BROWNSLADE BARROW, CASTLEMARTIN, PEMBROKESHIRE

Archaeological survey and excavation 2002 - 2006

Phase 4: Interim Report

July 2007

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Phase 4: Interim Report

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1. INTRODUCTION

1.1 PROJECT BACKGROUND

Brownslade Barrow is one of a number of archaeological features on the Castlemartin Estate, Pembrokeshire that are thought to be of Bronze Age date. It is a Scheduled Ancient Monument (Pe315) and it is presumed to have been a burial mound dating to the Late Neolithic or Early Bronze Age. However, antiquarian investigation during the late 19th century (Laws 1882, 51-58; Laws 1888, 57-59) identified a central burial that was subsequently suggested to date to the Romano-British or early Medieval period. Further extended, inhumation burials were identified in and around the barrow and some of these were in stone-lined cists. These suggested that the barrow mound had become the focus for an early Medieval, Christian cemetery.

Considerable badger disturbance to the environs of the barrow was observed during a site visit in 2001. This disturbance had brought a significant number of human bones to the surface and concern was raised about the potential damage that was being caused to a significant archaeological site. In order to assist with the formulation of future management options, an archaeological topographic and geophysical survey was commissioned in 2002 together with a small-scale archaeological evaluation in the area of the fragmentary remains of a rectangular building to the north of the barrow in 2003. An examination was also undertaken of the collection of human remains that had been recovered from the site. A total of 104 bone fragments representing at least six individuals were examined (Coard 2003). Three radiocarbon dates obtained for this bone indicate a date range of between AD 450 and AD 960 which supports the early Medieval date that had previously been suggested for the cemetery. Interim reports of all this initial work were prepared in 2002 and 2003 (Ludlow 2002, Ludlow 2003).

The results of the survey and the assessment of the human bone demonstrated the archaeological potential and significance of Brownslade Barrow. However, it became clear that the barrow itself and the area in its immediate vicinity faced a significant threat from ongoing badger activity. A decision was taken by Defence Estates, in consultation with the National Park Archaeologist, the Heritage Management Section of Cambria Archaeology, CCW and Cadw, to relocate the badger sett, erect badger-proof fencing around the undisturbed areas and to undertake the full excavation of those areas that have been most severely affected by the badger action. This excavation was undertaken by Cambria Archaeology in two stages during the spring and summer of 2006. Stage 1 consisted of two 1m wide hand-excavated trenches to the north of the barrow in May 2006. Stage 2 consisted of the area excavation in the area of the badger sett to the southeast of the barrow. An interim report on the results of this excavation was prepared in September 2006 (Hughes and Crane 2006) and this was followed by the preparation of a post-excavation assessment and updated project design outlining a programme of work leading to the full publication of the results of the investigation.

This report provides an interim report on the integrated results of all the archaeological work undertaken between 2002 and 2006.

1.2 SITE DESCRIPTION

1.2.1 Location

Brownslade Barrow, Castlemartin parish lies at NGR SR 905 972, towards the western tip of the Castlemartin peninsula, in an area of wind-blown sand (Fig 1). The area was requisitioned by the MOD in 1938 and is part of the Training Estate, used for both live firing and dry training. Geographically the range is a plateau dissected by two small streams that enter the sea along the western coastline through a system of sand dunes. Vertical sea cliffs define the southern boundary.

The underlying geology is Carboniferous Limestone which, over most of the range, lies beneath drift deposits characterised by very fine *loess* deposits. The soils are everywhere deep and rich; prior to military use the area was primarily arable, having been extensively improved in the 1700s. The area was considered to be the best corn-growing land in Pembrokeshire.

The site lies towards the west end of the range, 700m inland from the dune slacks of Linney Burrows, but within an area of blown sand.

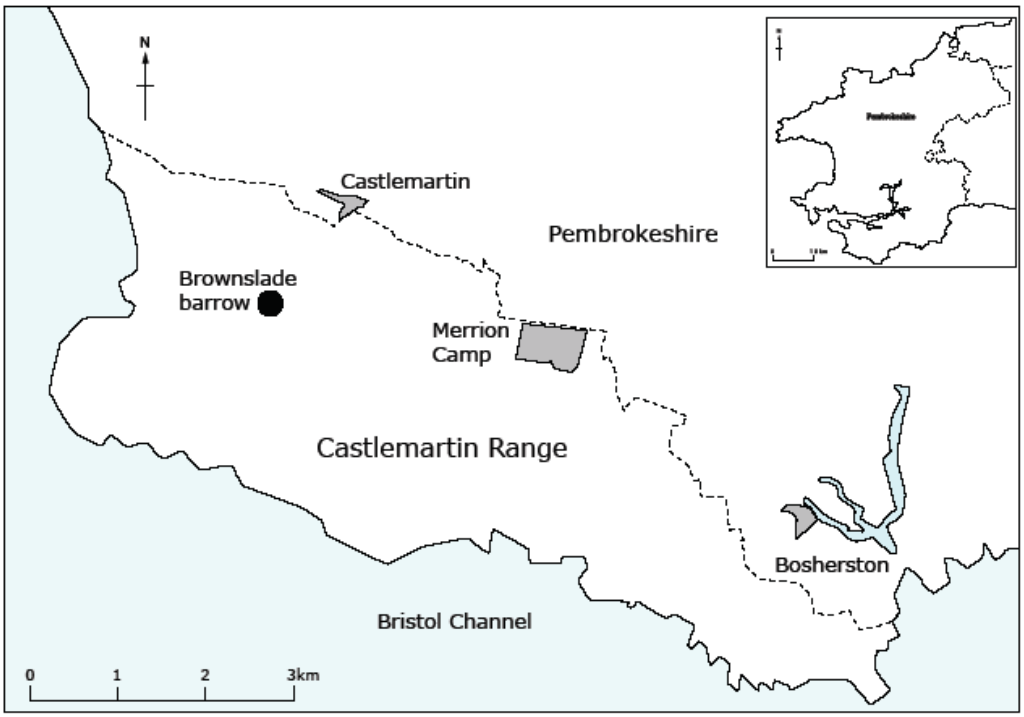


Fig. 1. The location of the site.

1.2.2 The barrow and surrounding earthwork banks (see Figs. 2 and 3)

The barrow stands on a slight E-W trending ridge, a position of high visibility, at an approximate height of 42m above sea level. It is oval rather than circular in plan, measuring 40m WSW – ENE, and 34m SSE – NNW, and averages 2m in height with a smoothly rounded profile. It is apparently largely constructed from sand.

It stands near a modern fence line off of the main firing area. It is mostly in good condition, in part because of the artillery star-markers that stand at its base to the north and south and signify a 'no-digging' area. It is grass-covered, but the

irregular surface to the turf may be evidence of the excavations undertaken by Edward Laws during the 1880s. The scheduled area is 60m in diameter, centred on the middle of the barrow.

The barrow appears to sit within a rectangular enclosure formed by a series of low earthwork banks no more than 0.5m high. Several of these banks extend beyond the limits of the enclosure to the north, west and south suggesting that it forms part of a series of former small fields or paddocks. To the southeast of the barrow and lying within the enclosure, is a large recumbent stone with a drilled hole indicating its former post-medieval use as a gate post.

The barrow is generally regarded as Bronze Age, but Edward Laws' account of his 1880 excavation, though somewhat vague and sometimes confused (Laws 1882, 51-58; Laws 1888, 57-59), makes no reference to any burial that can be interpreted as Bronze Age. A central cist was regarded by the excavators as being a primary inhumation and 'older than the others' (*Ibid*), although the 'wheel-turned' pottery that accompanied the burial was not adequately recorded and its date is unknown.

The 1880s excavations also revealed a large number of burials, of 'men, women and children', some of which were seen to occupy cist graves without lintel slabs. They were described as ' packed like tiers at least three deep, like pigeons in a pie', suggesting successive re-cuts of graves. The burials were extended and oriented, and therefore presumed to be Christian, and from the medieval period, but no conclusive dating evidence was recovered from the site. The contemporary description suggests that the burials were intercut and may therefore occupy a considerable time-scale. The precise location of these burials was not clear from the 1880s account although Laws describes his investigation as commencing on the 'southeastern side' of the barrow.

The 2007 excavation was undertaken as a result of badger activity in the southeastern part of the enclosure, which was clearly disturbing human burials and throwing up human bone in the spoil from the sett.

1.2.3 Rectangular Building and Quarry

The fragmentary remains of a small, oriented rectangular masonry building lie 62m north of the barrow and scheduled area, at NGR SR 9055 9730 (Fig. 2). It was thought to possibly represent the chapel that is said, by Laws, to have stood near the barrow (Laws 1882 and 1888).

The building appears to be shown as an open rectangle on an estate map of 1790, though it is vague (Pembrokeshire Record Office, D/Angle 74). It is clearly represented by an open rectangle on the Ordnance Survey 1:2500 First Edition map of c.1880, suggesting that it was then roofless. It appears to have become ruinous by 1908 when it was not marked on the Second Edition map.

Prior to the investigation, the building was represented by a rectangular, E-W depression. The east, north and west sides were additionally defined by intermittent, limestone rubble masonry which showed through the turf. In addition, a large orthostat occupies what appeared to be the southern wall line of the building. The area around the orthostat has been poached due to its use as a sheep-rubbing stone.

The south side of the building is truncated by a small limestone quarry, or possible sand-pit, with an irregular outline and profile. It measures approximately 60m east-west and 40m north-south, and extends to within 30m of the barrow. It

is now grass-covered. It is not marked on any historic maps and must be post-c.1880 as the south wall of the rectangular building is shown in Plate 3, and it may be a 20th century feature. Nevertheless, limekilns are shown to lie to the northwest on both the First and Second Edition maps. Irregular mounds to the north may represent dumping, possibly of spoil from lime-burning.

1.2.4 Boundaries and Field Names

The field boundaries shown on all editions of the Ordnance Survey maps and the Castlemartin tithe map of 1838 (see Fig. 2) are no longer functional and are now represented by low, stony earthworks averaging 0.2m high. A modern post-and-wire fence divided the area of the barrow from Brownslade Farm to the north (and from the quarry/sand-pit and Building 544). Both areas are used for sheep-grazing.

Several sources have made much of the statement that the barrow stood in a field named 'Churchways' (Laws 1888, 57; RCAHMW 1925, 61 No. 140). In fact, in 1790 both the barrow and the rectangular building stood in a field called 'Churchy Bank' (Pembrokeshire Record Office, D/Angle 74; Fig. 2).

By 1838, 'Churchy Bank' had been united with the field to the north, 'The Bank', to form a large field called 'Bank Piece' (Castlemartin tithe map, 1838). 'Churchway Meadow' lay immediately to the south, to the west lay 'Upper' and 'Lower Church Hill', and to the east was 'Kings Land' .

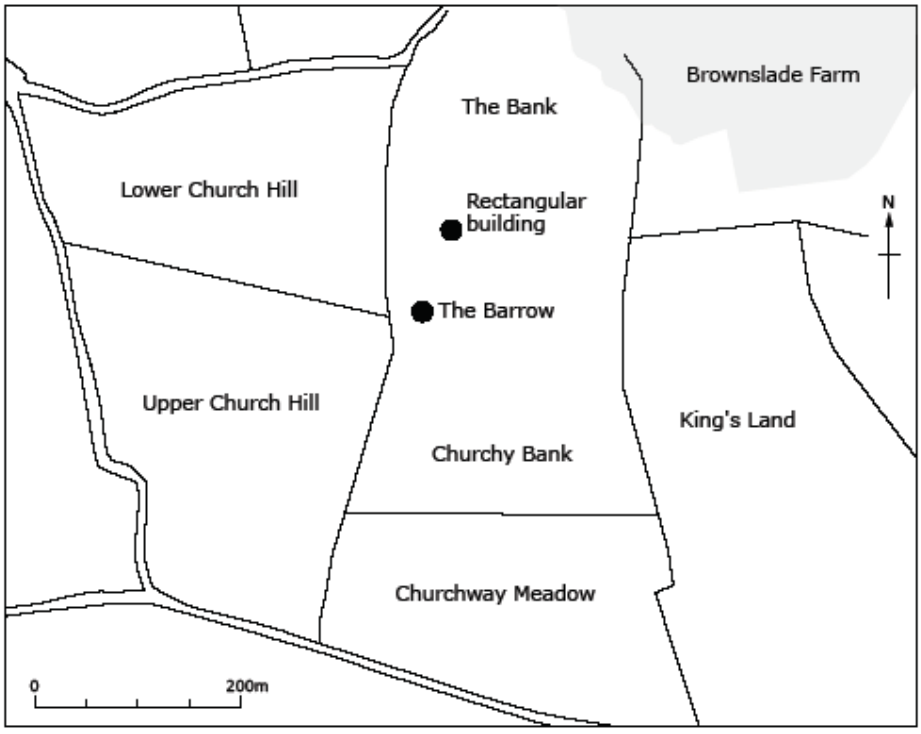


Fig. 2. Showing field names recorded in 1790. In 1838 the tithe map shows that 'Churchy Bank' and 'The Bank' had been united to form 'Bank Piece'.

2. PROJECT OBJECTIVES AND METHODOLOGY

2.1 PROJECT OBJECTIVES

The survey and excavation had important management and research objectives.

2.1.1 Management objectives

Site protection

The relocation of the badger sett, and the erection of badger-proof fencing was designed to protect the scheduled area of the site. Prior to the excavation, the scheduled area did not appear to be disturbed by badgers. However, monitoring showed that there was on-going disturbance from the badger sett and, if unmanaged, it was very likely that the sett would eventually destroy not just the cemetery but also the scheduled area of the site. The relocation of the badger sett gave rise to the need for excavation – once vacated, the sett needed to be destroyed in order to prevent re-colonisation. In most instances, the sett would have been destroyed mechanically. In this case, due to the nationally important archaeological remains, the only appropriate method of sett destruction was by archaeological excavation.

Damage assessment

The excavation provided an opportunity to undertake a damage assessment of the effect of badger activity on archaeological remains. This assessment will be used in the future management of both Brownslade Barrow and other archaeological sites that are similarly affected by badgers and other burrowing animals. The impact of the badgers can be usefully compared with data collected from other sites including Barrow Clump on Salisbury Plain. The information will assist decisions regarding the exclusion of burrowing animals or other management options.

2.1.2 Research objectives

Funerary and burial practice

Brownslade Barrow appears to be a multi-period burial site, used for a period of perhaps three millennia. As such it provided a rare opportunity to examine changes in funerary and ritual practice over time. In particular, the excavation provided a rare opportunity to examine in detail an early Medieval cemetery site. It forms one of 33 known or possible cist grave cemetery sites in Pembrokeshire for this period. However, only a small number have been examined in any detail. The need for good quality excavated evidence from these sites has been identified as one of the stated research priorities for the early Medieval period in southwest Wales '*… the excavation of some substantial cemeteries with preserved skeletal remains…further dating of undeveloped cemeteries… would be desirable.*' (www.cpat.org.uk).

Human remains analysis

The good preservation of the human bone from the site provided a rare opportunity for retrieving information about population structure, diet and disease during the early Medieval period in Pembrokeshire.

Paleaoenvironmental analysis

A detailed programme of palaeoenvironmental analysis was undertaken. Particular attention was paid to any preserved buried soil horizons that may enable an assessment of both prehistoric and early historic environmental conditions.

2.2 FIELDWORK METHODOLOGY

The trench locations and dimensions are shown in Fig. 3. Trenches 1 and 2 were excavated in advance of the main fieldwork season in order to try and establish whether the cemetery extended to the north of the barrow. Trench 3 was located over the main area of the badger sett, and the presumed disturbance to the cemetery. The evaluation trench was excavated in 2003 in order to characterise the rectangular building to the north of the barrow.

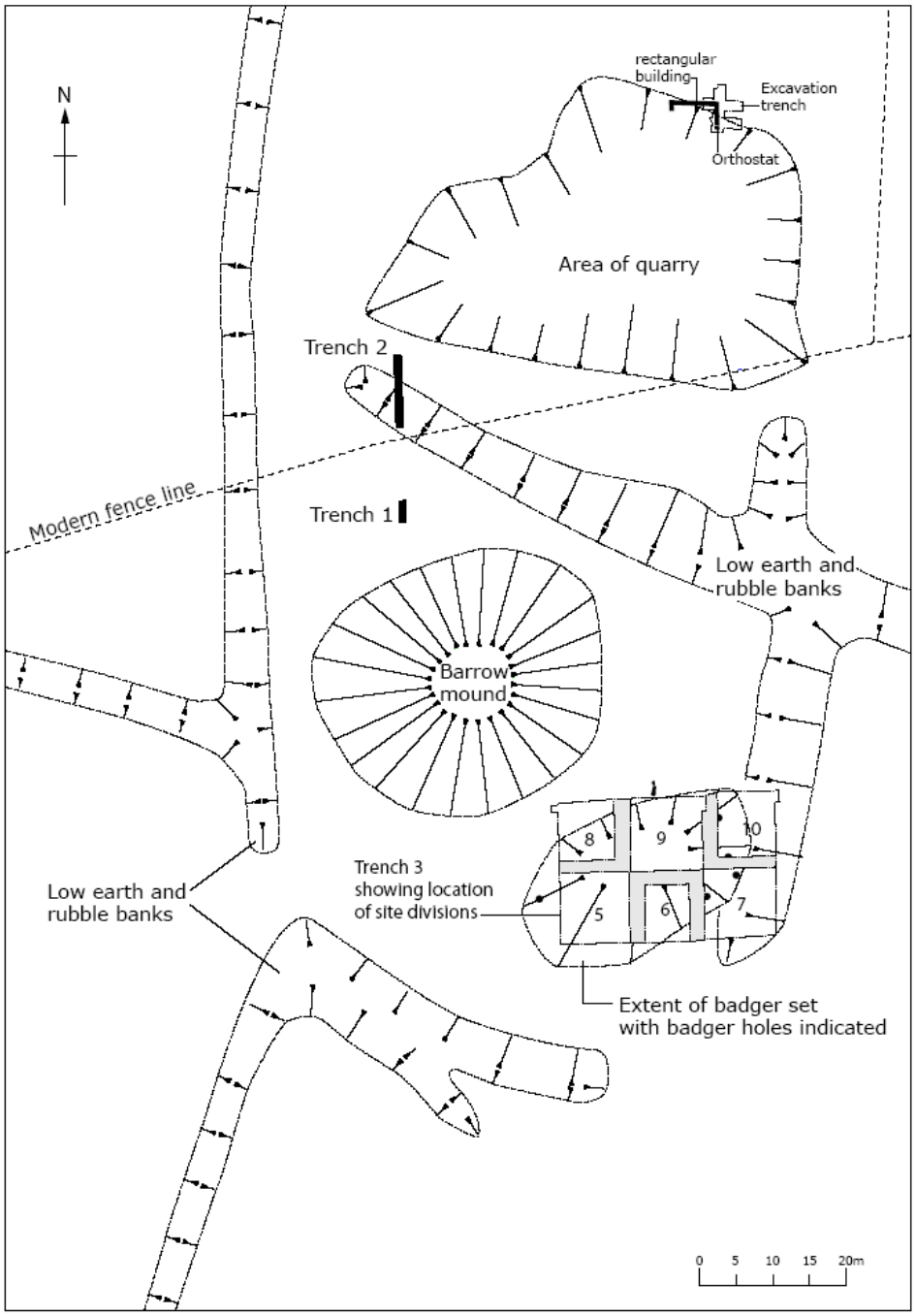


Fig. 3: Brownslade Barrow and the locations of all trenches excavated between 2003 and 2006

2.2.1 The Evaluation Trench (excavated 2003)

This comprised an irregular shaped archaeological test trench measuring 20 square metres in total area. It was located at the east end of the rectangular building, within which - if the building was a chapel – burials and archaeological evidence for liturgical features such as an altar base would be most likely to occur. The trench was positioned just within the inferred east wall of the building, ie. the area least affected by quarry/sand-pit. It was irregular in plan, with extensions beyond the east and north wall lines to test for the presence of extra-mural burial.

The trench was hand-excavated to the level of the top of archaeological deposits which were then hand-cleaned and recorded and archaeological features were sample excavated.

2.2.2 Trench 1 *(3m x 1m, excavated May 2006)*

Trench 1 was located 7m to the north of the barrow and 8.5m south of a modern fence line. It examined part of the interior of a small enclosure formed by the barrow to the south and low linear banks to the north and west. The objective was to determine whether or not the inhumation cemetery was present in the area to the north of the barrow. This trench was fully hand-excavated to the natural subsoil.

2.2.3 Trench 2 *(10m x 1m, excavated May 2006)*

The southern end of Trench 2 was located 1.8m to the north of the modern fence line. It examined the area between a low linear bank and an area of minor quarrying to the north. This trench was fully hand-excavated to the natural subsoil and archaeological features were sample excavated.

2.2.4 Trench 3 *(30m x 20m, excavated August 2006*)

This was located to the southeast of the barrow and focused on the area of the badger sett and the previously observed human remains that had been brought to the surface by badger activity.

A rapid survey was undertaken to locate the Trenches, the position of the badger holes to the south of the barrow and the proposed line of the badger proof fencing. Further human skeletal material had been brought to the surface in the vicinity of the badger holes and this was collected for future examination prior to the excavation.

The area of Trench 3 was initially divided into six areas (numbered Areas 5-10 on Fig. 3) divided by 2m wide baulks. Two hand-dug transects, each 2m wide, were excavated in the southeastern area to test the depth of the badger disturbed topsoil and the character of the underlying stratigraphy. Once this had been established, the remaining badger disturbed topsoil was excavated from all six areas using a JCB mechanical excavator. The surface of the underlying sandy deposits was cleaned using hand tools to define archaeological cuts and features including graves. No graves were encountered cutting the sand in Area 6 and so the opportunity was taken, towards the end of the excavation, to mechanically excavate an area approximately of 6m x 6m to investigate the pre-sand soil formations.

3. EXCAVATION RESULTS

All radiocarbon dates are given in the text as calibrated dates at 2-sigma probability. All the uncalibrated radiocarbon dates from the excavation are available in Table 5.

3.1 THE RECTANGULAR BUILDING – THE EVALUATION TRENCH

A full description of the results of the evaluation of the rectangular building (544) is contained within the archive report (Ludlow 2003). The following is intended as a summary discussion of the results.

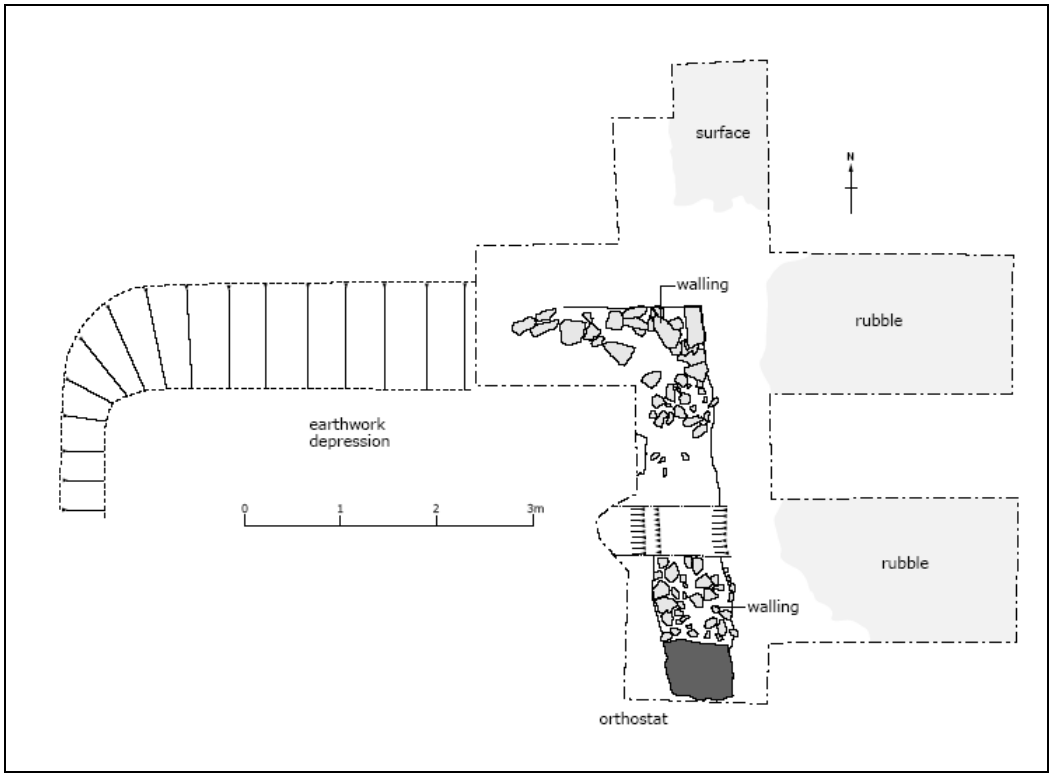


Fig. 4. Composite plan from the 2003 evaluation of the rectangular building, showing the location of the trench and the main phases of activity uncovered.

Building 544, prior to excavation, was represented by a rectangular east-west depression. The southern edge of the building had been truncated by the quarry, but a large orthostat was considered to mark the line of this southern edge. Excavation revealed an extensive spread of limestone rubble, thought to represent collapsed building material. It was thought that parts of the masonry structure had collapsed in a single episode, rather than slow degradation of the building over time.

Some mortared masonry survived, up to six courses in height at the northeast corner, showing the original footprint of the north and east sides of the building. The evaluation produced 101 sherds of pottery, of which 7 were Medieval and 94 post-Medieval. The bulk of these came from the topsoil.

This evaluation was not able to date, with certainty, the building nor to assign a definite function. However it did suggest that the building was in the tradition of

Medieval buildings from this area, in that there was no construction trench. A piece of glazed ridge tile was also recovered, thought to date to the 15th – 16th century, but too large to have been wind-blown and therefore likely to have derived from the immediate location. However, the building dimensions (c. 6 m x 4m, 20ft by 14ft) do not fit in with the description given by Laws in 1882 of a building 16ft by 12ft. Furthermore, no burials were identified during this evaluation, nor were any soilmarks noted which may represent grave-cuts. In an ecclesiastical context, there may have been expected to be burials close to the east and north walls. However, this evaluation only revealed a restricted area of undisturbed natural soil, and it is worth noting that in this very sandy matrix, grave-cuts can be practically invisible as the fill is identical to the surrounding soils.

The evaluation failed to conclusively identify either the date or the function of Building 544, although it is considered likely that it may represent a medieval chapel.

As part of this evaluation, the unstratified human bone recovered from the surface was also considered. Radiocarbon results confirmed an early Medieval date, and the results are discussed in section 3.5.

3.2 THE AREA NORTH OF THE BARROW – TRENCHES 1 AND 2

Although this phase of the excavation indicated activity of medieval date to the north of the barrow there was no evidence for any human skeletal material or any signs of graves. This suggests that the cemetery does not extend into this area. A full description of the results from these two trenches is contained within the archive report (Crane and Hughes 2006). The following is a brief summary discussion of the results. Context numbers, in brackets, refer to the section drawings (Figs. 5 and 6).

The earliest feature identified to the north of the barrow was a pit (109) in the southern corner of Trench 1. This is probably prehistoric, but may be a natural feature. Only further excavation of the area would be likely to resolve this. The earliest find was a single sherd of red ware that appears to be Roman in date. This was in a residual context (the topsoil in Trench 2) and so is not particularly helpful in dating the observed sequence.

An overlying grey brown sandy silt in Trench 1 (107) and reddish brown clay in Trench 2 (117/120) may represent a buried soil. These deposits were cut by a shallow ditch/gully (106) in Trench 1 and a pit (118) containing an L-shaped stone structure (122) in Trench 2. It is possible that the L-shaped structure may be part of an oven/hearth or corn dryer. The features may have been contemporary with an associated sandy material (104 in Trench 1 and 119 in Trench 2). In Trench 2 it seems that some of this sandy material had been banked up (113) to form an enclosure or field boundary fronted by a stone revetment (121). The pottery associated with the overlying sandy deposits and the stone fronted bank strongly suggested that this phase of activity was medieval in date although it is not possible to determine whether it was associated with domestic or funerary activity.

The overlying sandy material (102 in Trench 1 and 114 in Trench 2) clearly accumulated after the earlier, medieval features went out of use. It is not clear if this sand developed as a result of natural processes (eg wind-blown) or whether they were artificial dumps. Sand intrusion of this kind was recorded in the medieval period, for example the 1188 reference to the winter storms of 1171-2, when the beaches of South Wales were denuded of sand (Gerald of Wales 1976, 157). However, in Trench 1 the sandy material contained lenses of shell and animal bone (103) suggesting dumps of midden-type material from possible domestic activity.

Three deposits produced fragments of slag (102, 105, 114). The sample from the ditch fill (105) appears to be iron smelting slag and possibly medieval, whereas the others could be from smithing and are likely to be post-medieval. However this slag could be residual from early Medieval activity; such early metalworking has been identified at South Hook on the north bank of Milford Haven (Crane, forthcoming).

Apart from a single sherd of post-medieval pottery there was no clear evidence for later activity. This is in contrast to the evaluation trench on the "Chapel site" (see above), where most of the pottery was post-medieval.

Plate 1. Trench 2, showing part of a possible oven or corn drier during excavation. The burnt material is contained by a stone surround, within a pit or hollow. Scale = 500mm

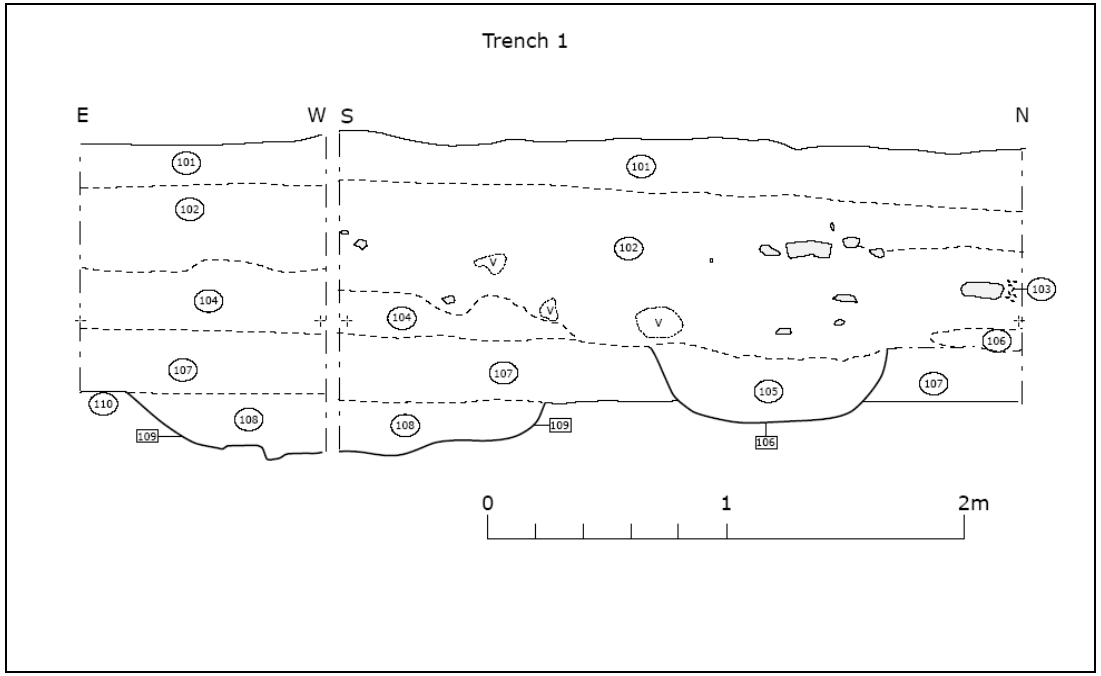
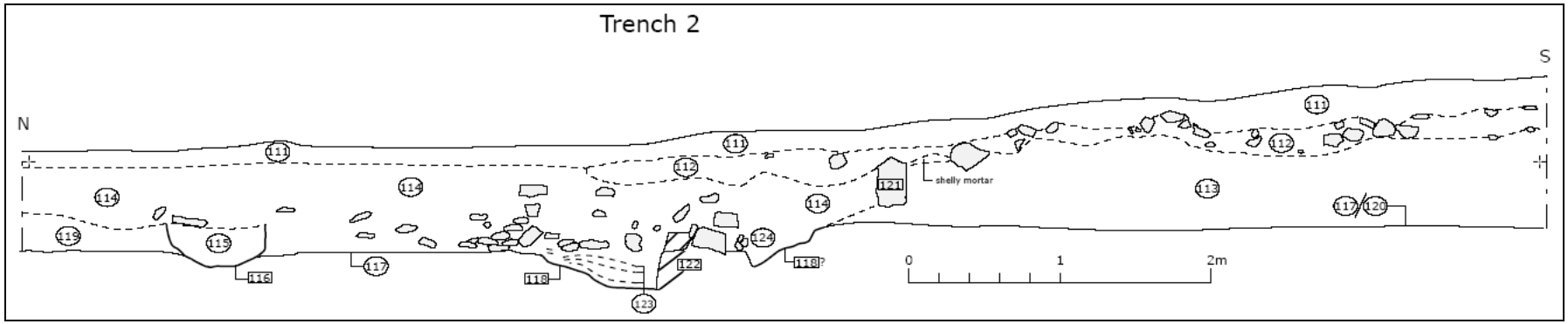


Fig. 5 (above): Section drawings from Trench 1, showing the possible prehistoric pit (109)
Fig. 6 (below): Section drawing from Trench 2. Feature 118 may represent an oven or corn drier.



3.3 THE EARLY PRE-SAND DEPOSITS AND FEATURES IN TRENCH 3

The lowermost deposit encountered (at a depth of 1.25m in Area 6 and 7 and at 1.2m in the southeast corner of Area 5) was a yellow-brown silty clay, interpreted as a pre-sand loess soil (Fig.8, 272). This was cut by two linear features (281 and 289) and two small postholes (279 and 282). The two linear features or gullies were both orientated northwest – southeast and they were both approximately 0.6m wide. However, they had very different fills and profiles. The southwestern gully (Fig.7, 289) had a v-shaped profile and was c. 0.4m deep. It was filled by a dark brown sandy silt (273) with fragments of animal bone including a cow molar. A calibrated radiocarbon date between 700 BC and 400 BC was obtained from this tooth (see Table 1 for full calibrated date ranges). By contrast the northeastern ditch (Fig 7, 281) was very shallow (less than 0.1m deep) and was filled by a yellow brown silty sand (276). The two small circular post-holes had no apparent relationship with the two linear gullies. Small quantities of charred plant grain (emmer wheat, spelt wheat and barley) were recovered from the fill of these features. A sloe stone was recovered from the southwestern gully (289). This may suggest dumped domestic material, both from cultivated crops and wild food resources.

Both the loess and the fill of the southwestern gully were cut by a series of very shallow linear cut marks (278) that were interpreted as criss-crossing cultivation marks possibly created by an ard (Plate 2). These were very closely spaced (0.05m – 0.1m apart and were very narrow and shallow (each was no more than 30mm across and 10mm deep). They were orientated north-south and east-west, a noticeably different alignment to the linear gullies.

The loess, the cut features and the early cultivation marks were overlain by brown sandy silt (271), approximately 0.2m thick that has been interpreted as a buried soil. A further set of criss-crossing cultivation marks (277) were observed cutting the surface of this deposit (Plates 2 and 3). They were rather different in character to the lower set, being wider, deeper and more widely spaced. The northwest-southeast and northeast-southwest orientation also differed from the lower cultivation marks, although this orientation was comparable with the linear gullies (281 and 289).

Very few charred plant remains were recovered from a soil sample collected from the buried soil (271) suggesting a period of stabilization and soil development, followed by cultivation, represented by the cultivation marks (277). Further mixed cereal grains were recovered from a soil sample associated with these plough marks, together with a charred hazelnut shell. This may suggest, once again, mixed domestic waste including both the products of cultivation and the gathering of wild resources. A radiocarbon date from the cereal grain within the cultivation marks (sample 616, cultivation marks 277) gave a date of between Cal BC 350 – 290 and 220 – 50 (see Table 1, Beta 229587).

The buried soil was overlain by a thin layer of yellow brown sand, approximately 0.2m thick and associated with a linear stone feature running southwest-northeast across the site (Plate 4). This structure was recorded in the southeastern part of Area 5 and the northeastern part of Area 9 (290). However, it was not associated with any dating evidence. For the majority of its length it only survived as a single coarse of medium or small angular stones. Only a small section of the feature (in Area 9) provided evidence for two or three layers of drystone coursing suggesting that it might have functioned as a very crudely-built wall. In Area 9, it shared this alignment with a further series of cultivation marks (297) that were similar in character and dimensions to the set cutting the upper buried soil in Area 6 (277).

Sample number	Laboratory number	Context	Date range (calibrated at 2-sigma probability)
56592/273	Beta-228418	Cow tooth from the fill (273) of a gully (289) cutting buried soil (272). Presumed to be contemporary with the first set of cultivation marks (278)	750 – 690 BC, 660 – 640 BC and 590 – 400 BC
56592/616	Beta-229587	Charred plant material from a sample associated with the upper set of cultivation marks (277)	350 – 290 BC and 220 – 50 BC

Table 1: showing calibrated radiocarbon dates obtained from the pre-sand deposits in Trench 3, Areas 5 and 6. All uncalibrated radiocarbon dates from the site are available in Table 5.

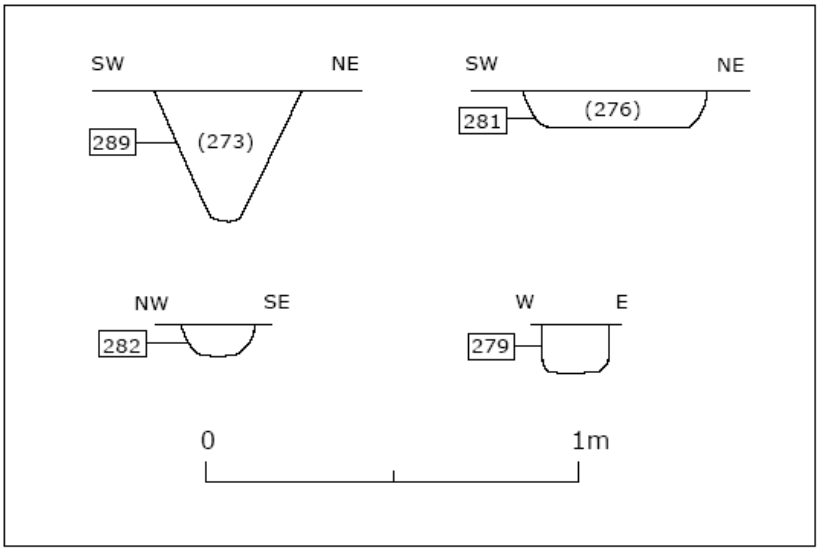


Fig. 7. Showing profiles of features cut into the pre-sand deposit 272. See fig. 8 for their locations. Features 289 and 281 were linear gullies, 282 and 279 appeared to be post-holes.

Plate 2. Showing both sets of cultivation marks (277, right of picture, upper level and 278, left of picture, lower level). The upper set (277) were wider, deeper and more widely spaced. A radiocarbon date of BC 350 – 290 and 220 – 50 was obtained from the context of the upper cultivation marks.

Plate 3. Detail of the criss-crossing cultivation marks (277) under excavation. This level was overlain by a thin layer of blown sand, on which was constructed a crude drystone wall. Further cultivation marks accompanied the wall (see below).

Plate 4. Area 9, looking south. Showing the crude drystone wall (290) which underlies the main phase of sand deposition. Cultivation marks (297) similar to those in the layer underneath (277, see plate 3 above) can be seen to the right of the wall. Scale=500mm.

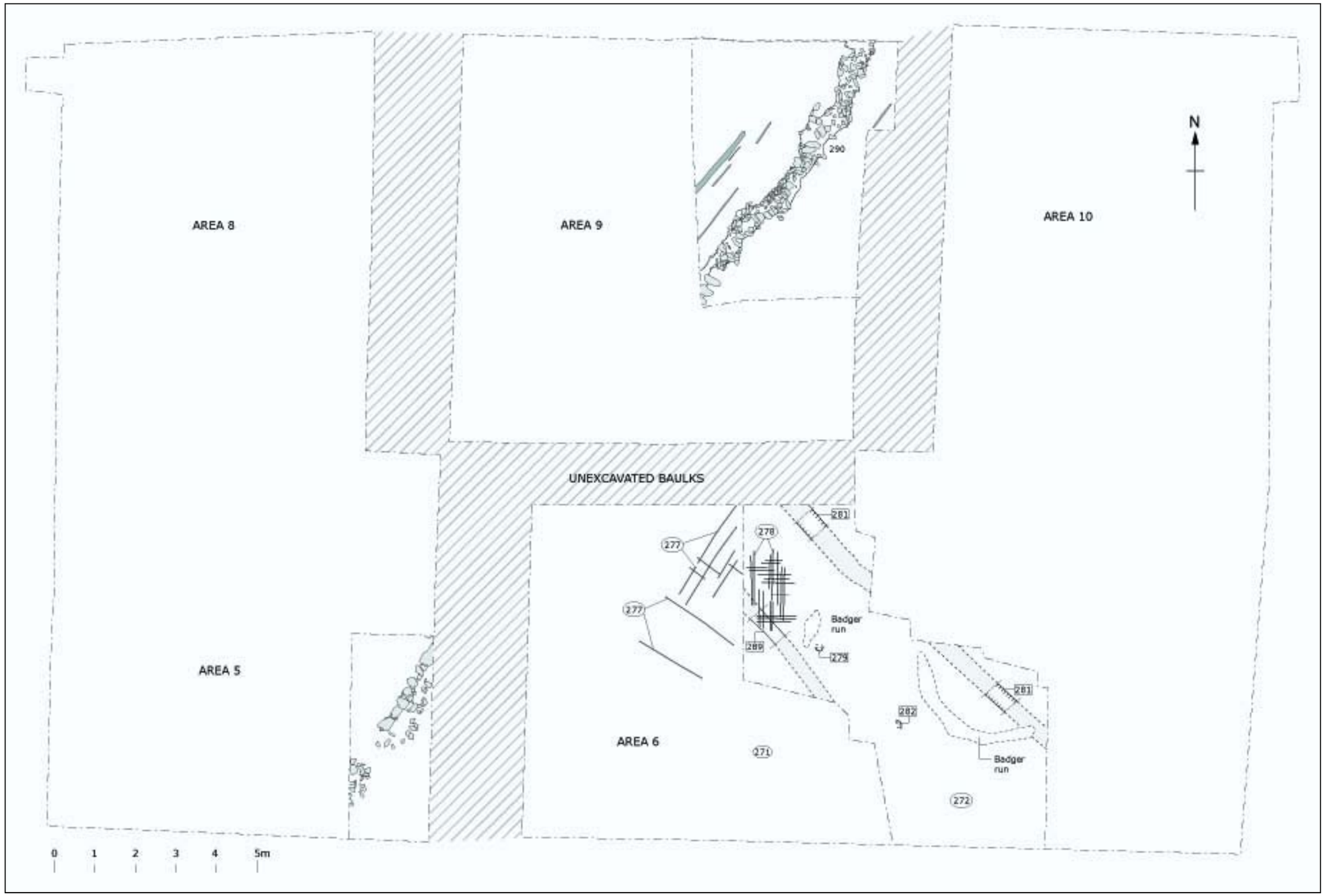


Fig. 8. Plan of the pre-sand deposits and features excavated in Trench 3.

3.4 THE SAND FORMATION IN TRENCH 3

The wall was overlain by a deposit of yellow sand up to 0.7m thick. This build up of sand varied in character between the eastern and western parts of the site. In the western area (Areas 5, 6 and 8) it was more yellow in colour and coarser in composition and resembled the build-up of a sand dune. In the eastern areas (Area 7 and 10) it was siltier and yellow-brown in colour. The sand deposits contained a well-preserved assemblage of land molluscs. Samples were collected from two columns through the sand and underlying deposits in Areas 5 and 6.

Plate 5. South facing section at eastern end of Area 6, showing buried soil at base (272), overlain by a build-up of sand. The was sampled for land molluscs. Scale=1m

The overall sequence suggested by the land molluscs (See Bell, below) is of a calcareous shell-sand which supported a restricted mollusc fauna suggestive of only partly-vegetated sand, and therefore a dune system which was still mobile. It is interesting to note the slight differences in the assemblages between the two columns with differing proportions of various species appearing at different levels. The mollusc report concludes that the sand dune in the different areas of the site developed at different times. It goes on to suggest that this is consistent with the patchy vegetation implied and the way in which sand dunes form and move, perhaps with the dune at the eastern end of the site developing first. However, there is no direct evidence for the date at which this sand dune development occurred. The radiocarbon dates from the underlying buried soil and linear feature provide a *terminus post quem* – that is the dunes must have developed at some point after 200BC. Similarly they must have become at least partially stabilised

by the time the early Medieval cemetery became established – that is before c AD 500. It is also of note that the mollusc samples from the sand contained species that are commonly thought to be early Medieval or medieval introductions. The mollusc report notes for example that *Cochlicella acuta* occurs in early Medieval contexts at Bantham, Devon. We can clearly add Brownslade to the appearance of this species in another potentially early Medieval context.

Subsequently the dunes became stabilised and were vegetated, suggesting a dry grazed grassland environment with very little evidence of scrub or trees. This is supported by the land mollusc evidence with more diverse assemblages consistent with a relatively stable vegetated dune system which was grass covered and grazed. These upper deposits in all areas of the site were heavily disturbed by badger activity including runs and chambers. However, in the western areas these runs and chambers were largely backfilled with sandy soil whereas in the eastern areas they were still voiding. It was clear from this that the badgers had been most recently active in the eastern areas of the site. It was also noticeable that the badger runs had penetrated to a depth of 1.25m in parts of Ares 6 and 7 and had cut into the lowermost 'loess' deposits (272) and associated features (281) (see Fig. 8).

3.5 THE EARLY MEDIEVAL CEMETERY

3.5.1 The evaluation trench

During the 2003 evaluation of the rectangular building, human bone was recovered from surface collections. This was examined by Dr Ros Coard, at the University of Lampeter. The assemblage consisted of 104 pieces of bone, from a minimum of six individuals. Three radiocarbon dates, from three different individuals were obtained. These were dated using standard radiometric dating by Beta Analytic, Florida and the dates are included in Table 4. All uncalibrated radiocarbon dates from this site are available in Table 5.

3.5.2 General character of the cemetery

A total of 32 human burials were recorded cutting the top of the sand. All had, to various degrees, been disturbed by the badgers. Some were almost intact, whereas others were very fragmentary. Twelve of these burials were associated with stone cists, 14 were associated with simple dug graves and 6 were disarticulated remains. Between them these 32 burials were found to contain the skeletal remains of 52 individuals. In addition to the remains contained within the graves, a substantial quantity of disarticulated human skeletal material was also recovered from the overlying badger disturbed topsoil. The general condition of the bones was excellent with good preservation of all parts of the skeleton.

The southeastern and southwestern limits of the cemetery appear to have been identified although no fence-line, bank, wall or other form of boundary demarcates the edge of the burial ground in these areas. The burials clearly continued beyond the edges of the excavation to the north and northwest in the direction of the barrow. It seems likely that the cemetery continues right up to the edge of the barrow and even onto the southeastern side of the monument.

It is difficult to construct an argument for any formal organisation of the burials within the cemetery. There is a suggestion that the burials fell into two clusters or bands. The first is a north-south band extending from the northern part of Area 5 and into Area 8. The second is a northeast-southwest band extending across the southeastern half of Area 9 and the northwest part of Area 10. (See Figs.9 and 10)

There was little clear evidence for intercutting burials, despite the original description by Laws that the burials that he recorded in the late nineteenth century were, '…. stacked like pigeons in a pie…' (Laws 1888). Disarticulated bone was recovered from several of the graves in addition to the principal skeleton. This could be seen as suggestive of residual bones from previous burials being incorporated into new grave cuts. However, given the overall level of badger disturbance on this site, the fragmentary remains are considered more likely to be intrusive material from nearby graves (see discussion on page 27). There is not yet any demonstrable evidence that any of the burials date to the period after the Anglo-Norman conquest of this area of Pembrokeshire. However, this possibility cannot be ruled out and it may be clarified when further radiocarbon dates are obtained.

In addition to the human remains there were a number of animal burials including a pig. However, the date of these burials was uncertain and they may be later than the early Medieval cemetery.

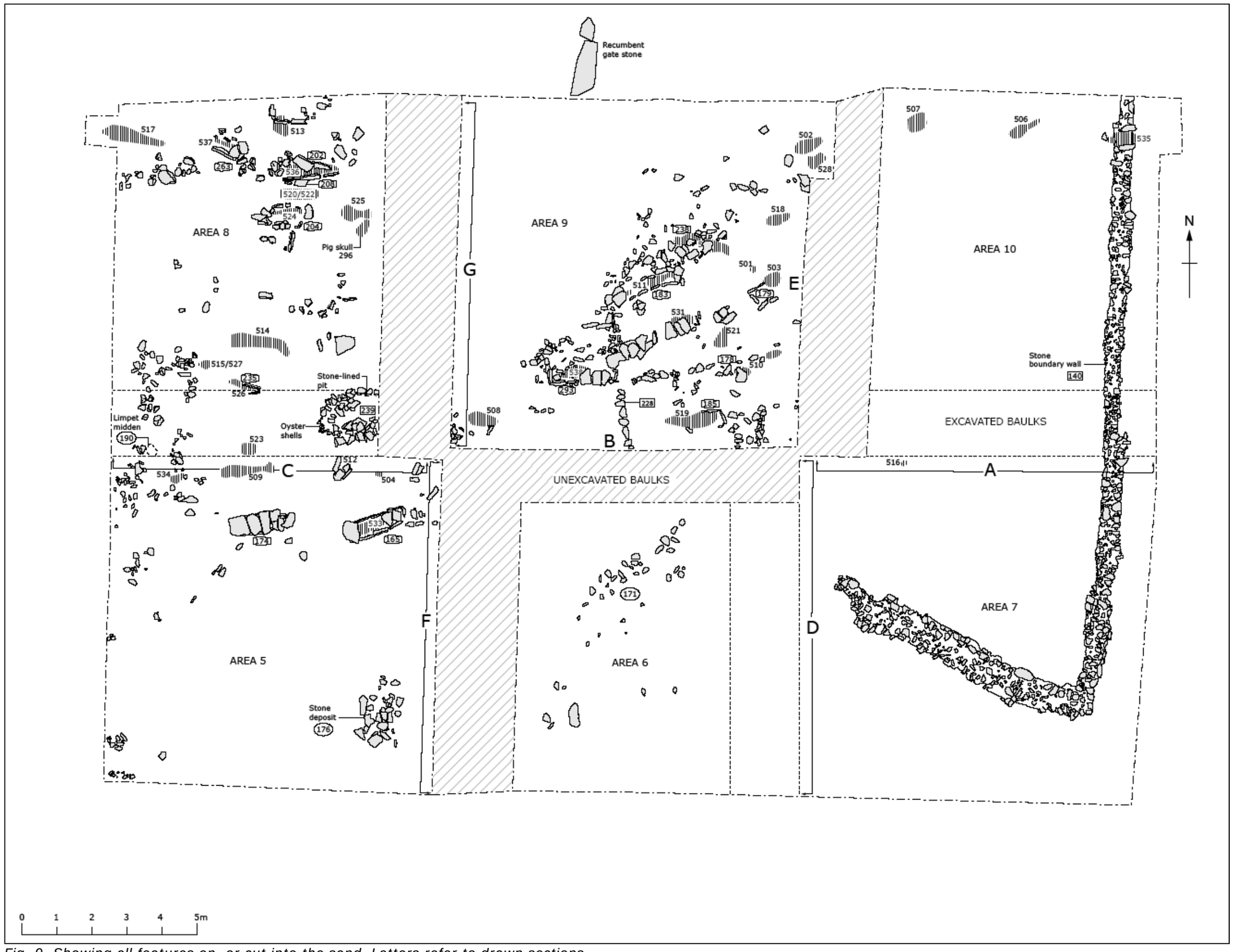


Fig. 9. Showing all features on, or cut into the sand. Letters refer to drawn sections.

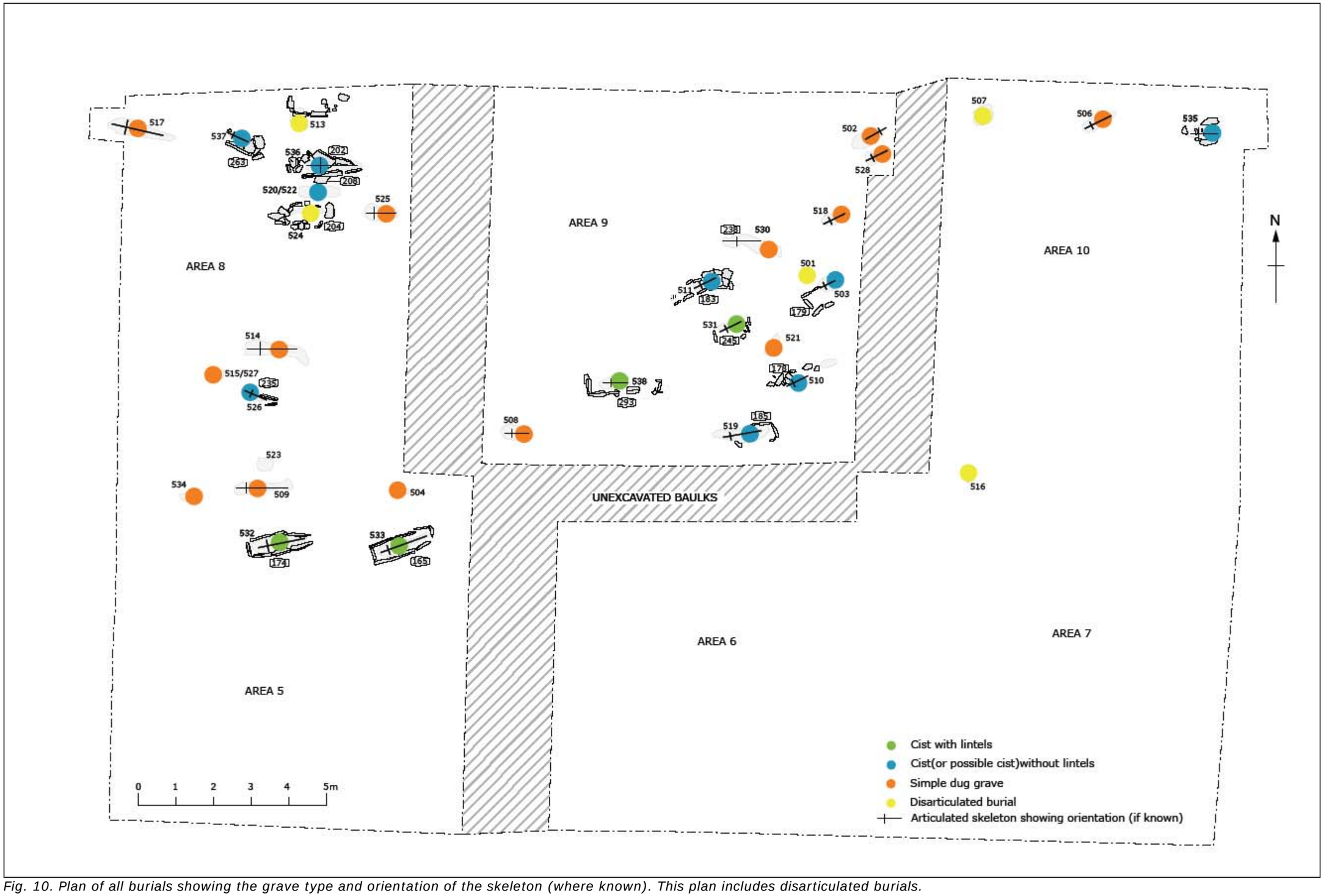


Fig. 10. Plan of all burials showing the grave type and orientation of the skeleton (where known). This plan includes disarticulated burials.

3.5.3 General character of the burials

The majority of the burials had been badly disturbed by badger activity and in many cases only parts of the articulated skeletons survived. In some cases the badger activity had completely removed the upper and/or lower parts of the skeletons. The burials associated with stone cists had generally fared rather better than the simple dug graves. However, even some of the stone cist burials had been undermined by badger runs and had subsequently partly collapsed.

A summary of the character of the 32 recorded burials and 52 identified individuals is provided in Table 2 (a detailed description of each burial is provided in the gazetteer). The 52 individuals include 50 skeletons of varying completeness, (some are almost complete, others very fragmentary) and 2 excavated skulls which were within the cemetery but had been disturbed by the badgers. The unstratified bone from surface collection and from topsoil is not included.
The 30 burials (discounting the two isolated skulls) could be subdivided according to the character of the associated grave as follows;

1. Cists with lintels containing extended inhumations (4)
2. Cists or possible cists without lintels containing extended inhumations (8)
3. Simple dug graves containing extended inhumations (14)
4. Cists without lintels containing disarticulated human bone (2)
5. Pits containing deposits of disarticulated human bone (2)

The distribution of these grave types is illustrated in Figure 10 along with the orientation of the grave if known.

One possible grave-marker (SF 607) was recovered from Area 9 of the site where it was lying amongst loose stones. Although it was not possible to positively identify which grave it was associated with, it was lying immediately above burial 530. Mark Redknapp suggests a 14th century date, but comments that an earlier date cannot be ruled out (see specialist reports, below).

Stone spreads (175 and 176) overlying burials in Area 5 were also found to contain fragments from at least three rotary querns (SFs 602, 603, 604, 606,613) No other objects, such as grave good or coffin furniture, were recovered from the immediate vicinity of any of the burials. The nature of the stone spreads themselves was unclear. It is possible that they represented collapsed and/or flattened mounds or cairns, acting as gravemarkers (Arnold and Davies:2000:185).

Evidence for multiple burials

Many of the graves have skeletal remains from more than one individual. However, on closer inspection of the evidence it is clear that in the majority of these cases only one articulated skeleton is present *in-situ*. The presence of bones of second or third individuals is almost certainly explained by either residual bone material (perhaps re-deposited from earlier graves disturbed by the burial) or intrusive material (bone deriving from nearby graves that has been re-deposited and mixed with the grave fill, in most cases by badger activity). Given the general disturbed character of the site, the later explanation almost certainly explains the presence of the majority of skeletons that are represented by just a few disarticulated fragmentary bones in graves that otherwise contain articulated partial or complete skeletons.

A classic example of this is the cist burial containing the virtually complete articulated skeleton of an adult female (Burial 511, plate 6). This burial also contains bones belonging to a juvenile and a neonate. However, the neonate is represented by just a single bone (a humerus) and the juvenile is represented by just nine fragmentary bones. Given the, relative completeness of the adult female it would be difficult to argue that the bones of the other two individuals are *in situ*. Almost certainly they have entered the grave by other means, probably re-deposited by badgers.

Plate 6 (Left). This burial (511) of an adult female has been disturbed by badgers, resulting in the collapse of the cist at the west end. The skeleton was almost complete, and there was no evidence for a multiple burial, suggesting that the other bones identified during osteo-archaeological analysis had entered the grave as a result of post-depositional processes.

In Table 2 an attempt has been made to distinguish between those skeletons that were clearly articulated (however partial they might be) and are therefore considered to be *in situ* and those skeletons that were only fragmentary and were not identified during the excavation as being articulated. These disarticulated remains are interpreted as not being *in situ*.

There are only a small number of burials that contained evidence for more than one *in-situ* skeleton. Burial 515/527 contained the remains of a near complete infant skeleton and a second partial infant skeleton. Both were clearly recognised during the excavation although there was little evidence for surviving articulation associated with the partial skeleton. Nevertheless, it seems probable that this grave did contain the remains of two infants buried together. Similarly, Burial 510 contained the partial remains of an infant skeleton and the partial remains of a juvenile skeleton. The remains of both skeletons appeared to be articulated even though the grave was heavily disturbed by badgers. There was a suggestion that Burial 536 might have contained the remains of two *in-situ* female skeletons. However, the presence of the second skeleton was only observed during the osteological study. No indication of the presence of two articulated skeletons was recorded during the excavation and the second individual might have been the

result of extensive disturbance noted elsewhere in this part of the site. Burial 524 contained evidence for no fewer than five individuals, including the near complete skeleton of a juvenile, and the partial or fragmentary remains of three other juvenile skeletons along with the partial remains of an adult female skeleton. However, during the excavation there was no indication that any of these skeletons were articulated. It seems possible that all of these remains were re-deposited in a stone-lined pit perhaps in antiquity or perhaps more likely during the 1880s investigation.

Table 2 – Summary of the character of the burials (the gazetteer contains detailed descriptions of each burial)

Burial No	**Area**	**Grave type**	**Orientation**	**Skeleton Number**	**Sex (if known)**	**Maturity**	**Condition of skeleton**	***In-situ* or not**
501	9	Disarticulated		S501	Male	Mature Adult (+50)	Frag (disart.)	No
502	9	Dug grave	ENE-WSW	S502A S502B	Male Male	Mature Adult (50+) Young adult (20-25)	Partial (art.) Partial (disart.)	Yes No
503	9	Cist grave	ENE-WSW	S503	Male	Young Adult	Partial (art.)	Yes
504	5	Dug grave		S504		Neonate (4 weeks)	Partial (art.)	Yes
506	10	Dug grave	ENE-WSW	S506	Male	Middle Adult (30-35)	Near Complete (art.)	Yes
507	10	Disarticulated		S507A S507B	Male Female		Partial (disart.) Frags (disart.)	No No
508	9	Dug grave	E-W	S508	Male	Adult (24-30)	Partial (art.)	Yes
509	5	Dug grave	E-W	S509	Male	Middle Adult (35-45)	Near Complete (art.)	Yes
510	9	?Cist grave	E-W	S510a S510b	Female	Juvenile (11-13) Neonate (40 weeks – 1 week postnatal)	Partial (art.) Partial (art.)	Yes Yes
511	9	Cist grave	ENE-WSW	S511A S511a S511b	Female	Middle Adult (40-45) Juvenile (7-8 weeks) Neonate (2 weeks)	Near complete (art) Frags (disart.) Frag (disart.)	Yes No No
513	8	Disarticulated		S513A S513B S513C	Male Female ?Male	Middle Adult (35-40) Young Adult (20-24)	Partial (disart.) Partial (disart.) Frag (disart.)	No No No
514	8	Dug grave	E-W	S514	Female	Adolescent (13)	Near complete (art.)	Yes
515/527	8	Dug grave		S515 S527		Infant (18-20 months) Infant (1.5-2 years)	Partial (art.) Near complete (art.)	Yes Yes
516	7	Disarticulated		S516	Female	Mature Adult (45+)	Frag (disart.)	No
517	8	Dug grave	ESE-WSW	S517	Male	Mature Adult (55-58)	Near complete (art.)	Yes
518	9	Dug grave	ENE-WSW	S518a S518b		Juvenile (11) Adolescent (14-15 years)	Partial (art.) Frag (disart.)	Yes No
519	9	Cist grave	ENE-WSW	S519	Male	Young Adult (15-20)	Partial (art.)	Yes
520/522	8	?Cist grave/ ?disarticulated		S520 S522A	 Female	Juvenile (c 5 years) Young adult	Frag (disart) Frag (disart.)	No No

				S522a		Juvenile (5.5 years)	Frag (disart.)	No
521	9	Dug grave		S521	Female	Middle Adult (40-45)	Partial (art.)	Yes
524	8	Cist grave with disarticulated bone	E-W	S524A S524a S524b S524c S524d	Female	Adult (30-35) Juvenile (5.5-6) Juvenile (4.5-5) Juvenile (2-3) Juvenile (1.5)	Frag (disart) Near complete (disart) Partial (disart.) Frag (disart) Frag (disart)	No No No No No
525	8	Dug grave	E-W	S525	?Female	Mature Adult (45-50)	Partial (art.)	Yes
526	8	Cist grave	E-W	S526A S526a	?Female	Adult (25-30) Infant (1.5-6)	Frag (disart.) Partial (art.)	No Yes
528	9	Dug grave	ENE-SWS	S528A S528B	Male Female	Young Adult (20-25) Adult	Partial (art) Frag (disart)	Yes No
530	9	Dug grave	E-W	S530A S530a S530b	Male	Middle Adult (35-40) Juvenile (6-8) Juvenile (11)	Near complete (art.) Frag (disart. Frag (disart.	Yes No No
531	9	Cist grave (lintels)	ENE-SWS	S531	Female	Middle (35-40)	Partial (art.)	Yes
532	5	Cist grave (lintels)	ENE-SWS	S532	Male	Mature Adult (50+)	Near complete (art.)	Yes
533	5	Cist grave (lintels)	ENE-SWS	S533	Female	Mature Adult (45-50)	Near complete (art.)	Yes
534	5	Dug grave		S534	Male	Middle Adult (35-45)	Partial (art.)	Yes
535	10	Cist grave	E-W	S535	Female	Young Adult (20-25)	Partial (art.)	Yes
536	8	Cist grave	E-W	S536A S536B	Female Female	Young Adult (18)	Partial (art.) Partial (?disart.)	Yes ?No
537	8	Cist grave	NW-SE	S537		Juvenile / possibly infant	Partial (art.)	Yes
538	9	Cist grave (lintels)	E-W	S538	Female	Adult (25-30)	Near complete (art.)	Yes

Near Complete – 80% or more of skeleton present
Partial - 20-80% of skeleton present
Fragmentary – less than 20% of skeleton present

Table 3 – summary quantifications of grave type by sex/level of maturity

Grave type	**Adult Male**	**Adult Female**	**Adolescent Female**	**Adolescent unsexed**	**Juvenile unsexed**	**Infant unsexed**	**Neonate unsexed**	**No. of graves (some contain skeletal remains of more than one individual)**
Cist grave with lintels	1	3						**4**
Cist grave or probable cist grave without lintels	2	5			3 (one juvenile, in burial 510, identified as female)	1	2	**8**
Dug grave	9	3	1	1	3	2	1	**14**
Disarticulated bone	4	3						**4 ***
Cist grave with disarticulated bone		2			6			**2**
Totals	**16**	**16**	**1**	**1**	**12**	**3**	**3**	**32 graves 52 individuals***

* these figures include the two disarticulated skulls which were excavated at the site, but do not include unstratified bone from surface collection and topsoil.

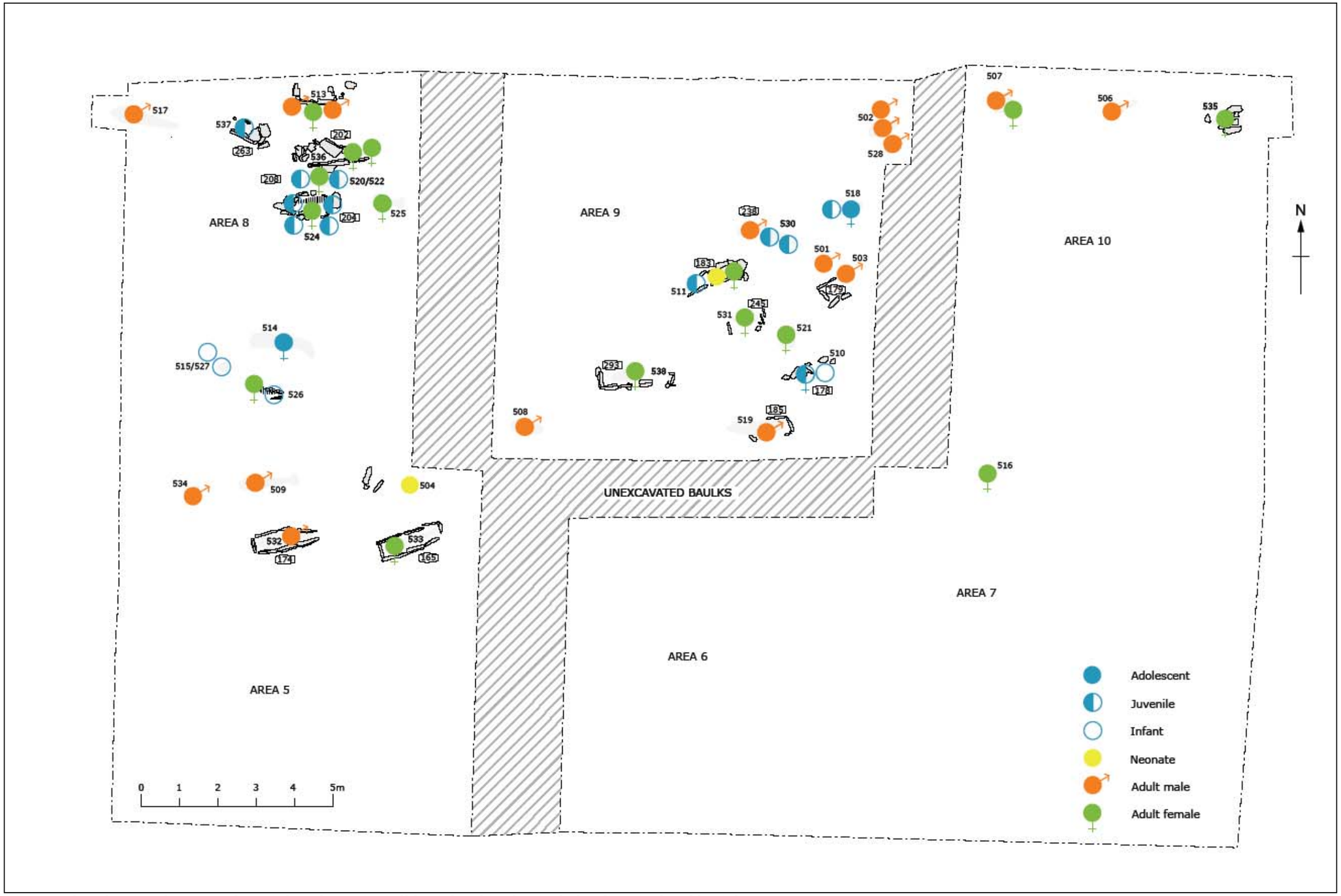


Fig. 11. Plan showing the age and sex (where known) of all burials. This plan includes disarticulated burials.

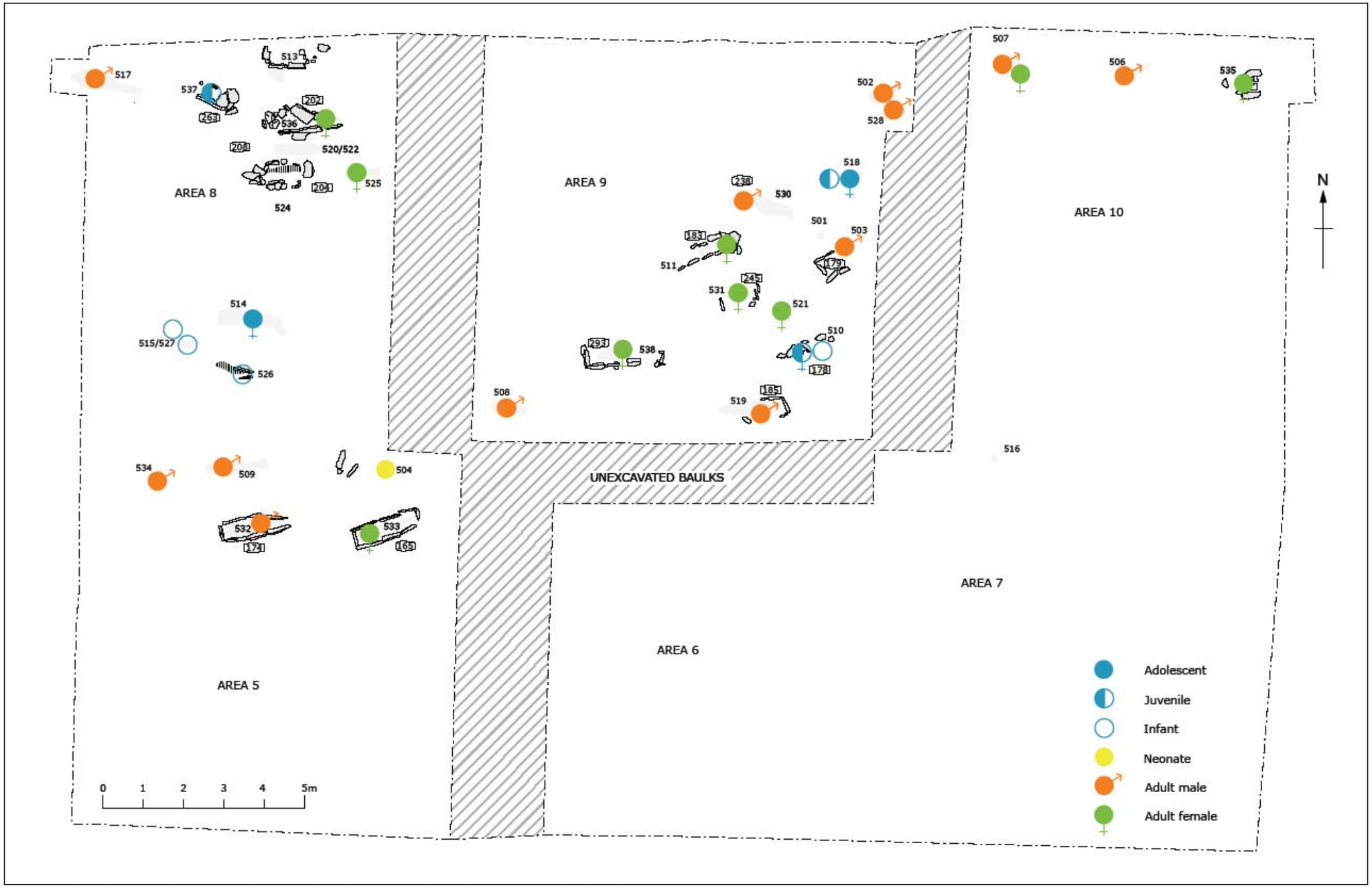


Fig. 12. Plan showing the ages and sexes (where known) of those burials considered to be in situ.

3.5.4 Grave types

Cist graves with lintels and containing extended inhumations

There were only four examples of cist graves with lintels. From such a small sample it is difficult to extract any clear 'pattern' of burial, however it is worth noting that:

- All individuals in these burials were adults, with the youngest being a female aged 25-30. The other individuals were amongst the oldest noted on the site.
- Three of the four individuals were female.

- Only two of the cist burials were well-preserved enough to observe the positions of the hands. However, in both of those cases the hands were placed or crossed on the abdomen.

- Burials 532 and 533 represented two of the oldest individuals on the site (A male of 50+ and a female of 45 –50). They were also the most carefully constructed cists, using fewer, larger stone slabs than many of the others (see Fig. 13).

- Burial 531 is also worthy of interest. Although this burial is badly badger-disturbed, the excavator's notes suggest that charcoal was recovered from the pelvic area and lower abdomen. However, this should, perhaps, be treated with caution as many of the bones exhibited signs of being affected by "natural" (i.e. accidental) post-mortem burning.

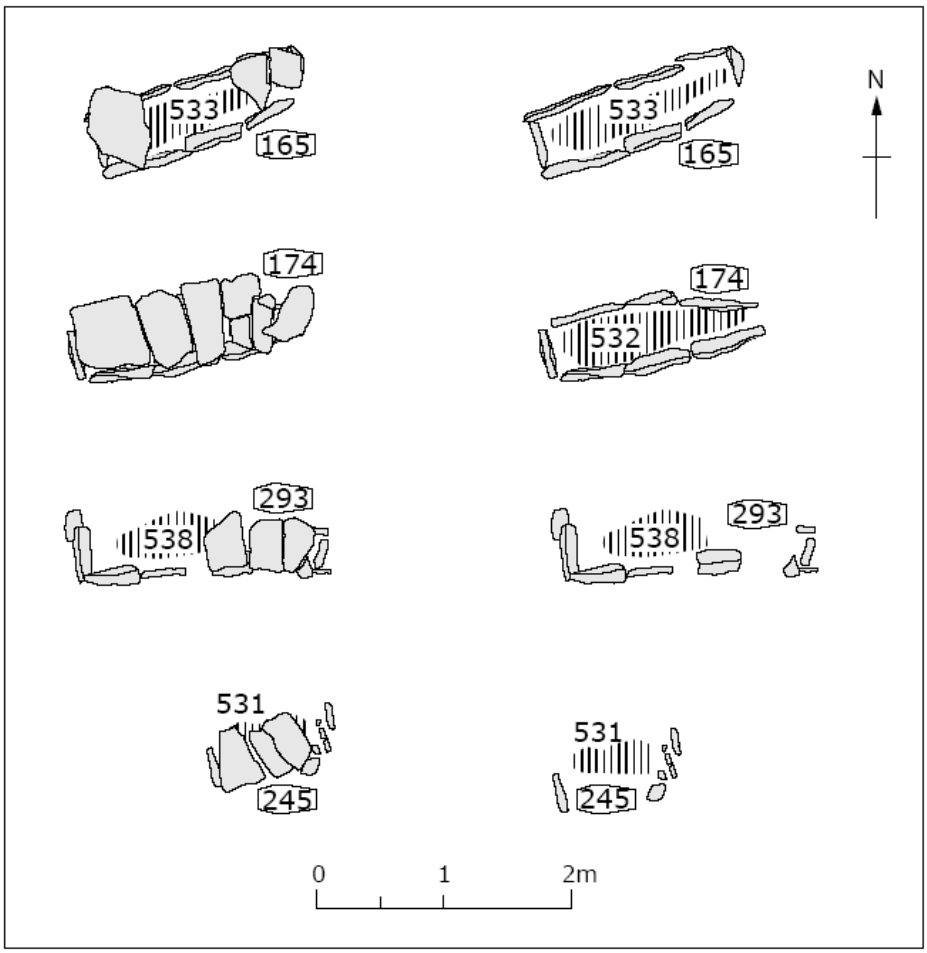


Fig. 13. Plans of the cist graves with lintels, showing them before and after lintels were removed. Of particular note is the careful construction of the cists in burials 533 and 532. Arguably, burial 511 could be included in this group – see discussion below, and plan of cist in Fig. 14.

Cist graves without lintels and containing extended inhumations

Of the eight graves which fell into this category, four contained the remains of more than one individual. However, only one of these was thought to be a 'genuine' multiple burial (Burial 510, discussed further below). The other three contained what may be termed a primary skeleton (at least partially articulated) and fragments of disarticulated bone from other individuals. See above (p.27) for further discussion of this.

This discussion is limited to 'primary' extended inhumations in cists – i.e. those burials which are considered to be *in situ*.

Both sexes are represented:

Male	Female	Infant (unknown sex)	Neonate (unknown sex)	Total number of graves
2	4 *	2	1 *	8

* one of the females and the neonate were buried in a single grave.

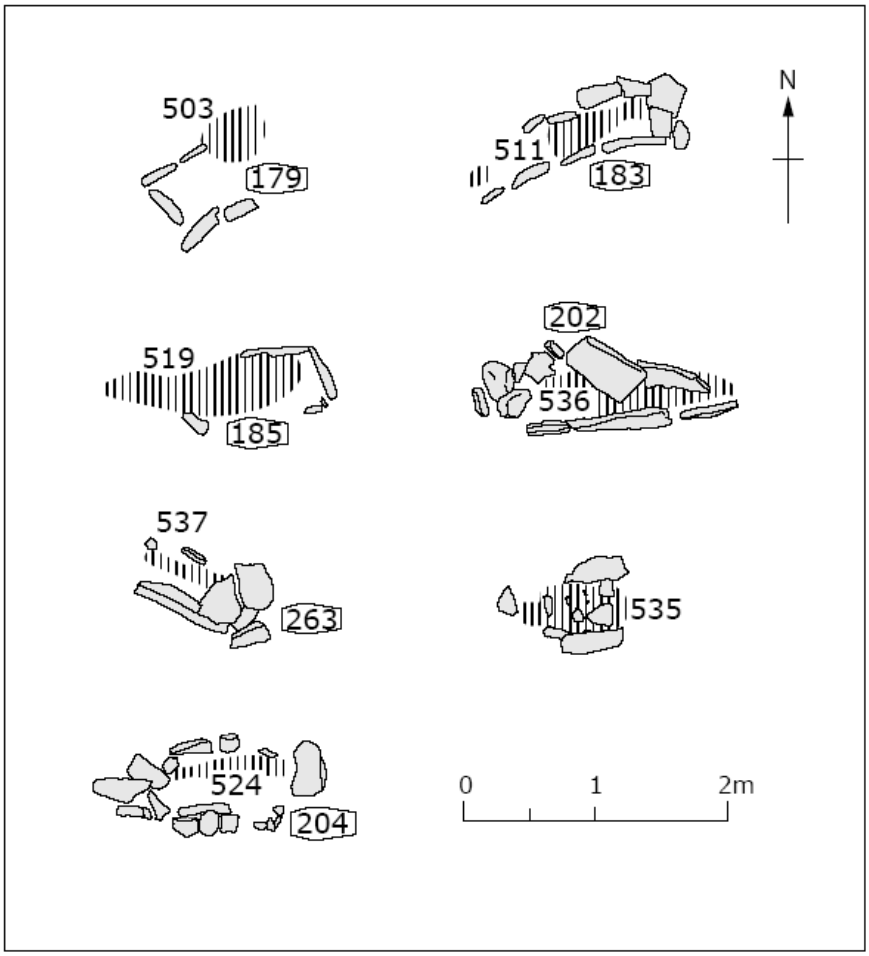


Fig. 14. Plans of the cists without lintels. Of particular note are 511, where the stones at the east end may represent displaced lintels, and 524 which differs markedly in construction and shape from the others. It is suspected that 524 is, in fact, a 'false' cist constructed for the re-deposition of bone retrieved during the 1880s investigation of the site. Cist 510 is not represented in this figure, as the stones were so disturbed by the badgers that they were not planned.

- Burial 510 appeared to be a 'genuine' multiple burial. This comprised the partially articulated remains of a young individual, probably female (aged 11 – 13) and the remains of a neonate (40 weeks – 1 week postnatal). The neonate was not identified during excavation, however, the bones which were recovered included many skeletal elements which would articulate – e.g. the right complete femur, tibia and fibula, metacarpals and carpals. Given the age of the neonate, it is very tempting to consider this as a young mother with an unborn or stillborn baby. However, badger activity in the area was such that much of the torso of the female had been heavily disturbed or lost, making it impossible to assess whether the baby was *in utero*.

- Many of these burials were too disturbed to identify the posture of the burials beyond noting that all bar one were extended and approximately E-W. Hands were observed crossed over the chest (535) and over the lower body (536A) and both the juvenile (527) and the adult female (511) had their feet crossed.

- the age structure of this group of individuals is also of interest. With the exception of burial 511, who was a female aged 40 – 45, all the others have ages estimated as below 25. It is worth noting, however, that the cist for burial 511 was partially disturbed. Two large stones at either end of the cist may be the remnants of lintels although this is inconclusive. The photographs and drawings, too, are inconclusive, although the flat stones at the head and foot may represent lintel stones (see plate 6, and Fig.14, above). If this burial is removed from this category (extended inhumations in cists without lintels) and placed into the category of cists with lintels, the age distributions are very pronounced, with younger individuals (under 25) buried in open cists and older individuals (over 25) in closed cists, or cists with lintels (see Fig. 15, below).

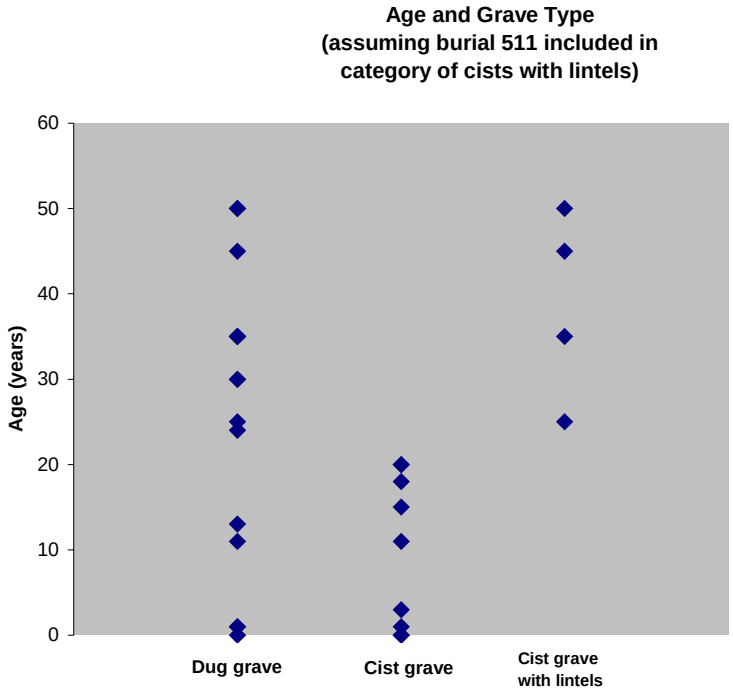


Fig. 15: chart showing the distribution of ages buried in different types of grave. For this chart, the lowest age estimate of an individual has been used.

- Burial 526a is of particular note, as it was the only instance of a burial where the individual was laid on their side with legs together and bent. Interestingly, the skeletal analysis of this individual raised the possibility that they were affected by a form of short-limbed dwarfism (further details in the gazetteer, and see Plate 7). If this is the case, it is possible that the burial posture is a result of this. The group "Achondroplasia UK" (a group for people affected by achondroplasia, the most common form of short-limbed dwarfism, http://www.achondroplasia.co.uk/) notes that, amongst other complications, infants and young children affected by achondroplasia often display external rotation of the hips and/or bowing of the legs which sometimes results in an inability to walk. These problems with the lower limbs may be more pronounced were a child to be laid on its back. Individuals affected by achondroplasia can also develop curvature of the lower spine. It could be argued that the burial posture has been specifically selected to minimise the appearance of symptoms associated with short-limbed dwarfism.

Plate 7. Burial 526a, a juvenile buried on their side.

Simple dug graves

14 dug graves were identified, containing the remains of at least 20 individuals. However, as with the cist graves, only one of these burials is thought to be a 'genuine' multiple burial. The others are probably the result of either residual skeletal material or badger disturbance. As before, this discussion will be restricted to those individuals who were thought to remain *in situ*.

Male	Female	Infant / Juvenile (unknown sex)	Neonate (unknown sex)
8	3	3 *	1

* Two infants (515 and 527) were buried together, one aged 18-20 months and one aged 1.5–2yrs.

- A wide span of ages was recorded amongst those individuals who were buried in simple dug graves (See Fig. 15). However, adult males occurred most frequently and with the greatest degree of surety in the determination of sex. Of the three females present, one (521) is very disturbed and described as a 'probably female' adult, one (514) is the near-complete skeleton of an individual around 13 years old, and the third is an adult female represented only by parts of the upper torso and arms.

- With one exception, where they had survived well enough to be seen, the posture of all of these burials were similar, extended on their backs with heads to west. Some had their feet crossed, and some had their arms across their chest. The one exception was burial 502A, a male of age 50+. He was the only individual at Brownslade who was buried with his head to the east.

- The posture of burial 530 is also notable. The right leg is bent and the whole skeleton gives the appearance of lying slightly on the right hand side, rather than flat on the back. The skull also is lying on its right hand side (see plate 8). It is possible that this is the result of badger activity displacing the right leg. However the bones are still clearly articulated, and there is little badger disturbance in the grave as a whole. This grave is also the only one which may be associated with a grave marker (SF 607).

Plate 8. Burial 530. The posture is different from the other, carefully extended, burials on the site. This may be the result of badger disturbance, but the bones are still articulated in the right leg.

Cist graves without lintels and containing disarticulated human bone

There are two graves which fall into this category, and contain a minimum of eight individuals. Both are very close to each other, in Aea 8, and are similar in that they contain the disarticulated remains of a number of individuals.

- Burial 524 is of particular interest as it contains a virtually complete juvenile skeleton as well as a partial juvenile and a partial adult. However the excavation records indicate that this was regarded as a disarticulated burial within a crudely built cist; i.e. even the most complete of the skeletons was not identified during excavation. This implies that the bones had been re-deposited and therefore were not articulated when excavated. In addition, the cist was not as well constructed as others recorded on the site, being made of a large number of small stones and only roughly shaped. Overall, this burial is noticeably different from others at Brownslade, and it may represent the re-deposition of bones uncovered during Laws' antiquarian investigations in the 1880s (see Fig.14 above).

- Burials 520 and 522 were very fragmentary, and were identified within a possible cist represented by a small number of angular stones. Again, the remains are disarticulated, and may represent either antiquarian re-deposition of excavated material or be the result of badger disturbance. The two were subsequently considered to have been buried in one event and are therefore considered one burial.

- Neither of these 'cists' containing disarticulated bones are considered to be *in situ* burials. However, radiocarbon dates of Cal AD 540 – 650 and 620 - 690

obtained from burials in the grave (see Tables 4 and 5) show that the material belongs to the main phase of cemetery use.

Deposits of disarticulated human bone

There are two deposits of mixed, disarticulated human bone (507 and 513).

- Both contain multiple individuals. 507 contains the remains of two adults, and 513 the remains of three adults.

- In both cases, the deposits contain disarticulated bones which *could* articulate – e.g. a virtually complete vertebral column. The excavator's notes from both burials suggest post-depositional disturbance, though in 507 there is also a suggestion of badger disturbance.

- The significance of these deposits of disarticulated human bone is not clear, as the origins of the disturbance is unclear. It is possible that they should be treated as individual cases, rather than being placed in the same category.

- In the case of burial 513, there was a suggestion that the burial was disturbed by the later insertion of a cist. Re-burial was suggested by the fact that the long-bones, although broken, were generally laid in the same directions, and the bone was generally very contained, rather than being spread throughout a wider area. If this is so, this is the only example of inter-cutting graves observed at Brownslade. However, given the location of this deposit, near to the Barrow and close to burial 524 (discussed above), it is also possible that the disturbance is the result of antiquarian investigation and re-burial.

-Burial 507 may be different. It is located in the eastern part of the cemetery, in one of the areas which had been most disturbed by the badgers. Both individuals are represented only by bone fragments, though there is substantially more of 507A than 507B. There is no other evidence for any antiquarian investigation in this area. There were few, if any, articulated bones and the area was almost totally badger disturbed. It is possible that this deposit represents part of one exceedingly disturbed burial (507A) with residual/disturbed bone from another (507B).

3.5.5 Radiocarbon dates from burial contexts

Sample No.	Laboratory No.	Context	Date (calibrated at 2 –sigma probability)
AMS dates from excavation in August 2007			
503	Beta-228419	Burial in cist grave 503	Cal AD 880 – 1020
509	Beta-228420	Burial in dug grave 509	Cal AD 660 – 780
510a	Beta-228421	Burial in cist grave 510. The bone is from the juvenile (this grave has a juvenile and neonate buried together)	Cal AD 720 – 740 AND Cal AD 770 – 970
524	Beta-228422	Burial in 'cist' 524. The bone is from the adult female, and may be re-deposited as a result of the 1880s excavation	Cal AD 540 – 650
524a	Beta-228423	As above, but bone from one of the infants.	Cal AD 620 – 690
532	Beta-228424	Burial in cist grave with lintels	Cal AD 650 – 780
535	Beta-228425	Burial in cist grave	Cal AD 640 – 710 AND AD 750 – 760
Radiometric dates from bone collected during evaluation, 2003.			
004 (femur)	Beta-179378	Surface collection	Cal AD 660 – 910 AND Cal AD 920 – 960
022 (humerus)	Beta-179379	Surface collection	Cal AD 650 – 880
040 – 042 (re-joined scapulae fragments)	Beta-170380	Surface collection	Cal AD 450 – 660

Table 4. Showing the calibrated radiocarbon dates obtained from burials in the cemetery and from bone collected during the 2003 evaluation. All uncalibrated radiocarbon dates from Brownslade are available in table 5.

3.5.6 Grave alignment

All of the graves were aligned either directly east-west or a few degrees off this east-west alignment (eastsoutheast – westnorthwest or eastnortheast – westsouthwest). Three were orientated eastsoutheast – westnorthwest and two of these (517 and 537) were located in the northwest corner of Area 8. With a couple of exceptions the majority of the east-west graves were in the western part of the site (Areas 5 and 8). With a couple of exceptions (the two well-preserved cist graves with lintels (532 and 533) all of the eastnortheast – westsouthwest graves were located in the eastern part of the cemetery (in Areas 9 and 10). This apparent clustering of graves with a similar alignment perhaps suggests that each successive internment might, to some extent, be respecting the alignment of those graves already present in a specific area. This, in turn,

could suggest the presence of some form of grave marker – perhaps a mound or stone cairn?

3.5.7 Summary of skeletal remains

What follows is only an outline discussion, attempting to pick up the main patterns and points of interest. For full details, see the specialist human bone report.

Age/maturity

The individuals within this cemetery span a range from neonate to adults of 50+. Although all ages are represented, there appears to be a pattern of high mortality in the juvenile age group (between 3 and 12 years). This mortality may be identified with a specific period of stress – perhaps associated with diet and/or moving to a more physical or harsh lifestyle. Further work on the skeletal remains will help to clarify this.

It is of interest that age appears to be one of the defining factors in the way in which the body is treated after death (see discussion of cist graves with and without lintels, above), however, it is certainly not the only defining factor. There appears to be no correlation between age and the area of the cemetery in which an individual is buried. It must be remembered, though, that the excavated area does not extend across the full site of the cemetery – indeed, the full extent is not known. What may be of note is that the re-deposited bone, in the northwest area nearest to the barrow (burial 524), contains a large amount of infant and juvenile bone. If this is indeed the result of antiquarian investigations, it is possible that this earlier investigation had focused on an area where there was a high proportion of child burial. Further investigation would be needed to clarify this.

Sex

Males and females are more-or-less evenly represented within the population excavated at Brownslade. A higher mortality rate was observed amongst females between 18 and 45 than in their male counterparts. It is suggested that this could be due to the stress – and possible complications – of childbearing.

In terms of patterning within the cemetery, it is difficult to identify any kind of clear 'male' and 'female' zones. There is a group of female burials in the centre of the excavated area (Area 9) with burials of males around the periphery, but this pattern is relatively weak, and there are outlying burials (both male and female) which do not 'fit'. It is difficult to say with confidence whether or not an individual's sex influences their positioning within the excavated area of the cemetery.

Furthermore, it must be remembered that the skeletons were sexed with different degrees of confidence when different parts of the skeleton were represented. Details of the methods used to sex each skeleton are given within the gazetteer.

Posture

As may be expected in a cemetery of this period, the majority of the articulated burials at Brownslade were extended, on their backs and had their heads to the west. A variety of positions of hands and feet were observed – some with feet crossed, some with arms crossed across their chests and some with their hands

placed on the pelvis. However, the high degree of disturbance meant that in many cases the details of placement of hands and feet had been lost. There were three exceptions to this overall pattern.

1. Burial 512 - This was identified during excavation as an infant burial, and appeared to be a crouched burial, laid on its side.

2. Burial 526a -This is the burial of an infant, placed on its side. It is possible that this child was affected by a form of short-limbed dwarfism, which influenced the burial posture (see above).

3. Burial 502A - This is the burial of one of the oldest adult males (aged 50+) who was laid on his back but with his head to the east. It is difficult to discuss the significance of this one individual, although, clearly, his burial orientation was unusual. There appear to be few, if any, theories covering this placement in the early Medieval period, but in medieval cemeteries reversed burials occasionally occur. Gilchrist and Sloane comment that:

> *A common misconception is that medieval burials of priests were placed with their heads at the eastern end of the grave, so that at the Day of Judgement, they might rise up facing their flock buried before them in the church and cemetery. In fact, this seems to have been very rare indeed and to date no medieval burials with chalices, patens or other priestly items have been found arranged in this manner. This misconception probably has its roots in the early 17th century, when the Catholic ritual was altered. (Gilchrist and Sloane, 2005,152).*

They go on to suggest that, in fact, medieval reversed burials are the result of a number of different factors. These may include burials carried out after the dissolution of the religious house and abandonment of the cemetery or illegal burials with no controlling tradition or custom. However, at Brownslade, the reversed burial is so closely integrated into the cemetery, and spatially very close to another, that it is considered unlikely that these are explanations for it. Finally, Gilchrist and Sloane suggest that there may be links between medieval reversed burials and penance or punishment – perhaps designed to disorientate the soul on the Day of Judgement (*ibid*, 153). It is unknown whether this may be the case at Brownslade – currently, it is only possible to speculate.

3.5.8 Summary: the significance of the cemetery phase

The results presented above are only a preliminary discussion of the cemetery – a full contextual discussion will be forthcoming. What is clear, however, is that the exceptional preservation of the skeletal remains has enabled a large amount of information to be obtained. This is of national importance – it is one of very few early Medieval assemblages of this size in Wales.

This initial examination has hinted at a few aspects of people's attitudes towards the dead – for example, that age at death was important, arguably with some older members of the population being treated with great respect. There are also hints that the cemetery would have had grave markers, but that there was little or no formal organisation of the burials. They may be 'clustered' in certain areas – for example, there appears to be a gap between Areas 9 and 8 where there were no burials. However, there was no evidence for any clear structural boundary to the cemetery, nor for structural divisions within it.

The cemetery was placed into a landscape of partially vegetated sand dunes which would, presumably, have still been semi-mobile. Although possibly grazed, the dunes were not cultivated during this period, and this raises questions about how the landscape of burial was regarded and its relationship with the domestic settlements which must have been present. Were they, for example, burying in 'wild' places or in 'waste' ground? The presence of a probable prehistoric barrow may suggest either a respect for what was perceived as a tradition of sanctity, or, perhaps, an attempt to Christianise a pagan place. There are interesting parallels and differences to be explored from other, very local, sites in Pembrokeshire (e.g. Kilpaison, Angle and St Ishmaels) which may shed light on some of these questions.

The discovery of possible evidence for metal-working and grain-drying to the north of the barrow (Trenches 1 and 2) suggests that some forms of domestic/industrial activities were occurring close to the cemetery, but the dates for these are not confirmed.

3.6 LATER FEATURES IN TRENCH 3

The most northeasterly of the burials (in the northeastern corner of Area 10) was overlain by a field boundary wall (140, Plates 9 and 10). This drystone structure survived to a height of 0.5m and was 0.5m wide. Its eastern side was aligned north-south and lay just inside the eastern edge of the excavation (see Fig. 16). In Area 7 it returned at an acute angle and extended into the central area of the excavation, becoming progressively more dilapidated. In the central eastern area of the site, the wall had been severely undermined by the ongoing badger activity and was little more than a pile of rubble. It appeared to fade-out all together in the northwestern part of Area 7 and there was little evidence of it in the western part of Area 9.

It is suggested that the wall forms part of a medieval or post-medieval boundary system post-dating the cemetery. It appears to link-up with a series of low earth and rubble banks visible in the area around the barrow (Fig. 2). A section through part of one of these banks was examined in Trench 2 where it appeared to be designed to prevent the encroachment of sand into an area of apparent medieval activity.

Further evidence for medieval activity in the vicinity of the excavation came from numerous fragments of green-glazed medieval pottery and animal bone recovered from the badger-disturbed topsoil and a stone spread overlying the burials. The quality of the pottery and a fragment of glazed ridge tile suggest the presence of a high-status building in the vicinity. However, there was no clear evidence for any buildings, structures or associated features within the area of the excavation itself, apart from a single pit containing a substantial deposit of limpet shells. Therefore, it seems that the focus for this medieval activity lay outside of the immediate excavation area. Fragments of iron slag from the topsoil also suggest small-scale industrial activity in the area. It is uncertain whether this material is early Medieval or later in date.

The topsoil in Trench 3 produced an assemblage of pottery which was predominantly medieval in date. By contrast, the evaluation trench, excavated 2003, recovered mostly post-medieval pottery, perhaps reflecting a shift in activity and land-use.

Plates 9 (above) and 10 (below): Burial overlain by later field wall. The field wall had protected the upper part of the body, but the legs were truncated by burrows. Scales = 500mm

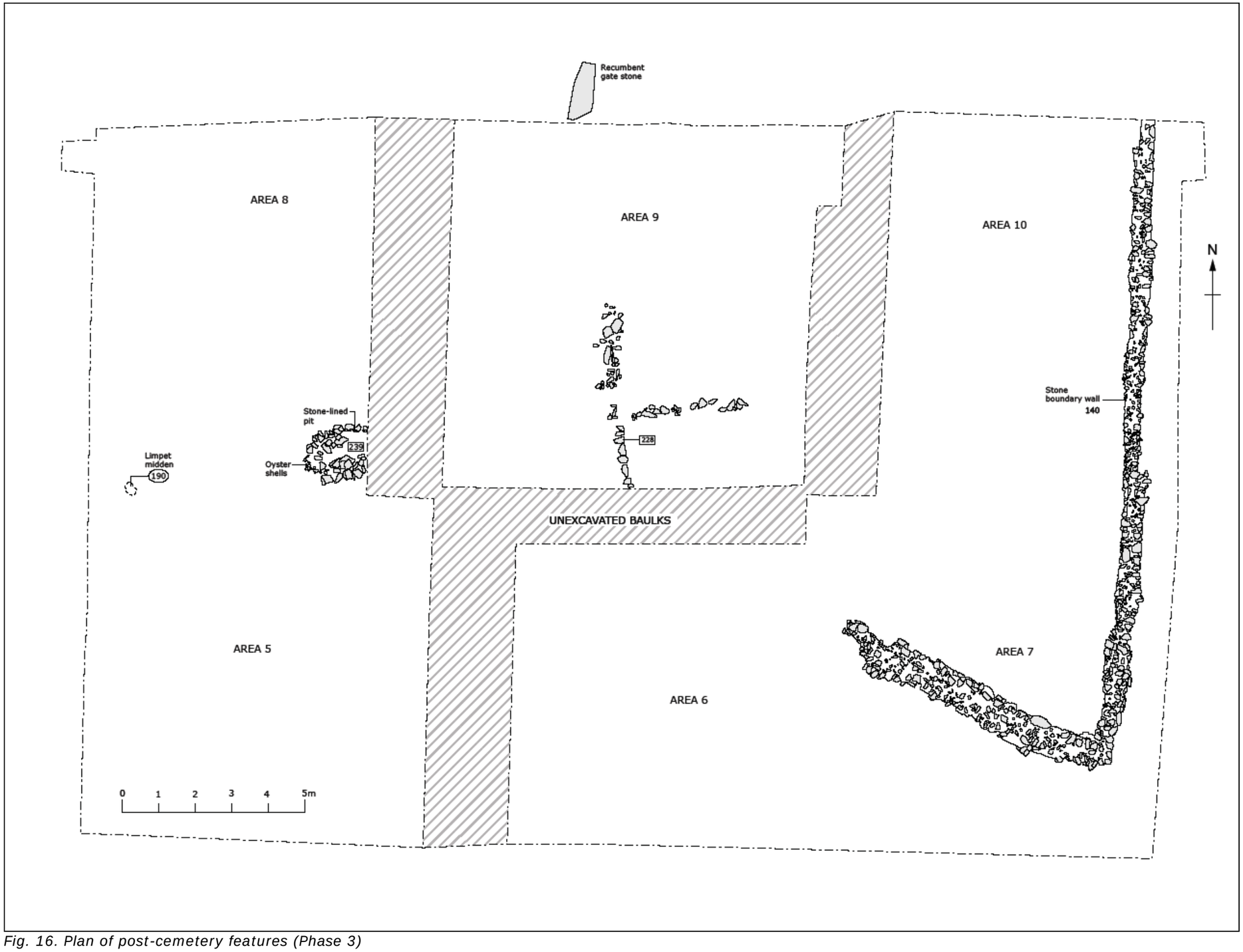


Fig. 16. Plan of post-cemetery features (Phase 3)

3.7 THE BADGER SETT

One of the important objectives of this excavation was to evaluate the impacts of the badger sett on the archaeological site, and to assess what the implications of this information may be for the management of other earthwork sites which are affected by active badger setts and burrowing animals.

3.7.1 Impacts

In essence, the badgers affected this site in three ways:
1. Immediate disturbance of the burials
2. Displacement of material / mixing of stratigraphy
3. Blurring of chronological and spatial resolution

Immediate disturbance of the burials

Despite the exceptional bone preservation, not one of the burials observed was completely free from badger disturbance. The extent of the damage varied widely, from almost complete displacement of the bones to minimal disturbance. It was not only the skeletons which were affected – badger runs had also displaced cist stones in many cases, displaying the great strength which these animals have. In terms of understanding the site, the disturbance of burials had various effects. Firstly it meant that, in many cases, details of posture could not be observed. It was sometimes unclear whether a burial was *in situ*, since there was so much disarticulated bone scattered around the site. Finally, the details of cist construction were frequently lost due to the disturbance.

Plate 11 (left) Shows one of the burials which has been heavily disturbed by badgers. A badger run has cut through the middle of this grave, displacing the stones of the cist and removing much of the torso of the skeleton. Compare with Plate 12 (right) which shows an almost intact burial. Here, the badger damage is restricted to the feet, which have been lost, along with the footstone of the cist.

Displacement of material / mixing of stratigraphy

Large volumes of material had been lost or moved due to the badger runs. In the western end of the site, most of the badger runs had been infilled, but in the eastern end the runs were largely open suggesting that the badger sett had moved from west to east. They penetrated to depths of over 1m, and were, in some cases, almost 1m in width. As well as the defined runs themselves, in the centre of the site the majority of the material excavated had no discernible stratigraphic relationships, since it was seen as one, amorphous, disturbed layer See Fig. 17).

The impact of the badger sett was divided into two models, rather flippantly referred to as 'chocolate cake' and 'swiss cheese' models. The stratigraphic layers within an archaeological site have been described as 'a very large chocolate cake … with much promise to provide a vital glimpse into our past, but this promise relies totally on the integrity of the layers of the archaeological cake.' (Morton:2003:10). In the older part of this sett (the western end of the site, see Fig. 17, bottom) the sections revealed a network of infilled tunnels and dens - in this 'chocolate cake', the layers have been mixed and re-mixed and it was practically impossible to provenance any of the bones discovered within the infilled tunnels or to identify any stratigraphic units.

The 'swiss cheese' model was clearly seen in that part of the sett which had been more recently occupied (the eastern end, see Fig. 17, top). Open tunnels and dens riddled the ground. A huge volume of material had been excavated by the badgers, and much of it re-deposited as the amorphous, uniform layer which ran across the whole ground-surface of the site.

Blurring of chronological and spatial resolution

The excavation of Brownslade Barrow produced a large amount of information – but in many cases, the details have been obscured because of the later disturbance caused by the badgers. Some of the impacts on the burials themselves have been discussed above, but it is also worth contemplating the wider impacts. Over 1000 pieces of disarticulated bone were recovered from the topsoil and badger-spoil. In most cases, these cannot be rejoined to burials, or to each other, as there is no way of tracing their provenance. These include evidence for, for example, the only perinatal individual found at Brownslade. It is impossible to establish whether this child was buried alone, came from a different part of the cemetery, was buried with its mother, is totally intrusive, or was placed into the cemetery later, higher up the archaeological sequence. Similarly, the specialist metallurgical report identified evidence for iron smelting on the site as well as identifying probable non-tapped iron smelting slags. These non-tapped slags have not been recorded before in southern Wales, but elsewhere in Britain have been known from both pre-Roman and early Medieval iron-smelting sites. However, because the slags were found within areas of badger disturbance, they cannot be assigned to either the prehistoric or early Medieval phases of use at this site. Potentially, Brownslade could help significantly in unravelling the early history of metalworking in the area, but this potential is vastly reduced by the lack of chronological resolution.

3.7.2 Implications

At this one site, it is clear that badgers have had a very significant impact on the archaeological record. But there is a much larger question – how many archaeological sites are affected by burrowing animals, and to what extent? In 2006 The Badger Trust produced a discussion document addressing the issue of

badgers and ancient monuments (Lawson, 2006) and, quite rightly, commented that 'there is precious little information about the extent and significance of the damage …In terms of raw data, we are only scratching the surface'. (Lawson, 2006, 3) It is impossible – and undesirable – to exclude badgers from all archaeological monuments, but it is also undesirable to ignore their activities in significant and vulnerable sites. The National Badger Surveys of 1990 and 1997 showed a considerable population increase (due in part to the passing of the Protection of Badgers Act), especially in southwest England and in Wales. Although there are no current figures, many people believe that the population is still rising. With this in mind, it would perhaps make sense for heritage managers to look at the practicalities of accurately recording those sites which are affected by badger setts – to record the distribution of badger holes and whether there appears to be any movement of the sett over time. This would allow informed decisions to be made about the nature of any threats to the buried archaeology.

Similarly, the wider distribution of badger setts is also of interest to archaeologists and land managers. It seems that in areas where digging is difficult (in this case because of loose sand, in other cases it may be rocky or too wet), badgers will preferentially seek out earthworks in which to live. It may, therefore, be possible to predict which sites are vulnerable and take preventative, rather than curative, measures. This would clearly be the best option, in terms of minimising cost and avoiding any distress to the badger population.

All of this will require close collaboration with wildlife agencies and landowners, and there should also be a recognition that, in some cases, the removal of badger setts is simply impossible. Lawson (2006) comments that

> *'badgers are an intrinsic part of Great Britain's natural and cultural heritage. They should be regarded as integral to the historic environment, not separate from it … It is fair to assume that some setts in Britain today have been a permanent feature of the historic landscape for much of the Holocene, a period in excess of 10,000 years.'* (Lawson, 2006, 1-2).

However, this experience at Brownslade would lead us to take issue with the statement that:

> *'…in the vast majority of cases, the presence of badgers in an ancient monument is a long-standing feature of its unique history. As such, there is not likely to be justification for excluding the badgers since the 'damage' will have been done long ago.'* (*Ibid*, 4).

Our results have shown that, in this case, the badger disturbance was an ongoing issue, and that the slow, steady movement of the sett was continuing to displace nationally important archaeological deposits.

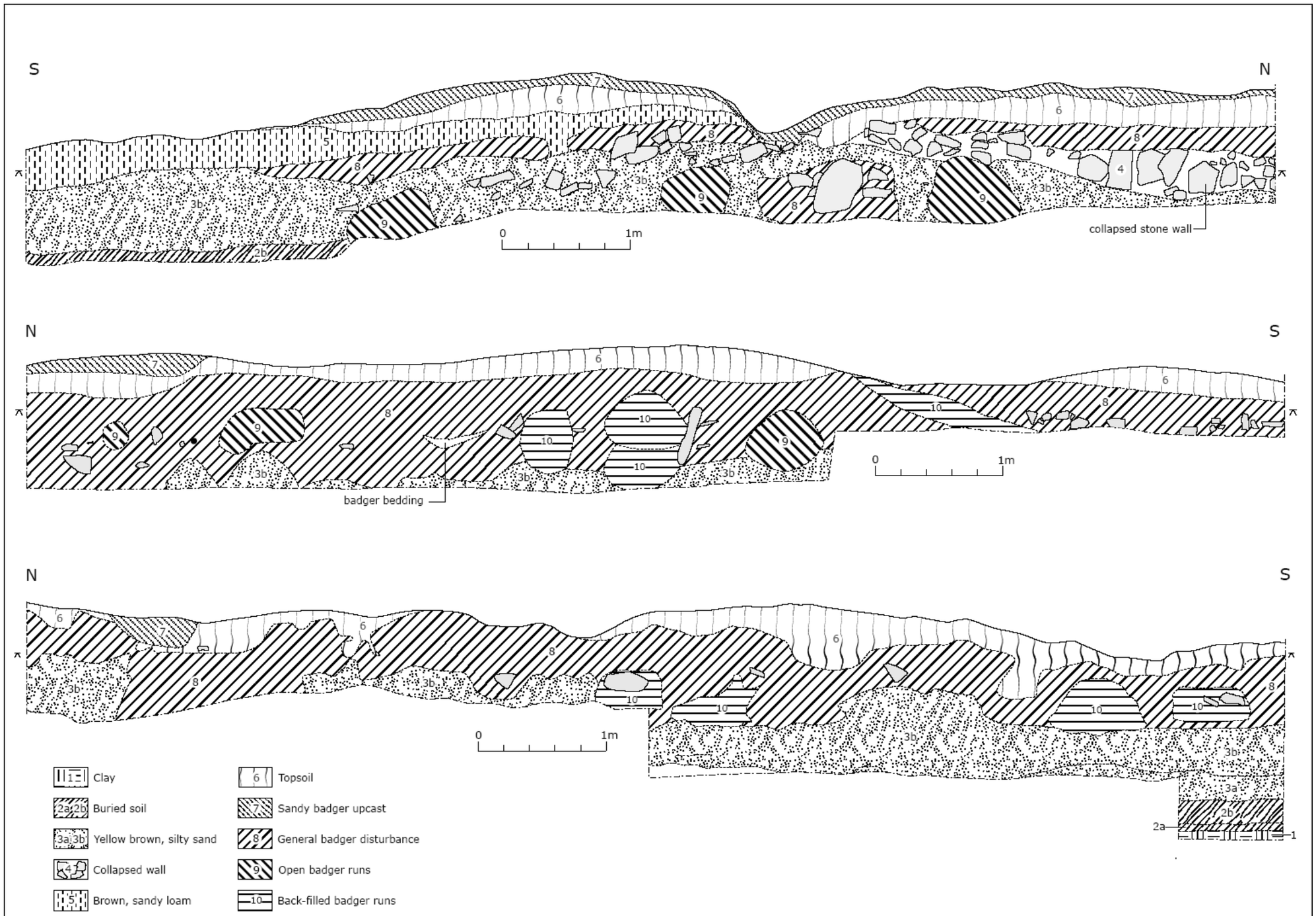


Fig. 17. Section drawings D (top), E (middle) and F (bottom). Locations are shown on the plan in Fig. 9. Note the differing amounts and types of disturbance caused by the badger sett – Sections E and F have fewer open runs but a greater overall level of disturbance.

3.8 SUMMARY OF SITE DEVELOPMENT

In essence, the developmental sequence exhibited at Brownslade is very simple. If the disturbance caused by the badgers is, temporarily, disregarded, the stratigraphy of the site is straightforward, showing a prehistoric agricultural landscape which suffered sand inundation and became used as an early Medieval cemetery site. This was, in turn, later incorporated into a farmed landscape of post-Medieval date.

This brief assessment of the site development is not an attempt at a full discussion of the nature and significance of the site. Rather, it is an overall look at the chronology, as evidenced by the excavations in 2006 and by Ludlow's earlier investigations of the 'chapel' building (Ludlow, 2003).
A full discussion is forthcoming, and will integrate information from other sites in the area.

Possible Bronze Age barrow

The earliest phase of use at Brownslade is the Bronze Age barrow around which current investigations have focused. The age of the barrow has been debated elsewhere (Ludlow 2002; Ludlow 2003) and it has been suggested that it may be later, due to the presence of what Laws described as 'wheel-turned' pottery (Laws, 1888, 57 – 59). A central burial was also located.

It has also been suggested that the construction of the mound, being made wholly or mostly of sand, argues against a Bronze Age date (see Ludlow 2003, 34). However another barrow on the Range, Crow Back Tumulus (SAM Pe467) is considered to be Bronze Age in date (Cook 2004, PRN 536) and recent consolidation work highlighted that Crow Back was constructed almost entirely of sand. Antiquarian investigations there apparently revealed two inhumations in a cist, alongside burnt bones, shells and pottery. It is considered likely, therefore, that Brownslade Barrow has Bronze Age origins, but further work would be needed to conclusively prove or deny this.

Pre-sand agriculture

At the base of the excavations, two deposits which were encountered which were interpreted as buried soils (272, a silty clay, was overlain by 271, a sandy silt). Cultivation marks were observed in both of these buried soils. The lower, earlier cultivation marks were closely spaced, narrow and shallow, and may have been made by an ard. The upper set, cutting into the top of soil 271 were wider, deeper and more widely spaced. A radiocarbon date from a cow molar associated with the lower deposits gave a date in the middle of the first millennium BC (see Table 2, Beta 228418). Grain from the fill of the upper set of cultivation marks yielded a late first millennium BC date (see Table 2, Beta 229587). These suggest a late prehistoric nature for the agriculture here, and also suggest that the landscape was farmed for several hundred years. The analysis of the charred plant remains suggests that there was some use of wild food resources, as well as cultivated varieties.

Sand inundation and dune formation

The late prehistoric ground surfaces were then overlain with thick deposits of sand. The sand contained a well-preserved land mollusc assemblage, and analysis of this supported the hypothesis that this phase represented the formation of the sand dunes. The molluscs recovered were typical of a mobile sand-dune system, which later became fixed and vegetated. There is little evidence for any scrub or

trees, instead a grazed grassland is the most likely scenario. Based on the dating evidence from the pre-sand layers and the post-sand burials, the sand-dune must have developed and stabilised between around 200BC and 500AD. The mollusc sequences include species considered to be early Medieval or medieval introductions, perhaps indicating that the dunes only became fixed a short time before their use as a cemetery site.

Early Medieval burials and domestic activity

Between the 6th and 11th centuries AD, this site was in use as a cemetery. Both dug graves and cist graves were cut through the surface of what would have been a more-or-less fixed sand dune system. There is currently no evidence for Anglo-Norman use of this cemetery, but without further radiocarbon dates, this possibility cannot be ruled out. The cemetery appears to be focused on the south and southeastern side of the barrow. There was no evidence that the cemetery continued to the north of the barrow, nor any further south than the excavated area. However, the extent to the west is unknown, and there is also a possibility that burials continue to the northeast. Little evidence was recovered for early Medieval domestic activity, but a fragment of a bone comb (SF 601) may date to the 6th – 8th centuries, and a copper alloy aglet (the casing on the end of a lace to prevent it unravelling, SF 612) may be of a similar date.

Continued sand inundation and Medieval use

There is no evidence for the development of a buried soil overlying the cemetery, as may have been expected had there been a long period of abandonment and stability. Instead there appears to be a continued build-up of sand which may be a contributory factor as to why the cemetery fell out of use. Medieval activity on the site is confined largely to pottery recovered from the badger-disturbed topsoil layers and small quantities from the rectangular building to the northeast, although most of this is post-Medieval. The pottery assemblage from the main excavation contains a significant number of Medieval sherds, dating from the 12th century to at least the 13th, and possibly the 15th century AD. The majority of the pottery is unglazed, perhaps from cooking jugs/pots, and there are no Continental imports. Consequently it seems likely that the pottery is from low-status households.

There is a possibility that a chapel was constructed in the area during the Medieval period (Ludlow, 2003) but this has not been conclusively proved. However, the wider area contains abundant evidence for Medieval activity – and, notably, for high-status Medieval houses such as those at Pricaston and Flimston.

Later agricultural use and acquisition by the military

During the post-Medieval period, the area around Brownslade Farm was extensively improved, and used for breeding the Castlemartin Black cattle. Field walls and land divisions dating from the late 18th century to the early 20th century can still be seen across this part of the Range, their survival has been partly due to the acquisition of Castlemartin by the MOD in 1938. From the point of view of archaeological survival, one of the key factors has been the development of the large badger sett within the Brownslade cemetery site. This may have been in existence for 100 years (Bob Haycock, *pers comm*) although Lawson (2006, 2) raises the possibility that badger setts can remain in the same locations for far longer – perhaps being measured in terms of thousands of years. The excavations here showed clearly that the focus of the badger sett had moved over time, and the archaeological damage was on-going.

3.9 UNCALIBRATED RADIOCARBON DATES FROM BROWNSLADE

Sample number	Laboratory Number	Context	Uncalibrated radiocarbon date
004 (femur)	Beta-179378	Bone from evaluation trench	1240±60BP
022 (humerus)	Beta-179379	Bone from evaluation trench	1290±60BP
040 – 042 (re-joined scapulae fragments)	Beta-170380	Bone from evaluation trench	1480±50BP
56592/503	Beta-228419	Burial in cist grave 503	1100±40BP
56592/509	Beta-228420	Burial in dug grave 509	1290±40BP
56592/510a	Beta-228421	Burial in cist grave 510. The bone is from the juvenile (this grave has a juvenile and neonate buried together)	1180±40BP
56592/524	Beta-228422	Burial in 'cist' 524. The bone is from the adult female, and may be re-deposited as a result of the 1880s excavation	1480±40BP
56592/524a	Beta-228423	As above, but bone from one of the infants.	1360±40BP
56592/532	Beta-228424	Burial in cist grave with lintels	1300±40BP
56592/535	Beta-228425	Burial in cist grave	1350±40BP
56592/273	Beta-228418	Cow tooth from the fill (273) of a gully (289) cutting buried soil (272). Presumed to be contemporary with the first set of cultivation marks (278)	2410±40BP
56592/616	Beta-229587	Charred plant material from a sample associated with the upper set of cultivation marks (277)	2130±40BP

Table 5: all available radiocarbon dates from Brownslade Barrow.

4. SPECIALIST REPORTS

4.1 THE POTTERY FROM TRENCHES 1,2 AND 3

By Paul Courtney

Introduction and summary description

219 sherds of medieval and later pottery (excluding one medieval ridge tile fragment) were recovered from the two phases of the excavation weighing 1.838 Kgs. The medieval pottery dates from the 12th century to at least the 13th century, though some could be as late as the 15th century. The mix of local Welsh fabrics and imports from S.W. England is typical of the region. Dyfed Gravel tempered wares (jugs and cooking pots/jars) and Llanstephan ware jugs predominate amongst the local wares. 72% of the medieval sherds from the site were unglazed and thus cooking pots/jars would appear to be the commonest form amongst the assemblage. There is also an absence of Continental imports, such as Saintonge ware. Both features are a reflection of the rural nature of the site and its presumed derivation from households of peasant status. Two sherds from Ham Green A jugs from contexts 121 and 155 can be dated to c. 1120-60. The B114 ware from Pill, near Bristol accounts for 20% of the medieval pot by sherd count. This is also likely to be 12th century in date. No characteristic late medieval or transitional wares, such as Newport-type wares, were recovered from the site. There may therefore be a hiatus in occupation or ceramic use in the 15th-16th centuries, though the assemblage is too small to be certain

44 sherds, 369g of post-medieval pottery were recovered from the excavation. It is probably largely 17th or 18th century in date, though the coarse North Devon wares could potentially be a century earlier or later. The post-medieval assemblage is dominated by undecorated North Devon coarse wares (NDGT and NDGF) that may date from the late 16th to 19th centuries in date. However, no industrial white wares of the late 18th century onwards were recorded. The only other post-medieval sherds were a BSYS yellow slipware rim of c.1680-1760 and a tin-glazed (ETGE) body sherd from a blue painted jug or similar vessel of late 17th-early 18th century date. In addition two sherds of uncertain date and one Roman sherd were classified as MISC (miscellaneous). The percentages given below are based on sherd and weight totals of medieval and post-medieval pottery, respectively.

Most of the material was from badger-disturbed topsoil contexts and no further work is required.

Catalogue

Medieval Fabrics

HGRJ Ham Green Jugs
Hand-made jugs in light-firing fabric usually often with darkened interior surface. Both Ham Green A (contexts 121 and 155) and B (context 246) vessels could be distinguished. The former dating to c.1120-60 (contexts 121 and 155) and the latter with applied pellets to c.1175-1275 (context 246).
7 shs (3.2%); 161g (8.8 %).

BRED Bristol Redcliffe Jug
Wheel-thrown, green glazed jugs in a light firing, Coal measures fabric from Bristol. A single sherd was found from context 156. Redcliffe wares were

produced from the mid 13th-15th centuries (Good and Russett 1987, 36-7; Vince 1991, 105-6: fabric Jb; Papazian and Campbell 1992, 35-6 and fig. 14).
1 sh (0.5%); 12g (0.7%).

HGCP Ham Green Cooking Pot
Baggy hand-made cooking pots/jars with everted rims. Predominently oxidised dark red, sometimes partly reduced for inclusions which are finer (under 0.3 mm) than B114. Eight of the nine sherds came from contexts 153, 154, 155 and 156 and are probably from a single vessel which had wavy combed decoration on the rim and shoulder and an applied thumbed strip. Late 12th- 13th century. (Good and Russett 1987, 36-7; Ponsford 1991 and Vince 1991, 105-6: fabric)
9 shs (4.1%); 61g (3.3%)

B114 Bristol Pottery Type 114
Hand-made cooking pots/jars in predominently reduced dark grey to black fabric, sometimes with reddish surfaces. The fabric, forms (baggy pots with out-turned rims) and decoration (combing and thumbed applied strips) are very similar to Ham Green and this ware probably derives from the adjacent Severnside potting village of Pill. See Ponsford 2002 for a large illustrated group from Bickley in Somerset. It can be distinguished from Ham Green by having a scatter of larger quartz and sandstone inclusions up to 1mm o(see Vince for fabric description). It should be noted that the relatively large group of B114 sherds partly reflects its tendency to fragment. This ware is found in South Welsh contexts including the castles at Llantrithyd and Penmaen and urban excavations in Swansea by the early 12th century. It overlaps Ham Green cooking pots in date though probably has an earlier start date. It is likely to be 12th century in Welsh contexts (Good and Russett 1987, 36-7; Vince 1991, 109-11: fabric Kb; Papazian and Campbell 1992, 28 and fig. 29; Ponsford 1991 and 2002: fabrics 1, 4 and 8).
45 shs (19.7%); 244g (13.3%).

NWTP North Wiltshire Tripod Pitchers
Hand-made tripod pitchers with dull green glaze and grey to buff fabric with large, usually leached, calcareous inclusions from Minety of Wiltshire. Probably late 12th- 13th century along South Welsh coast. (Good and Russett 1987, 37; Vince 1991, 115: fabric LA; Papazian and Campbell 1992, 35 and fig. 9).
7shs (3.2%); 140g (7.6 %)

LLAN Llanstephan Jugs
Wheel-thrown jugs with fine calacareous inclusions from Carmarthen Bay area, Mostly reduced with one or two oxidised surfaces . Probably 13th - ? 14th centuries (O'Mahoney 1995, 17-9; Papazian and Campbell 1992, 65-8).
30shs (13.7%); 494g (26.9%).

DGTG Dyfed Gravel tempered Glazed
Green glazed jug wheel-thrown sherds in fabrics with quartz and occasional siltstone inclusions. This type of ware was probably produced at a number of centres in Dyfed. Kiln waste has been published from Newcastle Emlyn (Early and Morgan 2004). Probably late 12th-?15th century (O'Mahoney 1985 and 1995, 9-11; Papazian and Campbell 1992, 56).
17 shs (7.8%); 226g (12.3%)

DGTU Dyfed Gravel tempered Unglazed
Unglazed sherds from cooking pots/jars with quartz and numerous siltstone inclusions up to 3mm. Mostly grey cores with buff surfaces, Probably late 12th-15th century (see DGTG for references).

98shs (44.4%); 465g (25.3%)

NDCP North Devon Medieval Cooking Pot
Unglazed cooking pot/storage with characteristic bell rims. Inclusions (similar to the post-medieval wares) include angular quartz gravel up to 1-2 mm and occasional biotite flakes. These appear to have been exported from North Devon to South Wales (especially the Haverfordwest and Carmarthen areas, in the 13th century and possibly later. A 13th century kiln site produced only cooking pots has been excavated in Barnstaple. Jug production appears to have only commenced in the 14th century. The Okehampton castle sequence suggests hand-made coking pots continued in use into the mid 15th century (Markuson 1980; Allan and Perry 1982, 87-91; Papazian and Campbell 1992, 40 and fig. 15).
5 shs (2.3%); 35g (1.9%)

Building materials (1 sh; 147g)
DGRT Dyfed Gravel tempered Ridge Tile
A single sherd from a glazed ridge tile of medieval date, with part of an attached crest surviving was recovered from context 143. The fabric is similar to the DGTG jugs.
1sh; 147 g.

Post-medieval fabrics (44 shs; 369g)

NDGT North Devon Gravel tempered
Undecorated coarse wares, mostly bowl-like forms, manufactured in Barnstaple and Bideford areas of North Devon. Green to brown glazes on red to grey firing earthenware with coarse gravel grit with angular quartz up to 1mm or more and occasional biotite flakes. Late 16th-19th century. See Allan 1984, 129-32 and Grant 2005.
34shs; 306g

NDGF North Devon Gravel Free
AD NDGT but without temper being mostly used for storage jars, sometimes with gravel tempered handles.
8shs; 42g.

BSYS Bristol/Staffordshire Yellow Slipware
White firing Coal measures fabrics with yellow glazes and red slip decoration. A single undecorated rim sherd from context 156 probably from a mug or posset pot. Produced in Staffordshire and Bristol, c.1680-1760
1sh; 1g.

ETGE English Tin glazed earthenware
White tin-lead glaze on a buff Coal measures fabric with blue painted decoration from a jug or similar globular-shaped, hollow-ware vessel. Probably a Bristol product, late 17th-mid 18th century. One sherd from context 128
1sh; 20g

MISC Miscellaneous sherds (3 shs; 6 g.)

One sherd (2g) of unglazed fine pink fabric from context 132 and a sherd of glazed, fine pink fabric (1g) from context 221, uncertain whether medieval or post-mediaval. In addition a sherd (3g) of micaceous, colour-coated pink ware of Roman date, possibly from SE Wales, was found in context 111 .

4.2 THE POTTERY FROM THE RECTANGULAR BUILDING – THE EVALUATION TRENCH

by Dee Brennan

The evaluation in the area of the rectangular building produced a total of 101 sherds of pottery recovered from three contexts. Of the total, 7 sherds are medieval and 94 are post-medieval in date. Much of the pottery comprises thin flakes from body sherds, at least some of which may originate from elsewhere and be sand-blown, like the surrounding deposits.

The bulk of the pottery, and other finds, came from the topsoil *001*. In addition, datable finds were recovered from Context *004* and from Context *007*, the fill of the feature cut by the east wall trench *006*. Although a variety of pottery was present within each context, all included material datable to the 18th century at the earliest.

The very small and poorly preserved sample of medieval pottery is clearly residual. Six of the seven sherds are from the topsoil *001*. These comprise rim, body and base sherds from one, possibly two unglazed cooking pots and a body sherd from a glazed jug. One other small body sherd from an unglazed cooking pot is from Context *004*. All vessels are in a 'locally' manufactured gravel-tempered fabric. The fabric was first identified by Cathy O'Mahoney (1985a) and a recent survey of medieval ceramics in Wales gives a brief summary of the fabrics, forms, dating and distribution of this 'locally' made gravel-tempered ware (Papazian & Campbell 1992, 56-59). Although no chronological type series is yet available for these wares, associated pottery provides a means of dating (see, *inter alia*, Brennan & Murphy 1996, 1, Brennan 2003, 46-7), and proves that they are the products of a west Wales pottery tradition that evolved in the twelfth century, with a terminal date sometime during the late 16th or early 17th century when North Devon wares arrived on the Welsh market (Papazian & Campbell 1992, 56).

The bulk of post-medieval pottery is imported from North Devon. The majority of sherds fall into the 17th-18th century period of production, in what was a long pottery-making tradition centred on Barnstaple and Bideford (*ibid*.). This North Devon ware is extremely common in west Wales, with which Devon had close cultural associations and a thriving maritime trade from the medieval period into the early 20th century.

Most of the recovered sherds are from vessels made in the distinctive North Devon gravel-tempered fabric. From the topsoil there are at least six different bowls recognised from varying rim profiles. Additionally, there are a number of body and base sherds, which may represent other vessel forms produced and sold in this fabric. From Context *004* there are another two bowls, one jar and a handful of body and base sherds. A single indeterminate body sherd is from Context *007*. All sherds are internally glazed green or greenish-brown. Evidence for use as cooking vessels is visible on several sherds, which are fire-blackened and sooted externally.

Four sherds of North Devon Sgraffito-decorated ware found in the topsoil are from two vessels comparable to Type 1 dishes found at Exeter (Allan 1984, 149). The Brownslade examples bear complex designs consisting of linear grooves, swirls and dots. A similarly decorated dish was found in a cesspit at the Tudor Merchant's House, Tenby, in a context datable to the 17th-18th centuries (Murphy 1989, 261; O'Mahoney 1985b, fig.3, no.14 and p.32). At Exeter most of the stratified Sgraffito-decorated wares' date from c.1660-1700, and there they are

absent from c.1720 (*ibid*., 132).

Two other pottery fabrics recovered from the topsoil are two body sherds from a large black-glazed jar of probable Welsh manufacture and five unglazed red ware body sherds of indeterminate form and uncertain provenance. On appearance a 17^{th}-18^{th} century date is likely for both wares.

The topsoil *001* also produced part of a single glazed ceramic ridge tile of fifteenth-sixteenth century date, of either local or North Devon manufacture. Additionally there are several body fragments from 18th century free-blown wine bottles and two clay pipe stems of uncertain post-medieval date.

4.3 LITHIC ARTEFACTS

By Elizabeth A. Walker (Amgueddfa-Cymru – National Museum Wales)

Factual Data

The following is a catalogue of 9 lithic objects that were recovered during the excavation. All were recovered from badger-disturbed topsoil and so none are associated with datable contexts. However, together the collection does give some indication of the extent of prehistoric activity in the area.
The context numbers refer to the area sub-divisions of the topsoil – they are not stratigraphic units.

126 Bifacially flaked flake fragment. Made on a black unpatinated flint. The flake has been struck and then both faces have been trimmed and flaked. On the dorsal face one edge has irregular chipping, which is not formal enough to be retouch. The ventral face shows a number of irregular removals including a hinge fractured flake removal. Some of the damage could be recent from agricultural equipment.

133 Prehistoric burnt blade fragment. Half the dorsal surface is cortical. The proximal end of the blade has been snapped off. The distal end shows a heat fracture and occurred during the burning of the piece.

134a Piece of general flint knapping debitage. Made on black unpatinated flint.

134b A natural flint that has experienced a period of retouch, during which it might have been an awl but it has then suffered some recent damage. The original piece of flint is thermally fractured and displays a heavy white patina. A small area of retouch on one side of the piece suggests that it might have been shaped into an awl during later Prehistory. This is demonstrated by the suggestion that this flint is developing a patina again over the retouch, however, the opposite side of the implement shows more modern damage and the breaks are fresh displaying the unpatinated original flint colour.
length = 27.0mm; width = 15.8mm; thickness = 7.7mm; weight = 2.2g

143 Prehistoric flint flake made on a black unpatinated flint. The flake shows three previous flake removal scars on the dorsal surface and the main blow that detached this flake has hinged at its distal termination.

155 A later Prehistoric utilized flint blade. The flint is pale grey in colour and is unpatinated. The cortex is stained a heavy yellow colour and is weathered and rolled. The dorsal flake scars also have rolled surfaces making them less distinct. The cortex provides a natural backing to this implement as it is the parallel edge that has been used as a cutting implement. The proximal end of the blade is missing, this break is old.
length = 42.7mm; width = 21.1mm; thickness = 8.9mm; weight = 8.7g

156a Natural thermally fractured piece of flint.

156b Heavily burnt piece of flint. One surface is cortical and the other shows thermal fractures. Probably natural.

173 Prehistoric flint flake fragment. Cortical flake of pale grey unpatinated flint. The flake has broken along its length.

4.4 OTHER FINDS

by Mark Redknap (Amgueddfa-Cymru – National Museum Wales)

Interim Statement

The following artefacts were recovered during the excavation:

copper-alloy 'aglet' (SF 612),
fragment of bone comb (SF 601)
gravemarker (SF 607)
upper rotary quernstone edge (diameter about 30cm – to be verified; SF 613)
upper rotary quernstone in conglomerate (max width about 18cm; SF 603)
upper rotary quernstone (radius about 33cm, irregular; SF 606)
?upper rotary quernstone fragment (SF 604)
upper rotary quernstone with convex lower surface(max. width 29cm; SF 602).

The small finds and worked stone from Brownslade Barrow appear to be broadly contemporary in stylistic terms with the early Medieval radiocarbon dates that have been obtained from the excavations. Early Medieval material culture from Wales is rare, as are dated contexts for human activity during this period. The association of objects with independent radiocarbon dates makes this assemblage of particular significance.

The quernstones and honestones are similar in form (but not geology) to those excavated at Dinas Powys and Llanbedrgoch, the latter site also having numerous early Medieval radiocarbon dates. The bone side-plate from a composite, double-sided comb is also paralleled by examples from Dinas Powys and Llanbedrgoch, and is probably 6^{th} – 8^{th} century in date.

The gravemarker is of a widespread form generally dated to the 14^{th} century (where they usually bear simple designs), though an earlier date cannot be ruled out.

4.5 HUMAN REMAINS

by Ros Coard and Alison Sables (Department of Archaeology and Anthropology, University of Wales Lampeter)

Introduction

This report presents the analysis undertaken on the human remains during 2006-2007. It considers the skeletal material from the excavated inhumations (the 500 context numbers), and the remains from non-burial contexts (the 100 and 200 context numbers).

The inhumation burials include skeletal material representing 52 individuals. However, not all of these were complete skeletons and a large number survived as only partial or fragmentary skeletons. The disturbance caused to the graves was due largely to badger activity but also other burrowers, such as rabbit. Considerable disturbance, due to badger runs and setts, meant that the human remains were being displaced, exposed and disarticulated. Further disturbance had been caused to part of the site, mainly the north/central area. This disturbance was most probably due to antiquarian excavators.

The non-burial contexts included disarticulated remains from the badger disturbed topsoil and re-deposited remains in features post-dating the cemetery. This material was often mixed with a large quantity of animal remains, pottery and other cultural debris. The animal bones and cultural remains were not thought to be a product of intentional behavioural activity contemporary with the cemetery usage, but probably date to a later occupation period and possibly represented midden type deposits created once the cemetery was abandoned.

All of the analysis was based on a physical examination by eye adopting standard anthropological techniques (Bass, 1995, Brickley, and McKinley, 2004, Buikstra and Ubelaker 1994). The number of individuals, their skeletal maturity and chronological age, the sex and heights of the individuals as well as their burial context (i.e. cisted or dug grave) are considered in this report. The osteological data follows the report. Throughout the report the use of a letter following a skeleton number denotes a burial where there was more than one individual present in the same grave. The use of a capital denotes an adult, such as 522A, and the use of lower case denotes a juvenile, such as 522a. Full details of all the skeletal remains from the burials appears in the burial gazetteer.

The excavated graves

Treatment of the remains

All of the skeletons were air dried at room temperature for several days. Once dry the fine wind blown sand (the depositional matrix) was easily removed by gentle brushing with a natural bristle brush.

All of the skeletons were examined by eye initially and all cultural remains or environmental materials were removed. These included animal bones, cut-marked bones and shells. These were thought to be intrusive to the graves and not to represent grave goods. No grave goods, as such, were observed during the excavations although some cultural remains in the form of a single grave marker and fragments of rotary querns were reported (see above).

A skeletal inventory was constructed for each skeleton and an osteological inventory of each skeleton was produced. The inventory included a sex and age estimate, a height estimate and pathologies were noted. These are detailed in the burial gazetteer.

Condition of the bone

The condition of the bone ranged from excellent to poor. Generally the bone surface texture was good and this is primarily due to the non-acidic nature of the depositional environment and, as such, is rare for Wales. The juvenile group were observed to have more extensive damage due to the more fragile nature of the bone. In the adults much of the damage was confined to the epiphyses of long bones, or other bone extremities and this did resemble damage caused by acidity. Some damage was attributable to the excavation process, but this was limited and easily recognised. Further damage was caused by antiquarian activities and this could be distinguished in some cases. Although the bone surface texture was generally good the level of bone fragmentation was high. This can again be attributed to post depositional activities. Bone modification caused by burning was also noted. This affected one skeleton in particular (S531) and may have been due to natural causes, such as a localised fire or restricted shrub/bush fire, as the damage was mainly restricted to the lower portion of the arm bones (ulna and radius) of both arms.

Sex of the individuals

Sexing the individuals varied depending on the survival of the appropriate bones and wherever possible, was based on the morphology of the pelvis and/or the cranium. In the absence of these bones, other elements indicative of sexual dimorphism were used. This involved metric analysis distinguishing the sex groupings. Estimates of sex were established for the adult group and where the sexual characteristics were more completely developed in the adolescent group. A total of 33 individuals were sexed, of which 16 were males and 17 were females. The remaining individuals were sex indeterminate. The data suggest a balanced population in that 30.7% are female and 32.6% are male.

Age distribution

In aging the individuals it was accepted that the degree of skeletal maturity (biological age) would be equated or converted to a chronological age. The following criteria were used and adapted from Scheuer and Black, (2000) and are based on stages of skeletal maturation or skeletal biology (for example, fusion or the lack of for major bone groups), paediatrics, and behavioural biology. The

term *juvenile* is used here in a general sense to refer to all skeletal remains (or individuals) in any stage previous to adult (i.e. full skeletal maturity).

Any remains, or individuals, having achieved full skeletal maturity are termed *adult*. The groupings are *Perinatal*, including up to and around the period of birth, *Neonatal*, including birth to 2 months, *Infant*, including from 2 months to 3 years and loosely based on parental dependency due to weaning. *Juvenile* included eruption of the permanent dentition and pre-long bone fusion, *Adolescent*, included 12-18 years based on long bone fusion completion, *Young adult*, included long bone fusion complete and pre-age related changes, *Adult*, *Middle adult* and *Mature adult* were defined by stages of dental attrition and/or other changes to the skeleton due to the maturation process.

The age was determined for 46 individuals (see Table xx) using bone length and development, epiphyseal union, dental development and age related changes to the auricular surface of the ilium, the pubic symphysis, ribs and vertebral column (Bass, 1995, Buikstra and Ubelaker 1994, Miles and Bulman, 1995, Scheuer and Black, 2000). A mixture of these techniques was adopted depending on the bone survivorship and the age of the individual. In the adult categories, age estimates were dependent on dental wear only, in the absence of other skeletal markers for aging (Lovejoy, 1985).

Skeletal development	Chronological age	No. of individuals	Classification
Perinate	Up to/ around time of birth	0	Juveniles N= 20
Neonate	Birth-2 months	2	
Infant	2 months-3 years	4	
Juvenile	3-12 years	12	
Adolescent	12-18 years	2	
Young adult	18- 25 years	7	Adults N= 26
Adult	25-35 years	4	
Middle adult	35-45 years	8	
Mature adult	Over 45 years	7	

Table 7. Age estimates for the Brownslade population

Although aging the skeletons as accurately as possible is an on-going process, it was clear that there were peaks in several age groups. Relatively few deaths occurred in the youngest age categories with two mortalities in the months following birth. This increased to four in the Infant category, leading up to 3 years old. These mortalities may be related to infants who suffered from the stress of birth and the weaning process. The mortalities rose to twelve individuals in the Juvenile, or 3-12 years, category. The data suggested that something unusual occurred in the group. There is a strong suspicion that some of the individuals in this group were suffering from a specific period of stress. The stress may be related to diet but also, possibly, due to a more physical or harsh life style. Of this group, five mortalities were associated with individuals aged between 11 and 15 years old. Work on the skeletal signs of stress in this young adolescent/teenage group is currently underway. The mortality rate fell for the 12-18 years olds, the adolescents, and then rose sharply into the adult years and, with one fluctuation, remained high.

There is a lack of resolution within the adult categories in terms of the age ranges but interesting patterns emerged when these were compared to the sex of the individuals. The data in Table 8 show a trend from female mortality being numerically dominant in the Young adult and Adult categories. This then balanced out in the Middle adult stage and then demonstrated a slight swing in the opposite direction in the Mature adult group. The higher female mortality in

those younger adult categories could be related to child bearing and the complications associated with it.

	Female	Male
Young adult	4	2
Adult	3	1
Middle adult	3	3
Mature adult	3	4

Table 8. The number of females and males mortalities in the adult categories

When compared to other sites, Llandough demonstrated a similar trend for greater female mortality in these age categories for the entire cemetery site and evident in Areas II and III. The patterning was not evident and showed an opposite trend in Area I, the area associated with the earlier burials (Loe and Robson-Brown, 2005). Similar conclusions, mortality related to childbirth processes and complications, were suggested by the authors. However, such a female dominated trend was not noted by Wilkinson (2001). Why some areas or sites record such a pattern and others not, remains to be explored.

The percentage of juvenile mortality for the site at 20 is around 46% of the stratified population. This compared to other sites where estimates for early Medieval and medieval sites ranged from around 20% to 50% of the population. What was more striking was that different patterns within the juvenile mortality group emerged. At Llandough, 28% failed to reach adulthood with mortality peaks in the earlier age groups, under 2 years, under 6 years and under 10 years (Loe and Robson-Brown, 2005). This pattern was contrasted, however, at Greyfriars, Choir of the Church and Northern Extension of the Nave population, where the mortality pattern showed greater peaks between 10 years to 18 years (Wilkinson, 2001). A similar pattern was seen in the Choir and Graveyard population, where only 3 under 5 years old were represented compared to 7 in the 5-10 year old group (Wilkinson, 2001). In this respect, Brownslade more closely matched Greyfriars, although the peaks were at different ages in the juvenile samples.

The osteology does not reveal why such peaks should occur but the explanations are more probably embedded in the social and cultural attitudes of the time.

Height estimates

Height, or stature, measurements were taken from the major long bones of the lower limbs, or combinations thereof, in the first instance. In the case of poor survival of those bones, estimates based on the upper limb long bones was attempted (the more problematic nature of this was accepted). The measurements were compared to statural estimates from skeletal remains published in Bass (1995) and to other published accounts of early Medieval or medieval populations in Wales (Loe and Robson-Brown 2005, Wilkinson, 2001). No attempt to estimate pre-mortem stature was made. The body build could be characterised as robust with few showing marked gracility. In total the height of 21 individuals were estimated which included 11 females and 10 males. The females ranged from 151-160 cm (4'11"-5'3") and the males from 160-177 cm (5'3"-5'9"). The mean height for the males was 168.9 cm or just over 5'6", and the modal height was 1.68 cm or 5'6". The mean height for the females was 155.9cm or just under 5'1", and the modal height was 153 cm or 5'0". The distributions are presented in Table 9.

cm inches	151 4'11"	153 5'0"	156 5'1"	158 5'2"	160 5'3"	163 5'4"	165 5'5"	168 5'6"	170 5'7"	172 5'8"	176 5'9"
Male					1		1	5		1	2
Female	1	4	1	2	3						

Table 9. The estimated body heights of male and females.

When compared to other early Medieval populations, the Brownslade sample fell within the range of other samples but was at the lower end. For example, although later medieval in date, Wilkinson, (2001) noted at Greyfriars, that the body height for the Choir of the Church and Northern Extension of the Nave males, ranged from 167-183 cm (no averages given) and the Chapter House and Cloisters males as 164-183 cm with an average of 172.5 cm. At Llandough, the male heights ranged from 156-186 cm with an average of 169.5 cm (not specified by area). With this comparison in mind it would be tempting to view the Llandough sample as more comparable, however, caution should be urged due to the fact that these represent a compounding of all areas at Llandough (early Medieval through to medieval) and therefore, any period specific resolution is lost.

A similar pattern is seen in the female data. The Choir of the Church and Northern Extension of the Nave females (Wilkinson 2001), recorded heights of 157-167 cm (no averages given) again, putting them much taller than the Brownslade sample. Equally at Llandough, the females ranged from 144-169 cm, with a mean of 156.8 cm (Loe and Robson-Brown, 2005). Again, this puts both samples as taller than Brownslade females, but again, as for the same reasons stated above, caution should be urged due to the compounding of the data by areas at Llandough. Loe and Robson-Brown (2005) quote average heights for the Atlantic Trading Estate, Barry, population as an average of 165cm for males and 156.7cm for females. This may indicate that this population are more comparable to Brownslade, with the males being slightly shorter than the Brownslade males, and the females slightly taller. What appears as unusual in the Atlantic Trading Estate data is that the range of heights for the males indicates no tall individuals either, adding to their comparative value for Brownslade. Tempting though it would be to see this as a good parallel, the data have not yet been confirmed from primary published sources.

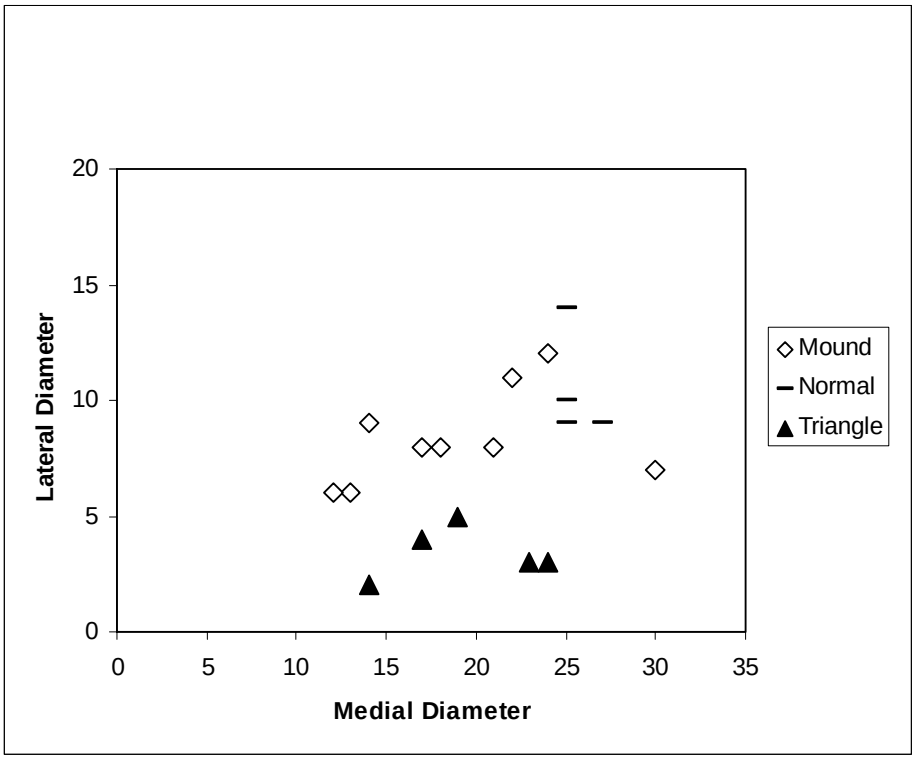
Pathology

A range of pathologies were noted and it became clear very quickly that a number of marked pathologies and bone modifications were present in this population. Some of the pathologies were noted as being rare or unusual. This included the flaring of the lateral diameter or curvature of iliac crest (hip-bone) and was observed as a pronounced triangular pattern on skeletons 509, 513A/b and 533. A further group consisting of skeletons 133, 248, 270, 502, 513a/b, 514, 530, 532, 534, 535, and 524, displayed a moderate flaring of the iliac crest. Skeletons 511, 513a/b, 518, 524, 526, 527, and 531, displayed no such development and remained within the bounds of normality. The feature observed consisted of a relatively normal medial curvature to the iliac crest but a pronounced but gently rounded lateral curvature (in the case of the moderate group) or sharply angulated (giving a triangular shape) in the more pronounced or developed group. The three main patterns observed are plotted in Diagram 1 and included those showing no obvious development, termed *normal*, those showing some development, classed as *mound*, and those with pronounced development, termed *triangle.* The terms were chosen simply on the shape of the feature and are intended to be purely descriptive at this stage. The small group with the pronounced triangular hip feature can clearly be seen. These individuals consist

of adults only. The mounded and normal group both contain adults and Juveniles. Note that this data does include data from the contextual and disturbed contexts.

These features may have been the result of a bio-mechanical adaptation amongst part of the population, probably as a consequence of some form of repetitive physical activity. The trait is seen in both females and males, and may be seen developing in some juveniles. If this is indeed an adaptation to lifestyle, it would imply that these people carried out the same activity day in, day out – but that it was restricted to a certain part of the population, who began doing it as juveniles. This would present a potential opportunity to look more closely at the daily life of an early Medieval community. Further work needs to be undertaken before any firm conclusions can be drawn and this will be discussed further in subsequent reports.

Fig. 18. Scatterplot showing the three main patterns observed on the iliac crest.



Disorders associated with growth abnormalities were not uncommon and included disruption to the growth plates of the long bones (skeleton 509), dyschondrosteosis (skeleton 533), a form of short limbed dwarfism (Aufdehide and Rodríguez-Martín,1998), and enamel hyperplasia (skeletons 514 and 530A). These pathologies are associated with stress during the growth years and some, associated with the late infant or early adolescent group, and may suggest a physical or harsh lifestyle beginning during this phase of skeletal development. Trauma associated with bone breakage was rare but included one healed fracture to the ulna of skeleton 513B.

Other pathologies were associated with the maturation process and included compression of the vertebrae, the development of Schmorls nodes and vertebral

lipping, along with severe dental wear (often to the first permanent molar). If the dental wear was associated with diet (eating coarse food) or activity related, has yet to be explored.

The badger disturbed topsoil and bone from non-burial features (the 100 and 200 context numbers)

A similar process as adopted for the excavated inhumations was carried out for the co-mingled remains from the badger disturbed topsoil and other contexts. Again, all specimens were air dried, soft brushed and examined by eye. Cultural and environmental remains were separated and bagged separately. These included iron nails, pottery fragments, shells and animal bones.

Skeletal inventories were produced for each context which frequently contained the remains from more than one individual. In the case of multiple skeletons the material was grouped into age divisions and a skeletal inventory produced for each age range for each context number. Clearly one individual may well be represented in several context numbers depending on the extent of the disturbance in that particular area. That the material was disturbed was evident by the amount of animal bone and cultural debris mixed in with the samples. The taphonomic indicators showed that this material suffered from more extensive damage, largely due to badgers, foxes and other destructive agents breaking the bone. The co-mingling was due to post-depositional disturbance. Some material (but in reality very little) was rejoined to the 500 contexts.

A total number of 1,329 human bones were recovered from these non-burial contexts. In addition, an un-numbered bag of unstrafified material contained a further 60 human bones.

Collectively, they included a profile, in terms of age and sex, similar to that of the burial contexts. One important difference was that bones of a single perinatal individual were covered. Individuals of this age group were not found in the excavated contexts. Whether this individual represents a later insertion and, hence, was higher up in the soil profile and more readily disturbed by subsequent activity, is not clear but remains a distinct possibility.

The level of analysis carried out on this bone was severely limited due to its disturbed nature and presented some unique difficulties with regards interpretation. It has contributed to some of the explorations carried out with regard to patterns in the pathology. For all it may be possible to rejoin more individuals or to say something more meaningful about this particular group (Mickinley, 2004), this has not been undertaken, fully, as yet.

General conclusions

Osteological observations suggested that this population represented a very homogeneous group. The height of the individuals, the robusticity, as well as the trends in pathology, all suggested a local and possibly a confined community. No outstandingly different individuals were noted in either the male of female categories (for example, both the mean and modal heights were the same for each sex grouping). This suggests that no very tall, or conversely very short, individuals were present. If the osetological pattern of homogeneity or coherence was a reflection of their social patterning or standing in the medieval world or not, was not explored here but does raise interesting questions. Llandough and Greyfriars both recorded tall individuals in both sexes, and Loe and Robson-Brown (2005) further suggested that, the greater standard deviation shown in the height for males over the females

at Llandough, reflected immigrants in male population. Essentially, they suggested that males were physically more mobile and showed a wider range of skeletal heights than females, whom they suggested were more local. This is an interesting proposition and if correct, would lend support to the osteological observations that both sexes at Brownslade were homogeneous or coherent and therefore, if not local, at least confined. Clearly further means of testing for homogeneity could be sought, not just in skeletal markers but perhaps in DNA or, perhaps, even more profitably in isotope analysis. Such analysis would indicate how homogeneous a community was and, more importantly, link this to a local or a wider environment.

Also noted here, was that the mortality pattern had a general spread in the juvenile category and not one of marked mortality in the youngest individuals (such as, the birth to weaning group). This raised questions of survivorship v. real patterning. It is known and accepted within archaeological, anthropological and forensic circles that juvenile material does not survive as well as adult material. This group are particularly vulnerable as none of the secondary centres of ossification (process that makes the bone stronger) are developed. The Brownslade data will reflect this pattern to an extent. However, the data provided evidence that suggested that it also reflected a real pattern. Overall, bone survival is good (and exceptional for a Welsh context), therefore the chances of all bone surviving was increased. Equally, a high proportion of juvenile material in other categories did survive, in all 46% of the population. Finally, the fact that a perinatal individual was recovered from the disturbed contexts does imply that had further individuals been present at the site then they too, would have emerged. A note of caution is urged here in that the cemetery was not fully excavated (virtually no early Medieval cemetery has been fully explored in this respect). It remains a distinct possibility that such individuals were treated differently and placed elsewhere.

A similar pattern was noted by Wilkinson (2001) in the Choir of the Church and Northern Extension of the Nave sample, and may have reflected some investment in the young until such time as they were perceived as 'adult' or at least of a productive working age. The relatively high mortality in the 10/11-15 year olds, is a pattern. Equally, some adults showed signs of skeletal stress around that period of their skeletal maturation. Adults retained the stress to the skeleton that happened in them in their young teenage years. Such evidence included the enamel hyperplasia on the 3rd molar or wisdom tooth of skeleton 514. This could only have happened around the juvenile years as that is the age when the tooth enamel was formed. Other evidence for skeletal stress around these juvenile years could include the slipped growth plates of skeleton 509. It may be that any increased labour around that age caused nutritional or other stress that then led to the mortalities or pathology. In reality, such a metabolic disturbance could have been caused by any environmental factor, including dietary, (Larson, 1997).

The lack of attaining a full growth potential may also be indicative of a population with restricted access to resources or suffering from some dietary or environmental stress. The modal height of 153 cm. (5'0") for the females and 168 cm. (5'6") for the males is not tall, even by any medieval standards. The robustness of the bones, pronounced muscle attachments, short squat bones, the lateral twisting to the ulna and radius, along with, marked asymmetry, all suggested a physical, if not a harsh lifestyle.

4.6 ANIMAL BONE

by Dr Ros Coard (Department of Archaeology and Anthropology, University of Wales, Lampeter)

Introduction

This assessment report considers the animal bones from the excavation of the Brownslade Barrow in Castlemartin, Pembrokeshire. As this is an interim statement most of the remarks and comments remain general in nature and should be considered 'provisional'. Quantification to demonstrate trends or to provide supporting evidence is still ongoing. Essentially this report presents some initial findings and thoughts.

Initial Observations

A full quantification of the animal bone has not yet been completed although the material is currently stored in 14 small boxes and 41 large boxes. The majority of the animal remains consist of co-mingled bones from 'disturbed' topsoil contexts. The disturbance is due largely to animals (badger, rabbit plus other potential agents such as fox) and humans (probably) attributable to antiquarian explorations.

The species list is wide ranging and so far includes domesticates (cow, horse, sheep, pig and dog) and wild animals (fox, badger, rabbit and bird). Intriguingly there is little fish bone (one may have expected this on a site so close to the coast) and this does raise interesting research questions regarding diet. Some domesticates show butchery marks and burning. Pathologies are very rare, tooth loss/severe wear being the only pathology observed so far. They most probably represent use of the site once its function as a cemetery had ceased (and been forgotten about?).

Statement of Potential

The vast majority of the bones were recovered from disturbed contexts and as such their 'research' value may be limited. There is no obvious association between the graves/skeletons and the animal bones (the bones do not represent grave goods for example).

The animal bones are useful in terms of giving a taphonomic insight to the site. They may well prove interesting as an indicator of the movement of material across the site (for example a skeleton of a diagnostic animal may show a concentrated or diffuse distribution). This will be useful to gauge the extent of post-depositional disturbances. Although it may be the case that all movement is due to badger activity it should not be assumed for all of the material at this stage. It may be worth running a single radiocarbon date on the animal bones on the assumption that they represent reuse of the site after the functioning of the cemetery. Although the need for this may not be as great IF it can be established that any material remains (pottery etc.) are truly contemporaneous with the animal bone.

The animal bones however, still represent past human activity and it may possible to relate this activity to a later period/population. Although there are some interesting research questions within this material it is hampered by several factors. The dating would need to be resolved to establish the relationship of these bones to the Borwnslade population and put them in an historical context.

If this were done then comparisons could be made with other assemblages and some meaningful socio-economic questions could be addressed.

Another drawback is that the material is not from an identified context (in contrast to the disturbed human bones where they are known to be from a grave). No middens have been identified, although much of this material is probably derived from a midden. The lack of a context makes some of the more standard quantification methods, for example assessment of the minimum number of individuals less meaningful.

Interesting research questions could be asked of this material and we do have collections from both urban and rural contexts within Wales for which a good comparative data may be obtained. Regardless of whether the animals are pre-or post Norman conquest, such issues as, size of breads, relative economic importance of species, butchery patterns, kill off patterns, evidence of traction (beasts of burden) etc. could be addressed in a longer time frame. Some of the issues could be very interesting to research as species abundance, the use of 'status' animals and traction animals along with differing sizes of animals all change with the Normans. It is possible that an unusual pattern is noted, for example butchery or skinning evidence in the dog remains. If this should occur then this particular aspect of the assemblage becomes more interesting but could be addressed as a single research question.

However important these issues are (and they are important as these are all under-researched areas with in a Welsh context) more could probably be gained from concentrating efforts on the human remains at this stage. It remains a possibility that the animal bones could range from a wide period of use, even spanning pre and post conquest, making some of the outlined comparisons less secure or valid.

In summary:

- The simple fact that bone rarely survives in Wales due to the normally acidic nature of the soils (Caseldine, 1990) makes this material rare.

- Even though context of the animal bone is not as secure as would be hoped to address some wider research issues, they do represent past human behaviour and remain a source of information that would not otherwise be available to the archaeological or historical community.

- Preservation of the bone and bone surface texture ranges from good to exceptional and as such gives an opportunity to examine the finer details of the taphonomy of the animal bones assemblage and the site as a whole.

Recommendations

The final animal bone report will provide a species list and attempt to quantify the bones and give relative proportions of each species. This will tell us how economically or socially important each species may have been. Taphonomic features will be noted with special reference to butchery marks and carnivore damage along with noting spatial distributions. Pathology will be noted. The more complete bones identified to anatomical part and species may be measured if they relate to wider research issues but in reality any research using such a sample would want to assess the features that are particular to their research and this is not easy to predict. The report will include graphical representation of the assessment.

A single sample should be submitted for radiocarbon dating. AMS may be the only option here as unless a group of bones from a single and discrete context can be identified (clearly if this cannot be done a sufficient mixture of bone will need to be submitted for standard radiometric dating making the date all but invalid). A single date would indicate the period of abandonment/ reuse of the site. It may be that this date proves to be of research interest and some of the issues outlined above could be addressed. The date could be obtained from one of the less commercial labs that offer a more restricted range of services (and as such they tend to be cheaper but also much slower) as only a date is needed and not isotope ratios etc.

This assemblage should be retained to assess its potential against other similar assemblages. If they prove interesting or throw up something unique, the work that may need to be done could be reassessed at a later date. The costs to address a single issue in terms of research (for example measurements of some cow bones taken as evidence of the use of cow as traction animals) would be modest.

4.7 CHARRED PLANT REMAINS

by Wendy Carruthers

Methods

A total of eight soils samples were processed from the site from a variety of contexts. Six of the samples were taken from the buried soil (271) and associated features (277, 279, 281 and 289) and underlying the sand in Areas 6 and 7 and the other two were taken from the shell midden (269) cutting the sand in Area 8. During the initial assessment stage, half of each sample (10 litres) was processed using standard methods of bucket floatation. A 250 micron mesh was used to recover the flot and a 1mm mesh was used to retain the residue. Sample 602, from a small post-hole (279), was only 4 litres in volume, so the entire sample was processed at the assessment stage.

Since reasonable quantities of charred plant remains were recovered from the assessment samples, the remaining soil from each sample was processed for the full report. The soils were very sandy, so processing was quick and easy and the residues were small. All of the residues were scanned for charred plant remains as a check on recovery. Very few charred remains were found in the residues, so the floatation was considered to have been successful. Finds (primarily burnt and un-burnt bone) were extracted from the residues and sent to the relevant specialists.

Results

Table 10 presents the results of the full analysis. Nomenclature and most of the habitat information follows Stace (1997).

Notes on identification and state of preservation **-** The state of preservation for most of the charred plant remains was fairly poor, with surface erosion of the cereal grains being the main problem. This was particularly notable for barley grains from the shell midden pit (269), probably due to the charred material having been re-deposited from floor and hearth sweepings. The sandy nature of the soils may also have caused abrasion. The poor state of preservation limited identification of the barley to *Hordeum* sp. in most cases. However, it is likely that hulled 6-row barley (*Hordeum vulgare*) was being grown, since some evidence of husks and twisted lateral grains were observed.

Although most of the hulled wheat (emmer/spelt (*Triticum dicoccum/spelta*)) chaff was too fragmented to be identified to species level, a few well-preserved glume bases from sample 616 (the early cultivation marks 277) demonstrated that spelt wheat was being grown (*T. spelta*). Hulled wheat grains cannot be reliably identified to species level (Jacomet, 1987), but the lightly eroded grains in samples 601 (the linear gully 289) and 616 (the cultivation marks) were more characteristic of spelt than emmer, being more robust and blunt-ended.

Several oat grains were recovered from the shell midden pit (269) sample 614. Although no floret bases were preserved to confirm the presence of cultivated rather than wild oat, the large size and relatively large number of grains suggested that oats were being cultivated.

Discussion

i) Features cutting the loess (272) in Area 6

Linear gully (289) - samples 601 and 629 - The dark brown sandy silt fill of this v-shaped ditch contained signs of charcoal staining, burnt and unburnt bone and a few large grey stones. Several large (>2mm) fragments of charcoal and charred plant remains were recovered from the flots, although the overall concentration was low (< 0.3 fragments per litre of soil processed (fpl)). Two emmer/spelt grains (*Triticum dicoccum/spelta*) and a barley grain (*Hordeum* sp.) were identified. The presence of a charred sloe stone (*Prunus spinosa*) suggested that wild foods were being exploited. The remaining few seeds were from common grassland/cultivated land weeds, including a clover/medick/trefoil-type seed (*Trifolium/Medicago/Lotus* sp.), a grass seed and a chickweed-type embryo (Caryophyllaceae). They may have become charred as arable weeds or amongst hay, bedding, tinder etc. This small, mixed assemblage of charred grain, a fruit stone and bone are indicative of dumped domestic waste.

Posthole 279 - sample 602 - The chocolate brown sandy silt fill of this small, circular posthole contained several large fragments of charcoal, some large grey stones and frequent fragments of burnt bone. The small soil sample (4 litres) produced several barley grains, including some that were well-enough preserved to show that hulled 6-row barley (Hordeum vulgare) was being grown. The only other charred remain present was a lesser celandine-type (Ranunculus ficaria-type) tuber. Lesser celandine is common in damp meadows and hedgebanks. The tubers can become charred within turf as they are borne quite near to the surface, for example if a bonfire was laid in a grassy location. However, there is also evidence for their use as food and for medicinal purposes in early prehistoric times, as described by Mithen et al (2001).

These remains could have been present in the soil at the time the posthole was being dug. Alternatively, they may have entered the hole when the post was removed, or they could represent material that was lying around the post when it was burnt out. In this latter case, the identification of the lesser celandine tuber suggests that the surrounding vegetation type was damp grassland. It is difficult to take the interpretation of a single, small sample further, but the presence of frequent burnt bone and relatively frequent charred grains (3.8 fpl) does suggest that domestic activities were occurring nearby.

Linear gully (281) - sample 603 **-**This shallow ditch contained orange/brown silty sand with very few inclusions. A few poorly preserved bone fragments were present in the residue, and the flot contained several fragments of charcoal. Charred plant macrofossils, however, were scarce, with a poorly preserved emmer/spelt glume base and a fat hen (*Chenopodium album*) seed being the only identifiable remains (0.2 fpl). A charred sedge-type (Cyperaceae) rhizome fragment was present, suggesting that sedges may have grown in the damper stretches of the ditch. This small assemblage probably derives from low-level domestic waste.

ii) The buried soil (271) - sample 617

Overlying the loess and some early cultivation marks was a buried soil (271). This orange/brown sandy silt was the only sample found to contain a notable clay component when it was being processed. A few fragments of charcoal were recovered from the flot, but no cereal remains were found. The only charred plant remains were several tubers/rhizomes of both the lesser celandine type and the sedge type. A single clover/trefoil/medick seed was present. These results suggest that a period of stabilisation may have occurred, when damp grassland vegetation became established across the site. If grazed, these meadows may have been maintained for some time. Bonfires or burning of the vegetation *in situ* for clearance may have caused the tubers and seed to become charred.

iii) Plough marks (277) - sample 616

A second set of cultivation marks was cut into the top of the buried soil in Area 6 (277). The orange, sandy soil from in and around these cuts was surprisingly productive (3.6 fpl), containing the only assemblage of probable cereal processing waste from the site. Emmer/spelt chaff fragments were the most frequent component of the assemblage, at a ratio of 2 : 6 : 1 grain to chaff to weed seeds. Spelt wheat (*Triticum spelta*) was positively identified from a few well-preserved glume bases and tentatively from three well-preserved, blunt-ended grains. Two emmer/spelt grains have been submitted for radiocarbon dating. A single poorly preserved barley grain was also recovered. The few weed seeds present were characteristic of grasslands or open, cultivated soils, such as ribwort plantain (*Plantago lanceolata*) and docks (*Rumex* sp.). They may have been growing as arable weeds, or they could have come from burnt hay or dung. A fragment of hazelnut shell (*Corylus avellana*) indicated that other types of domestic waste had been mixed in with the cereal processing waste, and that wild foods were being collected.

Both burnt and un-burnt bone was present in the residue. Together with the cereal processing waste, this deposit is indicative of burnt domestic waste that was probably being used to manure the fields. Waste may have first been collected in a midden, although there was no evidence that conditions of preservation had been moist enough to have produced mineralised plant remains. Mineralisation can occur where there is an accumulation of highly organic material if drainage is restricted (Carruthers, 2000).

The hulled wheat remains could have been the waste product from small-scale cereal de-husking over a domestic fire prior to cooking, since hulled wheats were usually stored in spikelet form in order to prevent spoilage and sprouting (Hillman, 1981). There is no evidence to suggest that large-scale cereal processing was taking place on the site. In fact, the scale of arable cultivation throughout the periods sampled at Brownslade Barrow appears to have been fairly small, judging from the low concentrations of charred plant remains recovered from the site.

One item of note was a charred fragment that appeared to be seaweed, having the dense cell structure and general morphology of one of the wrack (*Fucus* sp.) seaweeds. A larger number of fragments was recovered from the shell midden pit 269 (see below), some of which had parts of the bladder-shape preserved. It is fairly certain, therefore, that seaweeds were being collected for use as fertiliser, as has long been the tradition in coastal areas. Some seaweeds can also be consumed, and Mabey (1972, p.119) mentions bladder wrack (*Fucus vesiculosus*) as being one that can be cooked and eaten as a vegetable.

iv) Shell midden pit (269) - samples 614 and 615

The samples that produced the highest concentrations of charred plant remains (6.7 and 4.4 fpl) came from the shell midden pit in Area 8 (269). These two samples produced abundant limpet shells and other molluscs, in addition to frequent bone fragments. Some of the bone fragments were large, such as fragments of jaw bone and teeth. The material in this pit clearly represents both burnt and un-burnt domestic waste.

If the charred cereal remains derived from human food debris, rather than animal fodder, the principal grain being consumed at this time appears to have been barley. A single twisted lateral barley grain indicated that hulled six-row barley

was present (*Hordeum vulgare)*. The condition of the grains was particularly poor in these samples, suggesting that the material may have been left exposed to the elements for some time before being re-deposited in the pit. Perhaps they were initially deposited in a midden, after being swept up from floors and hearths. Barley is the most salt-tolerant of the cereals, so it is well-suited to being grown in coastal locations. It also grows well in free-draining soils, so would have coped well with the sandy silts present on site.

As several large oat (*Avena* sp.) grains were present in sample 614, a mixed crop, dredge (oats and barley) may have been grown. Alternatively, oats may have been grown as an occasional crop, or primarily for fodder. Dredge is frequently mentioned in documentary sources from the medieval period, and several archaeobotanical charred assemblages have now been identified (e.g. Medieval malting kiln at Burton Dassett, South Warwickshire (Moffett, 1991); C16th barn at Wharram Percy, Yorks (Carruthers, forthcoming)). The advantages of growing maslins or mixed crops range from an effective 'insurance policy' in case weather conditions or pests and diseases cause the failure of one of the cereals, to a guard against lodging. Dredge was often used for brewing in the medieval period.

The only additional evidence of food from the midden pit was a couple of small charred hazelnut shell fragments (*Corylus avellana*). Wild foods from woodland margins and hedgerows were clearly still part of the diet at this time.

In addition to a couple of seeds from common weeds of disturbed soils (dock, clover/medick/trefoil-type), several fragments of probable charred seaweed (possibly wrack (*Fucus* sp.)) were recovered. As noted above, seaweed would have been valued as a fertiliser, probably first having been burnt to ashes, since seaweed takes a long time to rot. In post-medieval times seaweeds were collected and burnt to produce alkali, and this was used to make soap, glass, alum and paper. Seaweeds may also have been gathered as food, or used for 'packaging' for the molluscs, as it helps to keep them fresh.

Comparisons with other sites in Wales

Information concerning plant macrofossil records in Wales has primarily been recovered from Caseldine (1990).

The charred plant remains provide few clues as to the possible dates of the deposits, so the radiocarbon dates will be important in providing this information and this report will need to be altered accordingly.

Hazelnut shell fragments have been recovered from sites of all periods across Wales, from the Mesolithic period onwards. Wild foods such as sloes and hazelnuts would have provided valuable additional nutrients and some variety to the diet throughout the year, since they are easily dried and stored. Roasting improves the digestibility of nuts, and drying improves the flavour of sloes by removing unpleasant tannins (Wiltshire, 1995).

Hulled six-row barley has been cultivated in Wales from the Neolithic period onwards, being the dominant cereal grown on most Bronze Age sites across the British Isles. Oats have been found in small numbers from the Bronze Age onwards, with some Medieval sites producing large assemblages of oats (e.g. Loughor Castle, West Glamorgan, Carruthers, 1994). Spelt wheat first appears on sites in South Wales in the Iron Age, and by the time some sites became Romanised it was dominant and sometimes grown in large quantities. The

presence of granaries and corndriers at sites containing spelt wheat remains, provides evidence for the scale of cultivation.

As accelerator dating of single grains is increasingly being carried out, there is some evidence to suggest that hulled wheats may have continued to be grown in small quantities into the Dark Ages (e.g. 6th century Ty Mawr, Anglesey, Williams 1986). Oats and barley were recovered from a rural site in mid Wales (Capel Maelog, Caseldine, 1990), and a slightly wider range of cereals and legumes, including wheat, peas and beans has been recovered from more urban sites (Caseldine, 1990).

Summary

The features cutting the loess and sealed by the buried soil, and the plough marks cutting the buried soil produced assemblages that suggested small-scale spelt wheat and hulled 6-row barley cultivation was taking place during the Late Iron Age or Romano-British period (to be confirmed by dating). The few accompanying weed taxa were more typical of grassland and disturbed places than well-established arable fields, and this suggests that the cultivation may have been short-lived, or located on newly ploughed grassland. Alternatively, the seeds may have been charred amongst hay rather than growing as arable weeds. However, it is notable that all of the assemblages produced a similar range of weed taxa. Wild foods such as hazelnuts and sloes were being collected from hedgerows and woodland margins. Seaweed may have been used as fertiliser.

Evidence from the later (?post-medieval) shell midden pit (269) suggested that hulled 6-row barley and perhaps dredge (barley and oats) or oats were the principal cereals being consumed. Hazelnuts were still being collected, as was seaweed. Once again, no specialised arable weeds were identified. The presence of clover-type weed seeds in all of the periods sampled suggests that the nutrient content of the local sandy soils was poor, so manuring with household waste and seaweed ash would have been necessary to produce a reasonable yield.

sample no.	601	629	602	603	616	617	614	615
area	6	6	6	6	6	6	8	8
context	273	273	274	276	277	271	239	239
feature	gully 289	gully 289	post-hole 279	linear feature 281	plough marks	buried soil	shell midden pit 269	shell midden pit 269
GRAIN								
Triticum dicoccum/spelta (emmer/spelt grain)	1	cf.1			3			
Hordeum sp. (hulled barley grain)			1					
Hordeum sp. (poor, eroded barley grain)		1	6		1		53	34
Hordeum vulgare L. emend. (barley grain - twisted)			1				1	
Avena sp.(wild/cultivated oat grain)							9	
Indeterminte cereals	1	2	6		10		49	53
CHAFF								
Triticum spelta (spelt glume base)					3			
T. dicoccum/spelta (emmer/spelt glume base)				1	32			
T. dicoccum/spelta (emmer/spelt spikelet fork)					12			
Avena sp. (oat awn frag.)					++			
WEEDS etc.								
Ranunculus acris/bulbosus/repens (buttercup achene) DG					1			
Corylus avellana L. *(*hazelnut shell frag.) HSW					1		2	
Chenopodium album L. (fat-hen seed) CDn				1				
Caryophyllaceae embryo (chickweed etc.) CDG		1						
Rumex sp. (dock achene) CDG					1		1	1
Prunus spinosa (sloe stone) HSW		1						
Medicago/Trifolium/Lotus sp. (medick/clover/trefoil seed) GD		1			2	1	1	
Plantago laceolata L.(ribwort plantain seed) Go					2			
Poaceae (small seeded grass caryopsis) CDG		1			1			
Carex sp. (trigonous sedge nutlet) MPw					1			
tubers; *Ranunculus ficaria*-type (lesser celandine type)			1			10		
rhizome; Cyperaceae type (sedge-type)				1		10		
tuber NFI							1	
cf. seaweed frag.					1		17	
TOTAL	**2**	**8**	**15**	**3**	**71**	**21**	**134**	**88**
volume of soil processed (litres)	**20**	**19**	**4**	**20**	**20**	**19**	**20**	**20**
charred plant remains per litre	**0.1**	**0.4**	**3.8**	**0.2**	**3.6**	**1.1**	**6.7**	**4.4**

KEY : C = cultivated soils; D = disturbed ground; G = grassland; H = hedgerows; M = marsh, bogs; P= ponds, ditches etc.; S = scrub; W = woods; n = nutrient-rich soils; o = open ground; w = wet/damp soils; NFI = not further identifiable; ++ = several small

Table 10 – the charred plant remains

4.8 LAND MOLLUSCS

by Martin Bell and Alex Brown

Two collumns of samples were analysed. The methods used are essentially those outlined by Evans (1972). The sampling locations are indicated on Figure 4.

Column 1

This was from the southeast corner of Area 5. The results are presented in Table 11. This column presents an essentially similar sequence to that in Column 2. Five samples were analysed. There were no shells in the buried soil (284). Above the buried soil in this context there is a yellow-brown band (283) which is the sand associated with a dry-stone wall (231). This was dominated by *Helicella itala* and also present were *Trichia hispida, Cochlicella acuta, Cernuella virgata, Vitrina pellucida, Vallonia excentrica* and *Cochlicopa lubrica.* This suggests patchy grassy vegetation. The overlying yellow sand assemblage (194) is essentially similar to that in Column 2, but there are some differences. In this column *Helicella itala* is abundant at the base and declines upwards. In Column 2 the reverse was obtained. In this column *Cochlicella acuta* increases from the base upwards, whereas in Column 2 it decreased from the base upwards. Thus, if the yellow sand is essentially the same stratigraphic unit in both columns, then the evidence suggests it may not have accumulated at exactly the same stage in the 2 areas of the site examined. This is consistent with the patchy vegetation implied and the way in which sand dunes form and move.

Two samples were examined from the overlying mid-grey sand in Column 1 (287). This produced a very abundant mollusc fauna, over 500 shells in each sample. The dominant species is once again *Cochlicella acuta* but *Vallonia excentrica* is also abundant and other significant species are *Trichia hispida, Helicella itala* and *Vertigo pygmaea*. This assemblage is more diverse than any of the other samples, suggesting increasing stability and vegetation cover at the top of the yellow sand (287). Even so, there is no evidence of shade or trees and the environment suggested is a grassy stabilised dune landscape from the number of molluscs obtained over an extended time-scale.

Column 2

Column 2 was from the north section of Area 6 where a sequence of 7 samples was analysed. Results are presented in Table 12. The basal subsoil or loess (272), contained no land snails and the buried soil with cultivation marks (271) contained only 2 shells, individual examples of *Cochlicella acuta* and *Helicella itala*. It appears that the buried soil was non-calcareous and conditions only became calcareous and suitable for mollusc preservation with the subsequent encroachments of blown sand. The later sand samples contain a high proportion of marine mollusc fragments: thus they are quartz and shell sand with abundant tiny marine gastropods, which are considered to be a natural constituent of the sand. The basal soil horizon was overlain by yellow sand (223), from which a sequence of 3 mollusc samples was analysed. At the base *Cochlicella acuta* predominated but declined upwards. In the upper 2 samples *Helicella itala* was the dominant species. The other species at this stage are: *Vallonia costata, Candidula intersecta, Cernuella virgata, Trichia hispida, Cochlicopa, Pupilla muscorum* and *Vitrina pellucida*. *Cecilioides acicula* is present but as a burrowing species has no ecological significance. The fauna at this stage is a restricted one dominated by 2 species, *Cochlicella acuta* and *Helicella itala*. This suggests a rather specialised environment for molluscan life. The species present are

consistent with a dry dune environment with patchy vegetation cover and a lack of shade. The early Medieval burials were cut into the top of the yellow sand and thus apparently in the type of semi-mobile patchy vegetated dune system described, that is, unless there has been some truncation of the sequence at this point as a result of animal disturbance or deflation.

Above this was badger disturbance, from which samples were not analysed. That was overlain by grey sand (294) from which 2 samples were analysed and the topsoil (132) from which 1 sample was analysed. Both produced essentially similar mollusc assemblages. *Cochlicella acuta* remained the dominant species in 2 samples but *Vallonia excentrica* is also significant and predominates in the upper sample of Context 294. Other significant species at this stage are: *Cernuella virgata, Helicella itala, Trichia hispida* and these are accompanied by 9 other species. These upper more diverse assemblages are consistent with a relatively stable vegetated dune system which, as the *Vallonia excentrica* suggests, was grass-covered and grazed. There is only slight evidence for shade, perhaps the odd tree or scrubby patch of vegetation not near the site. By this stage the dune system appears to have been fully stabilised.

General discussion

Of note in the assemblage are some species which are considered to be Holocene introductions to the British fauna. Of these, *Cochlicella acuta* is present from the earliest levels in both columns. It is abundant later in Column 1 and Column 2. *Cernuella virgata* is abundant later in Column 1 and Column 2. This might suggest that the yellow sand accumulated in Column 2 first and Column 1 subsequently. The dates at which these species, and the other introduced species present, *Candidula intersecta* and *C. gigaxii*, were introduced are not at present clear. The general view is that they were medieval introductions but *Cochlicella acuta* and *Cernuella virgata* appear to occur in prehistoric contexts at Brean Down (Bell 1990). They may have appeared at an earlier date in coastal enclaves. For instance, *Cochlicella acuta* occurs in Dark Age contexts at Bantham, Devon.

In conclusion, the overall sequence is of a non-calcareous cultivated soil without molluscan evidence, that was overlain by calcareous shell sand which supported a restricted mollusc fauna suggestive of an only partly-vegetated and thus still mobile dune system. The burials appear to have been made in this context. Subsequently the dunes became stabilised and were vegetated, suggesting a dry grazed grassland environment with very little evidence of scrub or trees.

Note
Some revision to this report is needed before final publication. On Figure 2, one of two *Cernuella virgata* columns needs to be removed. On Figure 1, *Cernuella virgata* and *Hellicella itala* need to be amalgamated as *C. virgata.* No significance at this stage should be attributed to the presence of *Ashfordia granulata/ Ponentina sub virescens* in Column 1 but not in Column 2. Column 2 samples need to be checked for this species and further work is required to establish whether the Column 1 samples are *Ashfordia granulata* or *Ponentina sub virescens*. The mollusc names may also need some revision in the light of current nomenclatural changes.

Table 11 Land Molluscs Column 1

Land molluscs	**Column 1**											
Context	**287top**		**287B**		**194 top**		**194B**		**283**			
Sample	**605**				**S6592**				**609**			
Analysis by:	TW		Y		MB		JS		M			
Carychium minimum	1		0		0		0		0			
Cochlicopa lubrica	3		1		0		0		9			
Cochlicopa lubricella	2		2		0		0		0			
Cochlicopa sp	0		2		1		1		0			
Columella edentula	0		0		0		1		0			
Vertigo pygmaea	24		4		1		0		0			
Pupilla muscorum	7		16		4		2		0			
Vallonia costata	1		6		0		0		0			
V. excentrica	192		67		5		0		5			
Vallonia spp	0		0		0		3		0			
Punctum pygmaeum	1		0		0		0		0			
Vitrina pellucida	3		0		0		0		1			
A. nitidula	4		0		0		0		0			
Euconulus fulvus	0		0		1		0		0			
Ceciloides acicula	2		0		0		0		0			
Candidula intersecta	5		0		0		0		0			
C. gigaxii	1		0		0		0		0			
Cernuella virgata	56		168		9		0		1			
Helicella itala	40		18		26		59		85			
Cochlicella acuta	162		244		36		9		6			
Ashfordia granulata/ Ponentina subvirescens	27		4		1		1		0			
Trichia hispida	44		9		7		1		25			
Cepaea/ Arianta spp	1		1		0		0		0			
Land mollusc total	576		542		91		77		132			
Mytilus edulis (common mussel)	5				+		+		1			
Balanus sp (barnacles)			2		1		+					
Patella vulgata sp (limpet)	1+ 13F		1+		+		+		4			
Patina pellucida Blue rayed limpet							1					
Marine gastropod			5				58					
Marine bivalve							3					
Marine fragments	5											
Ostracod			1									
Mite			2									
Small mammal bone			1									
Bone	3		4		1		+		5			
Rodent bone	1											
Earthworm granules					+							
Foram									1			
Charcoal			5				+		+			
Cereal grain			1						2			
Seed			1									
Charred seed			7									
Sponge							+					

F = fragments

Table 12 Land Molluscs Column 2

Column 2								
Sample	**620**	**621**	**622**	**623**	**624**	**625**	**626**	**627**
Context	**132**	**294 top**	**294 bottom**	**223 top**	**223 middle**	**223 bottom**	**271**	**272**
Carychium minimum	-	1	0	0	0	0	0	0
Cochlicopa lubrica	4	8	3	0	0	0	0	0
Cochlicopa spp.	2	5	0	2	0	0	0	0
Vertigo pygmaeae	0	11	0	0	0	0	0	0
Pupilla muscorum	6	17	12	1	0	0	0	0
Vallonia costata	6	8	0	0	0	0	0	0
Vallonia excentrica	25	175	33	1	2	11	0	0
Acanthinula aculeata	1	0	0	0	0	0	0	0
Puntum pygmaeum	0	3	0	0	0	0	0	0
Discus rotundatus	2	0	0	0	0	0	0	0
Vitrea pellucida	0	0	0	1	0	0	0	0
Nestrovitrea hammonis	0	1	0	0	0	0	0	0
Aegopinella nitidula	1	11	0	0	0	0	0	0
Ceciloides acicula	5	4	10	0	2	0	0	0
Candidula intersecta	3	1	0	0	14	0	0	0
Candidula gigaxii	9	0	0	0	0	0	0	0
Cernuella virgata	42	20	21	0	12	21	0	0
Helicella italia	23	15	14	51	75	13	1	0
Helicella virgata	0	0	0	0	0	5	0	0
Cochlicella acuta	64	98	135	1	26	39	1	0
Trichia hispida	8	67	0	17	0	0	0	0
Cepaea	0	0	0	1	0	0	0	0
Total land molluscs	201	445	228	75	131	89	2	0
Marine spp.	0	0	40	0	0	0	1	0
Limpits	2	0	6	0	0	0	0	0
Total marine	2	0	46	0	0	0	1	0
Land plus marine	203	445	274	75	131	89	3	0

4.9 ARCHAEOMETALLURGICAL RESIDUES

By Tim Young

Summary

This largely unstratified assemblage included 0.69kg of iron smelting slags, 2.69kg of smithing slags, 0.76kg of indeterminate iron slags, 2.88kg of goethitic iron ore, 0.40kg of other natural rock and 0.14kg of iron, mainly shrapnel.

Iron smelting was represented by 5 small pieces (each less than 80g) with textures compatible with, but not certainly indicative of, tapped slags, plus one large block 502g with a lobate vertical margin, indicative either of solidification within the tapping arch area of a slag-tapping furnace, or within the basal pit of a non-tapping slagpit furnace

Iron working was represented by pieces of at least 9 smithing hearth cakes (SHCs). Well-preserved examples ranged in weight from 140g up to an estimated 900g.

The iron ores are goethitic ores and appear to include both replacive and surface-coating morphologies. There are approximately 80 pieces of ore in the collection, a level in excess of that normally found on smelting sites. This strongly suggests that the ores may outcrop close to the site and that the ores found in the excavations may be largely present through natural, rather than artificial, processes. For instance, karstic dissolution (and other weathering processes) may release iron ore from their host limestones.

Despite the material not being stratified, the presence of iron smelting slags in conjunction with iron ore raises the importance of the assemblage and may suggest Brownslade as a previously unrecognised source of iron ore. The possible occurrence of non-tapping iron smelting slags is also significant, for these have not been recorded in southern Wales, although elsewhere in Britain they are known from both pre-Roman and early Medieval iron-smelting sites.

Methods

All pieces in the assemblage were examined, where necessary using a low-powered binocular microscope, and weighed. The full catalogue is presented in Table 4. Distributional information is presented in Table 3.

Results

Iron-smelting slags - Slags produced during iron smelting are represented by six pieces, five of which are small. The small pieces show good evidence for flow, in at least two cases over a bed a charcoal, but represent only rather thin flows. These pieces resemble material commonly identified as tapped slags, although that interpretation is not strictly certain on pieces as small as these. One of these pieces was recovered in a stratified context (c105).

A large (502g) block of dense slag (from c156) shows the angle between a gently curved, possibly basal surface of the slag accumulation and an irregular, strongly convex, sub-vertical bounding surface. The nature of the material forming the vertical boundary is not indicated by the surface, which is strongly lobate (with lobes elongated horizontally). The surface has a white encrustation, which may be calcified ash. The lobate surface indicates poor wetting of the surface by the slag.

The convex nature of the vertical surface suggests that the most likely obstacles to have generated the curved surface would be either a stone (either lying on the floor on which the slag accumulated or as part of the margin of the area of accumulation) or a piece of wood (as commonly found as packing within the basal pits of non-slag tapping furnaces).The block does not appear to show flow lobes internally, and they are only weakly developed near the margin of the rough base. The slag is strongly vesicular, apparently becoming greatly so on the upper part of the surface away from the obstruction. Such a texture favours the block as a furnace slag rather than a true tapped-slag.

Smelting slags comprised 15% of the slag assemblage.

Smithing slags - The smithing slags mainly comprise fragments of smithing hearth cakes (SHCs). The fragments range from a complete example of 140g up to approximately 80-90% of an SHC weighing 728g (suggesting an original weight of 800-900g). Smithing slags comprised 65% of the slag assemblage. Where determinable, all the SHC material had textures suggestive of smithing using charcoal fuel.

Indeterminate iron slags - Material of too small a size to be identifiable with any certainty, together with larger pieces of indeterminate origin, provided 0.76kg (18% of the slag assemblage)

Iron ore - 2.88 kg of iron ore was recovered. This material appears mainly to be goethite, but small amounts of haematite may be present. The material has a variety of morphologies, with sheet-like material dominant, although boxstone pieces also occur, together with more massive blocks. The general range of morphology suggests that the ore may have been present in mainly rather small accumulations (perhaps on joint surfaces). One piece shows gradation of ore into a crinoidal limestone and several others show low-grade materials of uncertain lithology.

Other materials - The submitted collection contained small quantities of natural stone, together with several pieces of corroded iron that were probably shrapnel. There was also a single piece of stout iron wire (or narrow rod).

Distribution

Only one piece of slag was firmly stratified, a small piece of probable tapslag from an early context, c105. The materials show an uneven distribution across the site, with the majority of both ore and slag recovered from the northwestern part of the excavation (areas 5, 8 and 9; Table 13).

area	***slag***				***ore***
	smelting	*smithing*	*indet.*	*total*	
1	38	240		*278*	
2			62	*62*	
5	12	88	34	*134*	288
6			90	*90*	
7					62
8	578	390	101	*1069*	1290
9	62	1974	474	*2510*	1241

Table 13: Distribution of materials by area

Interpretation

The assemblage of ores from the site is extensive, and is indeed rather more extensive than is normal for iron smelting sites. The ores show that they were originally hosted in the Carboniferous limestone (the bedrock geology at Brownslade). Minor iron mineralization is known to be associated with the Flimston Fault (which passes close to Brownslade), where it is exposed on the coast at Great Furznip (S. Howells, pers. comm. 2006). The ores found at Brownslade might well have been released from the host rock by natural dissolution of the limestone (there is no direct evidence of the pieces having been mined). Other small areas of iron mineralization are also recognised further east in South Pembrokeshire (Dixon 1921)

The smelting slags are difficult to interpret in detail, for the large block which is possibly from a non-slag tapping furnace does not show conclusive evidence for, for instance, large wood inclusions, and the smaller pieces of probable tapslag are too small to certainly exclude an origin as within-furnace flows in a non-tapping furnace. If some of the slags are from a non-tapping furnace then that would favour an Iron Age or Early Medieval age, whereas tapped slags could be Roman or later.

The smithing slags are generally rather undiagnostic, but the presence of a moderately sized cake (>800g) hints at bloomsmithing being undertaken (although larger SHCs do appear on blacksmithing sites from the Medieval period).

Discussion

The assemblage is both small and largely unstratified, but is none-the-less significant for its evidence for both smithing and, more especially, iron-smelting in an area not normally noted for metallurgical activity. Other recent discoveries of iron smelting in the area (Young 2006) have raised the question of the nature of ore resources in this part of Wales. The abundant ore fragments present at Brownslade appear to be more indicative of a local geological resource, than of ore imported for smelting but lost or discarded on site. The ore fragments may largely represent material from the host Carboniferous limestone through dissolution of the limestone by Karstic processes.

The confirmation of this resource by analysis and comparison of the ores and smelting slags should be undertaken. If that relationship were to be demonstrated, it would be a significant step forward in unravelling the currently uncertain status of early iron-production in SW Wales. It would also be desirable that reference samples of iron oxide deposits should be made and analysed from the several localities around the area that currently expose geological materials similar to those conjectured to be responsible for the Brownslade ores.

Confirmation of the identification of non-slag tapping smelting slag would also be significant, for this technology is not yet recognised in southern Wales.

The unstratified nature of the material means that analysis of the smithing slags is unlikely to have great potential.

The site clearly has great potential beyond the current results, and the great significance of the metallurgical activity at the site should be recognised in any further archaeological investigations there. The conjunction of smelting slags and iron ores at Brownslade suggests a previously undocumented ore source, which

might have significant implications for the development of early industry in SW Wales.

Table 14: Catalogue of archaeometallurgical residues

Context	*weight*	*description*
102	240	small dense SHC shattered into 12 pieces - very altered
105	38	dense grey tapslag-like sheet, but only a small piece, charcoal dimples on base
114	62	small fragment of dense slag (from SHC?) broken in two
131	178	rounded cobble of iron-enriched rock - needs cutting to determine precise nature
133	152	small glassy SHC with included quartz pebbles. Top smoothly lobed, base dimpled
	138	fragment from small but very dense SHC, weathered pale grey, has lots of tubular vesicles
	10	fine debris
134	216	very dense, probably most of small SHC, with very dense iron rich lower part
	14	corroded iron
136	74	4 pieces of iron ore
	66	grey glassy slag in nub with khaki surface, lots of small charcoal impressions
	260	part of small dense SHC. Slightly prilly base with probable large tool mark, interior vesicular, top covered with fine rusty material
143	62	rather porous iron ore
145	14	small dense ore fragment
146	10	possible vitrified lining
	12	corroded iron - shrapnel
	12	small piece of tapslag-like material
	14	3 pieces of iron ore
147	198	13 pieces of iron ore
	6	iron - shrapnel
	100	natural coarse limestone
	12	vesicular grey indeterminate slag
	72	most of small SHC, dense
148	10	corroded iron - shrapnel

	10	iron ore

context	*weight*	*description*
150	14	corroded iron - shrapnel
	60	angular lump of slag with a very large charcoal impression
	30	4 pieces of vesicular slag
151	62	low density piece - probably stone, but needs fresh surface
153	138	5 pieces of goethite ore
	4	stone
	10	charcoal-rich slag
	78	fragment from small very dense SHC, thick crust, but small puddle
154	6	limestone pebble
	186	8 pieces of goethite ore
	64	dense angular slag piece - probably from margin of SHC
	42	smooth topped but lobate, with dimpled base - fragment of a very thin SHC?
	20	small nub of dense vesicular slag
155	16	iron rod
	1	lining slag
	8	corroded iron lump
	472	23 pieces of goethite ore
	52	natural stone
	66	small block of vesicular dense grey slag - probably an SHC fragment
	<	charcoal piece
	140	small complete SHC, with good charcoal impressions on top and dimples underneath. Slag rather pale
156	76	small tap slag like piece, mainly single flow with rough base, c 15 thick, lobed top
	38	small nub of charcoal-rich lining dominated slag
	232	10 pieces of goethite ore
	502	accumulation of lobate slag on floor and against object. Possibly from basal pit of slagpit furnace, but possibly from tapping channel
	30	3 pieces of vitrified lining?
	2	low density finely vesicular slag fragment
176	40	3 pieces of iron ore

context	*weight*	*description*
213	22	probable corroded iron lump
	10	poorly mineralised boxstone piece
	252	iron ore
243	2	low grade iron ore fragment in red clay
248	1065	block of goethite ore
	728	part of medium sized conventional SHC, <80%, charcoal rich. In 3 bits
	50	fine slag debris
	282	indeterminate charcoal-rich rusty slag block
	100	2 ore fragments
	218	charcoal-rich slag piece - possibly an SHC burr
256	262	dense rounded nub of slag, possibly part of an SHC, grey slag abundant vesicles near surface
	36	tapslag fragment in two pieces
	26	probable tapslag-like piece with charcoal dimpled base in two pieces
	22	corroded iron - shrapnel
	66	5 fragments of vesicular slag - some possibly SHC material?
	18	2 pieces of concretionary material - both probably from growth around corroding iron
266	16	small smithing slag nub
	12	piece of slagged lining
	12	probable iron ore

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Mae'r adroddiad hwn wedi ei gael yn gywir a derbyn sêl bendith
This report has been checked and approved by

Ken Murphy

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Yn unol â'n nôd i roddi gwasanaeth o ansawdd uchel, croesawn unrhyw sylwadausydd gennych ar gynnwys neu strwythur yr adroddiad hwn

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