin, farthing	James III; copper farthing 'Black money' type I; Edinburgh; c.1466 S.5305 0.32g

93/SF34100	1012	Copper alloy	Coin, farthing	James III; copper farthing 'Black money' type I; Edinburgh; c.1466 S.5305 0.62g
92/SF02200	13	Copper alloy	Coin, farthing?	James III?; copper farthing? 'Black money' type II; Edinburgh; c.1470 cf. S5306 0.19g  Originally recorded as a probable half-bawbee. Reign of James V or Mary Queen of Scots.
92/SF16500	36	Copper alloy	Coin, farthing	James III; copper farthing 'Black money' type II; Edinburgh; c.1470 S.5306 0.22g
92/SF49200	923	Copper alloy	Coin, penny	James IV; billion penny 2nd issue, type II; Edinburgh; 1488–1513 S.5360 0.57g
93/SF09200	929	Copper alloy	Coin, penny	James IV; billion penny 2nd issue, type IV; Edinburgh; 1488–1513 S.5362 0.74g
93/SF47000	942	Copper alloy	Coin, penny	James IV; billion penny 2nd issue, type II; Edinburgh; 1488–1513 S.5360 0.66g
92/SF03900	11	Copper alloy	Coin, bawbee	Mary; billion bawbee 1st period; Edinburgh; 1542–58 S.5433 1.27g
92/SF01402	11	Copper alloy	Coin, half bawbee	Mary, billion half bawbee 1st period; Edinburgh; 1542–58 S.5435 0.27g (fragment)
92/SF01401	11	Silver	Coin, bawbee	Mary; billion bawbee 1st period; Stirling; 1544 S.5434 1.24g
92/SF01400	11	Copper alloy	Coin, lion	Mary; billion lion 1st period; Edinburgh; 1558 S.5445 0.83g

Find	Context	Material	Name	Details
92/SF03800	105	Copper alloy	Coin, lion	Francis and Mary; billion lion Edinburgh; 1559 S.5449 0.59g

				Originally recorded as a James IV penny
92/SF01600	11	Silver	Coin, shilling	Elizabeth I; shilling i/m cross-crosslet; 1560–61 4.74g
92/SF05900	902	Silver	Coin, shilling	Elizabeth I; shilling i/m martlet; 1560–61 6.06g
92/SF00600	11	Silver	Coin, sixpence	Elizabeth I; sixpence i/m pheon; 1561 3.04g
92/SF00700	11	Copper alloy	Coin, plack	Mary, countermarked under James VI; billion plack 1st period; Edinburgh; countermarked with heart and star, 1575 S.5437 1.06g  Originally recorded as probable JAMES III Scotland 1460–88.
92/SF01403	11	Copper alloy	Coin, plack	Mary, countermarked under James VI; billion plack 1st period; Edinburgh; countermarked with heart and star, 1575 S.5437 1.44g
92/SF02600	101	Copper alloy	Coin, ryal	James VI; silver ryal issued 1570 and countermarked with crowned thistle, 1578 S.5472 30.03g
93/SF03100	1000	Silver	Coin, testoon	Francis and Mary, countermarked under James VI; silver testoon 2nd period; Edinburgh; countermarked with crowned thistle, 1578 S. 5417 5.50g
92/SF18700	908	Silver	Coin, twelvepence	James VI; silver twelvepence Edinburgh; 1594 S.5496 0.63g  Originally recorded as a James VI copper alloy twopence.
92/SF05901	902	Copper alloy	Coin, turner	James VI; copper turner Edinburgh; issue of 1614 S.5523 1.37g  Originally recorded as Francis and Mary lion or 'hard head' (1 and a half).

Find	Context	Material	Name	Details
92/SF01500	11	Copper alloy	Coin, turner?	Charles I/II?; copper turner? Edinburgh: coinage of 1642–63

				cf. S 5602 or 5625 1.45g
93/SF10500	930	Copper alloy	Coin, double tournois	Uncertain issuer; copper double tournois C17th 1.72g
93/SF03200	1000	Copper alloy	Coin, halfpenny	Victoria; halfpenny 1861 5.08g
93/SF02400	1000	Copper alloy	Coin, penny	Victoria; penny 1875 7.05g
93/SF04801	1000	Copper alloy	Coin, halfpenny	George V, halfpenny 1925 5.15g
92/SF32403	915	Copper Alloy	Coin, penny	George VI; penny dated 1939 [identification by N.S.H. Rogers]
93/SF04100	1000	Copper alloy	Coin, sceatta	Modern copy of Frisian sceatta 'Porcupine' type, marked with incuse R on reverse 0.95g
92/SF01000	11	Copper alloy	Coin	Unidentified Copper alloy; 15mm 0.36g  Originally tentatively identified as a half hard head of the reign of James VI.
92/SF06000	902	Copper alloy	Coin	Unidentified Copper alloy; 15mm 0.38g
92/SF06001	902	Copper alloy	Coin	Unidentified Copper alloy; 13 x 9mm 0.14g

**Table 10 Catalogue of the coins in chronological order**

S (eg S.5445): Anon., *Spink Standard Catalogue of British Coins: Coins of Scotland, Ireland and the Islands*, 2nd edition (London, 2002).

## 11 THE OSTEOLOGICAL ANALYSIS OF THE HUMAN BONES

By K. Tucker

### 11.1 Introduction

A total of 156 articulated inhumations from three seasons of excavation (26 from 1993, 56 from 1995 and 74 from 1996) and a substantial amount of disarticulated bone from 85 separate contexts from four seasons of excavation (10 from 1992, 10 from 1993, 28 from 1995 and 37 from 1996) were analysed by the author for the purposes of this report between 2005 and 2007.

### 11.2 Preservation

The general preservation of bone, both in the articulated inhumations and in the disarticulated material, was generally only moderate to poor, with degradation of bone surfaces and total disintegration of many skeletal elements. In many cases, skeletons were represented only by the cranial vault and dentition and, unfortunately, this meant that the amount of osteological information obtainable from the skeletons was greatly reduced. Ten skeletons that were recorded at the time of excavation (2096, 2148, 2163, 2214, 2226, 2259, 2295, 2453, 2611, 2626) are no longer in the archive. Four of these (2163, 2226, 2453, 2611) were recorded as disintegrating upon excavation, which explains their absence, while a further two (2096, 2295)



were recorded as being in very poor preservation at excavation and were never recorded as being present during processing. There was no information on the excavation context cards for a further three (2148, 2214, 2259) and these were not received for processing, which may also suggest that they disintegrated during excavation. One skeleton (2626) was recorded as being in fairly good condition at excavation, but was never received for processing, suggesting that it may never have been lifted, while one skeleton (2126) was recorded during an earlier assessment as having surviving dentition, which cannot now be located.

### 11.3 Methodology

All of the skeletal material was examined in detail and an inventory of skeletal elements was compiled. Age and sex were attributed to each individual where possible, and metrical and non-metrical data were collected. Pathological changes were also recorded and photographed where appropriate.

An assessment of age for the adult individuals was determined from, where possible, the changes to the pubic symphysis (Brooks and Suchey 1990) and the auricular surface of the ilium (Buikstra and Ubelaker 1994). Immature skeletons were aged from dental development, long bone length and epiphyseal fusion (Scheuer and Black 2000). The age of immature individuals can be determined with a much greater degree of accuracy than that of adults, due to the fact that the growth of the bones and development of the teeth follow a relatively predictable course, up to the time when the final epiphyseal fusion takes place around the age of 25. However, the degeneration of the pelvis of the adult skeleton depends on the sex, health and lifestyle of each individual, and tends to vary to a greater extent with increasing age. Therefore, the age of adult skeletons can only be assessed to within five to ten years, and cannot be reliably determined beyond 46 years.

The age of the individuals was divided into a number of categories, starting with foetus (up to 40 weeks in utero), neonate (around the time of birth), infant (one month to one year), younger childhood (1–6 years), older childhood (7–12 years), adolescent (13–18 years), young adult (19–25 years), young middle adult (26–35 years), old middle adult (36–45 years) and mature adult (46+ years). There may be overlaps between categories, or a broad category, such as adult, may be used where insufficient evidence was present to age an individual more accurately.

As the preservation of bone was generally poor, this reduced greatly the number of individuals whose age could be determined from the pubic symphysis and auricular surface. Therefore, age was also estimated using the dental attrition method as given in Brothwell (1981), which was based on observations of prehistoric to medieval British skeletal populations. It is recognised that any estimation of age based on dental attrition rates is likely to be less accurate than other methods, as dental attrition is dependent on diet and methods of food preparation, which can be population specific, as well as varying between individuals in a single population. Dental attrition can also be affected by periods of illness, which may lead to different foods being consumed from the norm, and pathological conditions, such as dental disease, facial paralysis, or even an unconscious habit of teeth grinding. Therefore, in individuals where age could be determined from the os coxa, that estimation should be preferred; however, dental ageing at least allows individuals to be placed into rough categories of ascending age.

The sex of the adult individuals was determined from, where possible, the assessment of several sexually dimorphic features of the pelvis and skull (as given in Buikstra and Ubelaker 1994). A

five-sexes classification (female, ?female, undeterminable, ?male, male) was used. Sex cannot easily be determined for immature individuals, as the skeleton only becomes truly sexually dimorphic during puberty. There have been several methods devised to try to sex the immature skeleton (for example, Weaver 1980, Schutkowski 1993, Molleson *et al* 1998), but during this analysis no attempt was made to sex immature individuals.

The stature of the adult individuals was calculated, where possible, from long bone lengths, which were placed into the regression formulae developed by Trotter (1970). The cranial index, which records the shape of the head, was also calculated, where possible, as given in Brothwell (1981). The dentition, where it could be analysed, was recorded as follows (permanent and deciduous dentition respectively):

UR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	UL
LR	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	LL

UR = Upper right, LR = Lower right, UL = Upper left, LL = Lower left

Upper right	51	52	53	54	55	56	57	58	59	60	Upper left
Lower right	70	69	68	67	66	65	64	63	62	61	Lower left

/ tooth lost post-mortem

X tooth lost ante-mortem

--- jaw and teeth not present

np tooth not present

c caries in tooth

a abscess

e tooth erupting

u tooth unerupted

The disarticulated human remains were quickly scanned and an inventory produced that included information about the element present, the side, and if age and sex could be determined for the element. Pathological changes, and any other anomalies, were recorded and photographed where appropriate.

For a catalogue of the burials see Appendix 5; for a catalogue of the disarticulated human bone see Appendix 7 and for summary of the skeletal information see Appendix 6:-

#### **Table 11 Summary of skeletal information**

### **11.4 Discussion**

Stratigraphic analysis of the site indicates that the inhumations date from three different phases of burial. There were four skeletons from Period 3/1995–96 Phase 4 (6th century), 112 skeletons from Period 4/1995–96 Phase 6 (7th–9th century), and 40 skeletons from Period 5b/1995–96 Phase 8 (11th–12th century). The burials from Period 4 were further separated into two distinct

sets, based on differing grave alignments. Sixty-five burials were from the first alignment (Period 4a) and 47 were from the second alignment (Period 4b). This distinction between the two sets has been retained in the following discussion in order to see whether the change in burial alignment is reflected in any changes in the cemetery population.

#### 11.4.1 *Period 3 (6<sup>th</sup> century)*

Only four skeletons from this phase were sufficiently preserved for analysis and, therefore, little can be said in terms of the population as a whole. Three of the skeletons were adults, one of whom could be more accurately aged and sexed as an old middle adult (36–45 years) male, and one was an older adolescent (16–19 years) of indeterminate sex. Only the adolescent individual had surviving dentition and this showed evidence for calculus deposits, possibly suggesting a poor level of dental hygiene, and enamel hypoplastic lines on the crowns of the third molars, which indicates disturbance to the formation of the tooth enamel as a result of a period of illness or stress. The old middle adult male had evidence for degenerative joint disease of the elbow, hips and knee, and a cortical defect at the attachment site for M. soleus on the tibia, which occurs as a result of repeated microtrauma at the site of attachment of muscles through heavy or unusual use of a particular muscle group. All of these conditions are common in archaeological skeletons of all periods, with calculus and degenerative joint disease both being present in the 6th-century burials from Hill's excavations in the Glebe Field (Cardy 1997, 554; Lunt and Watt 1997, 581).

#### 11.4.2 *Phase 6 (7<sup>th</sup>-9<sup>th</sup> century)*

One hundred and twelve skeletons from this phase (65 from the first burial alignment group and 47 from the second) were available for analysis. The following tables show the age distribution of these skeletons as calculated from the standard methods (Table 12) and from the dental development and attrition method (Table 13).

The first table indicates the general poor preservation of the skeletal remains, which only allowed five adult individuals from the first alignment group, and one from the second alignment group to be aged more accurately using the standard methods. The dental development and attrition methods did allow for a much larger number of individuals to be assigned to a general age category. Using the results from this method, it can be seen that there are no individuals younger than one year of age in the first group and no individuals younger than seven years of age in the second group. This lack of very young individuals does not reflect the normal pattern expected for a pre-industrial population, which should have the greatest number of sub-adult deaths occurring before the age of one year (Chamberlain 2000, 106) but is something that is often noted in archaeological skeletal populations. It has often been interpreted as being due to easier truncation and disturbance of the smaller burials of young individuals and a lower likelihood of recovery due to them not being recognised as human remains, or from being missed during time-constrained commercial excavations (Chamberlain 2000, 105). It has also been interpreted as very young individuals not being accorded burial in the same area as older individuals (Mays 1998, 25). Hill's excavations of the 6th-century graveyard also demonstrated a lack of young individuals (Cardy 1997, 552), while the excavations of the 7th- to 9th-century cemetery revealed an area that was exclusively used for the burial of individuals under the age of 13 years, with a large proportion of those being foetal, neonates or infants (Cardy 1997, 557). This differential treatment is also supported by the work of Molleson (as given in Mays 1998, 25) who has found that most Anglo-Saxon cemeteries show

a deficiency in infant individuals, which, she suggested, indicated they were generally excluded from burial in the main cemetery and may have been disposed of in water. Therefore, the lack of very young individuals in the present sample may not purely be a result of poor skeletal preservation, although this may certainly have played a part, especially if small, unerupted tooth crowns were the only skeletal remains surviving.

Age category	Period 4a (alignment 1)	Period 4b (alignment 2)
younger childhood	3	0
older childhood	3	2
adolescent	3	6
adolescent/young adult	0	1
young adult	0	0
young middle adult	1	0
old middle adult	2	0
middle adult	1	0
mature adult	1	1
sub-adult	2	0
adult	44	33
unknown	5	4

**Table 12 Age distribution of the inhumations by the standard ageing methods**

Age category	Period 4a (alignment 1)	Period 4b (alignment 2)
1–6	3	0
7–12	3	2
13–18	1	6
19–25	16	4
26–35	11	10
36–45	5	7
46+	1	2
sub-adult	1	0
adult	19	12
unknown	5	4

**Table 13 Age distribution of the inhumations by the dental development and attrition methods**

The age distribution of the adult individuals as calculated by the dental attrition method in the first alignment group indicates that a high percentage of individuals (48% of the adults who could be assigned to an age category) were aged between 17–25, while 33% were aged between 26 and 35, 15% were aged between 36 and 45, and only 3% of individuals were over the age of 45 years. In the second alignment group, 18% of adults who could be assigned to an age category were aged between 17 and 25, 45% were aged between 26 and 35, 27% were aged between 36 and 45, and 9% were over the age of 45 years. The expected age distribution for adults in an archaeological cemetery population is a peak in the young middle adult (26–35) category with a significant minority of individuals continuing into mature adulthood (McKinley 1994, 68). The percentage of young adult individuals in the first group is, therefore, higher than would be expected and different from that found in the second group, which has a more ‘normal’ age distribution. However, other cemetery populations of roughly the same date as the present sample Period 4 burials (Norton, Cleveland, and Edix Hill, Cambridgeshire) both show higher percentages of individuals in the 17–25 age group than in other adult age groups (Sherlock and

Welch 1992, 111; Malim and Hines 1998, 159). There is a possibility that the different age distributions between the two groups may be related to the inherent problems with the dental ageing method, which does not take into account differences in coarseness of diet between populations. Three adults of the five in the first alignment group who could be aged by both standard and dental methods were under-aged by one category with the dental method, suggesting they ate a less coarse diet. This under-ageing may also apply to the rest of the population, suggesting a peak in the young middle adult (26–35) category, rather than in the younger adult category (19–25). However, the one adult in the second alignment group who could be aged by both methods also demonstrated under-ageing by one category, also suggesting a less coarse diet for the second group. This suggests that while the dental age of individuals may not accurately reflect their skeletal age, the difference in age distribution between the two groups is a real difference.

Of the older adolescents and adults who could be assigned a sex, there were twelve males or ?males and twelve females or ?females in the first group (a ratio of exactly 1:1), and seven males or ?males and fifteen females or ?females in the second group (a ratio of 1:2.5). The ratio of males to females in the 6th-century burials from Hill's excavations was 2:1 (Cardy 1997, 553), while at Norton, the ratio was 1.1:1 (Sherlock and Welch 1992, 107) and at Edix Hill, 1:1.2 (Malim and Hines 1998, 157). The ratios at Norton, Edix Hill and in the first group of the present sample are as expected for a normal archaeological population, with roughly equal numbers of males and females. The ratios found in the 6th-century sample from Hill's excavations and the second group of the present sample are unusual. An unequal ratio of sexes in the second group may be a further indication of non-random burial practices, on the grounds of sex as well as age, something also seen for Hill's excavations, though it is interesting that differentiation by sex is only seen for the second alignment group (Period 4b).

Stature could only be calculated for one individual, a male, from the first alignment group, and one individual, a female, from the second alignment group. The statures were 167cm for the male and 147cm for the female. These are both shorter than the statures calculated for the 6th-century burials from Hill's excavations, which were an average of 176cm for the males and 168cm for the single female (Cardy 1997, 553). It is also shorter than the 177 and 179cm statures calculated for two males dated to the 8th–9th century from Hill's excavations (Cardy 1997, 557) and slightly shorter than the average stature for the early-medieval period as a whole (c.410–1066) given by Roberts and Cox (2003, 195) as 172cm for males and 161cm for females. The statures also fall just outside the lower limit of the range of statures for the period as a whole, given as 170cm for males and 152cm for females and calculated from 1747 individuals (Roberts and Cox 2003, 195). These two individuals were, therefore, shorter than other people being buried at Whithorn and the vast majority of individuals of the period, though it is impossible to say whether they were representative of the larger cemetery population.

Dental diseases are some of the most commonly recorded pathological conditions in archaeological skeletons because of the high survival rate of teeth in the burial environment, and while the general preservation of the bone at Whithorn was poor, teeth did survive for large numbers of individuals. Forty-one of the 65 individuals from the first alignment group, and 33 of the 47 from the second alignment group had surviving dentition. In the first group, eleven individuals (28.2% of the 39 who could be recorded), or 21 teeth out of 373 (5.6%), had evidence for dental caries. In the second group, this was seven out of 28 individuals (25%) or fourteen out

of 328 teeth (4.3%). The second group therefore shows a slightly lower percentage of affected individuals and teeth than the first group, though not significantly so. The percentage of affected teeth in the 6th-century burials from Hill's excavations was 5.9% (Lunt and Watt 2007, 572), while the overall percentage for the early medieval period was 4.2% of teeth (Roberts and Cox 2003, 191). These percentages are very similar to those found in the present samples. Caries are caused by the actions of bacteria on food residue on teeth and are most often related to high levels of sugar consumption. The low levels of affected teeth in the present samples and in the wider early medieval population are a reflection of the lack of refined sugars available at the time, with honey being the only sweetening agent used. The vast majority of caries in both groups of the present sample were located at the cemento-enamel junction on the interproximal surface (facing other teeth), which indicates that trapped food was largely responsible. Higher numbers of interproximal caries than those at other sites were also seen in the 6th-century burials from Hill's excavations (Lunt and Watt 1997, 576). This may be an indicator of low levels of dental hygiene, which is also suggested by the presence of calculus deposits on teeth (hardened plaque).

Calculus was found on the teeth of 35 individuals from the first alignment group (89.7% of the 39 who could be recorded) or on 425 out of 484 teeth (87.8%). In the second alignment group, this figure was 32 out of 32 individuals (100%) or 381 teeth out of 414 (92%), slightly higher percentages than in the first group but not significantly so. Calculus was recorded as being widespread among the individuals from Hill's excavations (Lunt and Watt 1997, 582). The general percentage of affected teeth from a number of early medieval cemetery populations is 39.2% (Roberts and Cox 2003, 194), with the highest percentage from any one site recorded as 43.7% of teeth at Castledyke, Barton-on-Humber (Roberts and Cox 2003, 193). The percentages recorded from the present samples are more than twice that figure, suggesting that the population from Whithorn had lower levels of dental hygiene than was the norm for early medieval populations.

Another dental disease that often results from low levels of dental hygiene is periodontal disease, which is often initiated by calculus irritating the gums. In the first alignment group, eight individuals out of 23 who could be recorded (34.8%) had evidence for some degree of periodontal disease, while in the second alignment group there were nine out of 21 individuals (42.9%). The second group, therefore, appears to show a higher prevalence of periodontal disease than the first group. In the 6th- to 9th-century burials from Hill's excavations, periodontal disease was seen in nine out of nineteen burials (47.4%) (Lunt and Watt 1997, 582), a slightly higher percentage than in the present samples. In the wider early medieval population, the prevalence has been recorded as 27.0% (Roberts and Cox 2003, 194), a lower percentage than at Whithorn, although this rate was calculated from the total number of individuals rather than those who had maxillae and mandibles present. Dental abscesses can also be a complication of dental caries and poor dental hygiene, and in the first alignment group one out of 23 individuals (4.3%) was affected, while in the second alignment group there were three out of 21 individuals (14.3%). The second group, therefore, also seems to have a higher prevalence of abscesses as well as periodontal disease than the first group. However, it is possible that both these differences are exaggerated by the very small numbers in the samples. In the wider early medieval population, the prevalence was recorded as 241 out of 2124 individuals (11.3%) (Roberts and Cox 2003, 191–2), a similar percentage to those recorded for Whithorn, although

this again was calculated from the total number of individuals rather than those with maxillae and mandibles present.

Another condition that can be recorded from the dentition is enamel hypoplasia, defects in the tooth enamel caused by periods of stress in childhood, either as a result of illness or poor nutrition, when the tooth enamel is forming. In the first alignment group, 41 individuals (51.2% of those with teeth) had evidence for enamel hypoplasia, compared with 33 individuals (36% of those with teeth) in the second alignment group. The first group, therefore, has a higher prevalence of the condition than the second group. This may be due, in part to the larger number of young individuals in the first group with lower levels of dental attrition. Evidence for hypoplastic lines can be lost as the teeth are worn away and so in a population with high levels of dental attrition the prevalence of the condition is likely to be lower than in one with less attrition. In the 6th- to 9th-century burials from Hill's excavations, the prevalence of enamel hypoplasia was 56.3% of juveniles and young adults with teeth present (Lunt and Watt 1997, 587), very slightly higher than the percentage in the first group, although this figure does not include older adult individuals.

The only other observations that could be made about the dentition from the 7th- to 9th-century burials was the presence of one individual in the second group (SK2599) with ante-mortem chipping of the tooth enamel that may have resulted from use of the teeth as tools, and one individual from the second group (SK2232) who had a groove on the interproximal area of the right mandibular second and third molars that may have resulted from over-use of a toothpick. Finally, one individual from the first group (SK2361) had retention of a deciduous canine with subsequent displacement of the permanent lateral incisor and canine.

The numbers of non-dental pathologies that could be recorded from both groups was greatly reduced by the poor bone preservation and made calculating prevalence rates impossible. Nevertheless, a few statements can be made about the pathologies that were seen. Ten individuals from the first group and thirteen from the second group had evidence for degenerative joint disease or osteoarthritis. The most common sites for the disease were the spine, hip and knee, something also noted for the 6th-century burials from Hill's excavations (Cardy 1997, 554). The fact that the second group has a higher number of affected individuals may support the conclusion that it has more older individuals, as degeneration of joints increases with age.

Infectious disease, in the form of porous woven bone and compact bone that cannot be attributed to a specific infective process (non-specific infections), was recorded on elements from five individuals in the first group and five individuals in the second group. Two individuals, one from each group, were recorded as having new bone on the endocranial surface, indicating some form of infection of the meninges that surround the brain, something also noted for one 6th-century burial from Hill's excavations (Cardy 1997, 554). Four individuals from the first group and one from the second group had evidence for sinusitis, in the form of spiculated new bone in the maxillary sinuses. This is associated with infection from abscesses penetrating into the maxillary sinuses, or from irritation of the sinuses by sooty or dirty air as a result of living and working conditions. None of the affected individuals had surviving evidence for abscesses, so it is possible that polluted air was the cause.

Evidence for periods of childhood stress, in the form of illness or poor nutrition, was recorded in two individuals from the first group in the form of *cribra orbitalia*. This condition was also recorded in nine individuals from the 8th- to 9th-century children's cemetery excavated by Hill (Cardy 1997, 555). One individual from the second group (SK2188) had other skeletal evidence for anaemia, a condition also noted for three individuals from the 8th- to 9th-century children's cemetery (Cardy 1997, 559), while one individual from each group had evidence for rickets (vitamin D deficiency).

Activity related changes to the skeleton were seen in both groups. Cortical defects, which occur at sites of muscle attachment and are due to repeated microtrauma through heavy use of a particular muscle or muscle group, were recorded on elements from four individuals in the second group. Two individuals from the first group and four from the second had evidence of enthesophytes. These are bony spurs at muscle attachment sites and are most commonly seen in older individuals. The most common site for the growth of enthesophytes is the attachment for tendo calcaneus on the calcaneus and this was the case in the present sample with four out of the six affected individuals having enthesophytes at this site, as well as one of the two affected 6th-century individuals from Hill's excavations (Cardy 1997, 554).

Traumatic injury to the skeleton was seen in a small number of individuals. One individual from the first group (SK2357a) had healed fractures of the ribs, while one individual from the second group (SK2279) had probable trauma to the attachment site of the gluteal muscles on the femur. Another individual from the second group (SK2254) had evidence for a condition called osteochondritis dissecans. This is a condition in which circulatory disturbance, sometimes as a result of trauma, leads to necrosis of the bone of a joint. The bone fragment may subsequently detach from the rest of the bone, leaving a rounded lesion on the joint surface. The affected bone in this individual was the calcaneus, something also noted for one 6th-century burial from Hill's excavations (Cardy 1997, 554). All of these injuries are most likely to be accidental in nature, though there was some evidence for deliberate trauma. One individual from the first group (SK2491) had a healed blade injury on the posterior of the cranial vault and a healed blunt force injury on the frontal. A blade injury was also seen on the mandible of an individual from the second group (SK2376). The mandible and maxilla of the individual were also fractured as a result of the blade injury and there was evidence for blunt force injury to the posterior of the cranium. None of the injuries showed any evidence for healing, indicating that they were *peri-mortem* in nature.

The only other conditions noted among the skeletons were one individual from the first group (SK2424) with evidence for gout, a condition caused by a build-up of uric acid crystals in joints and associated with excessive alcohol consumption, obesity, kidney problems and high blood pressure, and an individual from the first group (SK2429) with malignant neoplastic disease, probably secondary to a soft tissue tumour.

In summary, there do seem to be certain differences between the two alignment groups. The first group (Period 4a) had more young children than the second (Period 4b) and the adult age distribution was also different, with more young adults in the first group. There was a sex bias in the second group towards females that was not seen in the first group and the second group had higher prevalence rates of periodontal disease and abscesses, while enamel hypoplasia was more common in the first group. The prevalence of other pathological conditions could not be



compared as the numbers were so small but a variety of conditions and traumatic injuries were recorded in both populations.

#### 11.4.3 Phase 8 (11-12<sup>th</sup> centuries)

Forty skeletons from this phase were available for analysis. The following tables show the age distribution of these skeletons as calculated from the standard methods (Table 14) and from the dental development and attrition method (Table 15).

Age category	Number of individuals
foetal/neonate	1
younger childhood	2
older childhood	3
adolescent	4
adolescent/young adult	1
young adult	0
young middle adult	1
old middle adult	0
mature adult	0
sub-adult	1
adult	26
unknown	1

**Table 14 Age distribution of the inhumations by the standard ageing methods**

Age category	Number of individuals
0-1	1
1-6	2
7-12	3
13-18	2
19-25	11
26-35	5
36-45	2
45+	1
sub-adult	1
adult	11
unknown	1

**Table 15 Age distribution of the inhumations by the dental development and attrition methods**

The small numbers of individuals who could be assigned an age category by the standard methods demonstrate the same poor bone preservation as in the earlier burials. Much larger numbers of individuals could be assigned an age category using the dental development and attrition methods. A lack of very young individuals was also seen in this phase, with only one individual being under the age of one year at the time of death. The possible reasons for this are discussed above. Of the adult individuals, the majority (58% of the adults who could be assigned a specific age category) were between 17 and 25 years, 26% were between 26 and 35 years, 11% were between 36 and 45 years and only 5% were over the age of 45 years. These percentages are very similar to those seen in the first group of the 7th- to 9th-century burials and are not as would be expected from a normal archaeological population, as discussed above. This may again be due to the inherent problems with the dental attrition ageing method, as the one individual who could be aged by both methods was under-aged by one category using the dental method, as was possibly the case for the earlier burials. This suggests that the

populations at Whithorn in all phases of burial were consuming a less coarse diet than the populations used to construct the dental standards and may indicate that the population from the later phase did in fact represent a normal age distribution for an archaeological population.

Of the older adolescents and adults who could be assigned a sex, there were three males and ?males, six females and ?females, and one individual of indeterminate sex. This is a ratio of 1:2, which is similar to that seen in the second group of the earlier burials. It is possible that this may indicate some form of differential burial practice by both age and sex, although the ratio may be affected by the very small numbers of individuals who could be assigned a sex.

The dentition of the individuals from this period was sufficiently well preserved to allow the prevalence of dental disease to be calculated, with 29 individuals of the 40 having dentition present. Six individuals (33% of the 18 who could be recorded) had evidence for dental caries (26 out of 232 teeth, or 11.2%), a higher percentage than seen in the earlier burials, and higher than that recorded for the later medieval burials from Hill's excavations of 6.4% of teeth (Lunt and Watt 1997, 572). The percentage of individuals affected in the later medieval period as a whole and calculated from a number of sites across the country was recorded as 53% of individuals, or 5.6% of teeth (Roberts and Cox 2003, 259), a higher percentage of affected individuals but a lower percentage of affected teeth. The majority of caries were located on interproximal cemento-enamel junctions, again suggesting trapped food as the cause. The possibility that this relates to poor dental hygiene is supported by the high percentage of individuals (26 out of 28, or 93%) with calculus deposits on their teeth (268 out of 327 teeth, or 82%). These are similar percentages to those seen in the earlier burials, suggesting no change in levels of dental hygiene over time. The percentage of affected individuals in the general later medieval period was recorded as 59% of individuals, or 54% of teeth (Roberts and Cox 2003, 262), much lower levels than in the present sample, again suggesting poorer levels of dental hygiene among the populations from Whithorn than was the norm.

Periodontal disease was recorded in seven individuals (50% of the fourteen who could be recorded), a slightly higher percentage than seen in the earlier burials, and higher than the 38% of affected individuals seen in the wider later medieval population (Roberts and Cox 2003, 261). It is also slightly higher than the 46% of affected individuals in the later medieval burials from Hill's excavations (Lunt and Watt 1997, 582). Dental abscesses were recorded in two individuals (14% of the fourteen who could be recorded), a higher percentage than the first group of the earlier burials and similar to the second group, but lower than the figure of 26% for the wider later medieval population (Roberts and Cox 2003, 260).

Dental enamel hypoplasia was recorded in fifteen individuals (52% of the 29 who could be recorded), a very similar percentage to that seen in the first group of earlier burials, but lower than the 69% of affected individuals from the later medieval burials excavated by Hill (Lunt and Watt 1997, 587), although this does not take into account the older adult individuals. The figure from the wider later medieval population was 35% of individuals (Roberts and Cox 1997, 264) although this is calculated from the total number of individuals rather than those with teeth present and can, therefore, be expected to be lower than in the present sample. The only other condition noted in the dentition of individuals from this phase was one individual (SK2137) with a retained deciduous second molar in place of the permanent premolar.

The number of non-dental conditions that could be recorded from the burials from Period 5b was similarly as low as in the other groups due to the poor bone preservation and, therefore, prevalences were not calculated. However, a few statements can be made about the conditions that were noted. Four individuals had evidence for degenerative joint disease. The only sites affected were the spine and the temporomandibular joint, although this may be due to differential survival of these elements rather than a reflection of sites affected during life. The spine was also the most commonly affected site in the later medieval burials from Hill's excavations (Cardy 1997, 538). Two individuals had evidence for non-specific infections, whilst another (SK1073) had evidence for sinusitis of the maxillary antrum as a result of a dental abscess. Two individuals had evidence for rickets, a condition also tentatively identified in the later medieval burials from Hill's excavations (Cardy 1997, 545). One individual (SK1052) had evidence for some form of soft tissue cyst or tumour of the scapula, while a second (SK2175) had evidence for malignant neoplastic disease that was secondary to a soft tissue tumour. Finally, one individual (SK1137) had evidence for a condition known as hyperostosis frontalis interna, which is a thickening of the frontal bone of the cranium of unknown cause but most commonly seen in older females.

### 11.5 Summary

In summary, the skeletal populations from Whithorn displayed poor bone preservation that prevented the full range of osteological data from being obtained. However, a wide range of ages, with the exception of very young individuals, and both sexes were represented. Dental disease and poor dental hygiene was a common finding in all phases of burial and a number of other pathological conditions were represented, including degenerative joint disease, neoplastic disease, trauma and evidence for periods of stress during childhood.

### 11.6 Disarticulated human bone

A large amount of disarticulated human bone was quickly scanned and an inventory made. A wide range of ages and both sexes were represented and a number of pathological conditions were noted, including dental calculus and caries, enamel hypoplasia, degenerative joint disease, osteoarthritis, sinusitis and *cribra orbitalia*.

## 12 ANIMAL BONES

By J. M. McComish

No analysis had been undertaken of the 1992–93 animal bone at the time of excavation, but the 1995–96 animal bone was fully analysed in 1996. A decision had to be taken therefore as to the merits of undertaking analysis of the 1992–93 animal bone. The animal bone from both sets of excavations was similar, being very badly fragmented and degraded. Given that analysis of the 1995–96 animal bone yielded no useful information it was decided to do no further research into the 1992–93 material.

## 13 ANALYSIS OS SELECTED SOIL SAMPLES

By A. K. G. Jones

A group of 21 earth samples (see Table 16) collected during excavations at Whithorn were processed in order to recover fish remains and other biological and cultural evidence. This

activity was undertaken towards the end of the post-excavation phase of the project in order to check if remaining earth samples contained fish remains and other materials.

Context	Sample/Find number
2013	95/SF52 GBA
2049	95/SF53
2090	95/SF55
4005	95/SF62
4004	95/SF64
2112	95/SF66
4008	95/SF67
4018	95/SF69
2249	95/SF74
2284	95/SF80
2113	95/SF88
2066	95/SF89
2103	95/SF355
2102	95/SF358
2103	95/SF359
2615	95/SF1009
2619	95/SF1011
2702	95/SF1020
2709	95/SF1022
2745	95/SF1025
2823	95/SF1043

**Table 16 Soil samples examined**

The procedure adopted was as follows. Each sample, typically weighing between 5 and 10kg, was placed on a 4mm aperture sieve below which a 1mm aperture mesh was positioned. Each sample was agitated manually with a stiff brush in order to assist the earth particles in passing through the 4mm mesh. All stones were discarded and other finds were removed from the 4mm mesh, bagged and labelled for future analysis.

The fraction passing through the 4mm mesh was then wet sieved. To begin with this was done with the aid of a hosepipe and the cleaned soil residues scanned for small bones etc. This procedure was modified following the hosepipe trial, and the mesh was clipped onto a wire frame and the sample washed in a nearby gently flowing stream. Again washed residues were scanned for fish remains and other finds. The washed residues were retained.

### **13.1 Soil samples examined**

The sediments in general were friable and were readily processed; however, the samples proved to contain very few artefacts and no fish remains in either the >4 mm or 1–4mm fraction. Most produced no identifiable biological or cultural material apart from small fragments of charcoal. These were present in most samples, but charred grain and chaff fragments were not observed. Animal remains were restricted to fragments of tooth enamel (samples 53 and 64) and one fragment of burnt (calcined white) mammal bone shaft fragment (sample 1020). This suggests that soil conditions do not generally favour the preservation of delicate bones. Slag fragments were present in five samples.

### **13.2 Conclusions**

It was possible to examine approximately one third of the remaining samples from the 1995–96 excavations at Whithorn and it is clear that fish remains and other finds are very uncommon in the sediments. Given that selected samples from Whithorn have been carefully studied for a wide range of biological and other finds, and that bulk processing produced very few artefacts, all the remaining unprocessed soil samples were discarded. The sieved residues were, however, saved as part of the site archive.

Context	Sample/find number	Finds recovered
2013	95/SF52 GBA	2 fragments wood charcoal
2049	95/SF53	5 fragments of ungulate tooth enamel ?Bos
4005	95/SF62	2 possible pot or stone sherds
4004	95/SF64	3 fragments of ungulate tooth enamel ?Bos
2103	95/SF355	14 fragments slag
2102	95/SF358	16 fragments slag
2103	95/SF359	20+ fragments slag
2615	95/SF1009	1 fragment of slag
2619	95/SF1011	2 fragments of slag
2702	95/SF1020	1 fragment burnt mammal bone

**Table 17 Summary of results**

## 14 DISCUSSION AND CONCLUSIONS

By D. Petts

### 14.1 Introduction

Despite the location of a large number of early medieval ecclesiastical sites being known through identification in historical texts, such as Bede, or through the presence of diagnostic stone sculpture, relatively few sites have been extensively excavated. Fortunately, the majority of the most extensively explored sites are located in northern England and Scotland, and are thus in the same broad cultural milieu as Whithorn. The recent publication of Rosemary Cramp's seminal excavations at Monkwearmouth and Jarrow, both in Tyne and Wear (Cramp 2006), Christopher Lowe's excavations at Hoddum, Dumfriesshire (Lowe 2006), and Martin Carver's campaign at Tarbert, Highland, in addition to the previous work at Whithorn (Hill 1997) means that the archaeology of Northern British monastic sites in the early medieval period is increasingly well understood. Nonetheless, the excavations at Fey Field have the potential to expand our knowledge of early medieval ecclesiastical sites in general, and Whithorn in particular.

### 14.2 Spatial organisation at Fey Field

#### 14.2.1 Boundaries

In Hill's report on the Glebe Field excavations he presented a detailed model for the development and growth of the monastic site at Whithorn (Hill 1997, 26–66). He postulated a series of internal and external boundaries defining the activity within the ecclesiastical establishment. Arguing for an initially curvilinear boundary, it was suggested that the restructuring of the site following the Northumbrian takeover saw a rectilinear enclosure being established, before a westwards shift and a new curvilinear boundary in the later 10th or 11th century and finally a shift back eastwards to a curvilinear boundary around the medieval church. Some of these boundaries were merely hypothesised, whilst others were tentatively identified in the archaeological

record. Crucially, the projected path of many of these boundaries was intersected by Trench A in Fey Field, giving the opportunity to test these models for the spatial development of the site.



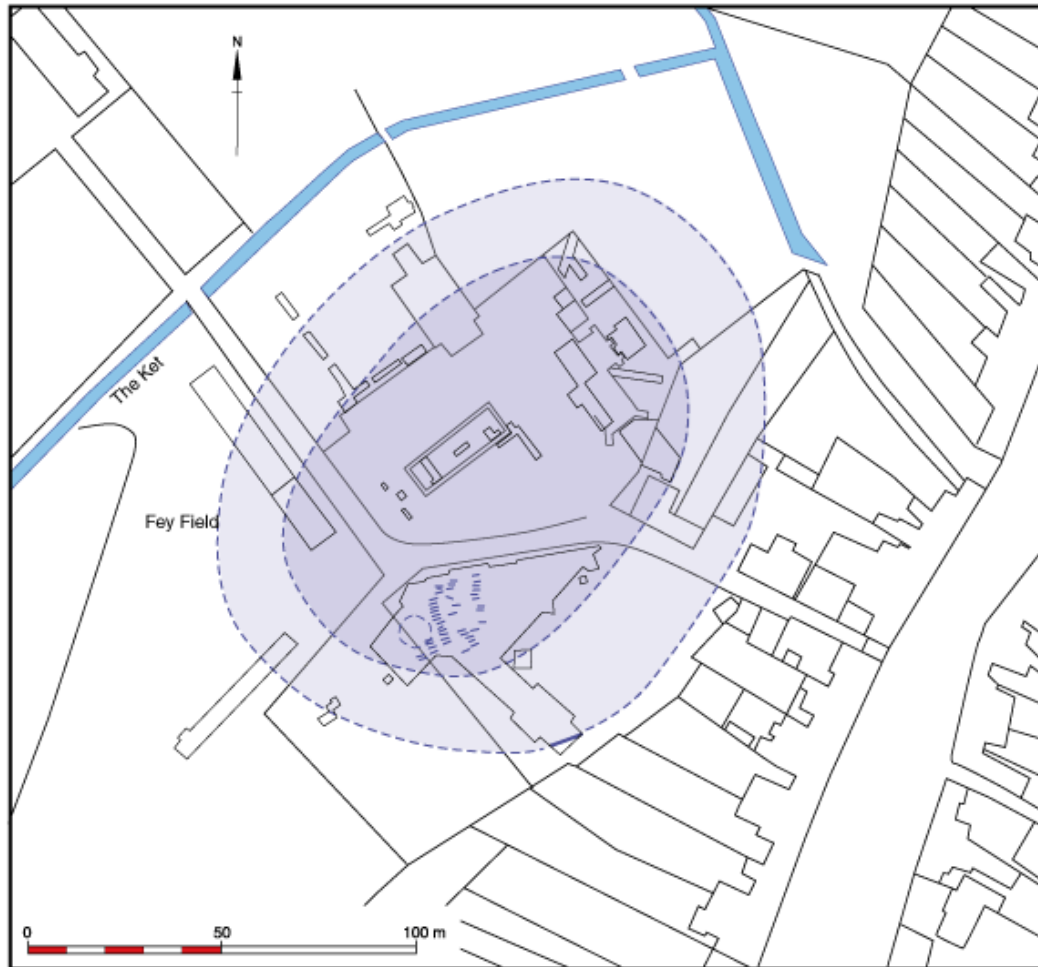
**Figure 41 Glebe Field Period I/1. Based on Hill 1997, fig. 2.2**

Hill argued that the initial phase of Christian activity at Whithorn (Hill's Period I/1) comprised a period of activity around the east end of the hill. Excavation in the Glebe Field identified a small ditch, which, it was suggested, marked an internal enclosure and separated religious activity in the inner precinct from the domestic activity to its south. The projected line of this enclosure circumscribed a central area approximately 70m in diameter, centred on the priory church, but did not cut the line of the Fey Field excavations (Hill 1997, 77, fig. 2.2) (Fig. 41). However, the projected course of a second boundary ditch noted in Hill's Period I/2 at Glebe Field (*ibid.*, 90–1, fig.2.4) did intersect with the Fey Field trench. When it was seen at Glebe Field it was interpreted as indicating the expansion of the monastic enclosure to include a larger area on the hilltop (Fig. 42). Like the earlier ditch, it was a relatively slight feature, only 0.8m wide and 0.15m deep. A further enclosure boundary, even further to the south-west, was identified in Hill's Period I/4, comprising first a boundary fence and then a band of stones (*ibid.*, 130–1, fig. 2.6) (Fig. 43). The projected line of this boundary also cut the Fey Field trench.



**Figure 42 Glebe Field Period I/2. Based on Hill 1997, fig. 2.4**

Excavation at Fey Field, however, revealed no evidence for Hill's Period I/2 or Period I/4 boundaries. There are a number of possible reasons for this. First, it may be that later activity on the site destroyed these slight early features. A second alternative is that the projected line of these features was incorrect. The Fey Field Period 2/Group 4 feature was a linear cut ditch (c.1m wide, 0.38m deep), which is consistent in dimensions with Hill's Period I/2 ditch. However, it has a more north-easterly alignment than the projected line of the Glebe Field boundary. It is possible that this may be the same feature, but is noticeable that whereas the Glebe Field boundary goes out of use in Period 2, the Fey Field Period 2/Group 4 ditch and its successive features continued to form a major boundary into later periods.



**Figure 43 Glebe Field Period I/4. Based on Hill 1997, fig. 2.6**

In Hill's Period II, the monastery saw a major phase of spatial reorganisation (Hill 1997, 40). Hill argues that the outer Period I/4 boundary continued in existence until towards the end of Period II (*ibid.*, 181). He also suggested a replacement of the inner, curvilinear boundary with a rectangular boundary separating the ecclesiastical focus of the site to the north from the domestic area to the south (Fig. 44). However, this rectangular boundary was entirely speculative (*ibid.*, 41), lacking any structural evidence beyond the line of a stone wall supporting an area of terracing to the south of the church structures (*ibid.*, 142, fig. 4.7). In this case the line of the Fey Field boundary feature (482) and its Period 2/Group 4 predecessor do seem to follow the projected line of the postulated enclosure. This Fey Field boundary appears to have its origins earlier than the Glebe Field feature, however, which is dated to the 8th century. In contrast, the Fey Field feature originates in the 6th century or earlier. This discrepancy is puzzling. It is possible that either the dating of the Fey Field boundary is too early or, alternatively, that the Glebe Field boundary may have had an earlier but unrecognised predecessor. This, however, would imply that the re-organisation of the site on a rectilinear plan, linked to the Northumbrian take-over of the site, built on an earlier element of spatial organisation. A final possible solution is that the existing Fey Field Period 2 boundary was incorporated into a new enclosure laid out in the early 8th century. It is certainly noticeable that the Fey Field boundary is transformed from a shallow gully to a stone boundary wall comparable with the stone enclosure identified in Glebe Field, though this again would suggest that the

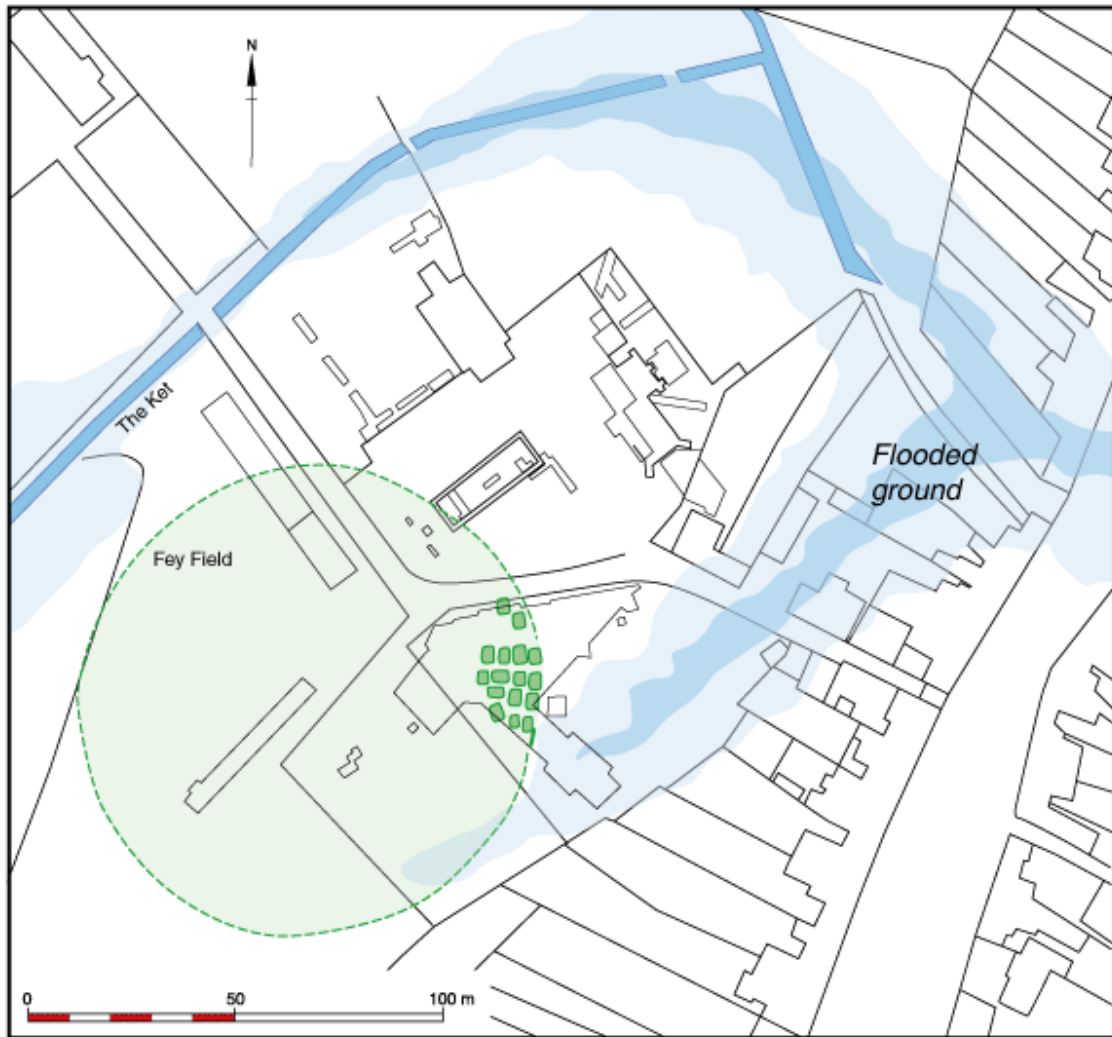


Northumbrian enclosure was not entirely *de novo* but was structured on some existing elements of the topography of the site.



**Figure 44 Glebe Field Period II/2. Based on Hill 1997, fig. 2.9**

A further replanning of the site in the later 10th or earlier 11th century (Hill's Period III/3) was identified in the excavations in Glebe Field (Hill 1997, fig. 2.16). This saw a movement of the focus of activity from the east end of the hill to the west end, whilst the rectangular Northumbrian enclosure fell out of use (Fig. 45). This new spatial structure appears to have survived until the end of Hill's Period IV in the later 13th century. The limits and orientation of this new layout were suggested by the new orientation of structures in Glebe Field and new insubstantial boundary ditches that contained them (Hill 1997, 201). Once again, however, there is no trace of the projected boundary in Fey Field Trench A. This may be due to destruction of this boundary by later remains, but this cannot be certain, and its presence in Fey Field remains speculative. Nonetheless it is clear that the former boundary on the line of Group 4/482 did fall out of use at this time.



**Figure 45 Glebe Field Period III/3. Based on Hill 1997, fig. 2.16**

A final phase of restructuring commenced 1250 x 1300 (Hill 1997, 60, fig.2.22). The site seemingly returned to its focus around the main church at the eastern side of the hill (Fig. 46). The outer boundary was recognised in excavations on Glebe Field and in the exploratory excavations in Fey Field in 1987. An inferred inner boundary, separating an inner precinct from an outer zone, was not recognised in either Glebe Field or Fey Field Trench A and remains unproved.



Figure 46 Glebe Field Period V/1. Based on Hill 1997, fig. 2.22

Thus the only boundary that could be clearly identified in Trench A was the rectilinear enclosure around the Northumbrian minster, although intriguingly the Fey Field evidence suggested an earlier date for the course of the boundary than was suggested at Glebe Field. None of the postulated curvilinear boundaries could be recognised at all. Admittedly the area of excavations was badly disturbed in places, but it is still surprising that there was no evidence for these boundaries. What are we to make of this apparent absence of boundary features and internal divisions at Fey Field? The first thing to note is that in broad terms none of the evidence from Trench A contradicts Hill's schematic outline of the shifting morphology of the monastic site, though it does question how far these broad settlement shifts were defined by clearly marked boundary features.

It is possible to distinguish two types of boundary associated with early medieval monastic sites: the vallum marking the overall edge of the establishment and lesser boundaries marking internal subdivisions. The regular assumption is that the vallum was a substantial boundary, usually marked by a bank or ditch (McCormick 1993, 105; Swan 1985). Certainly excavations at a range of early medieval ecclesiastical centres have revealed large boundary features. Near to Whithorn, at Hoddum, Dumfriesshire, the enclosure appears to have been defined by a bank,

ditch and palisade (Lowe 2006, 32). At Iona, where excavated, the vallum was between 5 and 6m wide and nearly 3m deep (Barber 1981, 292; Reece 1981). Recent excavations at Tarbert, Highland, have also identified two major enclosures, an inner one succeeded by an outer one; both were defined by large ditches (Carver *et al* 2001-2). The probable monastic boundary at St Abb's Head, Berwickshire (Kirk Hill), appears to have been a turf and clay bank with a frontal revetment about 8m wide and over 3m high (Alcock *et al* 1986). At Armagh, Co. Down, the ditch was about 6.4m wide and nearly 3m deep and had an external bank (Brown and Harper 1984, 112). The ditch at Brixworth, Northants, was smaller in size, but still over 3m wide and 2m deep (Everson 1977, 69). The pre-Conquest vallum at Glastonbury, Somerset, consisted of a 6m wide bank and a ditch over 4m wide and 2m deep (Radford 1981, 114). The suggested boundary at Hartlepool, Teesside, was, however, significantly smaller; the first phase comprised simply a series of post-holes, succeeded by a palisade trench (Daniels 1988, 161, 164), though this was filled in by the early 8th century as activity expanded over the edges of the initial enclosures (*ibid.*, 168).

It is becoming increasingly clear from the excavated evidence that if Whithorn ever had a formalised boundary in the pre-Northumbrian period, it was a small-scale, short-lived structure; there is no evidence for the kind of substantial vallum found at Iona, Glastonbury or Armagh (Hill 1997, 34). It was perfectly possible, however, for the boundaries associated with early medieval monastic sites to have been relatively small in scale. The simple wooden palisade at Hartlepool is a case in point. Literary evidence suggests that the boundary could be marked by a hedge (e.g. Oundle VSW, 67; Culross VK, VI). In other cases, the vallum clearly did not surround the entire site, a distinct boundary being conspicuously absent to the east of Iona, for example. In some cases the more substantial boundaries may have been dug *de novo*. There is increasing evidence from sites such as Iona, Tarbert and Armagh, however, that the primary enclosure may have re-used earlier, prehistoric, ditches (Carver 1998; Brown and Harper 1984; McCormick 1993).

#### 14.2.2 Use of space

One of the distinctive features of the archaeological remains uncovered at Fey Field is the way in which the utilisation of space within the area changed over time. Whilst there was some long-term continuity, particularly in the structuring role supplied by the boundary on the line represented by Group 4/482, the ebb and flow of different land uses, such as burial, craft and production, and built space, is conspicuously fluid.

The main distinction is between the two halves of Trench A. Its southern half appears to have belonged to the inner zone of the monastery, and here activity was dominated by burial from Period 3 onwards. To the north of Group 4/482, structural remains and evidence for craft and industry dominate the area. There is important variation within these broad tendencies, however. The burial ground went out of use or contracted in size for a time within Period 3b (early 7th century), and did so again in Periods 5a, 5c and 5e (broadly in the 11th/12th centuries). This contrasts with patterns of burial recognised in Glebe Field, where burial commenced in the second half of the 6th century (Hill's Period I/2) and a church structure was established in the early 8th century but there was a hiatus in burial from the early/mid-10th century until the early 14th century. Clearly the patterns of burial across the entire site were complex and changed over time. It is not possible to talk about simple processes of expansion

and contraction of the cemetery over this period. Instead there appear to have been changes of foci for burial, with areas within the monastery falling in and out of use as cemeteries.

It is not clear how far the burials in Fey Field and Glebe Field represent the same burial communities. The population of Hill's Period I cemetery at Glebe Field was dominated by adult male burials (Cardy 1997, 552–3). This contrasts with the higher level of juveniles and women identifiable from the poorly preserved skeletal assemblage from Fey Field. It is possible that this means that the Glebe Field population comprised elements of the ecclesiastical community, whilst the Fey Field burials were drawn from a lay population. It is noticeable, however, that the Glebe Field population was not exclusively adult male, and female and juvenile burials were recovered, a pattern that would not be expected if the burial group was drawn solely from the monastic community. It is worth drawing attention to the poor bone survival from both Glebe Field and Fey Field; both assemblages had been badly fragmented and disturbed by later activity on the site, making analysis difficult. For example, in Hill's Period I cemetery at Glebe Field only 59 out of the 118 graves excavated produced skeletal material, of which only 21 skeletons could be assessed for sex. This is clearly a small sample of the overall burial population, and it is unclear how far wider conclusions can be drawn about the demographic profile of either cemetery from these samples. The under-representation of juvenile burials at Glebe Field may also be influenced by taphonomic factors.

To the north of the main boundary in the Fey Field trench, activity went through a series of phases with regular and repeated replanning and reconstruction of structures (for more detail on constructional aspects of these buildings see 14.3 below). Several of the Fey Field Period 3 structures (Building 3; Building 4) were laid out on a roughly west–east orientation, perhaps indicating a settlement layout based concentrically upon a cult focus at the centre of the site. Although nearby structures (Building 2; Building 5) were placed on a more north-easterly/south-westerly alignment, subsequent phases of building were much more clearly aligned north-east/south-west, following the prevailing layout of the Northumbrian monastery, with major structural components being laid out parallel to the axis of the main ecclesiastical structures. A further re-alignment of the structures occurred in the mid-9th or early 10th century, with Fey Field Period 4e structures aligned north-west/south-east, at 90 degrees to the earlier Period 4 structures. This may relate to the apparent demolition of the church in Glebe Field in the early 10th century and the contraction of the ritual activity in the inner precinct in this period (Hill 1997, 48–9). This may mean that the church structures exerted a less compelling influence on the location of non-religious buildings in the outer zone.

The nature of the activity associated with the structures from Fey Field Trench A varies over time. Much of the artefactual evidence is clearly redeposited and not easy to relate to specific structures. In Period 3 at Fey Field the appearance of metal working waste in grave fills and a deposit rich in iron and copper working material to the north end of the site (Context 146), which also contained a possible tanged punch (92/SF39606, see 9.3.1), appears to indicate a range of small-scale ferrous and non-ferrous metal working. Metal working continues to be important in this zone of Whithorn throughout the 7th–10th centuries. Building F (Period 4d) contained a furnace associated with fire-cracked stones, possibly a raised hearth or the base of an anvil, these features producing evidence for copper working and possible lead working. Set 236 (Period 5a) also provided direct evidence for metal working in the form of a hearth base

and large amounts of slag, whilst these features were sealed by deposits containing lead working waste.

This supplements extensive evidence for metal working from the Glebe Field excavations. Indeed, evidence for metal working is commonly associated with early medieval ecclesiastical sites. Hartlepool produced fragments of crucibles and moulds, and scientific analysis showed that both copper alloy and silver were being worked at the site (Bayley 1988). Similar material was found at both Monkwearmouth and Jarrow. Excavation at Armagh, Co. Down, has also revealed fragments of moulds, crucibles and tuyères (Brown and Harper 1984, 136–150; Cramp 2006, 770–81). Evidence for metal working, however, is also found in secular elite contexts. In the south-west of Scotland particularly important evidence for such activities has been recovered from Dunadd, Argyll and Bute (Lane and Campbell 2000), and the Mote of Mark, Dumfries and Galloway (Laing 2006). Unlike much of this excavated material, however, the Fey Field assemblage is heavily fragmented, no doubt reflecting the heavily disturbed nature of the northern section of Trench A; it is thus not possible to identify precisely what kind of artefacts were being worked. The presence of metal working both here and at Glebe Field is important, as it is a solid indication that any zoning of activities within Whithorn was not strong. Very similar activities could clearly occur in different areas of the site.

Equally, different activities could occur at the same location. In addition to craft activities, evidence from Fey Field Trench A also indicated some agricultural processing. In Period 3b a sub-rectangular pit (Set 129) was interpreted as a corn-drying oven, on the basis of the presence of charred cereal grains. This oven cut slightly into the line of the main boundary division within the trench (Group 4). A series of corn-drying ovens were also excavated at Hoddum, Dumfriesshire (Holden 2006, 102–14). Most of these were substantial structures associated with timber or stone buildings. Three simple, oval pit kilns were also found, however (*ibid.*, 106–7). In their simple shape and lack of major superstructure they are more similar to Fey Field's Set 129. Set 129 belonged to Period 3b (7th century), however, whereas the Hoddum examples were dated by radiocarbon to cal AD 970–1170 (*ibid.*). This kind of grain-drying kiln is not uncommon in medieval contexts, with similar examples known from Rhuddlan, Clwyd (Holden 1994, 38), Capo, Kincardineshire, Abercairny, Perthshire (Gibson 1988) and Tarbert, Highland (Carver *et al* 2001-2).

The presence of luxury glass vessels in large numbers is unusual on a site which appears to have been primarily monastic in function, and might be seen as indicative of élite activity at the site (see 9.1.1). However, it may not be easy to distinguish in a hard and fast manner between ecclesiastical and high-status secular lifestyles (Blair 2005, 135–41). It is likely that high-status church figures would have entertained and provided hospitality as part of their social responsibilities in a similar manner to the members of the nobility from whose dynasties key clerics were usually drawn. Documentary evidence from other parts of Britain makes it clear that the provision of secular feasts for nobles by minsters was common (*ibid.*, 122, 131).

It is also likely that Whithorn had some wider economic function that saw high-status goods passing through the site. It has well-attested close links to the natural harbour at the Isle (Hill 1997, 5–6). The monastery may have acted as an intermediary point for the redistribution of Mediterranean and west Frankish imports to sites such as the probable early medieval power centre nearby at Cruggleton (Ewart 1985). As well as politically directed gift exchange, the large

number of 8th- and 9th-century coins from Hill's excavations at Whithorn suggest that by this period the monastery was becoming integrated into a quasi-market economy, though it is noticeable that no early medieval coins were recovered from the Fey Field excavations. Overall at Whithorn the focus of coin deposition was in the area between the halls and the ecclesiastical buildings. Hill suggested that this area might have been 'a contact zone between individual wealth ... and the corporate wealth of the minster' (Hill 1997, 352), further evidence for the spatial zoning of activities across the monastic site as a whole.

#### 14.2.3 *Overview*

The evidence from Fey Field consolidates the patterns extrapolated from Glebe Field. The use of space within particular sectors of the site clearly shifted repeatedly between the establishment of the site and the 14th century. This contrasts with some other sites, such as Hoddum, where the excavated area showed a remarkable stability in the activities carried out over long periods of time (agricultural processing, metal working). Perhaps most intriguing is the intermittent use of the southern area of Trench A as a cemetery, with recurring phases of non-burial activity in between periods of funerary activity. This should perhaps not surprise us. The notion of an area of land specifically consecrated for the burial of the dead is a later phenomenon than often appreciated. In an exploration of the liturgical evidence, Helen Gittos has shown that formal rites for consecrating cemeteries do not appear in pontificals and similar documents until the 10th century (Gittos 2002). She highlights the fact that the emergence of formal boundaries around cemeteries (as opposed to monastic vallum) is only widespread in Anglo-Saxon England in the 10th century (*ibid.*, 204–5), although she notes that Ireland and the north and west of Britain had a more defined notion of sacred space earlier than Anglo-Saxon England (*ibid.*, 207).

The evidence from Fey Field thus allows us to understand better the way in which space was used at Whithorn. It is clear that the organisation and utilisation of space within the monastic site was fluid and ill defined. Internal and external boundaries were clearly often ephemeral, and the areas defined by these boundaries witnessed a range of different activities over time. Many models and reconstructions of early medieval monastic sites give the impression of a settlement that is rigidly defined by a vallum and internal sub-divisions, with distinct zoning of activities within them. The archaeology of Trench A, supplementing the existing material from Glebe Field, shows that, at Whithorn at least, the evidence for this very compartmentalised image of ecclesiastical space needs to be challenged. Rather than envisaging rigidly defined activity zones with little change over time, we should perhaps instead see some activities, such as metal working or agricultural processing, being situated in multiple foci across the site. Burial areas appear to expand and contract regularly over time, these pulses probably being driven as much by practical demands for space as by liturgical issues.

Despite the curvilinear enclosures hypothesised by Hill (1997), the only enclosure confirmed by archaeology is the rectilinear enclosure related by the excavators to the Northumbrian phase of activity at the site. The rectangular shape of this enclosure is intriguing. Does it imply a definite attempt by the Northumbrian church to restructure the pre-existing spatial ordering of the British establishment? The evidence is uncertain. As noted above, at Fey Field the early date for boundary Group 4 suggests that some elements of the rectilinear enclosure may have pre-dated the advent of Northumbrian control. There is also little that it is distinctly Northumbrian, rather than British, about a rectangular enclosure. The vallum at Iona is rectilinear though, as noted

above, the course of this is partly determined by re-use of a prehistoric feature (McCormick 1993). At Hoddum, Dumfriesshire, whilst the main outer enclosure is roughly D-shaped, crop mark and geophysical evidence on the lower terrace serve to define a series of rectilinear enclosures surrounding the church and graveyard. Although not dated by excavation, Christopher Lowe makes a strong argument that these are traces of an early cemetery enclosure, centered on, but larger than, the modern cemetery (Lowe 2006, 188–9). Despite the presence of Northumbrian cross fragments at this site, there is no definite evidence that these enclosures are related chronologically to the advent of Northumbrian control. A rectangular enclosure has also been identified around Inch Abbey, Co. Down, which, although subsequently the site of a Cistercian monastery, was also the focus for earlier religious activity (Hamlin 1977).

Nonetheless, whether the rectilinear enclosure at Whithorn is directly related to Northumbrian control or not, it is clear that there was a major reorganisation of space at the site at some point in the 8th or 9th century. Not only is there the imposition of the boundary itself, but also there is an increasingly regimented ordering of the structures from both Fey Field and Glebe Field. There are hints that the earlier phases of building were aligned in a concentric plan around the central religious focus; this patterning was replaced by an increasingly grid-like pattern, with a strong west–east linear focus. If we are to look for the impact of Northumbrian control over the site, it is perhaps this change in the location of structures rather than the shape of the external boundary that is most important. Increasingly grid-like street plans are not only found on ecclesiastical sites of this period; it has been pointed out that some early medieval trading sites (*emporia*), such as Hamwic, Hants, had a distinct grid of streets, perhaps alluding to classical models of urbanism (Hodges 1996; Morton 1992, 32–40). A strong focus on the linear layout of structures is also visible in Anglo-Saxon ecclesiastical planning (Blair 1992, 246–58). The arrangement of churches end-on-end is common in Anglo-Saxon religious sites. It may well have been influenced by the morphology of Frankish religious sites, though a similar layout of buildings is attested from secular sites, such as Yeavinger, Northumberland (Hope-Taylor 1977). This appears to contrast with the arrangement of structures within western British ecclesiastical sites, where such linear planning is far less common (Petts and Turner forthcoming).

### 14.3 Structural evidence from Fey Field

The excavations at Fey Field revealed a series of structures covering the entire period of occupation from the 6th century until the 14th century. These buildings used a range of structural techniques, indicating chronological and, potentially, functional variation. The key structural techniques used include simple wattle and daub buildings, stave-built structures (with or without additional earth-fast supporting posts), buildings with double-staked walls, and post-built buildings. It is important to note, however, that even within individual buildings structural techniques can vary, with different walls being supported in different ways (e.g. Building 9; Building F).

Immediately noticeable at Fey Field, and at Whithorn in general, is the relative lack of post-built structures, with wattle and daub, and stave-built structures dominating. This contrasts strongly with the structures excavated at Hoddum, where the majority of structures were post-built (Lowe 2006, 180–6). As the activity at Hoddum is contemporary with that at Whithorn, this is unlikely to be due to a chronological variation in building design. Equally, the Hoddum structures, like the Fey Field buildings, appear to have been used primarily for agricultural or



industrial activities, so a functional variation is equally unlikely. It is possible that this variation might, instead, have a cultural or ethnic explanation.

In his discussion of the structural traditions of the features from Hoddom, Lowe notes that they sit firmly in the tradition of Anglo-Saxon hall-houses, as outlined by Millett and James (Lowe 2006; James, Marshall and Millett 1984). It is helpful to consider the Whithorn structures in the context of early medieval buildings in south-west Scotland. Relatively few structures of this period have been excavated in the region, but the limited evidence does suggest that the native British building technique in this part of Scotland was dominated by structures supported by earth-fast posts. For example, the excavated hall at Cruggleton, Wigtownshire, was post-built; dated by radiocarbon to AD 650–980, this rectangular structure (6m x 3.7m) may have been in an area still controlled by the British at the time of its construction (Ewart 1985). The structure at Kirkconnel, Dumfriesshire, was supported by individual post-holes and dated by artefactual evidence to the 6th–7th century (Clough and Laing 1969). Structural evidence from the important sites at Mote of Mark and Dunadd was poorly preserved, but what little evidence did survive is also suggestive of earth-fast post construction (Lane and Campbell 2000; Laing 2006, 14).

In his discussion of structural techniques at Yeavinger, Brian Hope-Taylor suggested that post-Roman Phase I was British rather than Anglo-Saxon (Hope-Taylor 1977, 154–7, 209–13, figs 72, 74). Five buildings were assigned to this phase (A5–8; D6), of which A6–8 had separate post-holes and A5 and D6 had walls placed in continuous trenches. The chronology of this phasing has been questioned by Scull, who argues that there is no stratigraphic reason for these buildings to be linked to Anglo-Saxon rather than British activity at the site, and that in general post-built buildings were cut by those with walls set in continuous trenches (Scull 1991). A similar chronological pattern is visible at Thirlings, Northumberland, where post-pit structures (e.g. Building I) appear to pre-date the trench-built structures (e.g. Buildings A and B) (O'Brien and Miket 1991).

Thus whilst there is evidence that the use of post-built construction can be linked to sites with both Anglo-Saxon and British communities, there is a tendency for post-built buildings to be replaced by structures with walls in continuous trenches, and there are no examples of the use of trench-built structure in clearly British contexts. At Fey Field the earliest evidence for continuous trench built structures (e.g. Building 6/B, Building 7) belong to Period 4a, with further examples in Period 4c (Building 9; Building D). The introduction of this technique thus appears to be contemporary with the advent of Northumbrian control.

Another distinct feature of the building at Fey Field was the addition of stone footings to a number of structures (e.g. Building 6/B). This practice was not limited to buildings at Fey Field; the addition of stone footings was also noted at Glebe Field (Hill 1997, 44). This phenomenon has been identified at a series of Northern British ecclesiastical sites too. At Hoddom, stone footings were added to stone buildings (e.g. western chamber of S11, northern chamber of S1, replacement of S7.1 by S7.2) in Phase 4 (c.750–800). This can also be seen at Hartlepool where Period 2 (AD 750–800) structures have stone footings, unlike those from Period 1 (Daniels 1988, 175–81). The assumption is that this feature is primarily functional in purpose, rather than indicative of status or cultural background, allowing better long-term preservation of structural timbers (Lowe 2006, 183–4). It is important to note that such stone foundations are unlikely to

have been visible once the building was completed. However, whilst the original purpose of such foundations may have been practical, the horizon of stone-founded structures found at a range of Northumbrian monastic sites in the 8th century is worthy of comment. Its appearance, particularly at Whithorn and Hoddum, appears broadly coterminous with the advent of Northumbrian influence at both sites and occurs at the same time as there is a clear change in spatial planning at the former site.

Simple wattle and daub structures were found at both Fey Field (e.g. Building 1; Period 2) and Glebe Field (Hill's Building I.6 Hill 1997, 64; Period I/1). Structures with a double row of stakes are also known from both areas (Fey Field Buildings 2 and 4; Hill's Glebe Field Building 1.18, *ibid.*, 127). There is little evidence for timber supporting posts, and the structures sometimes have rounded corners, implying no structural corner posts (e.g. Fey Field Buildings in Period 5; Hill's Glebe Field Building I.6, *ibid.*, 64). These relatively ephemeral structures have few clear parallels from Northern British contexts, though a light wattle and daub structure was used to house a corn-drying kiln at Hoddum (Building S6.1; Lowe 2006). However, similar sub-rectangular wattle and daub structures have been recovered from Ireland, most noticeably at Dublin, but also at Waterford and Limerick where Wallace's Type 1 and Type 2 structures are similar in size and structure to the Whithorn examples (Wallace 1992). These Irish examples have all been found in Viking contexts of 10th- and 11th-century date, and may thus at first appear inappropriate parallels for the Whithorn examples, which are chronologically much earlier. Wallace argues, however, that the Type 1 building owes its plan and structure to pre-existing indigenous building traditions, rather than having Scandinavian cultural affinities (*ibid.*, 93–5). Whilst the Irish parallels are strong, it is risky to argue that the Whithorn structures reflect a direct Irish influence. These structures are far more ephemeral than post-built and continuous trench buildings, and it is perhaps not surprising that no similar structures have survived in south-west Scotland. It may be safer to interpret these structures as characteristic of a broad tradition of lower-status building construction found in the Irish Sea coastal region, until evidence to the contrary is forthcoming.

#### 14.4 Conclusions

The Fey Field excavations have clearly enhanced our knowledge of the ecclesiastical site at Whithorn, and served to clarify and alter some pre-existing models for the development of the site. Crucially, whilst the overall broad pattern of settlement movement at the site has not been challenged, it is now clear that it is unlikely that these zones of activity were marked by substantial internal and external boundaries. Whilst it is likely that the external vallum would have been marked in some way, it is becoming increasingly apparent that at Whithorn this did not take the form of a substantial ditch or bank in the earlier phases, though from Period 4 there was a distinct rectangular enclosure, probably marked by a wall.

The evidence from Trench A has also highlighted how frequently areas within the monastic site could change function, with a range of different activities being recognisable archaeologically; even key distinctions between areas given over to ritual use, such as burial, and those dedicated to industrial and agricultural activity have little long-term stability. Future models for the use of space within early medieval monastic sites must take such instability into account.

Finally, it can be argued that it is possible to recognise a clear horizon of buildings that shows clear links to Northumbrian, rather than native British, building traditions. The use of continuous

trench foundations and stone foundations can be clearly paralleled in a range of Northumbrian ecclesiastical sites (e.g. Hartlepool) and secular settlements (e.g. Yeavering; Thirlings), whereas structural evidence from sites with a clear British cultural affiliation appears to consist only of earth-fast post structures. Combined with the apparent replanning of the site in the 9th century, the advent of Northumbrian control of the community was reflected in a fundamental reordering of all aspects of the existing site, raising important questions about the relationship between the Northumbrian and British churches.

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Archive assessment reports by YAT for the 1992–93 excavations included contributions from C. Barclay (coins), R. Chadburn (metal working debris), A. Clarke (research requirements and analysis of site archive), S. O'Connor (ironwork X-radiographic assessment), A.K.G. Jones (fishbones), A.J. Mainman (post-medieval pottery and miscellaneous finds), P.J. Ottaway (iron assessment), E. Paterson (conservation assessment), N.S.H. Rogers (gold and silver, copper alloy, lead alloy) and J. Rogerson (topsoil finds and roofing stone assessment).

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The preparation of this web-based report includes contributions from E. Campbell (early medieval imported pottery and glass), R.S. Cubitt (Appendix 4), A.K.G. Jones (analysis of selected soil samples), C. Mortimer (metal working waste), D. Petts (discussion and conclusions), J. Pickin (the millstone grave marker), N.S.H. Rogers (the artefacts including chest/coffin fittings), A.J. Mainman (later medieval and post-medieval pottery), D. Craig (incised stones) and K. Tucker (the osteological analysis of the human bones). In addition, earlier work by C. Barclay (the coins) and P. Harrington (the struck lithic remains) was incorporated. All other text was by J.M. McComish, who also prepared the web pages. R.S. Cubitt is thanked for her immense hard work with the computer records for the artefacts. Editing was by R.A. Hall, the illustrations were prepared by L. Collett and the photography was by M. Andrews. The report was copy-edited and proof-read by F. Mee; IADB design and management was by M. Rains.

## APPENDIX 1 RECORDING PROBLEMS FROM THE ORIGINAL SITE ARCHIVE

By J. M. McComish

### 1. Contexts that were not allocated to a 1992–93 'Block'

Contexts 259, 261, 272, 298, 309, 316, 318, 331, 366, 375–6, 405, 422, 433–4, 458, 464, 466–8, 500, 501, 524, 536–7, 534, 551–2, 560–2, 570, 587–91, 605, 617, 620, 629, 636, 638, 641, 644, 651–2, 655–8, 659–61, 663–7, 669–71, 673, 1005, 1007–8, 1015, 1019, 1021, 1027, 1043–4, 1056, 1070–1, 1085, 1100, 1114, 1123, 1128, 1131, 1132, 1139, 1147, 1154, 1155, 1156–9 and 1182–3.

### 2. Context numbers that were not used in 1995–96

Contexts 2227, 2274, 2311, 2324–9, 2388–90, 2584–5, 2618, 2621, 2633, 2660–9, 2697, 2757, 2807–8, 2812 and 2829.

### 3. Contexts from 1995–96 with planning-related omissions and errors

The following contexts were not planned: Contexts 2012, 2150, 2065, 2110, 2112, 2118, 2130, 2156, 2164–5, 2190, 2194–7, 2203, 2214, 2218, 2224, 2226, 2230, 2240, 2242, 2244, 2247–8, 2259, 2261–3, 2266, 2303, 2389, 2391, 2301, 2303, 2317–18, 2320–3, 2493, 2395, 2412, 2416–7, 2422, 2446–8, , 2483–6, 2490, 2520, 2557, 2614, 2622, 2642, 2657, 2678, 2679, 2691, 2712, 2716, 2741, 2747, 2753–4, 2769, 2772–9, 2782, 2796, 2798, 2821.

The following had incorrect co-ordinates on the plan: Contexts 2277 and 2682

The followings contexts were planned and placed onto IADB in 1995–96 but the plans have since been lost. The IADB plans cannot therefore be checked for accuracy: Contexts 2010, 2052–4, 2090, 2093, 2107, 2123, 2130–1, 2139, 2161, 2193, 2229, 2254, 2256, 2392, 2310, 2319, 2323, 2392, 2413, 2497, 2524, 2591, 2596, 2610, 2680, 2710, 2714, 2745, 2752, 2767, 2768, 2771, 2778, 2781, 2783, 2785, 2792, 2793, 2794, 2795, 2797, 2806, 2820 and 2823.

Context 2112 has a partial plan (on the plans of 2059 and 2004) but is not planned in its own right.

### 4. Contexts from 1995–96 that do not appear on the site matrix

Context 2319 does not appear on the matrix for the site as it was an arbitrary number allocated to the end of excavation in 1995, and Contexts 2457 and 2687 are not on the matrix because they were arbitrary numbers allocated to artefacts retrieved from the spoil heap.

### 5. Contexts with stratigraphic anomalies in the 1995–96 archive report

#### 5.1 Examples of stratigraphic problems caused by merging all the cemetery soils into a single group

Context 2142 in Set 10.68 was clearly stratigraphically above graves 16.225, 16.199, 16.226, 16.202, 16.201, 16.217, 16.192, 16.185, 16.231, 16.221 and 16.232. These graves were in turn stratigraphically above Context 2492 in Set 10.66. Effectively the graves were occurring within Group 10. Clearly either the graves had to move down the stratigraphic sequence into Group 10 or the uppermost deposit had to move up the stratigraphic sequence into Group 16.

## 5.2 Unphased contexts

Contexts 2080, 2133, 2134, 2136, 2135, 2132, 2138, 2141, 2210, 2211, 2078, 2081 2303 and 2741.

## 5.3 Contexts phased twice in the 1995–96 archive

Contexts 2792 and 2794.

## APPENDIX 2 DISCUSSION OF THE PROPOSED AQUEDUCT SYSTEM FROM THE 1992–93 EXCAVATIONS

By J. M. McComish

A number of features that were interpreted as parts of buildings and associated pits in the Interim Report on the 1992 excavation season (Pollock 1993a) were re-interpreted as a long-lived aqueduct system in the Interim Report for the 1993 season (Pollock 1993b). The interpretations in Pollock 1993a are favoured within this web-based publication and the reasoning for this is given here.

### Summary of the aqueduct system hypothesis, based upon Pollock 1993b.

The supposed aqueduct system was interpreted as beginning in Period 3 and continuing in use into Period 4. The aqueduct was seen as consisting of three elements: drains, pits and lengths of structural woodwork. In its initial stages it was interpreted as being fed by a culvert or waterpipe located beneath the Northumbrian wall (Context 482/2112). The wall itself is said to have ‘probably supported an aqueduct’; it was also stated that ‘an explanation is needed to account for the different level of the pipe and aqueduct’. To the north of the Northumbrian wall were a number of features (a small gully or drain [Context 573], a row of six post-holes [Context 400] and a slot [Context 424] containing a plank on edge packed with stones) which were seen as the remains of an aqueduct supplying water to a number of pits.

The system was seen as having been extended, with two drains being dug in relation to the initial aqueduct line (Contexts 326 and 489). A second ‘branch’ of aqueduct was added to the first, comprising two lengths of double-staved woodwork (Contexts 550 and 312) and three post-holes associated with bulbous pits (Contexts 317, 516 and 412). It was suggested that this part of the system would have been carried ‘at or above head height’ (Pollock 1993b, 12). Two gullies/drains (Contexts 299 and 378) were interpreted as flowing from this aqueduct line. A line of heavy woodwork (Context 301) was seen as the final branch of this system. A number of other pits were seen as being part of the later system, including one interpreted as a quenching pit and one interpreted as a cesspit.

The water supply for this system was seen as being a gravity-fed channel 2.5km in length from a source further upstream on the River Ket. This would have been via an aqueduct ‘that would cling to the hillside for most of the journey, but would have to cross 0.5km of low ground on piers or piped as a siphon’ (ibid., 13). Pollock also speculated that the aqueduct was built of wooden waterpipes which could have been reused as the log coffins seen in the Glebe Field excavations (Hill 1997, 72).

### Reasons for the rejection of the aqueduct system interpretation

The proposed aqueduct idea seems a highly elaborate interpretation for features which could have other far simpler explanations. For the reasons stated below, the interpretation of an elaborate water supply system is discounted.

a) The first major problem with this theory is that there is no evidence for the supposed channel supplying the water to such a system from the River Ket. No such feature showed on the Bradford University resistivity survey in the position suggested by Pollock. Furthermore, the description of a long aqueduct, with piers or piped as a siphon, sounds too elaborate an engineering project for this period of history.

b) The ditch beneath the Northumbrian wall (Group 4) was interpreted as being the supply for this system. There are several problems with this. The Period 2 ditch seems to be part of a much earlier ditched-enclosure (seen on the Bradford University resistivity survey) rather than relating to this period. In addition, excavation of a cross-section of this feature in 1995–96 produced no evidence of any kind of timber pipe within the ditch. Furthermore, it was clear that the ditch must have gone out of use before Period 4, as a corn-drying oven had been built across one portion of it in Period 3b. It cannot therefore be related to any Northumbrian features.

c) The Northumbrian wall is interpreted as supporting an aqueduct, but a far simpler explanation is that it is part of a boundary wall for a cemetery or religious enclosure. Similar Northumbrian walls were seen in the Glebe Field excavations (Hill 1997, fig 2.9).

d) The three elements interpreted as the initial aqueduct branch (Contexts 573, 400 and 424) are not on the same alignment, but on three parallel alignments. Since they do not align exactly it is difficult to see how they could form part of a single linear structure.

e) Most of the smaller features making up the individual elements of the suggested aqueduct system have simple alternative explanations.

The row of post-holes (Context 400) is strikingly similar to the layout of the north-eastern end of the later Period 4 Building 7 (*ibid.*, 3), and these post-holes may well relate to that building, or to an earlier building on exactly the same line for which no other traces remain, or to a boundary fence for a property.

The southernmost slot and edge-set plank (Context 424) could be all that remains of a rectangular building located to the south of and parallel to Period 4 Building 7. The gully (Context 573) could be a centrally placed drain within Building 2. The heavy timberwork (Context 301) supposedly forming the final branch of the system could be the southernmost walling from Building F, and Context 516 could be part of the northern wall of Building F. The timber work and post-holes (Contexts 312 and 550) could be part of the gable wall of Building G.

Gully 489 could be an eaves drip or drain for a small timber structure. Gully 299 could be a central drain for Building D. Gully 378 could be part of a drain relating to Building E. Finally, 326 could be a soakaway on the same alignment as all the other Period 4a features.

f) Another problem would seem to be the size of the pits supposedly associated with this suggested water supply. Why would such an elaborate engineering project be undertaken to supply such tiny pits? Surely these would have rapidly filled with water and overflowed. An

aqueduct would surely have needed some kind of large storage tank system, and no evidence for any such feature was found.

g) The design of the aqueduct superstructure was not suggested in any detail. There are clearly problems in designing a superstructure in relation to the elements described above. The first relates to the problem of the difference in height between the level of the supposed supply pipe and the aqueduct. The interim report stated that ‘an explanation is needed to account for the different level of the pipe and aqueduct’, but did not go on to offer any such explanation. It was suggested that part of the system was at or above head height, but it is difficult to imagine how a wooden pipe could sit above a single row of posts or timbers.

### **APPENDIX 3 KEYWORDS FOR THE CIFR IADB RECORDS**

By J. M. McComish

Keywords used in the 1992–93 CIFR/AIDB data base for stone objects: anvil stone, architectural fragment, discoidal, fragment, fragments, gaming board, grave marker, haematite, hone, incised, kaolinite, marble, millstone, natural pebble, pebble, pebbles, perforated stone, plough pebble, plough-damaged fragment, quern, roofing stone, sculpted stone, spindle whorl, slate pencil, smoothing stone, utilised stone, vitrified, and white stone.

### **APPENDIX 4 IMPORTANT INFORMATION ABOUT THE WHITHORN FINDS DATABASE**

By R. S. Cubitt

#### **1. Introduction**

Researchers need to be aware that there are three separate computerised artefacts (‘finds’) databases, WHIT92, WHIT93, WHIT9596, and that the sequential numbering system in each of them starts from number one. These three databases are all articulated in CIFR (Computerised Integrated Finds Record), York Archaeological Trust’s collections database.

When, in summer 2007, work began on a final check of these records in preparation for this publication, it was discovered that past data migration had truncated descriptions in the 1992 and 1993 databases. In contrast to the 1995–96 finds records, the 1992 and 1993 data were not entered directly into CIFR from the small find/day book. It had been entered at Whithorn into a computer database used by the Whithorn Trust, and it was this computerised data which was later transferred by YAT staff into CIFR via an automated process which, unfortunately, had truncated some of the data. Printouts of the Whithorn Trust databases for 1992 and 1993 exist in the site archive. They are an exact copy of the small find/day book, but in a much more convenient format. Thus YAT could complete the truncated descriptions using these early printouts.

In the process of completing the truncated descriptions, two further problems – alteration of find numbers, and apparent duplication within both the 1992 and 1993 databases – were encountered. Both are discussed in this document. The rest of this document highlights other difficulties with the database that are relevant to 1992, 1993 and 1995–96.

It should also be noted that some objects itemised on the databases were not amongst the assemblage that came from the Whithorn Trust to YAT for study.

## **2. Alteration of find numbers**

The artefacts from the 1992 and 1993 excavations at Whithorn are stored in plastic grip-seal bags which have small find numbers written on them. These numbers comprise three sections, for example, 92/103/1. However, this find is recorded on CIFR as 10301, and so it seems that an extra zero was added to the small find numbers in CIFR. Any single digit number in the third section of the find number was made into a two digit number by adding a zero in front, so /1 became /01, and /2 became /02 etc; the find number field in CIFR does not permit non-alphanumeric characters such as /.

This pattern is easiest to see in the 1993 printout where the find numbers are still shown divided by forward slashes. The 1992 find numbers were originally also divided in this way, as evidenced by the small find/day book. This explains why some 1992 numbers have not had zeros added when that might have been expected. For example, the 1992 database records 92/001710 Bronze, and 92/0001710 Med Pot. In CIFR the bronze object is now 17100, the medieval pot is still 1710. The small find/day book records that the medieval pot find number was originally in the form 92/00017/10, whereas the bronze object was 92/00171/0. This is comparable to the example of the 1993 post-medieval pot and flint objects given below.

It was discovered that there were blocks of numbers that did not occur on the printouts. Usually these were blocks from xxx00 to xxx09. The recognition of this pattern, coupled with a chance observation, led to the assumption that the printouts match the bags and pre-date the addition of extra zeros to the small find numbers in CIFR. Returning to the example given above, small find number 10301 appears on the 1992 printout as 1031. The truncated description and context number match exactly. This applies to records from both 1992 and 1993.

It was decided that the description for numbers xxx00 to xxx09 in CIFR could be updated using the information about xxx0 to xxx9 on the printouts. For each small find to which this applies, an explanatory sentence was added to other work records in CIFR to explain to future researchers where the information about this object was obtained. It should be noted that it is unlikely that all the altered numbers were encountered and marked in this way.

## **3. Apparent duplication of find numbers**

Small find numbers were allocated on site. The three-part nature of the 1992 and 1993 find numbers has already been outlined. Comparison of the small find/day books and the early Whithorn Trust database printout reveals that, in the latter, two zeros were added to the front of the second section of each find number. This resulted in finds numbers that are 6, 7 and 8 digits long, after the year code at the beginning. As CIFR is limited to 5-digit small find numbers, it is surmised that during YAT's transfer of the Whithorn Trust database to CIFR these small find numbers were truncated. As a result some numbers were no longer unique. For example, the paper finds database for 1992 includes the following small finds: 92/0013110 Bone and 92/00013110 Clay pipe. These very similar numbers probably both became 13110. As it is not possible in CIFR to have two small finds records with the same number, only one of these records would survive on CIFR. Providing that both objects came from the Whithorn Trust to YAT, a new number was allocated to the one which was not on the CIFR record.

Duplication also occurs within the 1993 finds database, although in a slightly different way. In the 1993 database printout the find numbers are in three parts, divided with forward slashes, e.g. 93/00040/13 Post Med Pot and 93/00401/3 Flint. Following the pattern described above, only the flint find number required an extra zero. Thus when the data was transferred to CIFR from the early Whithorn Trust database, rather than both of the above small find numbers becoming 04013, the objects retained unique numbers. The pot remained as 04013 and the flint became 40103.

However, the addition of zeros to 1993 find numbers created rather than avoided duplication in some cases. Two finds that provide an example are 93/00401/0 Med Pot and 93/00040/100 Coal. Following the pattern described above, the medieval pot find number required an extra zero. Thus when the data was transferred to CIFR both the numbers became 40100 and one find, in this case the medieval pot, disappeared from the database.

It was decided that text should be added to each CIFR record to explain to future researchers why they might be faced with details of a bone object when they thought that the number in question referred to clay pipe, etc. The exact wording of the explanatory text depended on how the pairs of object were recorded in CIFR, and which were included in the assemblage that came to YAT. The explanatory text is given below. It should be noted that it is unlikely that all the apparent duplicates that exist were encountered.

#### **4. Other numbering issues that researchers should bear in mind**

The process of updating the Whithorn database was complex. In addition to the difficulties described above, a number of other minor problems were encountered and are noted here. This section is relevant to 1992, 1993 and 1995–96. Attempts were made to solve these problems, and notes added to the ‘other work record’ section of CIFR to explain the action taken. However, resolution was not always possible, and there may be other cases that were not encountered.

Numerous finds were discovered with the wrong numbers written on the bags.

At some stage during the post-excavation process several small finds bags had been found to contain two different categories of object, for example slag and iron. These different categories had then been separated and given their own find numbers. However, find numbers, descriptions and quantities had often not been changed either on the bags or in CIFR. Where small finds had been divided up and some components given their own number, these new numbers have frequently not been added to CIFR.

Some bags contain groups of objects with a run of consecutive numbers. The range is written on the bag and the objects are marked with their individual numbers. Sometimes these finds do not have their individual CIFR records; instead they may all be recorded in the CIFR record with the first/lowest find number.

Some finds have six-figure numbers on their bags. These do not feature in CIFR as it is only able to accommodate find numbers up to five figures.

The year of excavation recorded on some of the bags is 1991. These are included in the 1992 CIFR database.



The 1992 and 1993 paper databases had to be cut up and stuck back together by R. Cubitt in 2007 in order to put them in numerical order. Copies have been included with the archive. Owing to the enormity of the task some errors of ordering were made. Where discovered, these have been annotated, but there are probably others that were missed. In addition, due to constraints of time, the 1993 find numbers were grouped by units of 100 rather than arranged in strictly numerical order.

Finds from the 1995 and 1996 excavation campaigns were originally marked with individual accession codes allocated by the receiving museum. These are WHITH:1995.0292, and WHITH:1996.0374 respectively. The data from these two projects were eventually amalgamated into WHIT9596. The original accession codes still appear on the finds bags but are now obsolete.

### 5. Discrepancies between identifications on CIFR and on finds bags

The complexity of the task coupled with the large number of objects (approximately 4000 finds from an original total assemblage of about 6100) meant that the 2007 work concentrated on producing a workable collections database. This has included updating identifications in CIFR using the paper records, and improving consistency in terminology. It was not possible to update the identification on the bags due to time and financial constraints. Where they differ, researchers should take the identification on CIFR to be the most up-to-date.

### 6. Duplication explanatory text for 1992 and 1993

The following table outlines the particular ways that the finds were recorded in CIFR and the steps taken to resolve the problems outlined two above. X, Y and Z represent objects with similar small find numbers that are likely to have become confused. Lower case x represents a number from 0–9. The paper databases referred to are the printouts of the early Whithorn Trust database for 1992 and 1993.

Option	Object that appears on CIFR	Object that appears in paper database	Object that appears in a specialist report	Which objects have been located?	Action to take and explanatory text to add to other work record
1	X	Y	–	neither  OR  Y only	Alter CIFR to refer to object Y. Add to <i>other work record</i> : This find is given the number xx/xxx in the paper database. This CIFR record originally referred to object X (details). Object X does not feature in the paper database. It was not amongst the finds assemblage that came to YAT therefore its current location is unknown. An explanation of the apparent duplication of small find numbers at Whithorn is given in a

					document attached to IADB.
2	X	Y	–	X only	Leave the CIFR record as it is. Add to <i>other work record</i> : This object does not appear in the paper database. The paper database refers to object Y (details). It was not amongst the finds assemblage that came to YAT therefore its current location is unknown. An explanation of the apparent duplication of small find numbers at Whithorn is given in a document attached to IADB.
3	X	X	Y	Y only	Alter CIFR to refer to object Y. Add to <i>other work record</i> : This object does not appear in the paper database. It is described in a specialist report (details). The paper database refers to object X (details). It was not amongst the finds assemblage that came to YAT therefore its current location is unknown. An explanation of the apparent duplication of small find numbers at Whithorn is given in a document attached to IADB. Alternatively there is a possibility that the finds specialist has mistaken the number.
4	X	X	–	Y only	Alter CIFR to refer to object Y. Add to <i>other work record</i> : This object does not appear in the paper database. The paper database refers to object X (details). It was not amongst the finds assemblage that came to

					YAT therefore its current location is unknown. An explanation of the apparent duplication of small find numbers at Whithorn is given in a document attached to IADB.
5	X	Y	Y	X only  OR  neither	Leave the CIFR record as it is. Add to <i>other work record</i> : This object does not appear in the paper database. The paper database refers to object Y (details). Object Y is also referred to in a specialist report (details). It was not amongst the finds assemblage that came to YAT therefore its current location is unknown. An explanation of the apparent duplication of small find numbers at Whithorn is given in a document attached to IADB. Alternatively there is a possibility that the finds specialist has mistaken the number.
6	X	X and Y	Y	neither	Leave the CIFR record as it is. Add to <i>other work record</i> : This object is given the number xx/xxx in the paper database. The paper database refers to object Y (details). Object Y is also referred to in a specialist report (details). It was not amongst the finds assemblage that came to YAT therefore its current location is unknown. An explanation of the apparent duplication of small find numbers at Whithorn is given in a document attached to IADB. Alternatively there is

					a possibility that the finds specialist has mistaken the number.
7	X	X and Y	–	X only	Leave the CIFR record as it is. Add to <i>other work record</i> : This find is given the number xx/xxx in the paper database. The paper database also refers to object Y. It was not amongst the finds assemblage that came to YAT therefore its current location is unknown. An explanation of the apparent duplication of small find numbers at Whithorn is given in a document attached to IADB.
8	X	X and Y	–	Y only	Alter CIFR to refer to object Y. Add to <i>other work record</i> : This find is given the number xx/xxx in the paper database. This CIFR record originally referred to object X (details). Object X is given the number xx/xxx in the paper database. It was not amongst the finds assemblage that came to YAT therefore its current location is unknown. An explanation of the apparent duplication of small find numbers at Whithorn is given in a document attached to IADB.
9	X	Y and Z	–	Neither	Leave CIFR as it is. Add to <i>other work record</i> : This object does not appear in the paper database. The paper database refers to objects Y and Z (details). Neither were amongst the finds assemblage that came to YAT therefore their current location is

					unknown. An explanation of the apparent duplication of small find numbers at Whithorn is given in a document attached to IADB.
10	X	X and Y	–	Both	Leave one as the original and renumber the other. A note should go into the other work record for each find. Note for find with original number: This find is recorded as xx/xxx on the 199x database printout. There was a second find, Y, with the same number. This Y was renumbered as small find Z, taking the next numerical number available in the database. Note for renumbered find: This small find was originally numbered xxxx on CIFR. It was one of two finds with that number. The other object, Y, had kept the original number. This X was renumbered, taking the next numerical number available in the database.

## APPENDIX 5 CATALOGUE OF BURIALS

By K. Tucker

The preservation, completeness, age, sex, stature and cranial index of each individual analysed, as well as any non-metric traits and pathologies observed, are catalogued below. The information is summarised in Table 11.

The assessment of numbers of teeth with calculus present –

Many skeletons had teeth that were so badly preserved that it was impossible to assess the pathology. A skeleton may therefore have, for example 20 teeth, of which only 16 could be assessed for calculus, giving a figure of 14/16 rather than 14/20 in the catalogue below.

In all of the dentition tables UR = Upper right, LR = Lower Right, UL = Upper Left and LL = Lower left

### WHITHORN 1993

**+93/647 (1035) (SK mislabelled with grave cut number)**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15	16	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (2/2), enamel hypoplasia of the molars

**+93/400/1 (1036) 1<sup>st</sup> individual (SK mislabelled with grave cut number)**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, mandible, left femur and teeth are present.

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	31	-	-	-	-	-	/	/	/	/	21	-	19	18	-	LL

Dental pathology: calcLLus (4/4)

Non-metric traits: none observable

Pathology: none observed

**+93/406/0 (1036) 2<sup>nd</sup> individual (SK mislabelled with grave cut number)**

Age: ?adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only teeth are present

Dentition:

UR	-	2	-	-	-	6	7	8	9	-	11	-	-	14	15	16	UL
LR	-	-	30	-	-	-	-	-	-	-	-	21	20	19	-	-	LL

Dental pathology: calcLLus (11/12), enamel hypoplasia of the canines.

**+93/272/1 and +93/409/0 (1038) (SK mislabelled with grave cut number)**

Age: ?adolescent

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only teeth are present

Dentition:

UR	-	2	3	4	5	-	-	-	9	-	11	12	13	14	-	-	UL
LR	-	31	30	29	28	27	26	-	-	23	22	21	20	-	18	-	LL

Dental pathology: calcLLus (3/18), enamel hypoplasia of the canines, premolars and molars.

**+93/318/0-1 (1039) (SK mislabelled with grave cut number)**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only the petrous temporals and teeth are present.

Dentition:

UR	-	2	-	-	-	-	7	8	9	-	11	12	-	14	-	16	UL
LR	-	31	30	29	28	27	-	-	-	-	22	21	20	19	18	17	LL

Dental pathology: calcLLus (15/16), enamel hypoplasia of the canine.

**+93/382/0 (1052)**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, cervical vertebrae, right scapLLa and femur, and teeth are present.

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	-	22	21	20	X	X	-	LL

Dental pathology: calcLLus (3/3), enamel hypoplasia of the canine, moderate to severe periodontal disease.

Non-metric traits: none observable

Pathology: the right scapLLa has a large smooth edged hollow on the anterior and medial of the glenoid fossa. The bone around the edges of the hollow, and on the posterior of the glenoid fossa, is porous. This is probably some form of tumour or cyst.

**+93/412 (1059) (SK mislabelled with grave cut number)**

Age: younger childhood (3-4 years)

Preservation: moderate

Completeness: only teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	UL
LR	70	-	-	-	-	-	-	-	-	-	-	LL

u u u u u u

UR	-	-	3	-	-	-	7	-	9	10	-	12	-	14	-	-	UL
----	---	---	---	---	---	---	---	---	---	----	---	----	---	----	---	---	----



LR	-	-	30	-	-	-	26	25	24	-	-	21	20	19	-	-	LL
			u				u	u	u			u	u	u			

Dental pathology: calcLLus (1/1), enamel hypoplasia of the unerupted permanent incisors, premolars and molars.

**+93/415 and +93/430/1 and +93/537/0-1 (1063) (SK mislabelled with grave cut number)**

Age: adult

Sex: female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, cervical vertebrae, left clavicle and pelvis, and teeth are present.

Dentition: c

UR	-	-	-	-	5	-	-	-	-	-	11	12	13	-	15	-	UL
LR	np	31	30	29	28	27	26	/	/	23	22	X	20	X	X	X	LL
		c	c														

Dental pathology: caries (3/12), calcLLus (14/14), severe periodontal disease, enamel hypoplasia on premolar.

Non-metric traits: parietal foramen, mastoid foramen exsutural (left).

Pathology: spinal degenerative joint disease.

**+93/408/1 and +93/457/0 and +93/484/0 (1064) (SK mislabelled with grave cut number)**

**Age: adult**

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only part of the cranium and teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	23	-	-	-	-	-	-	LL

Dental pathology: calcLLus (1/1)

Non-metric traits: none observable

Pathology: none observed

**+93/417 and +93/443 (1067) (SK mislabelled with grave cut number)**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and teeth are present.

Dentition:

UR	1	2	3	-	5	6	-	-	-	10	11	12	13	14	15	16	UL
LR	-	-	-	-	-	-	-	-	-	-	22	-	-	-	-	-	LL

Dental pathology: calcLLus (13/13)

Non-metric traits: none observable

Pathology: none observed

**+93/543 and +93/585 (1073) (SK mislabelled with grave cut number)**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, mandible, teeth and cervical vertebrae are present.

Dentition:

c c,a

UR	1	2	3	4	5	6	/	8	9	/	11	/	13	14	15	16	UL
LR	32	31	30	29	28	-	-	-	-	-	-	-	-	-	-	17	LL

c

Dental pathology: caries (3/18), calcLLus (13/17), penetrating abscess into maxillary antrum with subsequent sinusitis, slight to severe periodontal disease, enamel hypoplasia of the premolars.

Non-metric traits: none observed

Pathology: none observed

**+93/418 (1075)**

Age: ?adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only part of the right leg is present

Non-metric traits: none observable

Pathology: none observed

**+93/451 and +93/483 (1076)**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium are present.

Non-metric traits: none observed

Pathology: none observed

**+93/541/0-1 (1077)**

Age: younger childhood (4-5 years)

Preservation: good

Completeness: only parts of the cranium and teeth are present

Dentition:

UR	51	52	-	-	-	56	-	58	-	-	UL
LR	70	69	-	-	-	-	-	-	-	-	LL



Pathology: none observed

**+93/539 (1080)**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only parts of the right leg and foot present.

Non-metric traits: none observable

Pathology: none observed

**+93/540 (1081)**

Age: ?adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only part of the right leg is present

Non-metric traits: none observable

Pathology: the tibia is severely bowed mediolaterally. As the bone is poorly preserved, it is impossible to determine whether this is pathological or taphonomic in nature

**+93/485 (1082)**

Age: ?older childhood

Preservation: moderate

Completeness: only teeth are present

Dentition:

UR	-	-	3	-	-	6	7	8	-	-	-	-	-	-	-	-	UL
LR	-	-	30	29	-	27	26	25	24	23	-	-	-	-	-	-	LL

Dental pathology: enamel hypoplasia of the medial incisor.

**+93/544 (1084)**

Age: sub-adult

Preservation: poor

Completeness: only part of the right leg is present

Pathology: none observed

**+93/545 (1090) (SK mislabelled with grave cut number)**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only parts of the cranium and right leg are present.

Non-metric traits: none observable

Pathology: none observed.

**+93/497/0 and +93/512/1 (1091) 1<sup>st</sup> individual (SK mislabelled with grave cut number)**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only part of the cranium and teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	14	15	-	UL
LR	-	-	-	-	-	-	-	-	-	-	22	21	20	19	18	-	LL

Dental pathology: calcLLus (7/7), enamel hypoplasia of the canine and molars

Non-metric traits: none observable

Pathology: none observed

**+93/551 (1091) 2<sup>nd</sup> individual (SK mislabelled with grave cut number)**

Age: young middle adult

Sex: undeterminable

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, vertebrae, the left arm and hand, both legs and the pelvis are present.

Dentition:

UR	-	-	-	-	-	-	-	8	-	-	-	-	13	-	-	-	UL
LR	/	31	30	29	/	/	/	/	/	23	22	21	20	19	18	17	LL

Dental pathology: calcLLus (12/12)

Non-metric traits: mastoid foramen exsutural (right), femoral plaque (right), transverse foramen bipartite (left).

Pathology: active non-specific infections of the right ilium and both femorae.

**+93/542 (1091) 3<sup>rd</sup> individual**

Age: foetal/neonate

Preservation: poor

Completeness: only part of the cranium and teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	62	-	LL	

u

**+93/662 (1137)**

Age: adult

Sex: female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, mandible, teeth, ribs, left clavicle, pelvis and legs are present.

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	23	-	-	-	19	18	-	LL

c   c

Dental pathology: caries (2/3), calcLLus (3/3)

Non-metric traits: parietal foramen

Pathology: degenerative joint disease of the spine and the temporomandibLLar joint, possible hyperostosis frontalis interna, active non specific infection of the right tibia.

**+93/648 (1139)**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	12	-	14	15	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (3/3), enamel hypoplasia of the premolars and molars

**WHITHORN 1995**

**800/2002**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only part of the cranium is present

Non-metric traits: none observable

Pathology: none observed



**801/2008**

Age: adolescent or young adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, mandible and teeth are present

Dentition:

UR	1	2	3	4	-	-	-	-	-	-	-	-	13	-	15	16	UL
LR	32	31	30	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (10/10)

Non-metric traits: none observed

Pathology: none observed

**802/2025**

Age: older childhood (7-9 years)

Preservation: poor

Completeness: only parts of the cranium and teeth are present

Dentition:

									u?	u?	u?	u	u		u		
UR	-	-	-	-	-	-	-	-	9	10	11	12	13	14	15	-	UL
LR	-	31	30	-	-	-	-	-	-	-	-	21	-	19	18	-	LL
		u										u?		u			

Pathology: none observed

**804/2039**

Age: -

Sex: -

Stature: -

Cranial index: -

Stature: -

Preservation: poor

Completeness: only some small fragments of cranium present

Non-metric traits: none observable

Pathology: none observed

### **805/2043**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, mandible, teeth, cervical vertebrae, left clavicle and humerus, pelvis, right arm and hand, and femur are present.

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	11	12	13	14	15	16	UL
LR	32	31	30	29	28	27	26	25	/	23	22	21	20	19	18	17	LL

Dental pathology: calcLLus (18/18)

Non-metric traits: ossicle at lambda, parietal foramen, posterior atlas bridge (left).

Pathology: none observed

### **806/2055 (1<sup>st</sup> individual)**

Age: sub-adult

Preservation: good

Completeness: only parts of the cranium and teeth are present

Dentition:

UR	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	21	20	19	18	-	LL







**813/2124**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the leg are present.

Non-metric traits: none observable

Pathology: none observed

**814/2126**

Age: ?adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only part of the left arm is present (a bag of teeth recorded as being present during the assessment by EAU cannot now be located)

Non-metric traits: none observable

Pathology: none observed

**815/2128**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, pelvis and left leg are present.

Non-metric traits: none observed

Pathology: none observed

**816/2129**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium are present

Non-metric traits: none observable

Pathology: none observed

### **817/2130**

Age: -

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only a few unidentifiable fragments are present

Non-metric traits: none observable

Pathology: none observed

### **818/2137**

Age: adolescent

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, ribs, left arm, pelvis, sacrum, legs and left foot are present.

Dentition:

UR	X	X	X	X	X	X	X	X	X	X	X	UL
LR	70	X	X	X	X	X	X	X	X	X	X	LL

UR	np	2	3	4	5	6	7	8	9	10	11	12	13	14	15	np	UL
LR	np	31	30	np	28	27	26	25	24	23	22	21	20	19	np	np	LL

Dental pathology: calcLLus (deciduous 1/1, permanent 26/26), slight periodontal disease, enamel hypoplasia of the premolars and canines, retained dm2 and missing PM4, and missing M2 (congenitally absent or lost ante-mortem)

Pathology: the tibiae and fibLLae are flattened and slightly bowed. This possibly indicates rickets.

**819/2138**

Age: adult

Sex: female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, cervical vertebrae, legs and right foot are present

Non-metric traits: none observable

Pathology: none observed

**821/2143**

Age: adult

Sex: male

Stature: -

Cranial index: -

Preservation: good

Completeness: only parts of the cranium, mandible, teeth, and cervical and thoracic vertebrae are present.

Dentition:

c c

UR	-	-	-	-	5	6	7	-	-	10	11	12	13	14	15	16	UL
LR	32	31	30	29	28	27	-	-	-	23	22	-	20	19	18	17	LL

c c

Dental pathology: caries (4/15), calcLLus (18/19), severe periodontal disease.

Non-metric traits: none observed

Pathology: none observed

**822/2146**



Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the legs are present

Non-metric traits: none observable

Pathology: active non-specific infection of the left fibLLa, degenerative joint disease of the left knee.

**823/2153**

Age: ?adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only fragments of long bone are present

Non-metric traits: none observable

Pathology: none observed

**824/2156**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	15	16	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (3/3)

**825/2165**

Age: adult

Sex: female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, and teeth are present

Dentition:

UR	-	2	3	-	5	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (3/3)

Non-metric traits: parietal foramen (right)

Pathology: none observed

**826/2168**

Age: ?adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only small unidentifiable fragments are present

Non-metric traits: none observable

Pathology: none observed

**827/2172**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the right leg and foot are present

Non-metric traits: none observable

Pathology: none observed

**828/2175**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth, and cervical vertebrae are present

Dentition:

		c	c							c			c		c	c	
UR	1	2	3	4	5	6	7	-	9	10	11	12	13	14	15	16	UL
LR	32	31	30	29	28	27	-	-	-	-	22	21	20	19	18	17	LL
		c	c	c	c									c	c	c	

Dental pathology: caries (13/23), calcLLus (20/27), slight periodontal disease

Non-metric traits: lambdoid wormians (left)

Pathology: degenerative joint disease of the left temporomandibLLar joint. There are osteoclastic lesions of the diploe of the occipit al, temporals and C2 that have broken through the bone surface with sharp edges. This coLLd be a normal variation of vasclLarity, or evidence for some form of neoplastic disease.

**829/2188**

Age: older childhood (6-7 years)

Preservation: good

Completeness: only parts of the cranium and mandible, teeth, cervical vertebrae and left leg are present.

Dentition:

UR	51	-	-	-	-	-	-	-	-	60	UL
LR	70	69	-	-	-	-	-	-	62	61	LL

		u		u		u?		u?		u	u	u		u			
UR	-	2	3	-	5	-	7	-	9	-	11	12	13	-	15	-	UL
LR	-	31	30	29	-	27	26	25	24	23	22	21	20	19	18	-	LL
		u		u		u	u?	u?	u?	u?	u	u	u		u		

Dental pathology: calcLLus (deciduous 4/6, permanent 2/2)

Pathology: active non-specific infections present on fragments of long bone. The occipital and left parietal have areas of new bone with a furrowed appearance on the endocranial surface. This possibly indicates anaemia.

**830/2192**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth, cervical and thoracic vertebrae and left clavicle are present.

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	23	22	21	-	-	18	-	LL

Dental pathology: calcLLus (3/4), enamel hypoplasia of the canine

Non-metric traits: none observed

Pathology: none observed

**831/2196**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth and left leg are present.

Dentition:

UR	1	-	-	-	-	-	-	-	-	-	-	-	-	14	15	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	19	18	-	LL

Dental pathology: calcLLus (2/5)

Non-metric traits: none observable

Pathology: none observed

### **832/2206**

Age: adult

Sex: male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth and cervical vertebrae are present.

Dentition:

c

UR	-	2	3	4	5	-	-	-	-	-	-	12	13	14	-	16	UL
LR	32	31	30	29	28	/	26	25	-	-	-	-	20	-	-	17	LL

Dental pathology: caries (1/10), calcLLus (17/17), slight periodontal disease

Non-metric traits: mastoid foramen exsutural (right)

Pathology: degenerative joint disease of the right temporomandibLLar joint.

### **833/2208**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, arms and right hand, pelvis and legs are present.

Dentition:

UR	1	X	3	4	5	6	/	8	9	10	11	12	13	14	15	16	UL
LR	32	31	30	29	28	27	26	25	24	23	22	21	-	19	18	17	LL

Dental pathology: calcLLus (13/19), slight to moderate periodontal disease

Non-metric traits: none observed

Pathology: spinal degenerative joint disease

### **834/2225**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth, left scapLLa, clavicles, legs and feet are present

Dentition:

UR	1	2	3	4	5	6	-	8	-	-	-	12	13	14	15	16	UL
LR	32	31	30	29	28	27	-	-	24	23	22	21	20	19	18	17	LL

Dental pathology: calcLLus (26/26), enamel hypoplasia of the canines, premolars and molars

Non-metric traits: tibial squatting facet (right)

Pathology: sinusitis of the right maxillary antrum

### **835/2232**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, right arm and hand, pelvis, legs and left foot are present

Dentition:

UR	-	-	-	-	5	-	-	-	9	-	11	-	13	-	-	-	UL
LR	32	31	30	29	-	27	26	25	-	-	-	-	-	19	18	17	LL

Dental pathology: calcLLus (14/14), slight periodontal disease, possible use wear groove in the interproximal region of the mandibLLar right M3 and M2

Non-metric traits: parietal foramen (right), mastoid foramen exsutural (right), femoral plaque (right)

Pathology: spinal degenerative joint disease

### **836/2240 and 850/2314**

Age: adolescent (13-16 years)

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, ribs, scapLLae, right clavicle, arms, pelvis, left leg and feet are present

Dentition:

u

UR	-	2	3	4	5	6	7	8	9	-	-	12	13	14	15	16	UL
LR	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	LL

u

u

Dental pathology: calcLLus (26/26), enamel hypoplasia of the incisors, canines and premolars

Non-metric traits: mastoid foramen exsutural (left), tibial squatting facet (left)

Pathology: none observed

### **642/2244**

Age: -

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only tooth enamel fragments are present

Non-metric traits: none observable

Pathology: none observable

**837/2254**

Age: mature adult

Sex: male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, arms, right hand, pelvis, legs and feet are present.

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-	-	UL
LR	-	-	-	29	28	-	-	-	-	-	-	21	/	/	18	-	LL	

Dental pathology: calcLLus (5/5), enamel hypoplasia of the premolars

Non-metric traits: tibial squatting facet (left)

Pathology: spinal osteoarthritis and degenerative joint disease, possible osteochondritis dissecans of the left calcaneus, cortical defect on the lateral and posterior of the right ischium, enthesophytes on the *tendo calcaneus* attachment on both calcanei

**838/2262**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, and teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	24	23	-	-	-	-	-	-	LL

Dental pathology: calcLLus (2/2)

Non-metric traits: none observable

Pathology: none observed



**?/2265**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and teeth are present

Dentition:

UR	1	2	-	-	-	-	-	-	-	-	-	-	-	-	15	-	UL
LR	-	31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (3/4)

Non-metric traits: none observable

Pathology: the endocranial surface is rugged with small plaques of new bone

**839/2267 (1<sup>st</sup> individual)**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and teeth and legs are present

Dentition:

UR	-	2	-	4	5	-	-	8	-	10	11	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (6/6)

Non-metric traits: none observable

Pathology: none observed

**839/2267 (2<sup>nd</sup> individual)**

Age: adolescent (14-16 years)

Preservation: good

Completeness: only parts of the cranium and mandible, teeth, cervical vertebrae, and legs are present

Dentition:

UR	/	2	-	-	-	6	-	8	-	-	11	12	13	14	-	-	UL
LR	np	31	30	29	28	27	26	25	24	23	-	21	20	19	18	np	LL

Dental pathology: calcLLus (20/20), enamel hypoplasia of the premolars

Pathology: active non-specific infection of the right body of the mandible

### **840/2270**

Age: -

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only a few unidentifiable fragments are present

Non-metric traits: none observable

Pathology: none observed

### **739/2276 (1<sup>st</sup> individual)**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium, mandible, teeth, pelvis, left leg and feet are present.

Dentition:

c

UR	-	-	-	4	5	6	-	8	-	-	-	-	-	-	-	-	UL
LR	-	X	X	X	28	27	/	-	-	/	/	-	-	-	X	X	LL



Pathology: degenerative joint disease of the ribs and temporomandibular joint. The left femur has a depression on the greater trochanter with porous woven bone around it, and the trochanter is deformed with enthesophytes in the trochanteric fossa. This is probably some form of infection of a muscle insertion, possibly related to trauma. Enthesophytes around both acetabula

### **759/2284**

Age: adolescent (13-16 years)

Preservation: moderate

Completeness: parts of the cranium, mandible, teeth, cervical vertebrae, right scapula and humerus are present.

Dentition:

UR	-	2	3	4	5	6	-	8	9	-	11	12	13	14	15	16	UL
LR	-	31	30	29	28	27	26	25	24	23	22	21	20	19	18	-	LL

Dental pathology: calculus (26/26), enamel hypoplasia of the incisors.

Non-metric traits: parietal foramen (left)

Pathology: cortical defect on the proximal and medial right humerus

### **843/2285**

Age: young middle adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical and lumbar vertebrae, right clavicle and scapula, arms, left hand, pelvis, sacrum and legs are present

Dentition:

UR	1	2	3	4	5	6	/	8	-	10	11	12	13	14	15	16	UL
LR	32	31	30	29	-	-	-	-	-	23	22	21	20	19	18	17	LL

Dental pathology: calculus (24/24), enamel hypoplasia of the incisors, canines and premolars

Non-metric traits: lambdaoid wormians (left), mastoid foramen exsutural (right)

Pathology: sinusitis of the right maxillary antrum

**845/2288**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, right clavicle, scapula, arm and hand, pelvis and legs are present

Dentition:

UR	1	2	3	4	5	6	-	8	9	10	11	12	13	14	15	16	UL
LR	32	31	30	29	-	-	-	-	-	-	22	21	20	19	18	17	LL

Dental pathology: calculus (22/22), enamel hypoplasia of the canines, premolars and molars

Non-metric traits: tibial squatting facet (right)

Pathology: sinusitis of the left maxillary antrum

**846/2298**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium are present

Non-metric traits: none observable

Pathology: none observed

**847/2302**

Age: adult

Sex: female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth, right scapLLa and arm, pelvis and legs are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	12	13	14	15	16	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (2/2)

Non-metric traits: parietal notch bones (left), mastoid foramen exsutural (left)

Pathology: porous woven bone on the endocranial surface of the frontal and parietals

### **761/2303**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, mandible, teeth and cervical vertebrae are present

Dentition:

UR	-	2	3	4	5	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	32	31	/	/	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (6/6), moderate periodontal disease

Non-metric traits: mastoid foramen exsutural (right)

Pathology: none observed

### **848/2306**

Age: adult

Sex: female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth, vertebrae, right arm, pelvis, legs and feet are present

Dentition:

UR	-	2	3	-	5	6	-	-	-	-	-	-	-	14	15	16	UL
LR	32	31	30	/	-	-	26	-	-	-	-	21	20	19	18	17	LL

Dental pathology: calcLLus (16/16), slight to moderate periodontal disease

Non-metric traits: none observed

Pathology: spinal degenerative joint disease

### **849/2308**

Age: adult

Sex: female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth and cervical vertebrae are present

Dentition:

UR	-	2	3	-	-	-	-	-	-	-	-	12	13	14	15	-	UL
LR	np	31	30	-	-	/	/	/	/	23	22	21	20	19	/	np	LL

Dental pathology: calcLLus (13/13), moderate to severe periodontal disease

Non-metric traits: parietal foramen, mastoid foramen exsutural (left), posterior atlas bridge (right)

Pathology: spinal degenerative joint disease, fusion of C2 and C3 through the left facets

### **851/2313 (1<sup>st</sup> individual)**

Age: adolescent (13-16 years)

Preservation: good

Completeness: only parts of the legs and feet are present

Pathology: the tibiae are slightly bowed, which may indicate rickets. Active non-specific infections of the tibiae. Cortical defects of the soleal line on both tibiae

### **851/2313 (2<sup>nd</sup> individual)**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, and teeth are present

Dentition:

UR	-	2	-	4	5	-	-	-	-	-	-	-	-	-	-	UL	
LR	32	31	30	-	-	-	-	-	-	-	-	-	-	19	18	17	LL

Dental pathology: calcLLus (8/8)

Non-metric traits: mastoid foramen exsutural (right)

Pathology: none observed

### **WHITHORN 1996**

#### ***1600/2331***

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, teeth, legs and right foot are present

Dentition:

UR	1	2	-	-	-	-	-	-	-	-	-	-	13	-	15	16	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (2/5)

Non-metric traits: none observed

Pathology: none observed

#### ***1601/2334***

Age: adult

Sex: female

Stature: 147 ± 3.66cm (tibia)



Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, left hand, legs and feet are present

Dentition:

UR	-	2	3	4	5	6	-	-	-	10	11	-	-	-	15	16	UL
LR	32	31	30	29	28	27	26	-	24	23	22	21	20	19	18	17	LL

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Dental pathology: caries (1/24), calcLLus (23/24)

Non-metric traits: mastoid foramen exsutural (right), tibial squatting facet (right)

Pathology: degenerative joint disease of the foot

### **1602/2336**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: poor

Completeness: only parts of the cranium are present

Non-metric traits: lambdoid wormians

Pathology: none observed

### **1603/2337**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium are present

Non-metric traits: mastoid foramen exsutural (right)

Pathology: none observed

### **1604/2341**

Age: adolescent (13-16 years)

Preservation: moderate

Completeness: only parts of the cranium, teeth, legs and right foot are present

Dentition:

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UR	1	-	3	-	-	-	-	8	-	-	-	-	-	-	-	-	UL
LR	-	31	30	/	-	-	-	-	-	-	-	-	20	-	-	-	LL

Dental pathology: calcLLus (3/5), enamel hypoplasia of the incisor

Pathology: none observed

### **1605/2346**

Age: adolescent or young adult (16-20 years)

Sex: male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth, cervical vertebrae, left clavicle, right arm and leg are present

Dentition:

u

UR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	UL
LR	32	31	30	29	28	27	26	-	24	-	22	-	20	19	18	17	LL

Dental pathology: calcLLus (26/29), enamel hypoplasia of the canines, premolars and molars

Non-metric traits: none observed

Pathology: none observed

### **1606/2350**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium, left clavicle, scapLLa and arm, legs and feet are present

Non-metric traits: none observed

Pathology: enthesophytes at the attachment site for the *tendo calcaneus* attachment on the right calcaneus

### **1607/2353**

Age: adult

Sex: female

Stature: -

Cranial index: -

Preservation: poor

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, ribs, arms, right hand, pelvis and legs are present

Dentition:

UR	np	2	3	4	-	6	-	8	9	-	-	12	13	14	15	-	UL
LR	np	31	30	29	28	-	26	-	-	-	-	21	20	19	18	np	LL

Dental pathology: calcLLus (14/16), enamel hypoplasia of the premolars

Non-metric traits: lambdoid wormians, parietal foramen

Pathology: spinal degenerative joint disease, active non-specific infection of the tibiae, cortical defect of the soleal line on the right tibia

### **1608/2357 (1<sup>st</sup> individual)**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, right clavicle and scapLLa, arms, left hand, pelvis and sacrum, legs and feet are present

Dentition:

UR	1	2	3	4	5	6	7	-	9	10	11	-	13	14	15	16	UL
LR	32	31	30	29	28	-	26	25	24	23	-	21	20	19	18	17	LL

Dental pathology: calcLLus (28/28), enamel hypoplasia of the premolars

Non-metric traits: parietal foramen (left), double superior atlas facets

Pathology: possible healed rib fractures with displacement of the ends, enthesophytes on the *tendo calcaneus* attachment on the right calcaneus, enthesophytes on one right rib facet

### **1608/2357 (2<sup>nd</sup> individual)**

Age: older childhood (8-10 years)

Preservation: poor

Completeness: only part of the left leg and teeth are present

Dentition:

UR	-	52	-	-	-	-	-	-	-	-	-	UL
LR	70	69	-	-	-	-	-	-	-	-	61	LL

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UR	-	-	-	-	-	6	7	-	9	-	-	-	-	-	-	-	UL
LR	-	31	30	29	28	27	26	-	-	-	-	21	20	19	18	17	LL

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Dental pathology: calcLLus (deciduous 4/4, permanent 5/5), enamel hypoplasia of the permanent canine

Pathology: none observed

### **1609/2359**

Age: old middle adult

Sex: male

Stature: -

Cranial index: -

Preservation: good

Completeness: parts of the right hand, pelvis, sacrum, legs, feet and teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR		31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: enamel hypoplasia of the molar

Non-metric traits: none observed

Pathology: osteoarthritis of left hip, degenerative joint disease of the right hand, left hip and knee. Active non-specific infection of the right tibia and left fibLLa. Bowing of the left tibia and fibLLa, possibly indicating healed rickets

### **1610/2361**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical and thoracic vertebrae, left scapLLa and arm, and legs are present

Dentition:

UR	X	X	53	X	X	X	X	X	X	X	UL
LR	X	X	X	X	X	X	X	X	X	X	LL

UR	np	2	3	4	5	6	7	8	/	10	11	12	13	14	15	16	UL
LR	np	31	30	29	28	/	26	25	24	23	22	21	20	19	18	np	LL

Dental pathology: calcLLus (deciduous 1/1, permanent 16/26), slight periodontal disease, retained deciduous canine with the permanent canine erupting lingually of the dc and I2, the I2 is also rotated.

Non-metric traits: lambdoid wormians (left), mastoid foramen exsutural (left), posterior atlas bridge (left), transverse foramen bipartite (right)

Pathology: sinusitis of the right maxillary antrum

### **1611/2364**

Age: older childhood (11-12 years)

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth, cervical vertebrae and legs are present

Dentition:

UR	-	-	-	-	-	-	-	8	9	10	-	12	-	-	-	-	UL
LR	32	31	30	29	28	-	-	-	24	23	-	-	-	-	-	-	LL

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Dental pathology: calcLLus (4/6)

Pathology: active non-specific infections of the posterior of the mandible and both femorae

### **1612/2367**

Age: adolescent (13-16 years)

Sex: female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, mandible, and teeth are present

Dentition:

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u

UR	1	2	-	-	5	-	7	8	9	-	11	12	13	14	15	16	UL
LR	32	31	30	-	-	-	26	25	24	23	22	21	20	19	18	17	LL

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Dental pathology: calcLLus (18/20), enamel hypoplasia of the M3

Non-metric traits: none observed

Pathology: none observed

### **1613/2372**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the feet are present

Non-metric traits: none observable

Pathology: none observed

**1614/2373**

Age: adolescent (16-19 years)

Sex: undeterminable

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth and right arm are present

Dentition:

	u														u		
UR	1	2	-	4	5	-	-	-	-	-	-	-	-	14	-	16	UL
LR	32	31	30	29	28	27	-	-	-	-	-	-	-	-	-	17	LL
	u														u		

Dental pathology: calcLLus (6/9), enamel hypoplasia of the M3s

Non-metric traits: none observed

Pathology: none observed

**1615/2374**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and teeth are present

Dentition:

UR	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Non-metric traits: lambdoid wormians, parietal foramen (right)

Pathology: none observed

**1616/2375**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, right arm and hand, pelvis, legs and right foot are present

Dentition:

UR	1	2	3	4	5	6	-	-	9	10	11	12	13	14	15	16	UL
LR	32	31	-	29	28	-	-	25	-	-	22	21	20	19	18	17	LL

Dental pathology: calcLLus (23/24), slight periodontal disease, enamel hypoplasia of the canines and premolars

Non-metric traits: mastoid foramen exsutural (left), tibial squatting facet (right)

Pathology: none observed

**1617/2376**

Age: adult

Sex: undeterminable

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, left clavicle and scapLLa, right scapLLa, arms, pelvis, left leg and feet are present

Dentition:

UR	1	2	3	4	5	6	-	-	-	-	-	12	13	14	15	16	UL
LR	32	31	30	29	-	-	-	-	-	-	22	21	20	19	18	17	LL

Dental pathology: calcLLus (21/21)

Non-metric traits: mastoid foramen exsutural (right), tibial squatting facet (left)

Pathology: lytic foci of the right mandibLLar condyle and right superior facet of C2, slight sinusitis of the right maxillary antrum. The right ascending ramus of the mandible has a sharp cut through the superior edge with fracturing of the inferior and posterior surface. The body of the mandible



also shows fracturing with bone peeling on the anterior surface. The right maxilla is also fractured and the M3 has a cut and fracture. The blow appears to have come from above and to the side and the polished bone surface of the cut indicates that it is a peri-mortem injury. The occipital shows evidence of internal bevelling along a horizontal line just inferior of lambda, and a small fragment of left parietal shows evidence for bone peeling, which suggests further peri-mortem cranial trauma. The left scapLLa has a sharp cut into the anterior of the glenoid fossa, but the area is heavily degraded post-mortem, making it impossible to determine whether the cut is peri- or post-mortem.

### **1618/2380**

Age: adult

Sex: male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, right arm and hand, legs and right foot are present

Dentition:

UR	np	2	3	-	-	-	-	8	9	10	-	12	13	14	15	np	UL
LR	-	-	-	-	-	-	26	-	-	-	-	-	/	19	18	np	LL

Dental pathology: calcLLus (12/12), slight periodontal disease

Non-metric traits: mastoid foramen exsutural (right)

Pathology: degenerative joint disease of the left knee and right foot

### **1619/2383**

Age: adult

Sex: female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, hands, pelvis and legs are present

Dentition:

c

UR	1	2	-	4	5	-	-	-	-	-	-	-	-	-	-	UL
LR	/	31	-	29	28	27	-	-	-	-	-	-	-	18	/	LL

c

Dental pathology: caries (2/6), calcLLus (2/9), severe periodontal disease

Non-metric traits: lambdoid wormians (left), parietal foramen (right)

Pathology: degenerative joint disease of the spine and left hip

**1620/2386**

Age: mature adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, cervical vertebrae, left arm, pelvis and left leg are present

Non-metric traits: none observable

Pathology: none observed

**1621/2394**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth and cervical vertebrae are present

Dentition:

c

UR	1	-	-	-?	5	-?	-?	-?	-?	-?	/	12	-?	-	15	16	UL
LR	/	/	-	-?	-?	-?	-?	-?	-?	-?	-?	-?	-?	/	18	17	LL

Dental pathology: caries (1/7), calcLLus (1/5), there are 4 single rooted teeth worn down to the roots which are not identifiable to type.

Non-metric traits: mastoid foramen exsutural (left)

Pathology: none observed

**1622/2405**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: good

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, right scapLLa and clavicle, and arms are present

Dentition:

c

UR	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	UL
LR	32	31	30	-	-	27	26	25	24	23	22	21	20	19	18	17	LL

Dental pathology: caries (1/30), calcLLus (30/30), slight to severe periodontal disease, enamel hypoplasia of the incisors, premolars and molars

Non-metric traits: none observed

Pathology: none observed

**1623/2419**

Age: -

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only a few unidentifiable fragments are present

Non-metric traits: none observable

Pathology: none observed

**1624/2424**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: good

Completeness: only the feet are present

Non-metric traits: none observable

Pathology: scooped out lesion on the proximal facet of the right MT1, probably indicating gout. Enthesophytes at the *tendo calcaneus* attachment on the left calcaneus and at the attachment site for *m. peroneus longus* on the right MT1

**1625/2429**

Age: middle adult

Sex: male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, arms and hands, pelvis, legs and feet are present

Dentition:

c c

UR	1	2	3	4	5	-	7	-	9	10	11	12	13	14	15	16	UL
LR	32	31	30	29	28	-	26	25	/	-	22	21	20	19	18	17	LL

Dental pathology: caries (2/20), calcLLus (24/24)

Non-metric traits: none observed

Pathology: lytic lesions within the trabecLLar bone of the ilia, starting to break through to the external surface with sharp, ragged edges. Similar lesions on the temporals, parietals and mandible. This probably indicates some form of neoplastic disease.

**1626/2440**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	20	19	-	-	LL

c c

Dental pathology: caries (2/2), calcLLus (1/1)

Non-metric traits: tripartite inca bone of the occipital

Pathology: none observed

**1627/2443**

Age: younger childhood (4-5 years)

Preservation: moderate

Completeness: only parts of the cranium and mandible and teeth are present

Dentition:

UR	-	52	-	-	-	-	-	-	59	-	UL
LR	70	69	-	-	-	-	-	-	62	61	LL

u u u u u u u

UR	-	-	3	-	-	6	-	8	9	10	11	-	-	14	-	-	UL
LR	-	-	30	-	-	-	26	25	24	-	22	21	-	19	-	-	LL

u u u u u u u

Dental pathology: enamel hypoplasia of the permanent canines and premolars

Pathology: none observed

**1628/2445**

Age: ?adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only teeth, parts of the pelvis and legs are present

Dentition:

UR	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Non-metric traits: none observable

Pathology: none observed

**1629/2460**

Age: younger childhood (3-4 years)

Preservation: good

Completeness: only parts of the cranium and mandible and teeth are present

Dentition:

UR	51	52	-	-	-	-	-	58	59	60	UL
LR	70	69	-	-	-	-	-	-	62	61	LL

u u u u u u u

UR	-	-	3	-	-	-	7	-	9	10	11	12	-	14	-	-	UL
LR	-	-	30	-	-	27	26	25	24	-	22	21	-	19	-	-	LL

u u u u u u u

Dental pathology: calcLLus (deciduous 3/9), enamel hypoplasia of the permanent molars

Pathology: none observed

**1630/2466**

Age: older childhood (9-11 years)

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, and right arm are present

Dentition:

UR	51	X	53	X	X	-	-	-	-	60	UL
LR	70	X	-	-	-	-	-	-	-	61	LL

u u u u? u? u?

UR	-	2	3	4	5	6	7	8	9	10	11	12	13	14	15	-	UL
LR	-	31	30	29	-	-	-	25	-	-	-	-	-	19	-	-	LL
		u	u														

Dental pathology: calcLLus (deciduous 4/4, permanent 5/12), enamel hypoplasia of the permanent premolars

Pathology: active non-specific infection of the right humerus

### **1631/2471**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, teeth and cervical vertebrae are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	14	15	16	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (3/3)

Non-metric traits: none observed

Pathology: none observed

### **1632/2473**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: good

Completeness: only parts of the legs and feet are present

Non-metric traits: vastus notch (left)

Pathology: none observed

**1633/2479**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth and cervical vertebrae are present

Dentition:

		c	c									a		c	c		
UR	/	2	3	4	5	6	/	8	9	10	11	/	/	14	15	/	UL
LR	32	31	30	/	/	/	26	25	24	23	22	21	20	19	18	17	LL

Dental pathology: caries (4/23), calculus (22/23), moderate periodontal disease, abscess of the maxillary left PM3, enamel hypoplasia of the incisors, canines and premolars

Non-metric traits: double superior atlas facets (right)

Pathology: degenerative joint disease of both temporomandibular joints

**1634/2482**

Age: adult

Sex: -

Stature: 167 ± 2.52cm (tibia)

Cranial index: -

Preservation: good

Completeness: only parts of the legs and feet are present

Non-metric traits: none observed

Pathology: none observed

**1635/2485**

Age: -

Sex: -

Stature: -

Cranial index: -

Preservation: good



Completeness: only part of the left leg is present

Non-metric traits: none observable

Pathology: none observed

**1636/2488**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and right leg are present

Non-metric traits: none observable

Pathology: none observed

**1637/2491**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: good

Completeness: parts of the cranium and teeth, cervical vertebrae, arms, pelvis and legs are present

Dentition:

c

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	14	15	16	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	19	18	17	LL

Dental pathology: caries (1/6), calcLLus (5/6)

Non-metric traits: parietal foramen (left)

Pathology: osteoarthritis of the spine, degenerative joint disease of the left temporomandibLLar joint. Healed sharp force trauma on the posterior of the parietals, across the sagittal suture, and healed blunt force trauma on the right frontal.

**1638/2495**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the legs and feet are present

Non-metric traits: none observable

Pathology: none observed

**1639/2500**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only teeth and parts of the legs are present

Dentition:

c

UR	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: caries (1/1)

Non-metric traits: none observable

Pathology: none observed

**1640/2513**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the left leg are present

Non-metric traits: none observable

Pathology: active non-specific infection of the left femur

**1641/2517**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only part of the cranium and teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (1/1)

Non-metric traits: none observable

Pathology: none observed

**1642/2520**

Age: -

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only a few unidentifiable fragments and one tooth are present

Dentition:

UR	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (1/1)

Non-metric traits: none observable

Pathology: none observed

**1643/2523**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only part of the cranium and teeth are present

Dentition:

UR	-	-	3	4	5	6	7	-	9	-	-	12	13	-	-	-	UL
LR	-	-	-	-	28	-	-	-	-	-	-	21	-	-	-	-	LL

Dental pathology: calcLLus (10/10)

Non-metric traits: none observable

Pathology: none observed

**1644/2526**

Age: -

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only few unidentifiable fragments are present

Non-metric traits: none observable

Pathology: none observed

**1645/2528 and 1648/2535**

Age: old middle adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical and thoracic vertebrae, ribs, right scapLLa, arms, pelvis and left leg are present

Dentition:

	c		c												c		c	
UR	1	-	3	-	5	-	-	8	-	-	-	-	-	-	15	16	UL	
LR	/	/	X	29	28	-	-	-	-	23	-	-	-	19	-	-	LL	
	c																	

Dental pathology: caries (5/8), calcLLus (9/10), severe periodontal disease, enamel hypoplasia of the premolars

Non-metric traits: parietal foramen (left), transverse foramen bipartite

Pathology: degenerative joint disease of the left hip

**1646/2529**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the left hand, pelvis and both legs are present

Non-metric traits: none observable

Pathology: none observed

**1647/2532 (1<sup>st</sup> individual)**

Age: adult

Sex: female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth, pelvis and right leg are present

Dentition:

c c

UR	1	2	3	-	-	-	-	-	-	-	-	-	-	14	15	16	UL
LR	/	31	30	29	/	27	-	-	/	/	/	/	20	19	18	17	LL

Dental pathology: caries (2/13), calcLLus (14/14), slight periodontal disease, enamel hypoplasia of the canine, antemortem tooth chipping

Non-metric traits: mandibLLar torus, mastoid foramen exsutural (left)

Pathology: degenerative joint disease of the right hip and knee

### **1202/2532 (2<sup>nd</sup> individual)**

Age: adolescent (15-18 years)

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and teeth are present

Dentition:

u

UR	1	2	3	/	/	-	-	-	-	10	11	12	13	14	15	-	UL
LR	-	-	-	-	-	-	-	-	-	23	22	21	20	19	-	-	LL

Dental pathology: calcLLus (12/13)

Non-metric traits: none observable

Pathology: cribra orbitalia in the right orbit, active non-specific infection on the maxilla

### **1649/2538**

Age: sub-adult

Preservation: moderate

Completeness: only parts of the legs and left foot are present

Pathology: active non-specific infections of the right fibLLa and left tibia

### **1650/2540**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, teeth and cervical vertebrae are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	13	14	15	16	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Dental pathology: calcLLus (2/3)

Non-metric traits: parietal foramen

Pathology: spinal degenerative joint disease, new bone on endocranial surface

### **1651/2544**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, right hand, sacrum, pelvis, legs and feet are present

Dentition:

UR	1	2	3	4	5	6	7	/	9	10	11	12	13	14	15	16	UL
LR	32	31	30	29	/	27	26	25	24	23	22	21	20	19	18	17	LL

Dental pathology: calcLLus (29/30), enamel hypoplasia of the incisors, canines and molars

Non-metric traits: mastoid foramen exsutural (right)

Pathology: cribra orbitalia of the left orbit

### **1652/2547**

Age: younger childhood (2-4 years)

Preservation: good

Completeness: only parts of the cranium, mandible and teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	60	UL
LR	70	-	-	-	-	-	-	-	-	-	-	LL

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	30	-	-	-	-	-	-	-	-	-	-	-	-	-	LL

Pathology: none observed

**1653/2553**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the legs are present

Non-metric traits: none observable

Pathology: none observed

**1654/2560**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: good

Completeness: only parts of the cranium and mandible, teeth and cervical vertebrae are present

Dentition:

UR	1	2	3	4	-	-	7	8	9	10	11	12	13	14	15	16	UL
LR	32	31	30	29	28	27	-	-	24	23	22	21	20	19	18	np	LL



Dental pathology: calcLLus (27/27), slight periodontal disease

Non-metric traits: mastoid foramen exsutural (left)

Pathology: none observed

### **1655/2562**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: good

Completeness: only parts of the right hand and leg are present

Non-metric traits: none observable

Pathology: none observed

### **1656/2565**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only part of the right leg is present

Non-metric traits: none observable

Pathology: none observed

### **1658/2572**

Age: adult

Sex: ?male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical and thoracic vertebrae, left arm, pelvis, legs and feet are present

Dentition:

UR	-	-	-	-	5	6	-	8	9	10	11	12	13	14	15	16	UL
LR	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	LL

a

Dental pathology: calculus (20/22), slight to severe periodontal disease, abscess of the mandibular left M1, enamel hypoplasia of the premolars

Non-metric traits: parietal foramen, mastoid foramen exsural

Pathology: spinal degenerative joint disease, enthesophytes of the attachment for the interosseus ligament on the right fibula

**1659/2580 (1<sup>st</sup> individual)**

Age: adult

Sex: female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the cranium and mandible, teeth, cervical vertebrae, ribs, pelvis, legs and right foot are present

Dentition:

UR	1	2	3	4	5	-	-	8	-	-	-	-	-	-	15	16	UL
LR	32	31	30	-	-	-	-	-	-	-	-	21	20	19	18	17	LL

Dental pathology: calculus (16/16)

Non-metric traits: none observed

Pathology: none observed

**1242/2580 (2<sup>nd</sup> individual)**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and teeth are present

Dentition:

UR	-	-	-	-	-	6	7	8	-	10	11	12	13	-	15	-	UL
LR	-	-	-	-	-	-	-	-	24	-	22	21	20	-	-	-	LL

Dental pathology: calcLLus (9/12)

Non-metric traits: none observable

Pathology: none observed

### **1660/2592**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: parts of the right arm, hands, pelvis, legs and feet are present

Non-metric traits: none observed

Pathology: none observed

### **1661/2595**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible and teeth are present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	11	-	-	14	15	16	UL
LR	-	-	-	29	28	-	-	-	-	23	22	21	20	-	-	-	LL

Dental pathology: calcLLus (7/8), enamel hypoplasia of the incisors and canines

Non-metric traits: mastoid foramen exsutural (left)

Pathology: none observed

**1662/2599**

Age: adult

Sex: male

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium and mandible, teeth, cervical vertebrae, right scapLLa and clavicle are present

Dentition:

a?

UR	1	2	3	4	5	-	-	-	-	10	-	12	13	14	15	16	UL
LR	-	31	30	29	28	27	-	-	-	23	-	21	20	19	18	-	LL

Dental pathology: calcLLus (21/21), possible abscess of the maxillary right M2, enamel hypoplasia of the incisors, canines, premolars and molars, possible ante-mortem tooth chipping

Non-metric traits: coronal wormians

Pathology: none observed

**1663/2606**

Age: -

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only a few unidentifiable fragments are present

Non-metric traits: none observable

Pathology: none observed

**1664/2630**

Age: adult

Sex: ?female

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the cranium, teeth, cervical vertebrae and right leg are present

Dentition:

UR	1	2	3	4	-	-	7	8	-	-	11	12	13	14	15	16	UL
LR	-	31	30	29	28	27	-	-	-	-	-	-	-	19	18	17	LL

Dental pathology: calcLLus (19/20), enamel hypoplasia of the canines and molars

Non-metric traits: mastoid foramen exsutural

Pathology: none observed

### **1329+1665/2635**

Age: ?adolescent

Preservation: poor

Completeness: only teeth and a few unidentifiable fragments present

Dentition:

UR	-	-	-	-	-	-	-	-	-	-	-	-	-	15	-	UL	
LR	-	-	-	-	-	-	-	-	-	-	-	-	-	19	18	-	LL

Dental pathology: calcLLus (3/3), enamel hypoplasia of the molars

Non-metric traits: none observable

Pathology: none observed

### **1666/2638**

Age: -

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only a few unidentifiable fragments are present

Non-metric traits: none observable

Pathology: none observed

**1667/2641**

Age: old middle adult

Sex: male

Stature: -

Cranial index: -

Preservation: good

Completeness: parts of the left arm and hand, lumbar vertebrae, sacrum, pelvis, left leg and foot are present

Non-metric traits: none observed

Pathology: degenerative joint disease of the left elbow, hips and left knee, cortical defect of the soleal line on the left tibia

**1668/2644**

Age: -

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only a few unidentifiable fragments are present

Non-metric traits: none observable

Pathology: none observed

**1669/2649**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only parts of the mandible, teeth and feet are present

Dentition:

c

UR	-	2	-	4	-	-	-	-	-	-	-	12	13	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	-	20	19	-	-	LL

Dental pathology: caries (1/5), calculus (6/6), enamel hypoplasia of the premolars and molars

Non-metric traits: none observable

Pathology: none observed

### **1670/2679**

Age: older childhood (10-11 years)

Preservation: poor

Completeness: only teeth are present

Dentition:

c

UR	51	-	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	-	-	-	LL

UR	-	-	-	4	5	-	7	-	-	-	-	-	-	-	-	-	UL
LR	-	-	-	-	-	-	-	-	24	23	-	-	-	-	-	-	LL

Dental pathology: caries (deciduous 1/1), calculus (deciduous 1/1, permanent 5/5), enamel hypoplasia of the permanent incisors

### **1671/2704**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: poor

Completeness: only part of the left arm and leg are present

Non-metric traits: none observable

Pathology: none observed

### **1672/2718**

Age: adult

Sex: -

Stature: -

Cranial index: -

Preservation: moderate

Completeness: only parts of the pelvis and left leg are present

Non-metric traits: none observable

Pathology: none observed

## APPENDIX 6 SUMMARY INFORMATION ABOUT THE ARTICULATED INHUMATIONS

By K. Tucker

**Table 11 Summary information about the articulated skeletons**

EH enamel hypoplasia; DJD degenerative joint disease; OA osteoarthritis; NSPI non-specific infection; SN Schmorl's Nodes

Context No.	Phase	Period	Age	Sex	Dental age	Stature	Dental pathology	Pathology
1035		5d	adult	-	17-25	-	calculus, EH	-
1036 (1)		5d	adult	-	25-35	-	calculus	-
1036 (2)		5d	?adult	-	17-25	-	calculus, EH	-
1038		5d	?adolescent	-	-	-	calculus, EH	-
1039		5d	adult	-	17-25	-	calculus, EH	-
1052		5d	adult	-	-	-	calculus, EH, periodontal disease	cyst/tumour
1059		5d	younger childhood	-	-	-	calculus, EH	-
1063		5b	adult	F	25-35	-	caries, calculus, EH, periodontal disease	DJD
1064		5b	adult	-	-	-	calculus	-
1067		5b	adult	-	17-25	-	calculus	-
1073		5b	adult	?F	25-35	-	caries, calculus, penetrating abscess with sinusitis, EH	-
1075		5b	?adult	-	-	-	-	-
1076		5b	adult	-	-	-	-	-
1077		5b	younger childhood	-	-	-	calculus	-
1078		5b	adolescent	?F	17-25	-	calculus, EH	-
1079		5b	?adult	-	-	-	-	-

Context No.	Phase	Period	Age	Sex	Dental age	Stature	Dental pathology	Pathology
1080		5b	adult	-	-	-	-	-
1081		5b	?adult	-	-	-	-	?rickets
1082		5b	?older childhood	-	-	-	EH	-
1084		5b	sub-adult	-	-	-	-	-
1090		5b	adult	-	-	-	-	-
1091 (1)		5b	adult	-	17-25	-	calculus, EH	-
1091 (2)		5b	young middle adult	?	17-25	-	calculus	NSPI



1091 (3)		5b	foetal/neonate	–	–	–	–	–
1137		5b	adult	F	35–45	–	caries, calculus	DJD, hyperostosis frontalis interna, NSPI
1139		5b	adult	–	17–25	–	calculus, EH	–
2002	8	5b	adult	–	–	–	–	–
2008	8	5b	adolescent/young adult	?F	17–25	–	calculus	–
2025	8	5b	older childhood	–	–	–	–	–
2039	8	5b	–	–	–	–	–	–
2043	8	5b	adult	?M	17–25	–	calculus	–
2055 (1)	6	4a	sub-adult	–	17–25	–	calculus, EH	–
2055 (2)	6	4a	adolescent	–	17–25	–	calculus, EH	–
2079	6	4b	adult	–	–	–	–	–
2082	8	5b	older childhood	–	–	–	calculus, EH	–
2104	6	4b	adult	–	–	–	–	DJD
2106	8	5b	adult	–	25–35	–	caries, calculus, periodontal disease	–
2114	8	5b	adult	?M	45+	–	caries, calculus, abscesses, periodontal disease	DJD
2122	8	5b	adult	–	–	–	–	–
2124	6	4b	adult	–	–	–	–	–
2126	6	4b	?adult	–	–	–	–	–
2128	8	5b	adult	–	–	–	–	–
2129	6	4b	adult	–	–	–	–	–
2130	6	4b	–	–	–	–	–	–
2137	8	5b	adolescent	–	17–25	–	calculus, periodontal disease, EH, retained dm2 with absent PM4 and M2	rickets
2138	6	4a	adult	F	–	–	–	–
2143	6	4b	adult	M	35–45	–	caries, calculus, periodontal disease	–
2146	6	4b	adult	–	–	–	–	DJD, NSPI
2153	6	4a	?adult	–	–	–	–	–
2156	6	4b	adult	–	35–45	–	calculus	–
2165	6	4b	adult	F	25–35	–	calculus	–
2168	6	4a	?adult	–	–	–	–	–
2172	6	4b	adult	–	–	–	–	–

Context No.	Phase	Period	Age	Sex	Dental age	Stature	Dental pathology	Pathology
2175	8	5b	adult	?F	35–45	–	caries, calculus, periodontal disease	DJD, neoplastic disease
2188	6	4b	older childhood	–	–	–	calculus	anaemia
2192	6	4b	adult	?F	25–35	–	calculus, EH	–
2196	6	4b	adult	–	35–45	–	calculus	–
2206	6	4a	adult	M	25–35	–	caries, calculus, periodontal disease	DJD

2208	6	4b	adult	?F	35–45	–	calculus, periodontal disease	DJD
2225	6	4a	adult	?M	17–25	–	calculus, EH	sinusitis
2232	6	4b	adult	?F	35–45	–	calculus, periodontal disease, toothpick use?	DJD
2240	8	5b	adolescent	–	–	–	calculus, EH	–
2244	6	4a	–	–	–	–	–	–
2254	6	4b	mature adult	M	35–45	–	calculus, EH	OA, DJD, <i>osteochondritis dissecans</i> , cortical defect, enthesophytes
2262	6	4b	adult	–	–	–	calculus	–
2265	6	4a	adult	–	25–35	–	calculus	plaques of bone on endocranial surface
2267 (1)	6	4b	adult	?F	25–35	–	calculus	–
2267 (2)	6	4b	adolescent	–	–	–	calculus, EH	NSPI
2270	6	4b	–	–	–	–	–	–
2276 (1)	6	4b	adult	?F	–	–	caries, calculus	–
2276 (2)	6	4b	?adolescent	–	–	–	calculus	–
2279	6	4b	adult	F	25–35	–	caries, calculus, abscess, periodontal disease, EH	DJD, soft tissue trauma, enthesophytes
2284	6	4b	adolescent	–	–	–	calculus, EH	cortical defect
2285	6	4a	young middle adult	?M	17–25	–	calculus, EH	sinusitis
2288	6	4a	adult	?F	17–25	–	calculus, EH	sinusitis
2298	6	4a	adult	–	–	–	–	–
2302	6	4b	adult	F	25–35	–	calculus	new bone on endocranial surface
2303	8	5b	adult	?M	25–35	–	calculus, periodontal disease	–
2306	6	4b	adult	F	25–35	–	calculus, periodontal disease	DJD

Context No.	Phase	Period	Age	Sex	Dental age	Stature	Dental pathology	Pathology
2308	6	4b	adult	F	25–35	–	calculus, periodontal disease	DJD
2313 (1)	6	4b	adolescent	–	–	–	–	rickets, NSPI, cortical defect
2313 (2)	6	4b	adult	?M	25–35	–	calculus	–
2331	6	4a	adult	–	17–25	–	calculus	–
2334	6	4b	adult	F	45+	147cm	caries, calculus	DJD
2336	6	4a	adult	?F	–	–	–	–
2337	6	4b	adult	?F	–	–	–	–
2341	6	4b	adolescent	–	–	–	calculus, EH	–
2346	6	4b	adolescent/young adult	M	17–25	–	calculus, EH	–
2350	6	4b	adult	–	–	–	–	enthesophytes

2353	6	4b	adult	F	25–35	–	calculus, EH	DJD, NSPI, cortical defect
2357 (1)	6	4a	adult	?F	17–25	–	calculus, EH	rib fractures, enthesophytes
2357 (2)	6	4a	older childhood	–	–	–	calculus, EH	–
2359	6	4a	old middle adult	M	25–35	–	EH	OA, DJD, NSPI, rickets
2361	6	4a	adult	?F	17–25	–	calculus, periodontal disease, retained dc with displacement of C and I2	sinusitis
2364	6	4b	older childhood	–	–	–	calculus	NSPI
2367	6	4b	adolescent	F	–	–	calculus, EH	–
2372	6	4a	adult	–	–	–	–	–
Context No.	Phase	Period	Age	Sex	Dental age	Stature	Dental pathology	Pathology
2373	4	3a	adolescent	?	–	–	calculus, EH	–
2374	6	4a	adult	–	25–35	–	–	–
2375	6	4a	adult	?M	17–25	–	calculus, periodontal disease, EH	–
2376	6	4b	adult	?	17–25	–	calculus	lytic foci, sinusitis, peri-mortem cranial sharp force and blunt force trauma, sharp force trauma to scapula?
2380	6	4a	adult	M	17–25	–	calculus, periodontal disease	DJD
2383	6	4b	adult	F	35–45	–	caries, calculus, periodontal disease	DJD
2386	6	4a	mature adult	–	–	–	–	–
2394	6	4a	adult	?M	35–45	–	caries, calculus	–

Context No.	Phase	Period	Age	Sex	Dental age	Stature	Dental pathology	Pathology
2405	6	4b	adult	?M	25–35	–	caries, calculus, periodontal disease, EH	–
2419	6	4b	–	–	–	–	–	–
2424	6	4a	adult	–	–	–	–	gout, enthesophytes
2429	6	4a	middle adult	M	35–45	–	caries, calculus	neoplastic disease
2440	6	4a	adult	?M	25–35	–	caries, calculus	–
2443	6	4a	younger childhood	–	–	–	EH	–
2445	6	4a	?adult	–	–	–	–	–
2460	6	4a	younger childhood	–	–	–	calculus, EH	–
2466	6	4a	older childhood	–	–	–	calculus, EH	NSPI
2471	6	4a	adult	?M	17–25	–	calculus	–
2473	6	4a	adult	–	–	–	–	–

2479	6	4a	adult	?M	25–35	–	caries, calculus, periodontal disease, abscess, EH	DJD
2482	6	4a	adult	–	–	167cm	–	–
2485	6	4a	–	–	–	–	–	–
2488	6	4a	adult	–	–	–	–	–
2491	6	4a	adult	?M	35–45	–	caries, calculus	OA, DJD, healed cranial sharp force and blunt force trauma
2495	6	4a	adult	–	–	–	–	–
2500	6	4a	adult	–	35–45	–	caries	–
2513	6	4a	adult	–	–	–	–	NSPI
2517	6	4b	adult	–	–	–	calculus	–
2520	6	4a	?adult	–	17–25	–	calculus	–
2523	6	4b	adult	–	17–25	–	calculus	–
2526	6	4a	–	–	–	–	–	–
2528	6	4a	old middle adult	?F	25–35	–	caries, calculus, periodontal disease, EH	DJD
2529	6	4a	adult	–	–	–	–	–
2532 (1)	6	4a	adult	F	25–35	–	caries, calculus, periodontal disease, EH	DJD
2532 (2)	6	4a	adolescent	–	17–25	–	calculus	<i>cribra orbitalia</i> , NSPI
2538	6	4a	sub-adult	–	–	–	–	NSPI
2540	6	4a	adult	?F	45+	–	calculus	DJD, new bone on endocranial surface
2544	6	4a	adult	?F	17–25	–	calculus, EH	<i>cribra orbitalia</i>
2547	6	4a	younger childhood	–	–	–	–	–
2553	6	4a	adult	–	–	–	–	–
2560	6	4a	adult	?F	17–25	–	calculus, periodontal disease	–

Context No.	Phase	Period	Age	Sex	Dental age	Stature	Dental pathology	Pathology
2562	6	4a	adult	–	–	–	–	–
2565	6	4a	adult	–	–	–	–	–
2572	6	4b	adult	?M	45+	–	calculus, periodontal disease, abscess, EH	DJD, enthesophytes
2580 (1)	6	4a	adult	F	25–35	–	calculus	–
2580 (2)	6	4a	adult	–	25–35	–	calculus	–
2592	6	4a	adult	–	–	–	–	–
2595	6	4a	adult	–	35–45	–	calculus, EH	–
2599	6	4b	adult	M	17–25	–	calculus, abscess, EH, am tooth chipping	–
2606	6	4a	–	–	–	–	–	–
2630	6	4a	adult	?F	17–25	–	calculus, EH	–

2635	6	4a	?adolescent	-	-	-	calculus, EH	-
2638	6	4b	-	-	-	-	-	-
2641	4	3a	old middle adult	M	-	-	-	DJD, cortical defect
2644	6	4a	-	-	-	-	-	-
2649	6	4a	adult	-	25-35	-	caries, calculus, EH	-
2679	6	4a	older childhood	-	-	-	caries, calculus, EH	-
2704	4	3a	adult	-	-	-	-	-
2718	4	3a	adult	-	-	-	-	-

## APPENDIX 7 CATALOGUE OF DISARTICULATED HUMAN BONE

By K. Tucker

### Disarticulated human remains from Whithorn 1992 excavations

Context No.	SF No.	Element	Side	Age	Sex	Pathology
11	013/45	maxillary M3	R	-	-	-
11	017/25	mandibular ?M2	L?	-	-	-
13	044/2	femoral head	-	Adult	-	-
		unidentified diaphysis	-	Sub-adult	-	-
23	088	maxillary M3	L	-	-	calculus
101	096/10	mandibular M2	R	-	-	calculus
105	065/6	maxillary M2	L	-	-	calculus, EH
105	085/13	maxillary I1	L	-	-	shovel shaped
		maxillary I2	R	-	-	calculus, EH
		mandibular I2	L	-	-	calculus
105	114/3	1 cranial fragment	-	-	-	-
105	116/7	?maxillary C	L	-	-	EH
Context No.	SF No.	Element	Side	Age	Sex	Pathology
105	116/8	maxillary ?M1	L	-	-	-
105	146/3	maxillary M1	R	-	-	-
105	149/6	mandibular M1	R	-	-	-
106	081/11	mandibular M1	L	Younger childhood	-	-
115	125/1	1 cranial fragment	-	-	-	-
118	238/3	mandibular PM4	R	-	-	-
129	204/1	maxillary M3	L	-	-	calculus
226	377/0	thoracic vertebra	-	Adult	-	-

### Disarticulated human remains from Whithorn 1993 excavations

Context No.	SF No.	Element	Side	Age	Sex	Pathology
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1000	046/9	maxillary PM3	L	-	-	-
1000	071/67	maxillary PM3	R	-	-	EH
1003	099/0	1 cranial fragment	-	-	-	-
1003	122/2	maxillary M3	L	-	-	-
1003	131/5	1 cranial fragment	-	-	-	-
1003	135/2	1 cranial fragment	-	-	-	-
1003	147/12	2 proximal hand phalanges	-	Adult	-	-
		thoracic arch fragment	-	Adult	-	-
		temporal	R	Adult	-	-
1003	147/14	mandibular M2	L	-	-	-
1009	173/3	mandibular PM4	L	-	-	-
1009	174/4	mandibular M1	L	-	-	calculus
		mandibular M2	?L	-	-	calculus
		maxillary ?PM4	?	-	-	calculus
		molar crown fragment	?	-	-	-
1009	225/1	mandible	-	Adult	-	calculus
		C1	-	Adult	-	OA
		mandibular M2	L	-	-	calculus
1010	198/2	3 thoracic vertebrae	-	Adult	-	SN
		humerus	R	Adult	-	-
		humerus	L	Adult	-	-
1012	419	1 tibia fragment	-	-	-	-
		1 unidentified fragment	-	-	-	-
1012	469/1	maxillary M2	?	-	-	-
1016	278/1	mandibular C	L	-	-	-
		mandibular ?M1	?	-	-	-
<b>Context No.</b>	<b>SF No.</b>	<b>Element</b>	<b>Side</b>	<b>Age</b>	<b>Sex</b>	<b>Pathology</b>
1039	288/1	mandibular M1	L	-	-	-
1078 (not part of SK)	445	4 cranial fragments	-	-	-	-
		3 unidentified fragments	-	-	-	-
		maxillary I2	L	-	-	shovel shaped
		maxillary M2	L	Older childhood	-	-
		maxillary PM3	L	Younger childhood	-	-
		maxillary molar	?	-	-	-
		maxillary PM4	?L	-	-	-
		molar crown fragment	-	-	-	-
1086	474/0	?M3	?	-	-	calculus
1089	532/1	mandibular PM	?	-	-	-

1090	546	petrous temporal	R	Adult	-	-
		petrous temporal	L	Adult	-	-

### Disarticulated human remains from Whithorn 1995 excavations (WH95.0292)

Context No.	SF No.	Element	Side	Age	Sex	Pathology
2006	801	maxilla fragment with M3, M2, M1, PM3, C, both I2s, both I1s	R	-	-	calculus, possible use wear facet
2014	35	tooth enamel fragments	-	-	-	-
		maxillary M2	R	-	-	calculus
2015	34	maxillary M3	?	-	-	-
2028	110	maxillary C	L	-	-	-
		maxillary PM3	L	-	-	calculus
		maxillary PM4	?L	-	-	calculus
		maxillary PM4	?	-	-	-
		maxillary ?M1	R	-	-	calculus
		maxillary M2	R	-	-	calculus, slight EH
2030	130	femur	?	Adult	-	-
2033	803	long bone shaft fragments	-	-	-	-
2063	481	maxillary ?M2	R	-	-	calculus
		maxillary ?M3	R	-	-	calculus
2071	273	M3	?	-	-	calculus
		maxillary PM	?	-	-	calculus
		mandibular M1	?	-	-	calculus
		mandibular M2	?	-	-	calculus
Context No.	SF No.	Element	Side	Age	Sex	Pathology
		mandibular ?M2	?	-	-	calculus
		M3	?	-	-	calculus
2083	224	ilium fragments	?	Mature adult	-	-
		MC1 fragment	?	Adult	-	-
		vertebra fragment	-	Adult	-	-
		21 long bone fragments	-	-	-	-
2099	406	mandibular C	?	-	-	-
2100	299	petrous temporal	L	?Adult	-	-
		petrous temporal	R	?Adult	-	-
2139	387	maxillary M	?	-	-	-
2142	389	distal femur	?	Adult	-	-
		proximal tibia	L	Adult	-	-

		2 long bone fragments	-	-	-	-
		mandibular M1	L	-	-	calculus
		mandibular M2	?	Older childhood	-	-
		mandibular C	?	-	-	calculus
		mandibular C	?	-	-	calculus
		mandibular PM4	?L	-	-	calculus
		mandibular ?M1	?	-	-	calculus
		mandibular M2	?	-	-	calculus
		mandibular ?M3	?	-	-	calculus
		temporal	R	Adult	F	-
		temporal	L	Adult	F	-
		3 sphenoid fragments	-	Adult	-	-
		3 occipital fragments	-	Adult	-	-
		sacrum fragment	-	?Adult	-	-
		6 parietal fragments	-	Adult	-	bone very thickened
		cranial fragments	-	Adult	-	-
		maxillary M2	R	Older Childhood	-	calculus, EH
		maxillary M1	R	Older Childhood	-	calculus, EH
		maxillary I1	R	Older childhood	-	calculus, EH
		maxillary I2	L	Older childhood	-	calculus
		maxillary PM4	L	Older childhood	-	calculus
		maxillary M1	L	older childhood	-	calculus, EH
		maxillary M2	L	Older childhood	-	calculus, EH
		mandibular PM3	L	Older childhood	-	calculus, EH
		mandibular M1	L	Older childhood	-	calculus, EH
<b>Context No.</b>	<b>SF No.</b>	<b>Element</b>	<b>Side</b>	<b>Age</b>	<b>Sex</b>	<b>Pathology</b>
		mandibular M2	L	Older childhood	-	calculus, EH
		mandibular M3	L	Older childhood	-	-
		mandible	-	Adult	M	calculus
		maxilla	L	Adult	-	calculus
		maxilla	R	Adult	-	calculus
		cranial vault	-	Adult	?M	sinusitis, OA
		C1-C6	-	Adult	-	OA
		ilium	L	Adult	-	-
		sacrum	-	Adult	-	-
2174	828	vomer	-	Adult	-	-
		petrous temporal	R	Adult	-	-
		cranial fragments	-	Adult	-	-



		mandibular M1	R	-	-	calculus
		mandibular M2	R	-	-	calculus
2187	829	mandibular M1	L	-	-	-
2198	593	tooth enamel fragments	-	-	-	-
2240 (not SK)	836	talus	L	Adult	-	-
		calcaneus	L	Adult	-	-
<b>Context No.</b>	<b>SF No.</b>	<b>Element</b>	<b>Side</b>	<b>Age</b>	<b>Sex</b>	<b>Pathology</b>
2253	742	M fragment	?	-	-	calculus
		tooth enamel fragments	-	-	-	-
		maxillary PM	L	-	-	calculus
		maxillary M3	?	-	-	-
		mandibular M3	?	-	-	-
		mandibular M2	?	-	-	calculus
		mandibular PM3	?	-	-	calculus
		maxillary ?M1	R	-	-	calculus
		maxillary I2	R	-	-	calculus, shovel shaped
2278	730	maxillary M2	R	-	-	calculus, slight EH
		maxillary I2	R	-	-	calculus
		maxillary I2	L	-	-	calculus
		maxillary C	L	-	-	calculus, EH
		maxillary PM3	L	-	-	calculus, EH
		maxillary PM4	?	-	-	calculus, slight EH
		cranial vault	-	Adult	?M	wormian bones at bregma, small lesion on left parietal
<b>Context No.</b>	<b>SF No.</b>	<b>Element</b>	<b>Side</b>	<b>Age</b>	<b>Sex</b>	<b>Pathology</b>
		temporal	R	Adult	-	-
		temporal	L	Adult	-	-
		occipital fragment	-	Adult	-	-
		sphenoid fragments	-	Adult	-	-
		mandibular PM4	?	-	-	calculus
		mandibular PM4	?	-	-	calculus, EH
		mandibular PM3	?	-	-	calculus
		medial ulna	?	Adult	-	-
		cranial vault	-	Sub-adult	-	wormian bones at lambda
		petrous temporal	L	?Sub-adult	-	-
		petrous temporal	R	?Sub-adult	-	-
		maxillary M1	L	-	-	calculus
		maxillary M1	R	-	-	calculus

		maxillary ?M2	?	-	-	calculus
		maxillary PM3	L	-	-	-
		maxillary PM3	R	-	-	-
		maxillary PM4	L	-	-	-
		maxillary PM4	R	-	-	-
		maxillary C	L	-	-	calculus
		maxillary I2	L	-	-	shovel shaped
		1 rib fragment	-	-	-	-
		long bone fragments	-	-	-	-
		3 cranial fragments	-	-	-	-
		M fragment	-	-	-	calculus
		mandibular M1	R	-	-	calculus
		mandibular M1	R	-	-	calculus
2278	841	mandibular M2	?	-	-	-
2281	766	parietal	L	Adult	-	-
		occipital fragments	-	Adult	-	-
		temporal	L	Adult	-	-
		frontal fragments	-	Adult	?F	localised expansion on endocranial surface with small plaques of new bone (osteoma?)
		sphenoid	L	Adult	-	-
		maxilla with PM4, M1 and M2	L	Adult	-	sinusitis of antrum and dental calculus
		zygomatic	L	Adult	-	-
<b>Context No.</b>	<b>SF No.</b>	<b>Element</b>	<b>Side</b>	<b>Age</b>	<b>Sex</b>	<b>Pathology</b>
2284	755	calcaneus	R	Adult	-	-
2283	843	maxillary M3	R	-	-	EH
2287	844	unidentified fragments	-	-	-	-
2288 (not SK)	845	petrous temporal	L	Adult	-	-
		cranial fragments	-	Adult	-	-
2292	744	cranial vault	-	Adult	F	-
		C1	-	Adult	-	-
2293	728	long bone fragment	-	-	-	-
2302 (not SK)	847	petrous temporal	R	Adult	-	-
		M fragment	?	-	-	-
		proximal femur	R	Sub-adult	-	-
		proximal femur	R	Sub-adult	-	-
		proximal femur	L	Sub-adult	-	-

u/s	852	parietal fragment	-	Adult	-	-
		cranial fragments	-	Adult	-	-

### Disarticulated human remains from Whithorn 1996 excavations (WHITH:1996.0374)

Context No.	SF No.	Element	Side	Age	Sex	Pathology
2319	1060	mandibular M1	L	-	-	-
		mandibular M1	R	-	-	-
		mandibular M2	?	Older childhood	-	-
		mandibular dm2	R	-	-	calculus
		maxillary PM3	R	-	-	-
2333	1199	cranial fragments	-	Adult	-	-
		petrous temporal	R	Adult	-	-
		petrous temporal	L	Adult	-	-
2356	1078	temporal	L	Older childhood	-	-
		frontal	L	Older childhood	-	cribra orbitalia
		petrous temporal	R	Older childhood	-	-
		parietal	L	Older childhood	-	-
		occipital fragments	-	Older childhood	-	-
		parietal fragments	R	Older childhood	-	-
		maxilla fragment	-	Older childhood	-	-
		maxillary dm1	L	Older childhood	-	calculus
		maxillary M2	L	Older childhood	-	-
Context No.	SF No.	Element	Side	Age	Sex	Pathology
		maxillary M1	L	Older childhood	-	-
		maxillary M1	R	Older childhood	-	-
		maxillary PM4	L	Older childhood	-	-
		maxillary PM3	L	Older childhood	-	-
		maxillary PM3	R	Older childhood	-	-
		maxillary C	L	Older childhood	-	calculus
		maxillary C	R	Older childhood	-	calculus
		maxillary I2	R	Older childhood	-	-
		maxillary I1	R	-	-	calculus, shovel shaped
		maxillary PM4	L	-	-	calculus
		medial tibia	-	?Sub-adult	-	-
2371	1071	mandible	-	Adult	M	severe dental calculus
		proximal femur	R	Adult	-	-
		proximal femur	L	Adult	-	-
		os coxa fragment	-	Adult	-	-

		proximal femur	L	Adult	-	-
		distal femur	?	Adult	-	-
		3 femoral shaft fragments	-	-	-	-
		petrous temporal	L	Adult	-	-
		petrous temporal	R	Adult	-	-
		petrous temporal	R	Adult	-	-
		trapezium	R	Adult	-	-
		cranial vault	-	Adult	-	-
		19 cranial fragments	-	-	-	-
		20 long bone fragments	-	-	-	-
		maxillary C	R	-	-	calculus
		maxillary C	L	-	-	calculus
		mandibular PM3	L	-	-	calculus
		?maxillary M	?	-	-	-
		mandibular ?PM4	L	-	-	calculus
		maxillary PM4	?	-	-	calculus
		mandibular I2	R	-	-	calculus
		mandibular I2	L	-	-	calculus
		mandibular I1	?	-	-	calculus
		mandibular I root	?	-	-	-
2379	1230	proximal femur	L	Adult	-	-
2385	1090	maxillary M2	L	-	-	calculus
<b>Context No.</b>	<b>SF No.</b>	<b>Element</b>	<b>Side</b>	<b>Age</b>	<b>Sex</b>	<b>Pathology</b>
		maxillary M2	R	-	-	calculus
		maxillary M1	L	-	-	calculus
		maxillary M1	R	-	-	calculus
		maxillary PM4	L	-	-	-
		maxillary PM4	R	-	-	-
		maxillary PM3	L	-	-	calculus
		maxillary PM3	R	-	-	calculus
		maxillary C	L	-	-	calculus
		petrous temporal	?	-	-	-
2404	1102	tibia	L	Adult	-	-
		long bone fragment	-	Adult	-	-
2414	1105	unidentified fragments	-	-	-	-
2422	1616	mandibular condyle	L	Adult	-	-
2437	1227	unidentified fragments	-	-	-	-
2437	1228	maxillary M1	R	-	-	calculus

		maxillary PM4	R	-	-	-
		maxillary PM3	R	-	-	-
		maxillary PM3	L	-	-	-
		maxillary PM4	L	-	-	calculus
		maxillary M1	L	-	-	-
		mandibular M2	R	-	-	-
		mandibular M1	R	-	-	-
		mandibular PM4	R	-	-	-
		mandibular PM3	R	-	-	-
		mandibular PM4	L	-	-	-
		mandibular M1	L	-	-	-
		mandibular M2	L	-	-	-
2442	1627	proximal humerus	?	Adult	-	-
		mandibular I2	L	-	-	-
2449	1133	petrous temporal	?	Sub-adult	-	-
		maxillary ?M2	L	-	-	-
2458	1134	unidentified fragments	-	-	-	-
2478	1155	petrous temporal	?	-	-	-
		cranial fragment	-	-	-	-
		maxilla fragment with L and R dm2, M1, PM4, PM3, and L C	-	Older childhood	-	dental calculus and EH
2478	1174	maxillary I2	L	-	-	calculus
<b>Context No.</b>	<b>SF No.</b>	<b>Element</b>	<b>Side</b>	<b>Age</b>	<b>Sex</b>	<b>Pathology</b>
		cervical vertebral arch	-	Adult	-	-
		cranial fragments	-	-	-	-
2478	1633	vomer	-	?Adolescent	-	-
		ethmoid	-	?Adolescent	-	-
		palatines	-	?Adolescent	-	-
		4 sphenoid fragments	-	Adolescent	-	-
		2 occipital fragments	-	?Adolescent	-	-
		temporal	L	?Adolescent	-	-
		temporal	R	?Adolescent	-	-
		17 cranial fragments	-	?Adolescent	-	-
		I fragment	-	-	-	calculus
		maxillary C	?	-	-	calculus
		mandibular PM4	?	-	-	calculus
2492	1153	proximal femur	R	Adult	-	-
2492	1154	medial humerus	L	?Adult	-	-

		C2	-	?Adult	-	-
		2 unidentified fragments	-	-	-	-
		11 cranial fragments	-	Older childhood	-	-
		occipital fragment	-	Older childhood	-	porous new bone on endocranial surface
		temporal	L	Older childhood	-	-
		temporal	R	Older childhood	-	-
		zygomatic	R	Older childhood	-	-
		maxilla with M2, M1, dm2, PM4, PM3, C, I2, I1	R	Older childhood	-	dental calculus, EH
		17 cranial fragments	-	Adult	-	-
		frontal	-	Adult	F	-
		maxilla with M2, M1, PM4, C	R	Adult	-	-
		temporal	R	Adult	-	-
2492	1158	dens of C2	-	Adult	-	-
		maxilla fragment	L	Adult	-	-
		maxillary C	L	-	-	-
		maxillary PM3	L	-	-	calculus
		maxillary PM4	L	-	-	calculus
		maxillary M1	L	-	-	calculus
		maxillary M2	L	-	-	calculus
<b>Context No.</b>	<b>SF No.</b>	<b>Element</b>	<b>Side</b>	<b>Age</b>	<b>Sex</b>	<b>Pathology</b>
		cranial fragments	-	-	-	-
		maxillary I1	L	Older childhood	-	EH
		maxillary I2	L	Older childhood	-	EH
		maxillary C	L	Older childhood	-	EH
		maxillary PM3	L	Older childhood	-	EH
		mandibular PM3	R	Older childhood	-	EH
		mandibular PM4	R	Older childhood	-	EH
		mandibular M1	R	Older childhood	-	calculus, EH
2492	1159	femur shaft fragment	-	Adult	-	-
		long bone fragment	-	Adult	-	-
2492	1160	proximal femur	L	Adult	-	-
2492	1161	mandibular M2	L	Older childhood	-	-
		mandibular M2	R	Older childhood	-	-
		mandibular M1	L	Older childhood	-	calculus
		mandibular M1	R	Older childhood	-	calculus
		mandibular PM4	L	Older childhood	-	-

		mandibular PM4	R	Older childhood	-	-
		mandibular PM3	L	Older childhood	-	EH
		mandibular PM3	R	Older childhood	-	EH
		mandibular C	L	Older childhood	-	EH
		mandibular C	R	Older childhood	-	EH
2492	1293	long bone fragment	-	Adult	-	-
		femur	L	Adult	-	-
2492	1296	long bone fragments	-	-	-	-
2492	1300	mandible	L	Younger childhood	-	calculus
		mandible	R	Younger childhood	-	-
		temporal	L	Younger childhood	-	-
		petrous temporal	R	Younger childhood	-	-
		occipital	-	Younger childhood	-	-
		sphenoid fragment	-	Younger childhood	-	-
		C2	-	Younger childhood	-	-
		maxillary dm2	R	Younger childhood	-	calculus
		maxillary dc	R	Younger childhood	-	calculus
		maxillary di1	L	Younger childhood	-	calculus
		maxillary dc	L	Younger childhood	-	calculus
		maxillary dm1	L	Younger childhood	-	calculus
		maxillary dm2	L	Younger childhood	-	calculus
<b>Context No.</b>	<b>SF No.</b>	<b>Element</b>	<b>Side</b>	<b>Age</b>	<b>Sex</b>	<b>Pathology</b>
		maxillary M2	R	Younger childhood	-	EH
		maxillary M1	R	Younger childhood	-	-
		maxillary PM4	R	Younger childhood	-	EH
		maxillary PM3	R	Younger childhood	-	EH
		maxillary C	R	Younger childhood	-	EH
		maxillary I2	R	Younger childhood	-	-
		maxillary I1	R	Younger childhood	-	-
		maxillary I1	L	Younger childhood	-	-
		maxillary I2	L	Younger childhood	-	EH
		maxillary C	L	Younger childhood	-	EH
		maxillary PM3	L	Younger childhood	-	EH
		maxillary PM4	L	Younger childhood	-	EH
		maxillary M1	L	Younger childhood	-	-
		maxillary M2	L	Younger childhood	-	EH
		mandibular M2	L	Younger childhood	-	-
		mandibular M1	L	Younger childhood	-	-

		mandibular PM4	L	Younger childhood	-	EH
		mandibular PM3	L	Younger childhood	-	EH
		mandibular C	L	Younger childhood	-	-
		mandibular I2	L	Younger childhood	-	-
		mandibular I1	L	Younger childhood	-	-
		mandibular M2	R	Younger childhood	-	-
		mandibular M1	R	Younger childhood	-	-
		mandibular PM3	R	Younger childhood	-	EH
		mandibular C	R	Younger childhood	-	-
		mandibular I2	R	Younger childhood	-	-
		mandibular I1	R	Younger childhood	-	-
2492	1322	mandibular ?M2	?R	-	-	calculus
		mandibular PM	?	-	-	-
2492	1324	unidentified fragments	-	-	-	-
2492	1331	unidentified fragments	-	-	-	-
2492	1335	petrous temporal fragments	-	-	-	-
2492	1345	maxillary M1	R	-	-	calculus, EH
		maxillary PM4	R	-	-	calculus
		mandibular M1	R	-	-	-
		mandibular PM4	R	-	-	calculus, EH
		mandibular PM3	R	-	-	-
<b>Context No.</b>	<b>SF No.</b>	<b>Element</b>	<b>Side</b>	<b>Age</b>	<b>Sex</b>	<b>Pathology</b>
2492	1354	petrous temporal	?	-	-	-
2492	1355	unidentified fragments	-	-	-	-
2492	1378	long bone shaft fragment	-	-	-	-
2492	1380	long bone fragments	-	-	-	-
2492	1384	unidentified fragments	-	-	-	-
2492	1388	maxillary M2	?	-	-	-
2497	1176	tooth enamel fragments	-	-	-	-
2498	1639	proximal femur	R	Adult	-	-
2509	1178	unidentified fragments	-	-	-	-
2522	1235	petrous temporal	R	Adult	-	-
		petrous temporal	L	Adult	-	-
		cranial fragments	-	Adult	-	-
2531	1200	talus	L	Adult	-	-
		petrous temporal	?	Adult	-	-
		ilium fragment	R	Adult	-	-



		proximal tibia	?	Adult	-	OA
		M fragment	-	-	-	-
		mandibular M1	R	-	-	calculus
		mandibular PM4	?	-	-	calculus
		mandibular PM3	?	-	-	calculus
		maxillary C	?R	-	-	calculus
		maxillary I2	?R	-	-	-
2537	1206	long bone fragments	-	-	-	-
2551	1211	distal femur	L	Adolescent	-	-
		distal femur	R	Adolescent	-	-
		fibula shaft fragment	-	?Adult	-	-
2556	1213	maxillary M2	R	-	-	calculus
		maxillary PM3	L	-	-	calculus
2556	1263	mandible	L	Adult	-	calculus
		proximal humerus	L	Adult	-	-
		proximal ulna	L	Adult	-	-
		1 rib fragment	-	-	-	-
		scapula	R	Adult	-	-
		ilium fragment	R	Adult	-	-
		ilium fragment	R	Adult	-	-
		ischium	R	Adult	-	-
		2 long bone fragments	-	-	-	-
<b>Context No.</b>	<b>SF No.</b>	<b>Element</b>	<b>Side</b>	<b>Age</b>	<b>Sex</b>	<b>Pathology</b>
		mandibular M2	L	-	-	calculus
		mandibular M2	R	-	-	calculus
		mandibular M1	R	-	-	calculus
		mandibular M3	L	-	-	calculus
		M fragment	-	-	-	calculus
		mandibular PM	?	-	-	calculus
		mandibular PM	?	-	-	calculus
		maxillary I2	L	-	-	calculus
2561	1220	medial tibia	R	Adult	-	-
2569	1657	distal femur	L	Adult	-	-
2579	1269	C	?	-	-	calculus
		tooth enamel fragment	-	-	-	-
2579	1290	ilium fragment	R	Middle adult	-	-
2579	1659	mandibular M1	L	Younger childhood	-	-
		mandibular M1	R	Younger childhood	-	-

		maxillary M2	?	-	-	-
2603	1260	maxillary PM3	R	-	-	calculus
2613	1268	proximal ulna	R	Adult	-	-
		unidentified fragments	-	-	-	-
2629	1310	proximal humerus	?	?Adult	-	-
2646	1351	2 long bone fragments	-	-	-	-
2653	1366	mandibular M2	?	-	-	calculus
		2 mandibular M fragments	-	-	-	calculus
2653	1408	unidentified fragments	-	-	-	-
2653	1460	tooth enamel fragments	-	-	-	-
2677	1411	unidentified fragments	-	-	-	-
2692	1454	unidentified fragments	-	-	-	-
2707	1453	tooth enamel fragments	-	-	-	-
2709	1481	maxillary M2	L	-	-	-
2709	1483	petrous temporal fragment	?	-	-	-
2709	1492	mandibular M2	?	-	-	calculus
2719	1506	maxillary PM3	L	-	-	calculus
		maxillary PM4	L	-	-	calculus
2752	1525	tooth enamel fragments	-	-	-	-

## APPENDIX 8 METALWORKING DEBRIS BY PERIOD

Period	Copper alloy waste	Lead alloy waste	Crucibles, fired clay, tuyeres, ?refractories, furnace lining, and hearth bottoms	Iron slag 1992	Iron slag 1993	Iron slag 1995/6
Period 1 * Natural						95/SF0152695/ SF01582
Period 2 * Pre 6 <sup>th</sup> century			93/SF57000 93/SF62600 93/SF65202 95/SF01521 95/SF00689 95/SF01279	92/SF46601 92/SF47500 92/SF47501	93/SF57000 93/SF60600 93/SF60702 93/SF62200 93/SF62201 93/SF62300 93/SF62600 93/SF63000 93/SF65200	95/SF01540 95/SF01678 95/SF01517 95/SF01397 95/SF01304

					93/SF65201	
					93/SF65202	
Period 3	92/SF39601	92/SF39611	92/SF42708	92/SF36400	93/SF18002	95/SF01544
6 <sup>th</sup> to early 8 <sup>th</sup> century			92/SF42705	92/SF37102	93/SF36700	95/SF01573
			92/SF36400	92/SF38801	93/SF45300	95/SF01339
			92/SF37102 92/S F38902	92/SF39612	93/SF51100	95/SF01529
			92/SF39612	92/SF39619	93/SF51101	95/SF01556
			92/SF39613 92/S F42303	92/SF42303	93/SF66100	95/SF01474
			92/SF42402	92/SF42402		95/SF01251
			92/SF42402	92/SF42403		95/SF01358
			92/SF42603	92/SF42603		95/SF01363
			92/SF42704	92/SF42704		95/SF01371
			92/SF43902	92/SF42705		95/SF01374
			92/SF45504	92/SF43902		95/SF01375
			92/SF45609	92/SF43903		95/SF01436
			92/SF45611	92/SF45503		95/SF00613
			92/SF45702	92/SF45609		95/SF01111
			92/SF45900	92/SF45610		95/SF01497
			92/SF46004	92/SF45702		95/SF01507
			92/SF46006	92/SF46004		95/SF01511
			92/SF46105	92/SF46005		95/SF01565
			92/SF46106	92/SF46105		
			92/SF46202	92/SF46202		
			92/SF46203	92/SF46705		
			92/SF46705	92/SF47700		
			92/SF46706			
			92/SF47600 92/SF 47700			
			92/SF47705			
			93/SF18001			
			93/SF51100			
			93/SF66600			
			95/SF01376			
			95/SF01464			
			95/SF01491			
			95/SF01505			
			95/SF01527			
			95/SF01532			
			95/SF01536			
			95/SF01552			

			95/SF01563			
			95/SF01391			
			95/SF01495			
			95/SF01522			
Period 4	92/SF44600	92/SF41000	92/SF35406	92/SF23303	93/SF01000	95/SF01368
c. AD730 to c. AD 845	92/SF40000	95/SF01053	92/SF38103	92/SF32011	93/SF01302	95/SF01369
	95/SF1398	95/SF01131	92/SF39203	92/SF35302	93/SF01401	95/SF01392
			92/SF40603	92/SF35405	93/SF01402	95/SF01444
			92/SF49102	92/SF35604	93/SF01403	95/SF01451
			93/SF00400	92/SF41902	93/SF01406	95/SF01467
			93/SF00401 93/SF 05001 93/SF0330 1	92/SF43801	93/SF05001	95/SF01237
			93/SF01402	92/SF45001	93/SF06100	95/SF00580
			93/SF01407	92/SF28000	93/SF13000	95/SF00587
			93/SF02200	92/SF36300	93/SF16802	95/SF00668
			93/SF13000	92/SF38200	93/SF19000	95/SF00899
			93/SF21401	92/SF42903	93/SF27302	95/SF00900
			95/SF00580	92/SF44101	93/SF38302	95/SF00901
			95/SF00531	92/SF46502	93/SF56000	95/SF01504
			95/SF00580	92/SF49101		95/SF01215
			95/SF00591	92/SF38102		95/SF01255
			95/SF00609 95/S F00618	92/SF38703		95/SF01170
			95/SF00703	92/SF39002		95/SF00583
			95/SF00710	92/SF39202		95/SF00591
			95/SF00731	92/SF39206		95/SF00679
			95/SF00733	92/SF41200		95/SF01311
			95/SF01056	92/SF41403		95/SF01313
			95/SF01085	92/SF41404		95/SF01323
			95/SF01104	92/SF41602		95/SF01325
			95/SF01140	92/SF44201		95/SF01370
			95/SF01150	92/SF44301		95/SF01404
			95/SF01185	92/SF44500		95/SF01441
			95/SF01208	92/SF44503		95/SF01277
			95/SF01283	92/SF44900		95/SF00692
			95/SF01285			95/SF00628
			95/SF01323			95/SF00630
			95/SF01350			95/SF00640
			95/SF01379			95/SF00898
			95/SF01434			95/SF00746
						95/SF00902
						95/SF01117

		95/SF01441		95/SF01162
		95/SF01447		95/SF00680
		95/SF01469		95/SF00598
		95/SF01473		95/SF00599
		95/SF00681		95/SF00600
		95/SF00702		95/SF00601
		95/SF00714		95/SF00607
		95/SF00581		95/SF00696
		95/SF00595		95/SF01050
		95/SF00622		95/SF01163
		95/SF00631		95/SF01164
		95/SF00715		95/SF01165
		95/SF00723		95/SF01166
		95/SF00727		95/SF00594
		95/SF00760		95/SF01680
		95/SF01109		95/SF01328
		95/SF01136		95/SF01065
		95/SF01147		95/SF01085
		95/SF01193		95/SF01238
		95/SF01221		95/SF01243
		95/SF01257		95/SF01062
		95/SF01271		95/SF01145
		95/SF01276		95/SF01157
		95/SF00694		95/SF01172
		95/SF01435		95/SF01223
		95/SF01443		95/SF01115
		95/SF01450		95/SF01099
		95/SF01468		95/SF01076
		95/SF01475		95/SF01110
		95/SF01584		95/SF00527
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				95/SF00529
				95/SF00546
				95/SF00511
				95/SF00623
				95/SF00707
				95/SF00708
				95/SF00782
				95/SF00513
				95/SF00514

						95/SF00525
						95/SF00578
						95/SF01224
						95/SF00724
						95/SF00731
						95/SF00408
						95/SF00748
						95/SF00615
						95/SF00674
						95/SF00675
						95/SF00577
						95/SF00358
Period 5 c. AD 845 to c. AD 1250-1300		92/SF21406 95 /SF00198 92/S F30400	92/SF33000 92/SF31101 92/SF33301 92/SF33608 92/SF34014 92/SF36605 92/SF40501 93/SF18602 93/SF16200 93/SF21800 93/SF21801 93/SF22506 93/SF24403 93/SF03801 93/SF17202 93/SF17304 93/SF17406 93/SF17702 93/SF18102 93/SF18500 93/SF19402 93/SF19602 93/SF19603 93/SF22103 93/SF22504 93/SF22505 93/SF23702 93/SF24205	92/SF18404 92/SF19703 92/SF19807 92/SF21203 92/SF21407 92/SF22105 92/SF26501 92/SF27308 92/SF27803 92/SF34004 92/SF34102 92/SF35900 92/SF36604 92/SF36608 92/SF37203 92/SF38503 92/SF31102 92/SF32203 92/SF33602 92/SF33607 92/SF37801	93/SF03800 93/SF10902 93/SF12600 93/SF16105 93/SF16200 93/SF16904 93/SF17304 93/SF17406 93/SF17702 93/SF18103 93/SF18104 93/SF18202 93/SF18500 93/SF18600 93/SF18601 93/SF19604 93/SF20100 93/SF22103 93/SF22505 93/SF22506 93/SF22707 93/SF22708 93/SF24302 93/SF24402 93/SF25902 93/SF27203 93/SF28000 93/SF33800	95/SF00105 95/SF00120 95/SF00121 95/SF00119 95/SF00206 95/SF00219 95/SF00286 95/SF00291 95/SF00297 95/SF00363 95/SF00440 95/SF00451 95/SF00452 95/SF00869 95/SF00870 95/SF00896 95/SF00897 95/SF00413 95/SF00417 95/SF00418 95/SF00420 95/SF00421 95/SF00422 95/SF00427 95/SF00429 95/SF00431 95/SF00436 95/SF00437

		93/SF33800	93/SF37100	95/SF00447
		93/SF39103	93/SF38501	95/SF00895
		93/SF46904	93/SF38502	95/SF00161
		93/SF48701	93/SF38503	95/SF00165
		95/SF00043	93/SF39901	95/SF00469
		95/SF00158	93/SF40602	95/SF00228
		95/SF00897	93/SF40700	95/SF00186
		95/SF00105	93/SF43801	95/SF00187
		95/SF00120	93/SF43902	95/SF00354
		95/SF00182	93/SF44000	95/SF00355
		95/SF00187	93/SF44900	95/SF00480
		95/SF00413	93/SF46100	95/SF00885
		95/SF00418	93/SF46300	95/SF00142
		95/SF00422	93/SF46702	95/SF00164
		95/SF00895	93/SF46800	95/SF00166
		95/SF00223	93/SF46902	95/SF00171
		95/SF00146	93/SF47500	95/SF00192
		95/SF00166	93/SF46903	95/SF00193
		95/SF00181	93/SF47800	95/SF00203
		95/SF00246	93/SF48701	95/SF00213
		95/SF00403	93/SF48801	95/SF00335
		95/SF00419	93/SF49902	95/SF00352
		95/SF00426	93/SF50702	95/SF00379
		95/SF00004	93/SF50703	95/SF00392
		95/SF00014	93/SF50704	95/SF00393
		95/SF00017	93/SF51202	95/SF00394
			93/SF51300	95/SF00172
			93/SF51301	95/SF00494
			93/SF51804	95/SF00720
			93/SF53001	95/SF00118
			93/SF53203	95/SF00300
			93/SF55300	95/SF00298
			93/SF56602	95/SF00360
			93/SF58402	95/SF00361
			93/SF59001	95/SF00233
			93/SF59002	95/SF00103
			93/SF59003	95/SF00050
			93/SF59004	95/SF00026
			93/SF59005	95/SF00143
			93/SF59006	95/SF00004

					93/SF59007 93/SF60100 93/SF60200 93/SF60300 93/SF60500 93/SF65000 93/SF65001 93/SF65100 93/SF65900 93/SF65901	95/SF00014 95/SF00017 95/SF00671 95/SF01496 95/SF00040 95/SF00125 95/SF00135 95/SF00181 95/SF00182
Period 6 c. AD 1250-1300 to 16 <sup>th</sup> century	92/SF12620 92/SF12621 92/SF19620		92/SF13022 92/SF13124 92/SF22703 95/SF00904 95/SF01059	92/SF03504 92/SF03505 92/SF05507 92/SF06107 92/SF06509 92/SF06604 92/SF06702 92/SF08318 92/SF08333 92/SF08334 92/SF08518 92/SF08811 92/SF10311 92/SF10704 92/SF10706 92/SF10819 92/SF11407 92/SF11522 92/SF11708 92/SF12206 92/SF12503 92/SF12626 92/SF12802 92/SF12903 92/SF13118 92/SF13307 92/SF13505 92/SF13603 92/SF14005 92/SF14104		95/SF00552 95/SF00554



				92/SF14202		
				92/SF14301		
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				92/SF14702		
				92/SF14803		
				92/SF14908		
				92/SF15005		
				92/SF15203		
				92/SF15212		
				92/SF15509		
				92/SF15609		
				92/SF15610		
				92/SF15611		
				92/SF15800		
				92/SF15801		
				92/SF15906		
				92/SF16011		
				92/SF16012		
				92/SF16303		
				92/SF16405		
				92/SF16409		
				92/SF16601		
				92/SF16701		
				92/SF16906		
				92/SF16907		
				92/SF17001		
				92/SF17006		
				92/SF17216		
				92/SF17217		
				92/SF17313		
				92/SF17404		
				92/SF17602		
				92/SF17707		
				92/SF18103		
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				92/SF18318		
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				92/SF19413		
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				92/SF20303		
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				92/SF20409		
				92/SF20521		
				92/SF20604		
				92/SF20802		
				92/SF20803		
				92/SF21008		
				92/SF21101		
				92/SF21503		
				92/SF21602		
				92/SF21603		
				92/SF21903		
				92/SF22204		
				92/SF22212		
				92/SF22806		
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				92/SF26904		
				92/SF27202		
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				92/SF35104		
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				92/SF35605		
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				92/SF39104		
				92/SF39106		
				92/SF42803		
				92/SF43006		
				92/SF43011		
				92/SF43303		
				92/SF43304		
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				92/SF47206		
				92/SF47207		
				92/SF47401		
				92/SF47402		
				92/SF49413		
				92/SF22703		
Period 7	92/SF01839	92/SF01417	95/SF00192	92/SF01382	93/SF02814	95/SF00501
16 <sup>th</sup> century to the present	92/SF05404	92/SF05412	95/SF00216	92/SF01419	93/SF03754	95/SF00504
	92/SF31717	92/SF28713	95/SF00519	92/SF01730	93/SF05219	95/SF00508
	92/SF45400	92/SF31721	95/SF00164	92/SF01749	93/SF05233	95/SF00518
		92/SF34500	95/SF00260	92/SF01750	93/SF05800	95/SF00522
			95/SF00484	92/SF01843	93/SF05906	95/SF00523
			95/SF00519	92/SF01872	93/SF06300	95/SF00533
			95/SF00784	92/SF01873	93/SF06446	95/SF00486
			95/SF00797	92/SF01913	93/SF06447	95/SF00490
			95/SF00903	92/SF01917	93/SF06500	95/SF00549

			92/SF01923	93/SF06501	95/SF00565
			92/SF01924	93/SF06625	95/SF00541
			92/SF01925	93/SF06824	95/SF00462
			92/SF02002	93/SF06825	95/SF00653
			92/SF02009	93/SF07328	95/SF00483
			92/SF03301	93/SF09012	95/SF00485
			92/SF03302	93/SF09013	95/SF00788
			92/SF03303	93/SF09014	95/SF00173
			92/SF03624	93/SF09015	95/SF00256
			92/SF03650	93/SF09836	95/SF00260
			92/SF03719	93/SF10112	95/SF00267
			92/SF03739	93/SF11905	95/SF00311
			92/SF03740	93/SF12208	95/SF00456
			92/SF04508	93/SF12400	95/SF00783
			92/SF04513	93/SF12500	95/SF00886
			92/SF05307	93/SF12800	95/SF00887
			92/SF05413	93/SF13108	95/SF00888
			92/SF05415	93/SF13109	95/SF00889
			92/SF05811	93/SF13503	95/SF00890
			92/SF05815	93/SF13504	95/SF00891
			92/SF08116	93/SF14224	95/SF00892
			92/SF09008	93/SF14511	95/SF00893
			92/SF09616	93/SF14633	95/SF00894
			92/SF09617	93/SF14719	
			92/SF10408	93/SF14720	
			92/SF25807	93/SF18701	
			92/SF26028	93/SF18702	
			92/SF26029		
			92/SF26045		
			92/SF27416		
			92/SF27417		
			92/SF28714		
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				92/SF30218		
				92/SF30502		
				92/SF31722		
				92/SF33712		
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				92/SF33807		
				92/SF33808		
				92/SF35012		
				92/SF35013		
				92/SF35022		
				92/SF49412		
Unstratified or modern contexts	92/SF36900	92/SF07913	92/SF44006	92/SF07805	93/SF00602	95/SF00699
	92/SF07903	92/SF08008	93/SF04303	92/SF14605	93/SF00800	95/SF01455
	92/SF08001	92/SF16105	95/SF00001	92/SF16229	93/SF01100	95/SF01462
	92/SF20105	92/SF16106	93/SF43100 93/S F56304 93/SF387 00	92/SF17806	93/SF03400	95/SF01210
	92/SF24501	92/SF16224	93/SF43903	92/SF17818	93/SF03501	95/SF01074
	92/SF39301	92/SF16225 92/ SF17816 92/SF 17817	93/SF44401	92/SF20113	93/SF03600	95/SF01421
	92/SF39302		93/SF46301 93/S F46703	92/SF22503	93/SF04200	95/SF01427
	92/SF45200	92/SF20116	93/SF56603 93/SF 58600 93/SF0390 0	92/SF24308	93/SF04302	
	92/SF49309	92/SF20119	93/SF35400	92/SF24322	93/SF06201	
	93/SF10302	92/SF22513	93/SF51503	92/SF24406	93/SF06202	
	93/SF12700	92/SF22514	93/SF65502	92/SF24412	93/SF12302	
	93/SF12701	92/SF22515	95/SF00699	92/SF39704	93/SF15501	
	93/SF12702	92/SF24513	95/SF01428	92/SF40304	93/SF16000	
	93/SF29101	92/SF39316	95/SF01429	92/SF44002	93/SF16401	
	93/SF32100	92/SF39317	95/SF01430	92/SF44007	93/SF16402	
	93/SF32200	92/SF40205	95/SF01456	92/SF45104	93/SF17901	
	93/SF56102	92/SF40305 92/ SF47800	95/SF01430	92/SF46302	93/SF19701	
	93/SF02615	93/SF10313	95/SF01430	92/SF47003	93/SF21102	
	93/SF47701	93/SF10314	95/SF01456	92/SF47303	93/SF21300	
	96/SF667	93/SF12016	95/SF01297	92/SF49308	93/SF21602	
		93/SF12017			93/SF21701	
		93/SF12018			93/SF21702	
		93/SF12301			93/SF21703	
		93/SF15611			93/SF22600	
		93/SF29110 93 /SF30005			93/SF23000	
		93/SF04818			93/SF24500	
		93/SF07261			93/SF25101	
		93/SF14223			93/SF28401	
					93/SF28901	

	95/SF00666 95 /SF00906 95/SF01425		93/SF30100 93/SF30400 93/SF32801 93/SF35001 93/SF35400 93/SF35700 93/SF35701 93/SF37600 93/SF37601 93/SF37802 93/SF39502 93/SF39503 93/SF39700 93/SF44101 93/SF44102 93/SF44800 93/SF45500 93/SF45501 93/SF45600 93/SF47401 93/SF47600 93/SF49604 93/SF50001 93/SF51503 93/SF51701 93/SF51901 93/SF52500 93/SF52700 93/SF52800 93/SF52801 93/SF53103 93/SF56303 93/SF56703 93/SF56704 93/SF56705 93/SF56800 93/SF56900 93/SF57803 93/SF58201 93/SF58600	
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					93/SF60000	
					93/SF62000	
					93/SF63112	
					93/SF63113	
					93/SF63114	
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					93/SF64401	
					93/SF65501	
					93/SF65502	
					93/SF66000	
					93/SF66700	
					93/SF66801	

Metalworking finds by phase (\* represent contamination from later deposits)