

An Early Beaker funerary monument at Porton Down, Wiltshire

by Phil Andrews and Steve Thompson

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Excavation of an Early Beaker–Early Bronze Age funerary monument at Porton Down revealed an unusually complex burial sequence of 12 individuals, spanning four centuries, including eight neonates or infants and only one probable male, surrounded by a segmented ring-ditch. In the centre was a large grave which contained the disturbed remains of an adult female, accompanied by a Beaker, which had probably been placed within a timber chamber and later ‘revisited’ on one or more occasions. This primary burial and an antler pick from the base of the ring-ditch provided identical Early Beaker radiocarbon dates. Two burials were accompanied by a Food Vessel and a miniature Collared Urn respectively, others were unaccompanied, and there was a single and a double cremation burial, both within inverted Collared Urns. A C-shaped enclosure nearby may have been contemporary with the funerary monument, but its date and function are uncertain. Other features included an Early Neolithic pit which contained a significant assemblage of worked flint, and several Middle Bronze Age ditches and a Late Bronze Age ‘Wessex Linear’ ditch that reflect later prehistoric land divisions probably related to stock control.

Introduction

Wessex Archaeology was commissioned by Dstl (Defence Science and Technology Laboratory) to undertake the archaeological mitigation required ahead of the development of a new magazine storage facility at Porton Down, Wiltshire, centred on National Grid reference (NGR) 421450 136400.

The development covers an area of approximately 24 hectares and involves the construction of a replacement explosives storage facility with associated landscaping and access. Information from the Wiltshire Historic Environment Record and previous archaeological investigations, including

a geophysical survey (Archaeological Surveys Ltd 2008) and an archaeological evaluation (Wessex Archaeology 2009), indicated significant and extensive prehistoric remains within the site.

A Written Scheme of Investigation set out the strategy and methodology for the archaeological mitigation (Wessex Archaeology 2011), and an assessment of the results of the summer 2011 excavation was produced in early 2012 (Wessex Archaeology 2012). A draft publication report was prepared by 2013, but changes to the development plans led to further excavations being undertaken in summer 2014 (Wessex Archaeology 2014) and early 2015, the results of which are included here.

Site location, topography and geology

The site is located on Porton Down, between Idmiston Down to the northeast and Battery Hill to the southwest, c. 1.5km east of the village of Porton (Figure 1). The northern third of the site is fairly flat, at c. 110m above Ordnance Datum (aOD), but the remaining land slopes down to the southwest, falling to a height of 98m aOD, with a shallow dry valley in the southeastern corner. The majority of the site lay under pasture at the time of the excavation.

The British Geological Survey map for the area (1:50,000 Solid and Drift Series, sheet 298) indicates that the underlying geology of the site consists of Upper Chalk. Alluvial deposits and Valley Gravel associated with the River Bourne lie a short distance to the north and west.

Archaeological background

Since the then Office of War took over Porton Down in World War 1, there has been a long history of archaeological investigations within this protected area, most notably by J.F.S. (Marcus) Stone beginning around 1930. He and subsequently others have done much to investigate and record the rich prehistoric landscape of this area of chalk downland, with a particular focus on the Neolithic and Bronze Age remains (Ride 2006). This work has continued up to the present day, led by Porton Down's Conservation Group's Archaeological Section.

A total of ten Scheduled Monuments lie within the site's immediate environs. These include several groups of Bronze Age barrows to the north of the site (SMs 26772, 26773, 26774, 26783 and 26784). The monument listing for SM 26784 also includes a group of early 20th-century gas testing trenches. Further groups of barrows lie to the east of the site (SM 26785, the monument listing for which includes a Bronze Age enclosure) and also to the south and southwest (SMs 26775–26778).

Two previous archaeological investigations have been undertaken within the site, consisting of geophysical survey and field evaluation, both connected with the proposed development.

Geophysical survey

A programme of magnetometer survey was undertaken in October 2008 (Archaeological Surveys

Ltd 2008), the results of which identified a number of anomalies of certain or probable archaeological origin. The subsequent trial trench evaluation was targeted on these results.

Archaeological field evaluation

The archaeological trial trenching was undertaken in November 2009 (Wessex Archaeology 2009). The main findings of the geophysical survey alongside the locations of the trial trenches are illustrated in Figure 1.

A total of 45 evaluation trenches were machine-excavated across the site. The evaluation established that archaeological features comprising a segmented possible enclosure ditch, a crouched inhumation burial, a segmented ring-ditch, a small C-shaped enclosure and part of a 'Wessex Linear' ditch were present, though dating evidence was very limited. Relatively few other archaeological features were identified and the evaluation demonstrated that the geophysical survey had been very accurate in indicating the distribution, size and general nature of features present.

Excavation Strategy

On the basis of the results of the geophysical survey and field evaluation, and the footprint of the proposed development, a single phase of fieldwork consisting of two phases of mitigation was initially agreed (Figure 1). The mitigation commenced in 2011 with archaeological excavation of two areas in the southern part of the site, focusing on concentrations of features identified by geophysical survey and evaluation trenching. This was followed by a strip, map and record investigation in other areas within the site where development was proposed. Three years later in 2014, changes to development proposals resulted in further stripping and excavation, particularly in the southwest corner of the site where the principal archaeological features lay. Finally, in 2015, two further areas at the northeast corner of the site were stripped and subject to a watching brief. Overall, approximately 4.5ha of the site was subject to investigation.

Archaeological excavation areas

Area 1 was positioned partially over the segmented

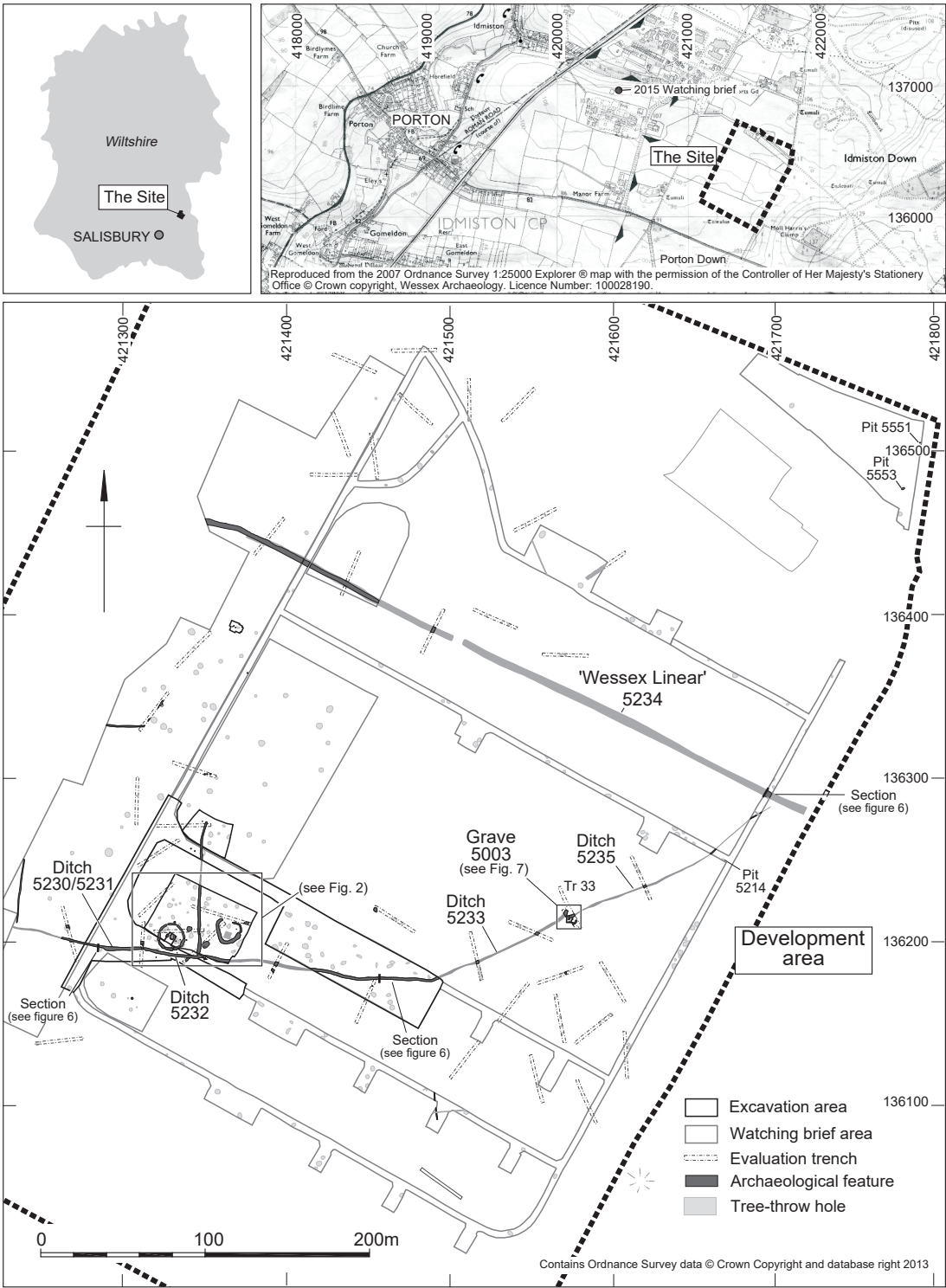


Fig. 1 Site location plan showing excavation areas and principal archaeological features

ditch and another ditch extending from it to the north, possibly forming part of an enclosure, and included one of the potential entrances. Features recorded by geophysics and evaluation trenching within the putative enclosure included a segmented ring-ditch and a C-shaped enclosure. The proposed development was designed such that both were to be preserved *in situ*, with archaeological excavation to the immediate south and north of these features. However, during stripping in 2011 the southern part of the segmented ring-ditch was unexpectedly revealed and, following discussions with the County Archaeologist and the Dstl, it was agreed to extend the excavation area to the north to expose the central part of the ring-ditch in order that more might be learnt about the nature, date and function of the monument. The remainder was to be preserved *in situ*. Subsequently, in 2014, following changes to development proposals, an area including the remainder of the ring-ditch and the C-shaped enclosure was stripped and investigated.

Area 2 was tightly focused over a burial identified and partially excavated during the evaluation (trench 33, see Figure 7). Although the burial was within an area of the site which will not be disturbed, the County Archaeologist requested its excavation, given that it had been partially disturbed during the evaluation and there was only a shallow depth of overburden protecting the grave.

Strip, map and record areas and watching brief

The remainder of the development footprint was subject to a strip, map and record investigation. The small number of archaeological features identified through geophysical survey and evaluation within this area included a further section of the segmented ditch and part of the 'Wessex Linear' ditch system.

It was apparent at an early stage of stripping that there were very few archaeological features other than those previously recorded in the geophysics survey, and limited investigation of a sample showed most to be shallow and devoid of dating evidence, as were the tree-throw holes identified. Therefore, with the agreement of the County Archaeologist, stripping was restricted to areas of significant impact or exposure, including the footprints of the access roads and the structures, most of the latter to be partly surrounded by earthen bunds.

Two final areas of stripping were undertaken in

2015, in the northeast corner of the site and, as little archaeology was anticipated in this area, this was subject only to a watching brief.

Results

Introduction

The topsoil over most of the site was extremely shallow, as is typical of chalk downland which has been under limited agricultural activity in recent decades. Only in the fairly flat, northern part of the site, (which was ploughed up to 2011) was the topsoil a little thicker, up to 0.4m deep with, in places, subsoil up to 0.2m thick. Elsewhere, the topsoil was generally between 0.2m and 0.3m thick and overlay natural geology. For most of the site this comprised Chalk, but in the northern third consisted of large areas of Clay-with-flints. Towards the lower, southeast corner of the site was a layer of small to medium-sized rounded flints overlying the chalk natural. This flinty layer is a relatively common feature of dry valleys in the area, and is of probable Late Glacial date (c. 12,000–10,000 BC). It is likely to be the result of large-scale erosion of the chalk under severe climatic conditions (especially freeze/thaw) combined with occasional high energy overland flow of water.

It was clear that the underlying natural geology had been impacted upon by ploughing, the size of some of the plough scars suggesting that they were created by steam ploughing, potentially as early as the 1840s.

Neolithic

A single Early Neolithic pit was identified, in the northeast corner of the site (Figure 1). Pit 5553 was sub-rectangular, 2m long, 1m wide and 0.35m deep, and contained four fills, all somewhat disturbed by animal burrowing. The bottom fill (5556), a dark greyish brown silty clay, produced a large assemblage of struck flint and two crumbs of undiagnostic pottery. Above this, successive layers of chalk and silty clay were largely devoid of finds and both probably represent deliberate backfill. However, the upper fill (5552), a dark grey silty clay, also contained a notable concentration of worked flint (see below). Charred hazelnut shell and a hulled wheat grain from the basal fill provided radiocarbon

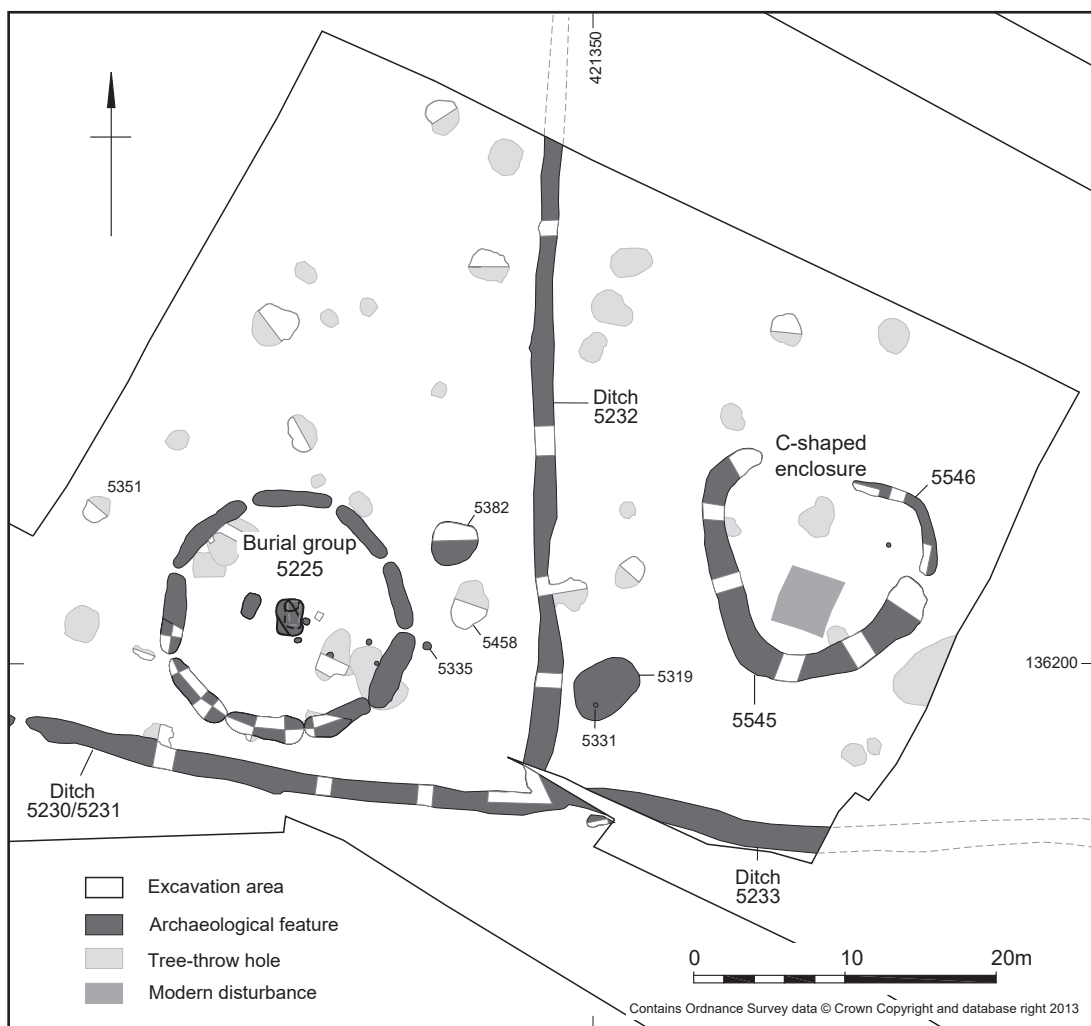


Fig. 2 Plan of Early Beaker/Early Bronze Age burial group 5225, C-shaped enclosure 5545 and other features in the vicinity

dates of 3820–3700 cal BC (72.9%) and 3830–3700 cal BC (69.9%) respectively (SUERC-62632–3 at 95% probability) (see radiocarbon dating, below). A modelled date for the digging of the pit places this event in the late 39th or 38th century BC (modelled as *First dig pit* 3830–3710 cal BC (61.4%) at 95% probability).

It is likely that many if not most of the tree-throw holes should also be assigned a Neolithic or possibly Bronze Age date, and where relationships could be established they were seen to be cut by Bronze Age features. A small number containing finds are described further below.

Early Beaker–Early Bronze Age

Burial Group 5225: segmented ditch

Other than the Early Neolithic pit and at least some of the tree-throw holes, the earliest complex of features identified comprised a segmented ring-ditch approximately 15m in diameter which surrounded a sequence of eight inhumation and four cremation burials (Figures 2 and 3), the burial sequence possibly spanning four centuries, on the basis of radiocarbon dating (see below). Some redeposited bone may derive from further individuals.

The segmented ring-ditch which surrounded the central sequence of graves measured approximately

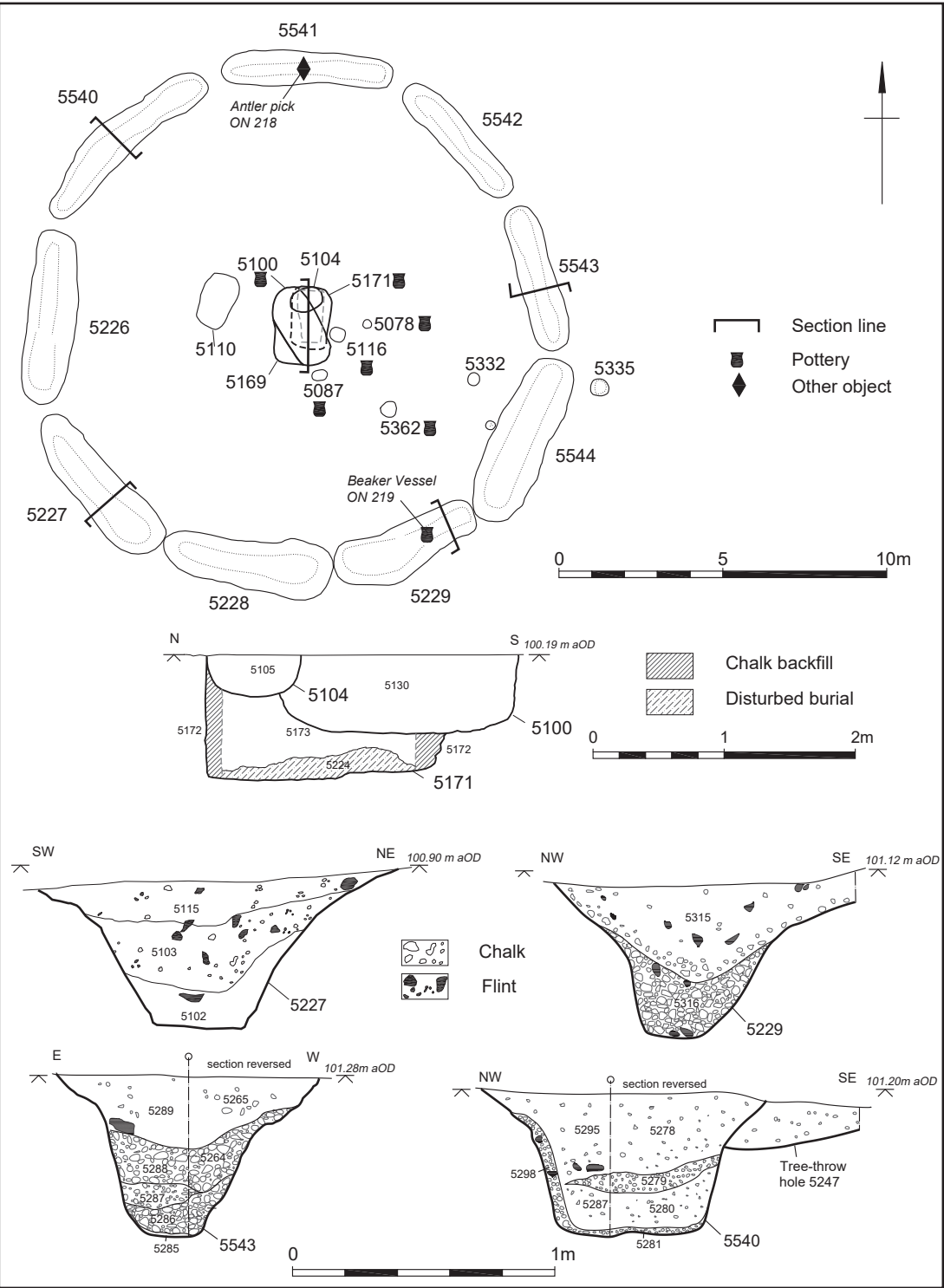


Fig. 3 Plan and sections of Early Beaker/Early Bronze Age burial group 5225



Plate 1 Early Beaker/Early Bronze Age burial group 5225: central grave 5171, with disarticulated bone 5224 fully exposed. Grave 5169 (with skull and upper body) lower left and remains of 'empty grave' 5100 upper left, with grave 5116 lower right (scale = 1m; from south-east)

15m in diameter (14m internally and 16.5m externally) and was composed of nine individual straight ditch segments (5226, 5227, 5228, 5229, 5540, 5541, 5542, 5543 and 5544) on average 5.1m long by 1.3m wide and 0.6m deep, with steep (45° and greater) sides, flat bases and rounded terminals. The segments varied in length from 4.5m (5542) to 6.2m (5544), in width from 0.95m (5542) to 1.5m (5228 and 5229), and in depth from 0.45m (5542) to 0.75m (5229). The variations in width and depth can in some part be accounted for by possible truncation as a result of agricultural activity, as the northernmost (uphill) ditch segments were sealed by slightly thinner topsoil, whereas the width variation of segments 5544 and 5540 was partly due to the softer fills of the tree-throw holes through which they cut. The gaps between the ditch segments were narrow, between 0.05 and 0.5m wide, on the south and north sides respectively. The segments were excavated in a series of opposing slots to provide continuous

longitudinal sections and a series of cross-sections, following which the remaining fills were removed.

The deposits filling each ditch segment were relatively uniform, comprising lower deposits of washed or redeposited chalk natural material (derived from the feature edges and probably the central mound), and sealed by homogenous deposits of loose, loamy and heavily bioturbated material.

Lying directly on the base of segment 5541 (within cut 5256 and sealed by redeposited chalk layer 5257) was a red deer antler implement (ON 218), probably used as a pick or rake. This antler was placed at some point during 2400–2130 cal BC (at 95% probability: SUERC-56364). Further datable finds were recovered from within segment 5229 (cut 5314 deposit 5316) where 45 sherds from the rim and body of a Beaker with simple linear twisted cord decoration (ON 219, Figure 8, 3) had been deliberately placed or discarded within the lower redeposited chalk fill of the ditch. Within the

upper fill of segment 5226 (cut 5325 fill 5329) a single piece of redeposited human bone was recovered, potentially derived from one of the disturbed burials within the centre of the ring-ditch.

The radiocarbon date (SUERC-56364) indicates that segmented ring-ditch was a primary feature, probably dug to provide material to erect a small mound over the earliest of the central group of burials, which produced a statistically consistent radiocarbon date (SUERC-43376: see below).

Burial Group 5225: graves

A large, sub-rectangular grave (5171) aligned approximately north-south lay in the centre of the area enclosed by the segmented-ring ditch and represents the earliest surviving burial in the sequence (Figures 3-4, Plates 1 and 4). Grave 5171 measured 1.83m long, 1.23m wide and 0.95m deep, and had vertical sides and a flat bottom. Around the sides was a layer of chalk rubble packing (5172) between 0.15 and 0.3m thick (but with numerous voids) and surviving to a maximum height of 0.65m above the base of the grave (on the northwest side). This had been used to infill the gap between the edges of the grave and the timber chamber it once contained. No wood survived, but its presence is indicated by a space approximately 0.1m wide between the chalk packing and the spread of disarticulated bone (5224) in the base of the grave. Bone spread 5224 comprised what appeared to be a disarticulated 'jumble' of well-preserved material, derived from a single adult female, although apart from several teeth there were no parts of the skull or mandible. (All of the bones were planned and individually numbered, or numbered in groups as appropriate). In addition, a fibula and a vertebra from 5224 were found within chalk rubble packing 5172 on the east side of the grave, though the mechanism by which these bones had got into this packing is unclear. A radiocarbon date (SUERC-43376: 2390-2150 cal BC at 95% probability) was obtained from the left tibia from 5224, and this was confirmed by ceramic dating. Relatively large sherds of a single Beaker (Figure 8, 1) (dating to around the 23rd century BC) were found together towards the southern end of the grave and represent the only surviving remains of any grave-goods.

Also towards the centre of the area enclosed by the segmented ring-ditch was grave 5169, though the relationship between this and grave 5171 was uncertain as the junction between them had been destroyed by later 'empty' grave 5100 (see below). Only the southern end of grave 5169 survived (see

Plate 1), the remainder having been removed by grave 5100. Grave 5169 appeared to have been sub-rectangular (at least at the southern end), aligned approximately south-north, and measured at least 1.1m long, 1m wide and 0.3m deep. In the surviving part of the grave was the skull and upper part of the torso of an adult female (5223), placed on the right side. A radiocarbon date (SUERC-43375: 2210-2040 cal BC at 95% probability) was obtained from a rib bone from burial 5223, indicating that this was later than grave 5171. A single Beaker sherd, probably redeposited, came from the fill of the surviving part of the grave.

'Empty' grave 5100 was a large sub-rectangular feature aligned approximately north-northwest to south-southeast (see Plate 1). It measured 2.45m long, 1.45m wide and 0.6m deep, and had near-vertical sides and a flat base. It resembled a grave in both shape and size, though it contained no burial. However, the fill (5130), excavated in 0.1m spits, contained a moderate amount of redeposited human bone (individually numbered and plotted) from two adult females and an infant and a few sherds from perhaps two or more Beakers (Figure 8, 2). 'Empty' grave 5100 had been dug through the upper part of grave 5171 and also truncated the majority of grave 5169, destroying the relationship between the earlier features. Although grave 5100 could not be directly dated, its stratigraphic position between radiocarbon-dated graves 5169 and 5104 suggests that it was dug *c.* 2000 BC.

Grave 5104 was a sub-oval feature, aligned northeast to southwest, which had been dug through the northern end of 'empty' grave 5100. It measured approximately 1m by 0.7m and 0.3m deep, and contained the unaccompanied, (slightly) crouched skeleton (5105) of an infant, possibly a female. A radiocarbon date (SUERC-43373: 2030-1870 cal BC at 95% probability) was obtained from the right tibia from 5105, confirming that grave 5104 was the latest in the sequence of intercutting burials at the centre of the monument.

A little over a metre to the northwest of the central sequence of graves was sub-oval grave 5110 (Plate 2). This was aligned approximately south-southwest to north-northeast and measured 1.70m by 1.05m and 0.22m deep. Grave 5110 contained a crouched burial (5108) of a subadult female lying on its right side and facing east. The skeleton of a neonate (5109) overlay the shoulder and upper right arm of burial 5108, so that they lay 'face-to-face'. No grave-goods were present; however, a radiocarbon date (SUERC-43374: 2140-1940 cal BC

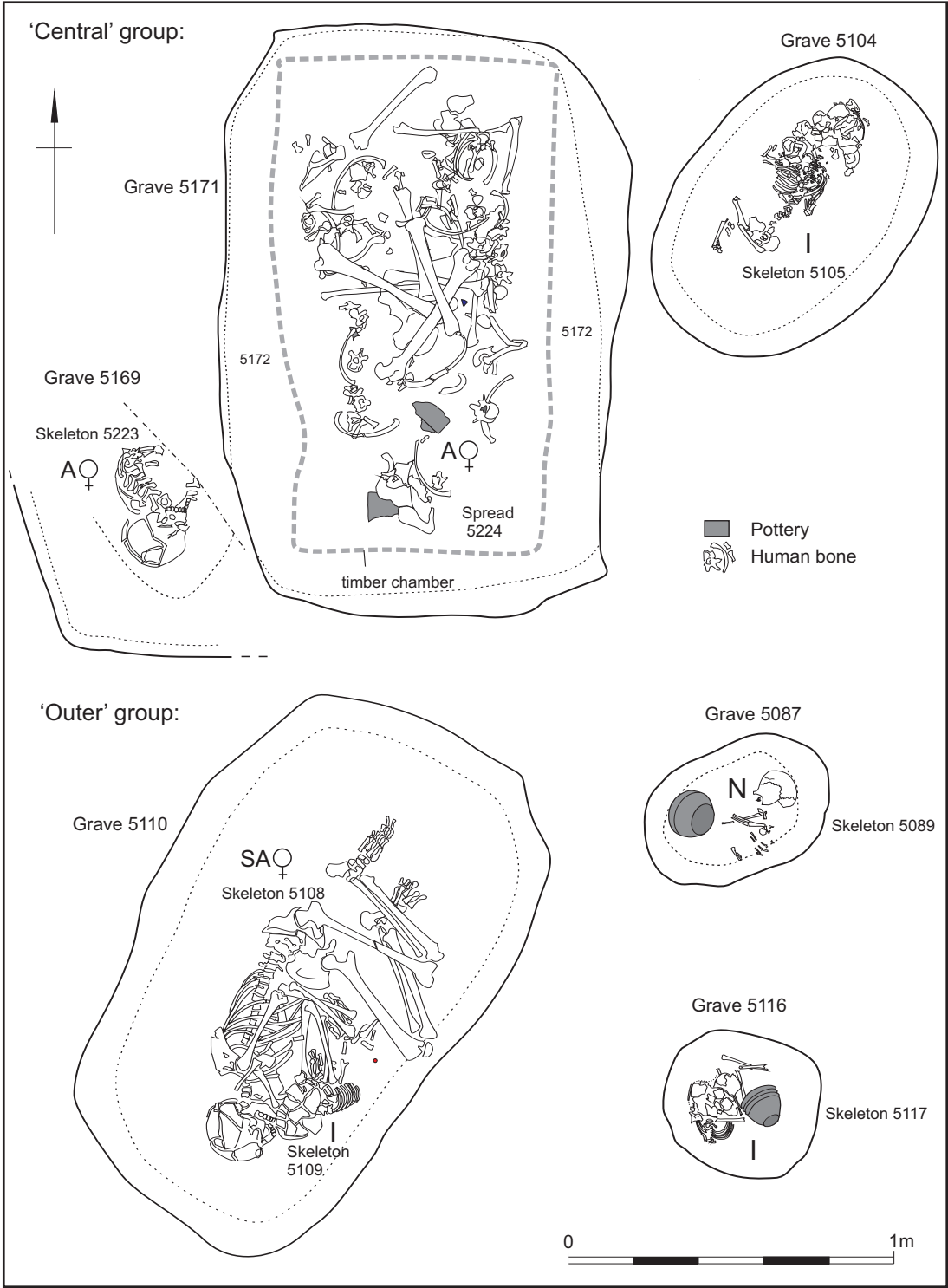


Fig. 4 Grave plans of Early Beaker/Early Bronze Age burial group 5225



Plate 2 Early Beaker/Early Bronze Age burial group 5225: grave 5110 (scale = 1m; from north-west)

at 95% probability) was obtained from the left femur from 5108, placing grave 5110 in the middle of the sequence of burials in group 5225.

A short distance to the east and southeast of the central sequence of graves were five further graves, comprising inhumation burials 5087, 5116 and 5332 and cremation burials 5078 and 5362. Inhumation burials 5087 and 5116 comprised a neonate and an infant respectively, both placed in small graves and accompanied by a miniature Collared Urn (Figure 8, 4) and a Food Vessel (Figure 10, 7, Plate 3) respectively. In grave 5087, to the south of the central group of graves, the miniature Collared Urn had been inverted, whilst in grave 5116, to the east, the Food Vessel lay on its side. Inhumation burial 5332 was that of an unaccompanied neonate in a grave 0.4m long, 0.35m wide and 0.15m deep, the grave also containing a deposit of cremated human bone, representing an adult probable female, apparently a later burial made in the same grave. Cremation burial 5078 included two individuals, an infant and a probable male infant/juvenile, and lay to the east and

furthest from the central group of graves. This burial had been made in a Collared Urn (a single sherd of Beaker pottery from the grave fill is redeposited), which had been inverted and placed in a small pit barely large enough to hold the urn (Figure 9, 5). Cremation grave 5362 lay approximately 2.7m to the south of 5078, was 0.5m long, 0.4m wide but only 0.12m deep, and contained the remains of a 1–2 year old infant, this burial also having been made in an inverted Collared Urn (Figure 9, 6). Small quantities of cremated animal bone from the fills of graves 5078 and 5362 indicate probable pyre goods (see McKinley, below).

C-shaped enclosure 5545

The date and function of this enclosure are unclear and only its proximity to the Early Beaker–Early Bronze Age segmented ring-ditch and the absence of finds (compared with the later prehistoric features) suggests that it was early and that the use of two, similar-sized monuments may have been broadly contemporary (Figures 2 and 5, Plate 5).



Plate 3 Early Beaker/Early Bronze Age burial group 5225; grave 5116, with Food Vessel (from north-west; scale = 0.2m)

The enclosure was approximately triangular in form, 13m long by 8.5m wide, with a northeast-facing entrance approximately 12m wide. Ditch 5545 was up to 2.1m wide and 0.8m deep, with steep, shouldered sides and a flat base (Figure 5). Six sections were excavated across ditch 5545; 5424 formed the northwestern terminal, 5415, the southeast terminal, and 5379, 5387, 5437, 5490 and 2703 made up the remainder. The sequence and nature of the fills were fairly consistent in all of the sections, infilling appearing to have occurred slowly as a result of the erosion of the feature edges and an associated bank, resulting in laminated heterogeneous deposits of redeposited chalk and loamy material. A number of possible stabilisation deposits were also observed, and the evidence suggests that the associated bank was located around the exterior of the enclosure.

A much smaller curvilinear ditch, 5546, is also undated, but this is thought to have been a later addition to partly close off the original, wide entrance, reducing its width to 6m. A single sherd

of Middle Bronze Age pottery came from the fill of this shallow feature.

The interior of the enclosure was devoid of features other than a modern 4m square geotechnical pit and three tree-throw holes, at least two of the latter cut by ditch 5545 and therefore earlier than the enclosure.

Other possible Early Bronze Age features

Feature 5335, immediately to the east of the segmented ditch of burial group 5225, was 0.5m in diameter and just 0.15m deep. The function of this undated feature remains uncertain, but could be a small pit, large posthole or perhaps a cenotaph.

Also to the east of the segmented ditch was a large, sub-circular pit, 5382, 2.45m long, 2.9m wide and 1.25m deep, with steep stepped sides and a flat base. Its function is unclear, and it was filled with alternate layers of redeposited chalk and loose loamy material, from which came a red deer first phalanx.

Tree-throw holes 5351 and 5458 lay a few

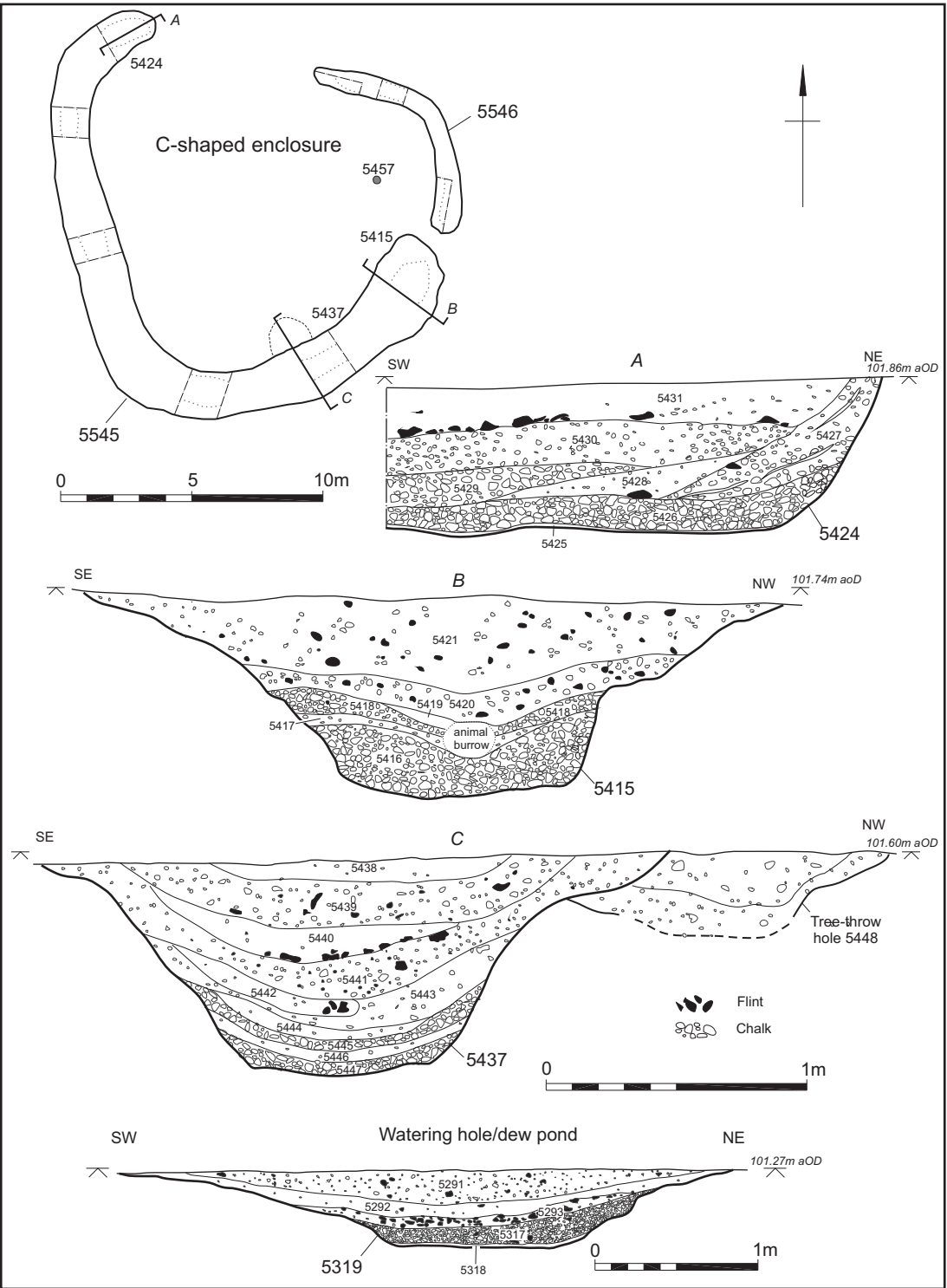


Fig. 5 Plan and sections of C-shaped enclosure 5545 and watering hole/dew pond 5319

metres to the northwest and east respectively of the segmented ditch, and both contained fragments of aurochs bone, including a horn core and proximal radius. This suggests an early prehistoric date for these features, which elsewhere have been shown to predate the segmented ditch and C-shaped enclosure.

Middle Bronze Age

Ditch 5230, 5231, 5232, 5233, 5235

A shallow, somewhat sinuous ditch extended across the entire site for a distance of at least 450m, continuing to the east and west beyond the limits of the proposed development area (see Figure 1). This ditch was revealed in the geophysical survey and investigated in both the evaluation and the excavation. These showed its alignment was west to east, before it turned to continue northeastwards in the eastern half of the site.

The ditch crossed gentle to moderately sloping ground, and in places appeared to follow a very slight break of slope, particularly in the central part of the site. It may have turned to the northeast in the eastern half of the site to avoid a shallow, dry valley in this area. There were two narrow entrances approximately 270m apart along the length of ditch exposed, one facing south and the other southeast, that to the northeast formed by slightly overlapping offset ditch terminals. Group numbers 5230 and 5231 have been assigned to the western ditch section, 5232 and 5233 to the central section, and 5235 to the eastern section.

There was a further, associated length of ditch which extended approximately 80m north from the main ditch in the western half of the site (see Figures 1 and 2). This ran midway between Early Bronze Age burial group 5225 to the west and the undated C-shaped enclosure to the east. The north-south ditch has been assigned group number 5232 as it appears to be part of the same ditch which has been assigned that number to the south, though the precise relationship at the ditch junction is somewhat ambiguous. Approximately 110m to the west, on the edge of the site, was a further length of north-south ditch which ran parallel to 5232, whilst an east-west ditch ran parallel and 135m to the north of ditch 5230/5231, these various ditches possibly forming a large rectangular enclosure or field open at the northeast corner.

The westernmost section of the main east-west ditch shows clear evidence for having been recut,

with the later phase (5230) diverging along part of its length from earlier ditch 5231, though this sequence was not apparent elsewhere unless the earlier ditch had been completely removed by the digging of the later ditch. To the east of this, the western part of the central section and its northerly branch (5232) appear to be later than the eastern part of the central section (5233), but the former probably represent a recutting of an earlier phase of ditch of which no trace survived (or was detected). The eastern part of the central section of ditch 5233 had a slot along the base indicating that it had been cleaned out on at least one occasion if not wholly recut. There was also some evidence for a similar slot along the base of the easternmost section of ditch 5235, though it was less pronounced here than in the central section.

Approximately 40 slots were dug across the various lengths of ditch and these showed generally consistent, open U-shaped profiles, though ditch 5233 in particular exhibited a more 'shouldered' profile from having been cleaned out (Figure 6). Widths varied between 1.1m and 2.8m, with an average of approximately 1.8m, whilst depths varied between 0.35m and 0.85m with an average of approximately 0.65m. The lower fills contained increasing quantities of chalk with depth, whilst the upper fills were all dark loamy soils with much bioturbation resulting from root and earthworm action. From the fill sequences it was not clear which side of the ditches any associated bank may have been located, but it seems reasonable to assume that this lay on the upslope, northern side of the main ditch that crossed the site.

The dating of the sinuous ditch remains a little uncertain. It seems clearly to respect Early Bronze Age burial monument 5225 (see Plate 4), though its relationship with the undated C-shaped enclosure is less clear; the two features may have been contemporary (see above). The relationship with the probable 'Wessex Linear' ditch 5234 of likely Late Bronze Age date is also unclear, and the projected junction between the two ditches lay just beyond the eastern limit of excavation, in an area which had suffered a greater degree of plough truncation and some modern disturbance. Five sherds of certain or probable Early Bronze Age pottery (three of Beaker), at least four sherds of Middle Bronze Age pottery, four sherds of probable Late Bronze Age or Iron Age pottery and approximately 30 sherds of Romano-British pottery were recovered from the various ditch segments, but most – including all of the Roman pottery – came from the uppermost fills, having been deposited (or redeposited) there

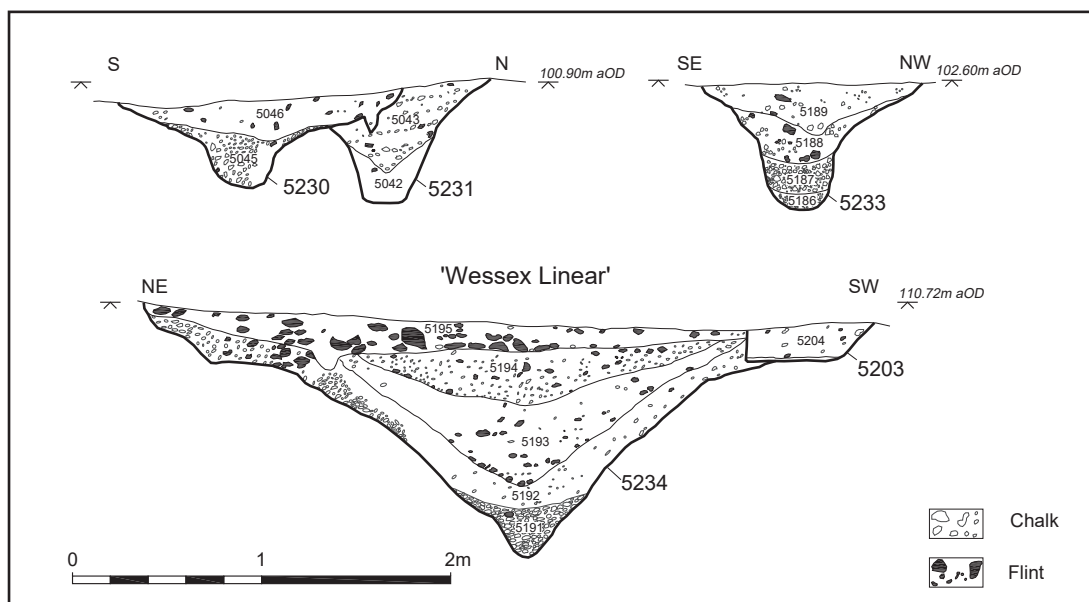


Fig. 6 Sections of Middle Bronze Age ditches 5230/5231/5233 and Late Bronze Age ditch 5234



Plate 4 Early Beaker/Early Bronze Age burial group 5225, showing central graves, segmented ring-ditch and, beyond this, Middle Bronze Age ditch 5232 (from north-east)

after the ditch had almost completely silted up. On this basis an Iron Age or Roman date might be surmised but, overall, a Middle Bronze Age date is considered likely. This is supported by a radiocarbon date (SUERC-43369) from grave 5002, which appears to have been associated with the ditch (see below).

Watering hole/dew pond 5319

Located at the junction of ditches 5232 and 5233 was 5319, a possible watering hole or small dew pond (Figure 2). It was an irregular oval in plan, 4.65m long, 3.5m wide and 0.6m deep, with a gently sloping stepped profile and a flat base (Figure 5). It is possible this feature was initially dug as a small quarry for flint extraction as it cuts through a band of flint nodules within the chalk. A single posthole, 5331, 0.28m in diameter and 0.25m deep, lay towards the southwestern edge.

The earliest fill, 5318, comprised a thin layer of water-lain fine chalky silt. Notable amongst the subsequent fills was 5293, which contained numerous complete and fragmentary flint nodules, but with little evidence of having been worked. From the uppermost fill came nine abraded sherds of Middle Bronze Age Globular Urn.

Grave 5003

This was exposed in evaluation trench 33 (Figures 1 and 7), partially investigated and when discovered to be a burial covered over again and left until the



Plate 5 Excavation area in 2014: C-shaped enclosure 5545 to left and Early Beaker/Early Bronze Age burial group 5225 to right, separated by Middle Bronze Age ditch 5232 (from north)

excavation stage of the project.

Subsequent excavation revealed an oval grave (5003) measuring approximately 1m by 0.8m and 0.2m deep. This lay close to the southwestern terminal of ditch 5235, and partly blocked the entrance formed by this and the northeastern terminal of ditch 5233, suggesting that the burial was broadly contemporary with the ditches (Figure 7).

Grave 5003 contained the tightly flexed or crouched skeleton (5002) of a possible male adult, lying on its front, with the arms underneath and the knees to the northwest; the skull, shoulders and much of the left foot were missing, apparently truncated by ploughing. The body had been covered by a tightly-packed capping of flint nodules (5001), perhaps to form a small cairn marking the entrance or to protect the body from scavengers. The burial was unaccompanied and no finds were recovered from the chalk backfill in the grave. However, a radiocarbon date of 1500–1320 cal

BC (SUERC-43369 at 95% confidence) obtained from the right fibula of burial 5002 confirmed the suspected Middle Bronze Age date for the burial.

Pit 5551

A small, apparently isolated Middle Bronze Age pit lay in the extreme northeast corner of the site (Figure 1) and contained the remains of a Barrel Urn (Figure 11, 8). Pit 5551 was oval, measured 0.5m by 0.3m and survived to a depth of 0.15m. It appears to have been dug specifically to accommodate the vessel, though from what was present this seems not to have been complete when placed in the pit and a number of old breaks were evident. There were no associated finds and the soil was devoid of any charred plant remains. Unfortunately, a sample of carbonised residue from the inner surface of the Barrel Urn contained insufficient carbon to produce a radiocarbon date.

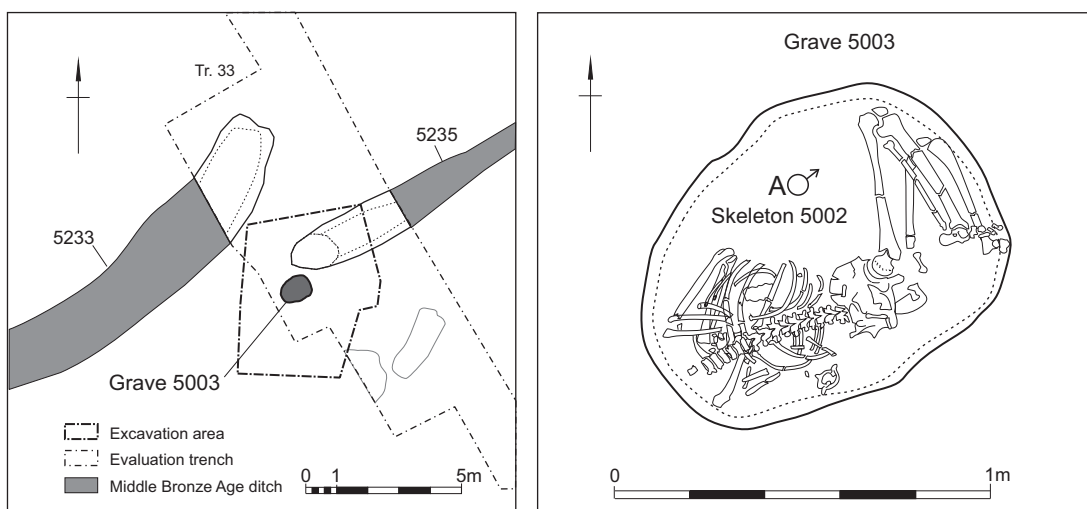


Fig. 7 Plan of Middle Bronze Age grave 5003

Late Bronze Age

Ditch 5234 – ‘Wessex Linear’

This was a straight ditch, at least 400m long, aligned west-northwest to east-southeast across the northern half of the site, turning quite sharply to the west at the west end, and extending beyond the limits of the excavated area (Figure 1). Ditch 5234 is interpreted below as a ‘Wessex Linear’ ditch (a Late Bronze monumental earthwork), and the ditch and associated bank is likely to have formed a component of an extensive network of land boundaries within the wider area (Bradley *et al.* 1994).

Ditch 5234 was recorded in the geophysical survey and this indicated a gap, possibly an entrance, approximately 5m wide, in an area which is not going to be disturbed by the proposed development. However, the ditch was investigated in three other locations during the evaluation and excavation, and these showed it to be approximately 3.5m wide and 1.5m deep, with a V-shaped profile (Figure 6).

The ditch fills largely comprised natural erosion deposits, with similar material eroding from both sides, and slight evidence for a bank having been located on the north side. Very few finds were recovered, comprising a single sherd of probable Iron Age pottery and a small number of Roman date, all from the secondary and tertiary fills of the ditch. However, this would not be inconsistent with a Late Bronze Age date for the construction of this major boundary feature.

Undated features

A small number of undated features were recorded, in addition to a background scatter of tree-throw holes which also remain largely undated. However, in the few cases where relationships existed and could be determined, the tree-throw holes always predated the archaeological features. A sample of tree-throw holes were excavated, but other than the very occasional surface find (usually struck flint) were devoid of dating evidence and even burnt flint was largely absent. Tree-throw holes 5351 and 5458 which contained fragments of aurochs bones have been noted above.

Only a few small features were identified in the excavation that are undated but of probable pre-modern date, most in fairly close proximity (but not necessarily related to) the Middle Bronze Age ditch crossing the site (Figure 1). These comprise two small, circular postholes to the south of ditch segment 5231, two postholes (not illustrated) close to the northern terminal of ditch segment 5232, and a small pit (5214) adjacent to ditch segment 5235 near the eastern edge of the site (Figure 1). Pit 5214 contained a single sherd of Beaker pottery which may be residual in this context.

Finally, what appears to have been a large but very slight, possibly sub-circular earthwork approximately 70m in diameter was noted during the evaluation. This lay towards the northwest corner of the site but outside the footprint of the proposed development and was not, therefore, targeted for

investigation in either the evaluation or excavation. The nature and date of this possible earthwork remain unknown, though it was barely visible at the time of the excavation and its existence as an archaeological feature is unproven.

Modern features

Several, shallow communication cable trenches were noted during the machine stripping, but generally these barely penetrated the topsoil. A few other military-related features were recorded in the evaluation, predominantly in the western part of the site, and included further cable trenches and possible fox-holes.

Finds

Pottery, by *Matt Leivers*

The excavations produced 887 sherds of prehistoric pottery weighing 11,534g, 43 sherds of Romano-British pottery weighing 190g and two sherds of post-medieval pottery weighing 33g. Varying quantities of Peterborough Ware, Beaker, Food Vessel, Collared Urn, Middle Bronze Age, Late Bronze Age and Iron Age ceramics are present within the prehistoric assemblage, which is dominated by Beaker, Food Vessel, Collared Urn and Deverel-Rimbury. Sub-assemblages by period are given in Table 1.

The material was analysed in accordance with Wessex Archaeology's recording system (Morris 1994), which follows the nationally recommended guidelines of the Prehistoric Ceramics Research Group (PCRG 2011). Sherds were examined using a x20 binocular microscope to identify clay matrices and tempers, and fabrics were defined on those bases.

The condition of the assemblage is rather varied. Complete vessels or large portions of vessels typify the Food Vessel, Collared Urn and Deverel-Rimbury ceramics, while the Beakers range from large segments of vessels to small abraded sherds. The overall average sherd weight is largely a result of this variation, as can be seen from the average weights of the individual chronological groups.

In total eight fabrics were defined for the prehistoric assemblage on the basis of principal inclusion. By raw count the majority of sherds are flint-tempered, although all 598 sherds in fabric F3 derive from a single vessel. Sand and grog-tempered

Table 1: Pottery totals by period/form (no/wt in grams)

Period	No. sherds	Weight (g)	Average weight (g)
Middle Neolithic	1	3	3
Beaker	69	612	8.87
Collared Urn	175	7184	41.05
Food Vessel	1	363	363
Early Bronze Age	2	11	5.5
Middle Bronze Age	619	3342	5.40
Late Bronze Age	18	10	0.55
Iron Age	2	9	4.5
Romano-British	43	190	4.42
Post-medieval	2	33	16.5
TOTAL	932	11757	12.61

fabrics are otherwise most common (although again represented by complete or near complete vessels). Shell temper is only present in very small quantities. Fabric descriptions are given below.

The assemblage

Middle Neolithic

A single fragment of a T-shaped rim of a (probably Fengate-type) Peterborough Ware vessel was recovered from plough soil during the evaluation. The rim is decorated with lightly incised diagonal lines forming a chevron or herringbone pattern. It is possible that the sherd comes from a vessel like that from Baston Manor, Kent (Philp 1973, 11, fig. 6.8).

Beaker

Eight joining sherds from a single vessel were found in grave 5171 within burial group 5225. Approximately one third of the rim and upper body are represented; the rim is 120mm in diameter with a slight cordon immediately below it; the body carries a simple linear rather irregular all-over comb-tooth design with single blank bands below the rim and above the base (Figure 8, 1). A single sherd from this same vessel came from the backfill of inhumation grave 5116 where it was almost certainly redeposited since the burial was accompanied by a complete Food Vessel. A further seven redeposited sherds (six body and one rim) from this vessel came from backfill of 'empty' grave 5100, along with five from a second vessel decorated with comb-tooth impressions forming diamonds at the shoulder with zoned horizontal lines above and below (Figure 8, 2).

A single small featureless sherd came from the backfill of grave 5169 in the same burial group, but is likely to be redeposited here.

A total of 45 sherds forming four portions of a single vessel came from the northeastern end of ditch

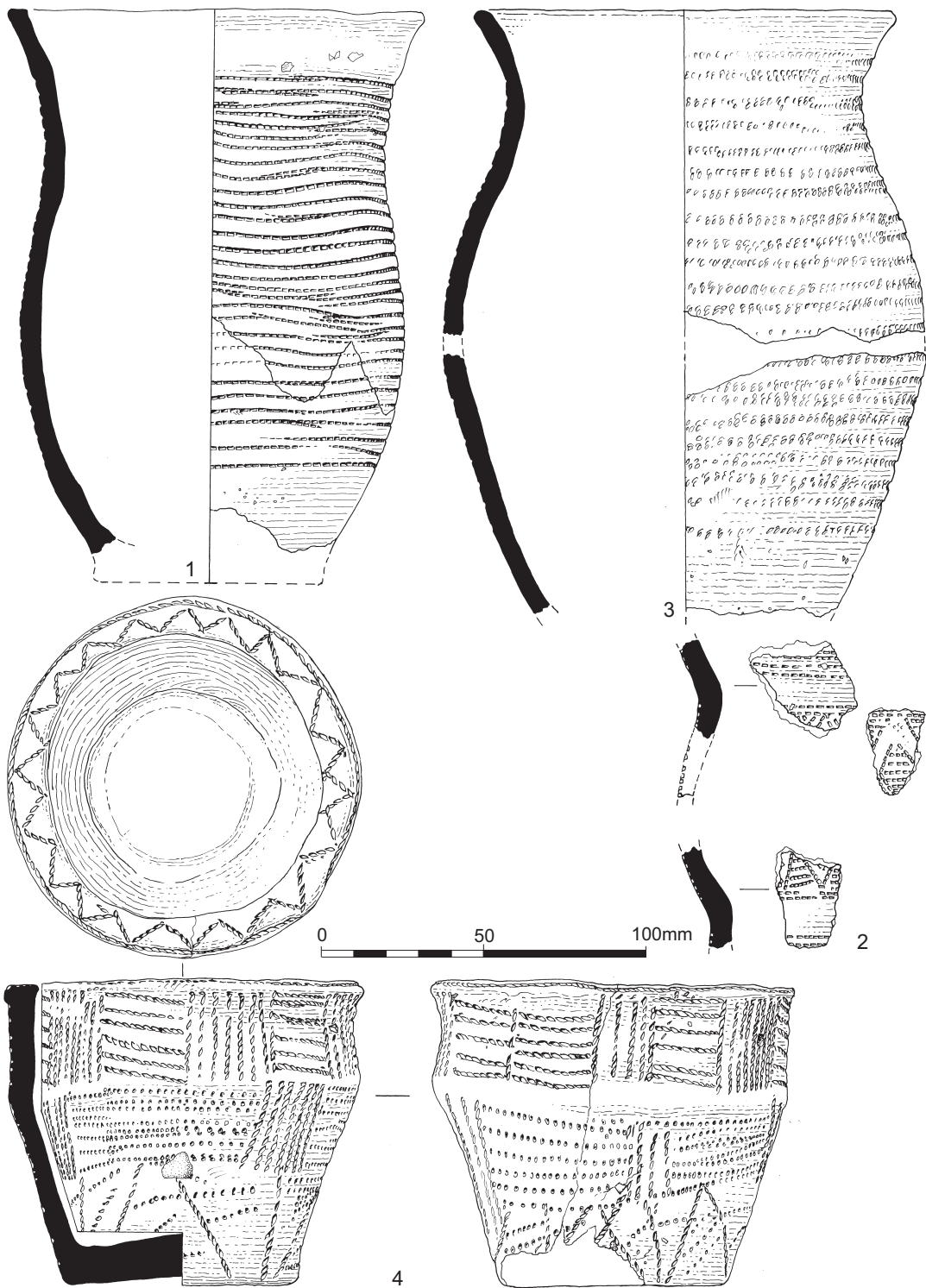


Fig. 8 Prehistoric pottery (Nos 1-4)

segment 5229 forming part of burial group 5225. Two of the portions derive from the rim and upper body, two from the lower wall. None of the portions join. The vessel has a rim diameter of 130mm and is decorated with irregularly horizontal lines of rather shallow twisted cord impressions which cover the entire external surface from 10mm below the rim to 50mm above the base. The undecorated portions have traces of burnish (Figure 8, 3).

Three sherds of probable Beaker came from fills of Middle Bronze Age ditch 5233. One was an undiagnostic grog-tempered body sherd, the second a simple rim with fingernail impressions on the external surface, the third decorated with a very fine comb-impressed chevron. All are redeposited, as may a single featureless sherd from pit 5214.

Early Bronze Age

Collared Urn

Grave 5078 contained an inverted Collared Urn, the lower part of which had been destroyed. The surviving upper portion (approximately 70% of the rim, with a diameter of 180mm) is tripartite, with incised chevrons on the collar, and in a band around the shoulder (Figure 9, 5).

Grave 5362 contained another inverted tripartite Collared Urn, the complete rim of which (with a diameter of 170mm) survived, but little else (Figure 9, 6). The shallow collar has incised chevrons which continue into the neck but not – on the basis of three small detached sherds – below the shoulder.

Six featureless grog-tempered body sherds were

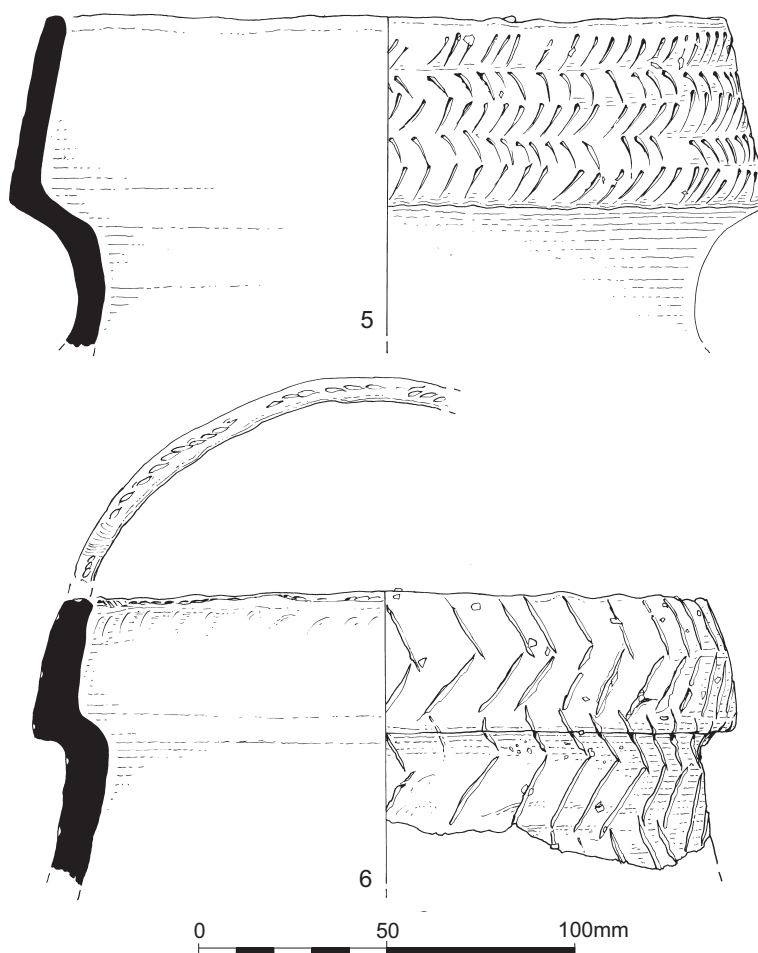


Fig. 9 Prehistoric pottery (Nos 5-6)

recovered from ditch segment 5544 of burial group 5225. On fabric grounds and wall thickness only, these are likely to derive from a Collared Urn.

A miniature vessel with Collared Urn affinities was found accompanying neonate inhumation burial 5087. The vessel (Figure 8, 4) is of simple bipartite form, with a shoulder one-third of the way down the 90mm-high wall and a rim diameter of 110mm. The rim top is flat and has a single line of twisted cord impression around the outer edge and with a twisted cord impressed zig-zag within. Above the shoulder the decoration consists of panels of alternately horizontal and vertical twisted cord impressions. The pattern is irregular, with the vertical panels containing between one and ten lines of cord; the horizontal panels all contain six lines, except for one which contains five. The overall effect resembles basketry, and is belt-like, with a horizontal element (perhaps rope) threaded under vertical loops. Below the shoulder, a second set of vertical twisted cord impressions—generally but not always offset from the first—separate horizontal lines of circular comb tooth impressions. This pattern is also markedly irregular, and the overall effect is again the same. The approximate lower third has crudely executed diagonal lines of circular comb tooth and twisted cord chevrons, along with a single vertical twisted cord line.

Food Vessel

A complete small Food Vessel was found accompanying infant inhumation burial 5116. The vessel (Figure 10, 7) is wider than the miniature Collared Urn, with a rim diameter of 120mm, but of the same height. The rim is internally bevelled and decorated with diagonal lines of comb impression. The wall has a series of four pinched-up horizontal cordons of decreasing height, the effect of which is duplicated by the everted rim and pronounced foot. Each of the four cordons has the same decorative motif as the rim.

All of the Beaker, Food Vessel and Collared Urn ceramics occurred in grog-tempered fabrics, with a varying degree of coarseness. Two further grog-tempered sherds carry no decoration and are otherwise undiagnostic; these have been dated as Early Bronze Age on the basis of their fabric, although ceramic tradition is uncertain. Both were residual in Middle Bronze Age ditches.

Middle Bronze Age

Pit 5551 contained 598 sherds belonging to a single Barrel Urn (Figure 11). This large vessel had a rim

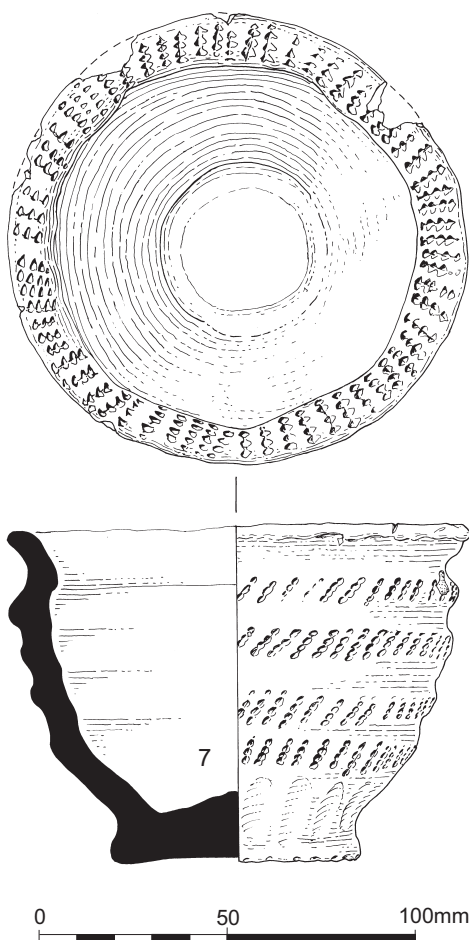


Fig. 10 Prehistoric pottery (No. 7)

diameter of 360mm, and a height of 410mm. The flat rim is expanded outwards and sits above a concave neck within which is a horizontal cordon. Between this and a second horizontal cordon marking the shoulder was an applied band of swag. Below the shoulder the wall is convex and separated into panels by vertical ribs descending from the shoulder cordon. These ribs fade into the wall before reaching the base. Inside the base was an applied plastic cross. An attempt to radiocarbon date internal residue, probably charred food, failed due to insufficient carbon.

Two sherds from a secondary fill of ditch 5232, four from ditch 5259 and a single sherd from gully 5546 are in profusely flint-tempered but relatively well-sorted fabrics characteristic of the Deverel-Rimbury ceramic tradition of the Middle Bronze Age. A further featureless grog-tempered sherd from

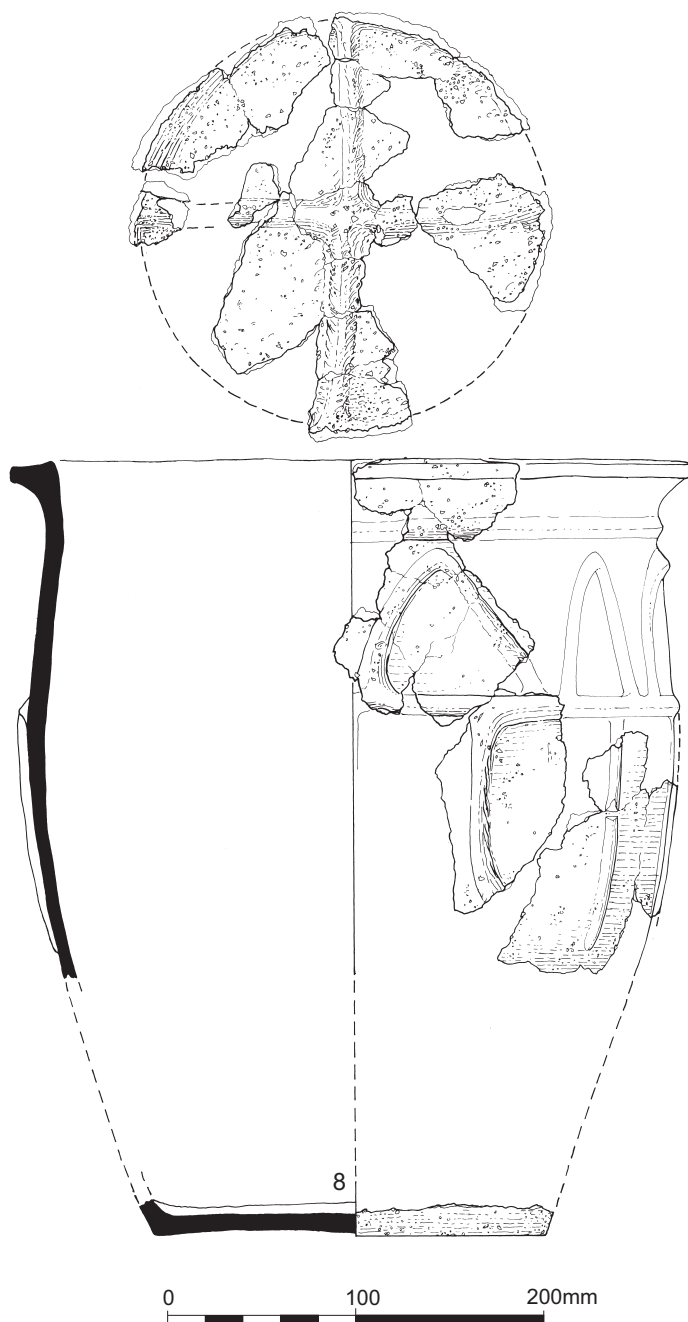


Fig. 11 Prehistoric pottery (No. 8)

ditch 5259 may be of a similar date

Three other groups of sherds are in much finer and better sorted flint-tempered fabrics that typify the Globular Urn tradition. One group of nine sherds (from hollow 5319) were entirely featureless

and very abraded; two other groups (from ditches 5301 and 5506) have small bosses or lugs on the shoulder angle.

Late Bronze Age

One small sherd with sparser, more poorly sorted flint inclusions, from topsoil is probably Late Bronze Age, while eight sandy sherds amounting to little more than crumbs (one a simple plain upright rim) from topsoil, eight plain sandy sherds from 5552 and 5556, and another small sherd with fossil shell inclusions from ditch 5232 could be of the same date.

Iron Age

Individual sandy sherds from ditches 5232 and 5234 are not particularly chronologically distinctive, but are probably later prehistoric, and have been tentatively dated as Iron Age.

Romano-British and later pottery, by Lorraine Mephram

The remaining 43 sherds are Romano-British. They comprise one sherd of imported samian, one of Oxfordshire colour coated ware, two of south-east Dorset Black Burnished ware (including one dropped flange bowl), and 39 of coarse greywares of unknown source(s). Although a very small group, the range of fabrics and forms suggests a date range spanning most of the Roman period, from at least the 2nd (possibly late 1st) century through to the late 3rd/4th century AD.

Virtually all of the Romano-British sherds were found in the secondary and tertiary fills of Middle Bronze Age ditches 5231, 5232, 5233 and 5234.

Two sherds of Verwood-type earthenware were recovered from tree-throw hole 5432 and gully 5546.

Discussion

The Beaker from grave 5171 is of Clarke's Wessex/

Middle Rhine type, with all-over horizontal comb impressions. The vessel from ditch 5229 has a more pronounced globular shape and is decorated with very abraded impressions which may be either cord approximating to the barbed wire technique, or alternatively fishbone impressions (Salanova 2001, 92, fig. 2:3). Parallels for the form (S-profiled with a belly approximately half-way down the body) occur locally at, for example, Durrington (Clarke 1970, 309, fig. 228), Upavon Flying School (Annable and Simpson 1964, 92, figs 100 and 101) and only slightly further afield at Stockbridge, Hampshire (Clarke 1970, 308, fig. 224). The vessel in 'empty' grave 5100 also belongs to Clarke's Wessex/Middle Rhine type, with a characteristic red surface finish and zoned geometric decoration.

The Collared Urns both belong to Longworth's Primary Series (Longworth 1984). They share some features with each other and with other local vessels of the same type, particularly in terms of the motif and execution of the decoration on the collar, which match very closely that on a somewhat larger vessel from Amesbury (Longworth 1984, 281 and pl. 55c; Leivers forthcoming), Collingbourne Ducus (Longworth 1984, 285 and pl. 10c) and Wilsford (Longworth 1984, 290 and pl. 52f).

Collared Urns of cup proportions are relatively common, as are the decorative motifs on the vessel from grave 5087. The form is best paralleled by a vessel from Marlton, Devon (Longworth 1984, 181 and pl. 133g), which also shares the use of diagonal lines of comb impression and the association with infant burial, in this instance a cremation burial. An entirely plain cup of similar type was recovered from a grave at Amesbury (Leivers forthcoming).

The miniature Food Vessel from grave 5116 is basically a simple undifferentiated ridged bowl. The rather restrained decoration is typical of examples from the south of England, which tend to be less heavily decorated than in other parts of Britain, where Food Vessels occur with much greater frequency. Local parallels are not known.

The Barrel Urn meets the criteria of Calkin's (1962) South Lodge type (and the plain ribs place it in his South Lodge Type A subtype). Barrel Urns in general and South Lodge types in particular are not commonly encountered, largely due to the unusual thinness of the wall in relation to the vessel's size, which often results in their disintegration, especially once broken. This example, although not whole, retains at least portions of the rim, neck, shoulder, body and base. While many sherds were in good condition, some appeared to have undergone some

exposure to heat. The presence of fragments of the entire profile (but no complete rim or base) together with the refiring of some sherds, suggests that the vessel was already broken when it was placed into its pit, and was not a container for a burial.

Calkin notes a concentration of Barrel and Globular Urn findspots northeast of Salisbury in the vicinity of Porton and Thorny Downs (1962, 23 fig. 9; Stone 1941).

Fabric Descriptions

- C1 moderate fine and medium shell
- F1 abundant well-sorted coarse crushed flint
- F2 moderate well-sorted medium and coarse crushed flint
- F3 micaceous sand matrix; abundant well-sorted fine to coarse crushed flint
- G1 common medium to large sub-rounded grog
- G2 sparse to moderate small and medium sub-rounded grog; sparse fine poorly sorted flint probably accidental; iron minerals probably naturally occurring
- Q1 fine quartz sand
- Q2 quartz sand matrix; abundant detrital inclusions including coarse grog; medium flint; sand

Catalogue of illustrated vessels

(Figures 8–11)

- 1 PRN 17. Beaker. Rim 120mm diameter; slight cordon immediately below. Simple irregular all-over comb impressions. Grave (5171) fill (5224).
- 2 PRN 11. Beaker. Four fragments with zoned comb-impressed triangles and horizontal line. Grave (5100) fill (5130).
- 3 PRN 24. Beaker. Two portions from the rim and upper body, two from the lower wall. 130mm diam. Irregular horizontal lines of rather shallow twisted cord impressions cover the external surface from 10mm below the rim to 50mm above the base. Barrow ditch segment (5229) fill (5316).
- 4 PRN 6. Collared Urn. Miniature vessel rim diameter 110mm. Bipartite; three zones of decoration on body. Grave (5087) fill (5089).
- 5 PRN 4. Collared Urn. Rim 180mm diameter; tripartite; incised chevrons on collar and shoulder. Pit (5078) fill (5079).
- 6 PRN 27. Collared Urn. Complete rim 170mm diam. The shallow collar has incised chevrons which continue into the neck but not below the shoulder. Grave (5362).
- 7 PRN 8. Food Vessel. Miniature vessel, rim diameter 120mm. Ridged bowl. Grave (5116) fill (5117).
- 8 PRN 36. Barrel Urn. Rim 360mm diameter; flat rim expanded outwards; concave neck with horizontal cordon; second cordon on shoulder; band of swag between; vertical ribs below; applied cross in base. Pit (5551) fill (5550).

Worked flint and sarsen from Early Neolithic pit 5553, by *Phil Harding*

This feature produced a total of 836 pieces of worked flint of which 45% were from the upper part of the main fill (5552) (Table 2). The total included 284 pieces of microdebitage (chips) that were recovered from sieved residue from 5556, the basal fill, which was 100% sampled. This microdebitage total included 159 pieces from a sub-sample, accounting for 70%, of the 2mm residue; the remainder was collected from 4mm residue. Burnt artefacts, primarily heat fractured flakes, accounted for 16% of the assemblage. The industry was in mint/fresh condition with all surfaces patinated white or light blue.

Raw material

Nodules from the locality included some with a thick chalky cortex similar to flint recovered from Bronze Age contexts in the excavation (see below) and others with thin weathered cortex and internal thermal fractures, both types probably collected from surface deposits. Flint may also have been obtained from further afield. A number of flakes with a thin weathered cortex underlain by a distinctive thin, orange-grey stain, similar to that seen on Bullhead flint (BGS 1996, 97–9), were also present. These flakes, with microdebitage, from the same nodule, were found in both artefact bearing layers in the pit. Two core preparation blades from these layers conjoined, indicating that the feature was backfilled in one event and that the worked flints represented a single industry.

A core fragment made of flint that was almost certainly derived from a gravel source, possibly hinting at links with the River Bourne valley, was also included. The introduction of flint to a location where surface flint of good quality was available is surprising but may be paralleled by fragments of gravel flint, probably from the River Avon valley, that were found in the fill of the Early Neolithic Coneybury Anomaly (Harding 1990).

The assemblage

The principal part of the industry comprised components of a blade/let industry, of which flakes and blade/lets formed 94% of the total collection, excluding micro-debitage, with blade/lets accounting for 24% of all flakes and blade/lets. Cores and broken cores were under-represented, contributing only 2% of the assemblage and providing a core: flake ratio

Table 2: Worked flint from pit 5553

Context	5552	5556	Total
Flake cores	6	1	7
Broken cores/core fragments	3	1	4
Blades	50	15	65
Broken blades	21	5	26
Bladelets	8	10	18
Broken bladelets	7	9	16
Flakes	114	45	159
Broken flakes	145	82	227
Crested pieces	-	1	1
Rejuvenation tablets	1	3	4
Chips/microdebitage	6	284	290
Scrapers	1	-	1
Core tools	1	-	1
Edge damaged	3	2	5
Microdenticulate	-	1	1
Debitage	7	3	10
Miscellaneous retouched	1	-	1
TOTAL	374	462	836
Burnt unworked (no.)	6	29	35
Burnt unworked (weight g)	277	184	461

of 1:47. Despite the prevalence of blades within the collection most of the cores were poorly prepared flake cores, with one striking platform. Core tablets were occasionally removed to rejuvenate striking platforms, although cores were more frequently rotated and blanks removed from an alternative flaking face.

All parts of the manufacturing process were represented by flakes and blades, which were divided into similar proportions: primary 7%, secondary 25% and tertiary 67%. Blade/lets showed traces of platform abrasion and were removed using both hard and soft hammers. Retouched material, which accounted for only 2% of the assemblage total, comprised a scraper and a microdenticulate. There were also five pieces characterised by damaged edges such as might result from use, including one piece with visibly rounded edges, and a flake from a polished flint axe.

Sarsen

An angular wedge of freshly broken sarsen, weighing 124g, was also found in the pit. Sarsen stone occurs naturally in many parts of Wiltshire (BGS 1996, 106–7) and must not necessarily be regarded as anomalous, however the discovery of a freshly broken fragment which once formed part of a much larger boulder is more unusual.

Discussion

Pits, both as individual features or in groups, provide one of the most distinctive types of Early Neolithic

monuments, representing repetitive activity across large parts of Britain (Garrow 2012). Aspects of related activity have been reflected by consistent patterns of backfilling. Study of large pit groups (Garrow *et al.* 2005; 2006) has shown that pit contents are apparently derived from refuse that has been exposed, possibly in a midden, before it has been backfilled into the pit. The condition of the worked flints at Porton Down, the inclusion of several pieces from the same nodule, and of microdebitage, indicates that the collection was derived from a common source. The debris was relatively freshly made and close to the pit; however, the presence of burnt material suggests a slight hiatus between the flaking event and the time at which the pit was backfilled. It is possible that some of the edge damage may also have resulted from trampling.

The discovery is also of considerable interest in relation to its place in the wider landscape and with other Early Neolithic monuments in the area. Neolithic monuments are poorly represented in the immediate area and few have been excavated. The flint mines at Martin’s Clump, Hampshire and Easton Down, Wiltshire are among the most local Neolithic sites; however, neither location is firmly dated. Radiocarbon dates from Martin’s Clump of 4230–4190 cal BC or 4150–3780 cal BC (BM-3083, 5150±70 BP), from an antler at the base of shaft 2, and from Easton Down of 3630–2700 cal BC (BM-190), from an antler pick from a gallery excavated by J.F.S. Stone between 1930–4, provide the only determinations. Despite the broad span of time covered by these dates Barber *et al.* (1999) considered that flint mining at Easton Down probably belonged to a second phase of mining in England, within the 3rd millennium BC, following a primary phase of mining in West Sussex, but conceded that mining at Martin’s Clump may have begun earlier. The radiocarbon dates from pit 5553, of 3940–3700 cal BC and 3950–3700 cal BC respectively (SUERC-62632–3 at 95% confidence), make it contemporary or a little later than Martin’s Clump but slightly earlier than Easton Down (see radiocarbon dating, below). However, there is nothing to suggest that mined flint was being used at the location, indeed it seems more likely that the presence of flint from a gravel source argues for a strong link with the river valley.

Other worked flint, by Matt Leivers

Excluding the material from Early Neolithic pit 5553

Table 3: Other worked flint

Flint Types	No.	% of assemblage
Retouched tools:		
Scrapers	5	0.51
Misc. retouched pieces	3	0.31
Piercers	1	0.10
Edge-flaked knives	1	0.10
Retouched tools sub-total	(10)	(1.02)
Unretouched tools:		
Cobble pounders	2	0.20
Debitage:		
Flakes (incl. broken)	745	76.18
Blade(lets)	1	0.10
Cores / core fragments	32	3.27
Irregulardebitage	26	2.67
Chips	162	16.56
Total	978	100.0%

(see above), a total of 978 pieces of worked flint was recovered (Table 3). Generally the flint is dark grey with a pale brown cortex. The source of the material is doubtless local, obtained from the Upper Chalk during the digging of pits and ditches or during cultivation. Their condition varies, but most pieces are heavily patinated, reflecting the situation on the Chalk. Most of the pieces are in good condition, with no evidence of extensive redeposition.

Although predominantlydebitage, the technological characteristics of the assemblage suggest that it falls into two groups: one dating to the Early Bronze Age and the other to the Middle Bronze Age. In the former, flakes are predominantly large and broad, struck with hard hammers from multi-platformed cores showing a minimum of maintenance. In the latter, flakes are predominantly cortical, with a high proportion of cortical butts. Cores where present are irregular. Neither cores nor butts have any signs of maintenance.

The retouched tools conform to this chronological assessment, being mainly end or end and side scrapers on thin flakes with a flattened oval plan, typical of Early Bronze Age assemblages. The edge-flaked knife is also typical of this date.

Unburnt human bone,
by Kirsten Egging Dinwiddy

Most of the unburnt human bone analysed (15 contexts) was recovered from Early Beaker and Early Bronze Age mortuary features enclosed by an

Early Beaker segmented ring-ditch (5216) (Figures 2 and 3). The remains comprise those of seven inhumation burials (including one double and one made in a mixed rite grave; see McKinley, p. 68 below) and redeposited bone from grave fills and the ring-ditch (SW segment). The remains of an inhumation burial approximately 240m northeast

of the enclosed mortuary complex, and redeposited bone from the grave fill and ditch 5216 (Group 5235) 150m further to the northeast, were attributed to the Middle Bronze Age. In the absence of associated datable artefactual material radiocarbon dates were obtained from bone samples taken from five burial remains (Table 4, Table 8).

Table 4: Summary of unburnt human bone analysis results

Context	Cut	Deposit type	Phase	Quantification	Age/sex	Pathology
5002*	5003	a) inh. burial b) R	MBA	c. 80% b) 1 piece shaft l.	a) adult c. 40–50 yr ?male b) subadult/adult >13 yr	a) calculus; enamel hypoplasia; solitary bone cyst – right carpals; degenerative disc disease – 1Cgen, L2, S1; osteoarthritis – 1Cgen; osteophytes – C1-2 af, T12 c-v, L3-4 bsm; enthesophytes – innominates, humeri, ulnae, left patella, tibiae, right calcaneum; mv – deviated sternum, bifurcated left 2nd rib; occasional facets – tarsals
5089	5087	a) inh. burial b) R (?token)	EBA	a) c. 50% b) 1 bone u.	a) neonate c. 40 weeks b) adult >18 yr	
5105*	5104	inh. burial	EBA	c. 75%	infant 1.5–2 yr ??female	enamel hypoplasia; scurvy (orbits); thinned outer table & vessel impressions – skull vault (metabolic condition)
5107	5110	R (grave)		6 frags. a.u.	adult c. 20–23 yr	
5108*	5110	inh. burial (double)	EBA	c. 96%	adult c. 20–23 yr female	calculus; dental caries; enamel hypoplasia; Schmorl's nodes – T8; coalition – sacrum (right iliacus); plastic change – scapulae
5109	5110	inh. burial (double)	EBA	c. 65%	neonate c. 3–6 mth	<i>cribra orbitalia</i> ; porosity & poor mineralisation – skull (metabolic condition)
5117	5116	inh. burial (seated)	EBA	c. 80%	infant c. 6–9 mth	bowed tibiae; cortical defect – right proximal radius
5130	5100	R (grave)	EBA	a) 4 frags. s.a.l. b) 20% a.u.l. c) 8% a.l.	a) infant 2–3 yr b) adult c. 25–35 yr female c) adult c. 40–50 yr female	a) enamel hypoplasia b) osteoarthritis – 2 right tarsals; osteophytes – T apj; enthesophytes – right clavicle, right calcaneum; cortical defect – right clavicle, left radius; plastic change – left ulna
5170	5169	R (grave)	EBA	1 bone l.	adult c. 25–45 yr ??female	enthesophytes – right patella
5172	5171	R (grave)	EBA	1 bone l.	adult c. 20–40 yr	
5218	5216	R (MBA ditch)	?MBA	1 frag. femur	adult c. 25–45 yr ??male	
5223*	5169	inh. burial	EBA	c. 25%	adult c. 20–30 yr female	apical void; calculus; dental caries; periodontal disease; idiopathic skull thickening (diploë); osteophytes – C1-2 af, T2 tpj, T4 bsm, 2 right ribs; pitting – right rib; enthesophytes – right clavicle
5224*	5171	R (revisited)	Early Beaker	c. 80%	adult c. 30–40 yr female	calculus; dental caries; fracture – C6 spinous process, T7, T12 & L1 bsm, right proximal ulna; ?solitary bone cyst – right trapezium; Schmorl's node – T8, L1-2; osteoarthritis – T12; osteophytes – T4-6, L1 apj, T6, 8-10 tpj, T6-L2 bsm, 4 right & 3 left ribs, left distal humerus; pitting – T4-6 apj; mv – coalesced articular surface – hamates; occasional facets – 1st MtTs
5329	5226	R (ditch) ?=5223	EBA	1 frag. U.	adult	
5333/4	5332	?inh. burial	EBA	c. 55%	<i>In utero</i> /neonate c. 36 weeks ??female	

KEY: * = C14 dated; inh. - inhumation; R - redeposited; s.a.u.l. – skull/axial skeleton/upper limb/lower limb (area of skeleton represented where not all recovered); C, T, L, S – cervical, thoracic, lumbar, sacral vertebra; apj – articular process joint; bsm – body surface margin; c-v – costo-vertebral; tpj – transverse process joint; mv – morphological variation

Methods

The degree of bone erosion was recorded (McKinley 2004a, fig. 6.1–7). Age was assessed from the stage of skeletal development and the patterns and degree of age-related changes to the bone and teeth (Bass 1987; Beek 1983; Scheuer and Black 2000; Buikstra and Ubelaker 1994). Sex was ascertained from the sexually dimorphic traits of the skeleton (Bass 1987; Buikstra and Ubelaker 1994). Measurements were taken and skeletal indices calculated where possible (Bass 1987; Brothwell and Zakrzewski 2004; Trotter and Gleser 1952; 1958). Non-metric traits were recorded in accordance with Finnegan (1978) and Berry and Berry (1967).

Results

A summary of the results is presented in Table 4. The small size of the assemblage and a lack of suitable True Prevalence Data (TPR: number of elements affected/number of elements present \times 100), it being predominantly in the form of Crude Prevalence Rates (CPR: number of individuals affected/number of individuals present \times 100), precludes comprehensive comparison and discussion.

Disturbance and condition

Most of the graves had survived to a relatively substantial depth, with only two at less than 0.20m and none below 0.10m. In one case some bone may have been lost due to horizontal truncation. The position of the remains in the Middle Bronze Age grave 5003 was such that most of the skull had been disturbed or lost (Figure 7).

The enclosed mortuary features included four intercutting graves constructed sequentially over a period of around four centuries (Burial group 5225). First in the sequence was timber-lined chamber 5171 which contained the disarticulated remains of a single individual, confirmed by radiocarbon dating as Early Beaker. The remains, which escaped truncation by the later graves, formed a 0.20m deep scatter at the base of the cut. Larger bones were situated towards the centre of the deposit and smaller bones were spread around the periphery, whilst the left fibula was found along the eastern edge of the chamber (5172), possibly within the packing material. Although a few loose teeth were recovered, no skull or mandible was found in the grave, nor were they represented in the rest of the redeposited assemblage. The evidence suggests intentional revisitation and manipulation of the remains once the corpse had become fully skeletalised, as well as potential curation of specific

elements. The manipulation, removal and curation of human remains are recognised phenomena in Early Bronze Age contexts, for example at Amesbury Down, though potential purposes and processes are varied and complex (McKinley forthcoming a). Grave 5169, containing the remains of *in situ* burial 5223, was next in the sequence; both grave and burial were truncated by grave 5100, leaving only the skull and upper part of the torso. Associated damage to the right pelvic bone of 5223 occurred whilst it was semi-green. Grave 5100 contained disarticulated and redeposited remains comprising parts of 5223 and two otherwise unaccounted for individuals (Table 4). Some of the bone may have derived from disturbed *in situ* burials, similar to that described above, though it is possible that grave 5100 never held a complete corpse. The bone may have been taken from elsewhere and reburied, perhaps to give a 'sense of place and context within a new settlement area' (*ibid*; see above). The upper portion of 5100 was cut by the last grave in the sequence – 5104, which contained the *in situ* remains of a single inhumation burial. Grave 5110, situated a metre or so to the west of the central sequence, contained a double burial made in the period between the use of graves 5169 and 5104. It is not clear at which point in the sequence the remaining burials within the enclosed area were made. The location of these mortuary features must have been clearly marked (e.g. the segmented ditch and bank/possible mound) or held within the local memory to allow the revisitation, for whatever reasons, during the long period of use.

The bone is predominantly in good condition with some surface erosion (grades 1–3). A few elements and the uppermost positioned parts of some skulls are more heavily eroded (grade 3–4). The bones from the older adult female redeposited in grave 5100 are slightly more abraded than most suggesting they may have been subject to repeated episodes of manipulation. Crania are occasionally a little warped and many are heavily fragmented due to the pressure of the chalky grave fills. Skeletal recovery is good with 75% or more of the skeleton recovered from the remains of the five burials (71.4%).

Demography

A minimum of 13 individuals (MNI) are represented in the unburnt bone assemblage (Table 5). The Early Beaker assemblage comprises the heavily disturbed remains of an *in situ* burial. Seven individuals are represented within the Early Bronze Age remains found *in situ*; an additional two are represented in the

Table 5: Summary of demographic data (unburnt human bone)

	Early Beaker	Early Bronze Age	Middle Bronze Age
<i>Immature</i>			
neonate c. 0–0.5 yr		3 (U)	-
infant c. 0.5–4 yr		3 (U)	-
subtotal		6	-
subadult/adult >13 yr	-	-	1 (U)
<i>Adult</i>			
c. 20–25 yr		1 (F)	-
> 25 yr		-	1 (??M)
c. 20–30 yr		1 (F)	-
c. 30–35 yr	1 (F)	-	-
c. 40–50 yr		1 (F)	1 (?M)
subtotal	1	3	2
Total	1 (F)	9 (3F, 6U)	3 (2M, 1U)

KEY: F – female; M – male; U – unsexed

redeposited material. Middle Bronze Age remains comprise those of an *in situ* inhumation burial (adult male), and two further individuals from the redeposited material – one from the grave fill, and one from ditch 5216 in the northeasternmost corner of the site (adult possible male).

Skeletal indices

The average stature estimate (1.65m (SD 0.03) – c. 5'5") calculated for three females, including the Early Beaker example, is comparable to those for the contemporaneous combined Stonehenge and Wider Environs and the Amesbury Down females (McKinley forthcoming b), whilst Roberts and Cox (2003, 86) give an average of 1.61m for their sample of Bronze Age females. The Middle Bronze Age male was rather short (1.63m / c. 5'4") in comparison to his contemporaries. Averages for Stonehenge and Wider Environs and Amesbury Down range between 1.74 and 1.76m (c. 5' 9"; McKinley forthcoming b); Roberts and Cox give an average of 1.72m for Bronze Age males (2003, 86).

The two measureable Early Bronze Age skulls fell within the brachycranic range (82.05, SD 1.77) reflecting the general broad/round headed pattern for the period (Brothwell 1973, Abb. 65) and parts of the local population (Amesbury and Rollestone Down; McKinley forthcoming a).

The platymeric index (reflecting the degree of antero-posterior flattening of the proximal femur) was calculated for four adults, two females (86.53, SD 3.86) and both males (86.4, SD 6.18). McKinley (forthcoming b, table 8) records a similar eurymeric average.

The platycnemic index (reflecting the meso-lateral flattening of the tibia) was calculated for three adults. The two female indices fell within the 'normal' eurycnemic range (72.43, SD 2.57) as seen in comparative material (McKinley forthcoming b, table 6; 2008a). The tibiae of the male, however, were very flattened i.e. platycnemic–hyperplatycnemic (53.9–55.3, average 54.6, SD 0.99), indicating a considerable disparity between this individual and his contemporaries with regard to the biomechanical loading of the legs. Brothwell (1972, 91) linked platycnemia to habitual squatting. Whilst this theory is rarely upheld, it may have been the case with the Middle Bronze Age male as a large lateral squatting facet was observed in his right distal tibia (left not observable).

Non-metric variation

Details of the non-metric trait observations are in the archive. Notable examples include a deviated sternum with associated bifurcated rib (male 5002). The left second rib increases in depth towards the sternal end, where it is twice the normal depth and divided into two. The sternum is longer on the left side than on the right in order to accommodate the anomaly.

Female 5223 has an unusual articulation between the atlas and skull base (occipital). A short pillar of bone extends superiorly from the left transverse process of the atlas, culminating in a smooth facet which corresponds to a facet located close to the lateral side of the left occipital condyle (posterior portion) (Plate 6). Rotation and tilting of the head to the left would have been somewhat restricted. Bergmann (www.anatomyatlases.org) and Allen (1879) describe a similar case, though involving fusion of the atlas and occipital.

An unusual coalition was seen on the anterior portion of the superior edge of the right sacral ala, at the site of the iliacus muscle of female 5108 (Plate 7). It is possible that repeated strain on the muscle attachment may have caused a failure of fusion of this part of the epiphyseal plate, as is the theory for at least some cases of *os acromiale* (Stirland 2005, 121).

Pathology

Pathological lesions were observed in the remains of 10 individuals, including four immature. These are summarised in Table 4.

Dental disease

All or parts of four erupted permanent dentitions were available for analysis (three female and one



Plate 6 Human bone: 5223 (adult female), superior view of the first cervical vertebra (atlas) showing a facet on the superior surface of the left transverse process (scale = 20mm)

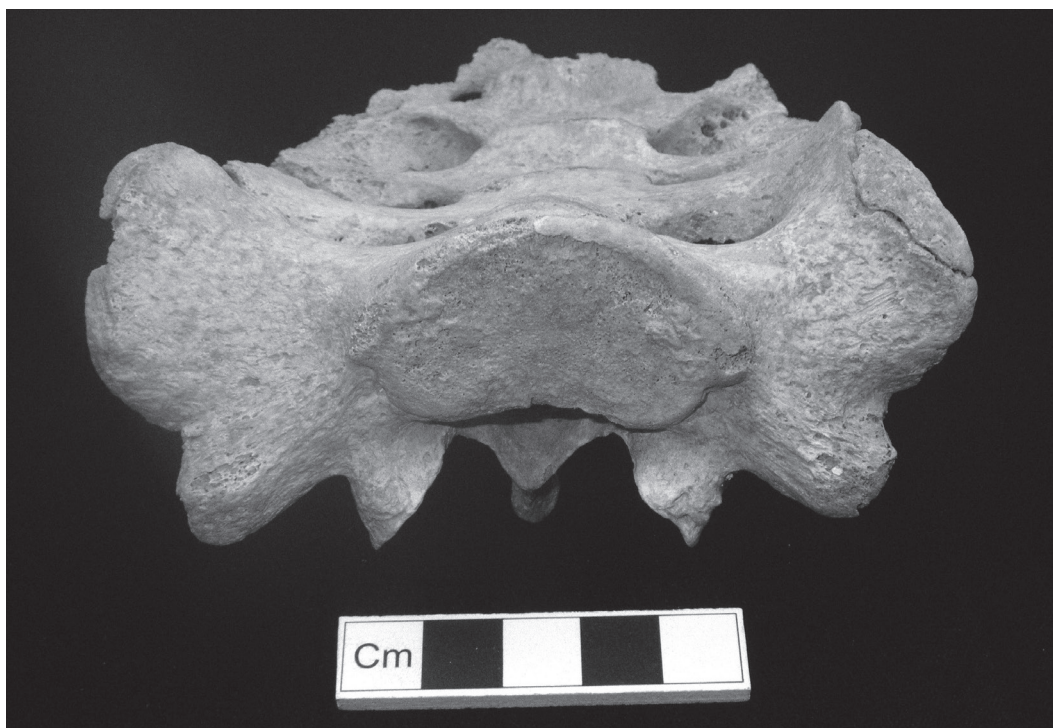


Plate 7 Human bone 5108 (adult female), superior view of the sacrum showing a coalition defect on the right lateral mass, at the location of the iliacus muscle attachment (scale = 50mm)

Table 6: Summary of permanent erupted dentitions and dental lesions

	Total teeth	Total tooth positions	Calculus	Caries	Abscess	Hypoplasia
<i>Early Beaker</i>						
Female (total)	T 8 (5 max.; 3 man.)	-	T 8 (5 max.; 3 man.) Rate 100%	T3 (1 max.; 2 man.) Rate 37.5%	-	-
<i>Early Bronze Age</i>						
Female (total)	T 57 (29 max.; 28 man.)	T 63 (30 max.; 33 man.)	T 42 (14 max.; 27 man.) Rate 73.7%	T6 (2 max.; 4 man.) Rate 10.5%	T 1 (1 man.) Rate 1.6%	T6 (6 max.) Rate 9.5%
<i>Middle Bronze Age</i>						
Male (total)	T 4 (2 max.; 2 man.)	-	T 4 (2 max.; 2 man.) Rate 100%	-	-	T1 (1 man.) Rate 25%
<i>All</i>						
Total	T 69 (36 max.; 33 man.)	T 63 (30 max.; 35 man.)	T 53 (21 max.; 32 man.) Rate 76.8%	T9 (3 max.; 6 man.) Rate 13.0%	T 1 (1 man.) Rate 1.5%	T 7 (6 max.; 1 man.) Rate 11.1%

male); two deciduous and three mixed dentitions are present in the Early Bronze Age assemblage.

Dental calculus (calcified plaque/tartar) was observed in four dentitions (Table 6). Deposits are manifest as slight to moderate 'tidemarks'; the severity broadly increases with age (Brothwell 1972, fig. 58). McKinley (forthcoming a, table 13) records a comparable rate of 71.1% for the Early Bronze Age teeth from Amesbury Down.

Slight to moderate manifestations of periodontal disease (gingivitis; Ogden 2005) were observed in seven molar sockets in one Early Bronze Age dentition (10.1%). The rate is rather low, especially compared to that from Amesbury Down (66.7%; McKinley forthcoming a).

Dental caries (destruction via bacterial acid production) were observed in two to four teeth in three female dentitions. In most cases lesions originated in the occlusal fissures of mandibular molars. The rate is higher than that recorded for Amesbury Down (1.1%; McKinley forthcoming a, table 13), and three times that given by Roberts and Cox for the overall Bronze Age period (4.8%; 2003, table 2.27). The lack of males in the Porton assemblage may bias the results as rates are commonly higher in females, as was the case at Amesbury Down (McKinley forthcoming a, table 13).

The single dental abscess lesion (mandibular molar) was probably associated with carious lesions in the same tooth. The rate is close to that observed by McKinley for the Early Bronze Age material from Amesbury Down (1.3%; forthcoming a), and the 1% given by Roberts and Cox for the Bronze Age (2003, table 2.28).

Dental enamel hypoplasia comprises

developmental defects in the enamel in response to growth arrest in immature individuals, probably as a result of illness or nutritional stress (Hillson 1979; Lewis and Roberts 1997). Lesions formed *in utero* and young infancy likely reflect the maternal health and/or nutritional status. Defects were seen in four dentitions, three Early and one Middle Bronze Age. Two infants suffered stress episodes from at least birth to their demise, whilst the defects in the young adult female appear to have formed in the weaning period (c. 2–4 years) and around the onset of puberty (c. 11 year). At least two periods of stress between the fourth and fifth years are evidenced in the teeth of the Middle Bronze Age dentition. The rates are higher than those for Amesbury Down (5.4% and 6.7%; McKinley forthcoming a). Roberts and Cox list a single true prevalence rate for the Bronze Age (8%; 2003, table 2.32).

Examples of probable activity-related dental attrition patterns comprise palatal polishing and a distinct mesio-distal U-profile groove across the tubercle of the maxillary first incisors (female 5224), and a labial-lingual notch on a mandibular canine associated with excessive wear on the anterior teeth (male 5002). Such modifications may be indicative of habitually grasping objects and/or fabrics, or processing fibres between the teeth. However, malocclusion and/or pre-existing dental lesions may also be factorial.

Trauma

Evidence for several fractures was seen in the remains of adult female 5224. Compression fractures were observed in three vertebral bodies, as can occur through force acting along the long axis of the spine, either from above, or from a fall onto

the feet or buttocks (Adams 1987, 100–3). There is also a fracture across part of the otherwise normal left olecron process, often a result of a fall onto the point of the elbow in adulthood (*ibid*, 153). It is not possible to determine whether the injuries occurred as a result of the same or separate accidents.

Metabolic

Cribra orbitalia, commonly associated with iron deficiency anaemia (Roberts and Manchester 1997, 166–9; Lewis and Roberts 1997, 583), though more recently linked to a lack of vitamin B₁₂, was noted in the orbit of neonate 5109 (9.1% orbits). Scorbutic haemorrhage (vitamin C deficiency; Aufderheide and Rodríguez-Martín 1998, 310–3) may be responsible for the new bone deposits in the left orbit and frontal bone of infant 5105.

Thinning of the outer table of the skull (5109) and bowed tibiae (5117) may suggest further metabolic conditions such as rickets (vitamin D deficiency), whilst the abundant endocranial capillary impressions in the same infant may be related to haemorrhage (e.g. scurvy or trauma) or inflammation from infection (Lewis and Roberts 1997, 584). Generalised porosity and poor mineralisation (e.g. 5109), may indicate generalised neonatal health stresses and/or malnutrition (Egging Dinwiddy 2011, 130), and therefore reflect to some degree the health status of the mother.

Idiopathic skull thickening (expanded diploë) was noted in adult female 5223. Possible causes include severe anaemia and the early stages of Padgett's disease (Salter 1999, 31, 194–6, 199).

Joint disease

Joint diseases are the most commonly recorded conditions in archaeological skeletal material. Similar lesions may develop as part of certain disease processes, whilst some may occur as lone lesions that are largely reflective of age-related wear-and-tear

(Rogers and Waldron 1995).

Table 7 summarises the conditions affecting the spinal elements. All or parts of three female and one male spine were present. There are 475 extra-spinal joints in the assemblage, comprising 351 female (Early Bronze Age) and 124 male (Middle Bronze Age).

Defects in the vertebral body from a ruptured intervertebral disc (Schmorl's nodes) are often the result of stress-related trauma involving loading and twisting of the spine in young adulthood (Rogers and Waldron 1995, 27; Roberts and Manchester 1997, 107). Examples were seen in between one and three vertebrae in two female spines. The Early Bronze Age rate for the Amesbury Down material is 9.6% (McKinley forthcoming a).

Degenerative disc disease (breakdown of the intervertebral disc, commonly age-related; Rogers and Waldron 1995, 27) was evident in the male spine, affecting three vertebrae. The rate is much greater than that at Amesbury Down (0.8%; McKinley forthcoming a), though this is likely a relic of the restricted sample size.

Lesions indicative of osteoarthritis (Rogers and Waldron 1995, 43–4) were seen in between one and two joints in three individuals (Tables 4 and 7). The two affected tarsals (11.8% of Early Bronze Age tarsals) were probably due to a minor morphological variation (adhering *os calcaneum secundarius*).

Lone osteophytes (Rodgers and Waldron 1995, 25–6) were seen in two female spines and that of the male. The body surface margins of the thoracic region was most commonly affected. Lone osteophytes were recorded in ten extra spinal joints – four Early Beaker ribs (22.2%) and the distal humerus (result of trauma), and five Early Bronze Age ribs (16.1%).

Lone pitting was seen in the joints of three upper thoracic vertebrae (Early Beaker) and an early Bronze Age rib (3.2% ribs).

Table 7: Summary of number and rates (TPRs) of spinal lesions by sex and phase

	No. vertebrae	Osteoarthritis	Schmorl's nodes	Degenerative disc disease	Lone osteophytes	Lone pitting
<i>Early Beaker</i>						
Female (total)	23	1 (4.3%)	3 (13.0%)	-	11 (47.8%)	3 (13.0%)
<i>Early Bronze Age</i>						
Female (total)	38	-	1 (2.6%)	-	5 (13.2%)	-
<i>Middle Bronze Age</i>						
Male (total)	25	1 (4.0%)	-	3 (12.0%)	6 (24.0%)	-
<i>All</i>						
Total (inc. unsexed)	86	2 (2.3%)	4 (4.7%)	3 (3.5%)	22 (25.6%)	3 (3.5%)

Miscellaneous

Enthesophytes (bony growths) and cortical defects (lacunae) may develop at tendon and ligament insertion sites (Table 4). Factors include disease, old age and traumatic/biomechanical stress (Rogers and Waldron 1995, 24–5).

Small voids commonly found in the carpals are thought to be the result of solitary bone cysts and are normally asymptomatic (Eiken and Jonsson 1980).

Plastic changes may occur as a result of normal forces on poorly mineralised bone (as in rickets – see above), or as a result of activity-related biomechanical stress. The left ulna of adult female 5130b (5223) is noticeably bowed, whilst the distal ends of the scapulae of female 5108 flare dorsally, the latter suggesting strong and repeated lateral rotation of the shoulder.

Concluding remarks

In general the Early Beaker and Early Bronze Age individuals fit well with their local and wider ranging counterparts in terms of activity and morphology, whereas the Middle Bronze Age male was relatively short and probably participated in different activities or used different methods to undertake the same tasks (e.g. involving squatting, see above).

The dental health of the Porton Down individuals is broadly comparable to that of their local contemporaries, with the various rates indicating a diet rich in meat, low in carbohydrates and somewhat self-cleaning (Hillson 1986, 286–99; McKinley forthcoming a). However, rates of enamel hypoplasia and metabolic conditions indicate that the Porton Down individuals probably suffered greater nutritional and/or health stresses, especially as children.

Cremated human bone, by *Jacqueline I. McKinley*

Cremated bone from three Early Bronze Age graves was analysed. In two cases (5078 and 5362) burials had been made in inverted Collared Urns, whilst the third comprised an unurned burial made in a grave (5332) which also formed the last resting place of an unburnt neonate. All lay in close proximity (2.5–4m apart) within the southeast quadrant of the 15m diameter area described by the segmented ditch 5216, and comprised part of the Early Beaker–Early Bronze Age mortuary group (see Egging Dinwiddy for unburnt remains).

Methods

The two urned burial remains were excavated by the writer in quadranted spits to enable details of the burial formation process to be ascertained. Recording and analysis of the cremated bone followed the writer's standard procedure (McKinley 1994a, 5–21; 2004b). Demographic information was assessed following the same criteria as followed for the unburnt bone with the addition of Gejvall (1981) and Wahl (1982) for sexing.

Results

The remains of a minimum of four cremated individuals were recovered. Both urned burials comprised the remains of infants; the 177.6g of bone recovered from grave 5078 represents the remains of two individuals, one an infant of 2–3 years of age and the other a probable male infant/juvenile of 4–5 years; and the 9.4g from grave 5362 an infant of 1–1.5 years. Grave 5332, from which some cremated bone may have been lost due to disturbance, contained the remains of a 30–35 year old adult, probably female (196.9g). A 'token' fragment of adult cheek bone from the urned burial in grave 5078 could have derived from the latter individual (see below).

Extensive lesions indicative of *cribra orbitalia* (manifest as pitting in the orbital roof and generally believed to result from a metabolic disorder associated with iron deficiency anaemia; Roberts and Manchester 1997, 166–9) were observed in the unsided orbital vault of at least one individual from grave 5078 (it could not be ascertained whether a fragment of right orbit, with lesser lesions, derived from the same or the other individual). Porotic lesions in a fragment of skull vault may be indicative of porotic hyperostosis, which shares a similar aetiology, and suggests a more severe form of the disease afflicting at least one child.

Pyre goods, in the form of small quantities (2.5g and 3.1g) of cremated animal bone, were recovered from two graves (5078 and 5332 respectively). The infants were accompanied on the pyre by sheep/goat and pig, whilst cattle-sized bone and bird bone were recovered from the adult's grave (species identifications by Lorrain Higbee).

Discussion

Most of the bone is white in colour, indicative of full oxidation (Holden *et al.* 1995a and b). However, amongst the bone from grave 5078 some fragments (rarely an entire element) from all areas of the skeleton show variations (black, blue, and grey) suggestive of incomplete oxidation. The

remains of the older individual appear to have been predominantly affected (though it was not always possible to attribute all fragments to one or other individual), with a marked focus on elements of skull and neck vertebrae, and with a preponderance for the right side. A variety of intrinsic and extrinsic factors may affect the efficiency of cremation (McKinley 1994a, 76–8; 2004c, 293–5; 2008b). In this case, were the children cremated together, which is likely, the larger size of the older individual would have meant their remains took longer to cremate. The pyre may have been slightly under-sized, giving insufficient time for full oxidation (which was probably not seen as necessary anyway); the peripheral position of the heads would have placed them in a cooler part of the pyre and/or some form of pillow/hood/hat may have partially curtailed the oxygen supply (the right-side possibly being largely insulated/muffled in one individual – possibly the children were laid facing each other on the pyre). Only very slight variations (blue/grey) were observed to three–four small fragments of skull and/or femur shaft from the other two graves.

The largest bone fragments recorded were between 23mm (infant grave 5362) and 76mm (adult grave 5332), and the majority of the bone in all but the former was recovered from the 10mm sieve fraction (approximately 67–69% by weight), with most from grave 5362 being in the 5mm fraction (47%). This is commensurate with the level of fragmentation normally attendant on the cremation process and there is no indication of deliberate fragmentation of the bone prior to burial (McKinley 1994b).

Although identifiable skeletal elements from all four areas of the skeleton are present in each burial context, there is an unusually marked preponderance of skull elements in that from grave 5078 suggesting they may have been preferentially selected for burial (approximately 71% by weight of the bone was identifiable to skeletal element, about 76% of which comprises skull fragments). Whilst a high proportion of skull fragments was also observed amongst the 67–69% by weight of identifiable skeletal elements from the other two graves, the same potentially deliberate bias is not indicated. The absence of any of the small bones of the hands and feet (which would have survived cremation) from two of the graves (5078 and 5362), and identification of only three such elements from grave 5332, suggests hand-recovery of material from the pyre site for burial rather than raking and winnowing (McKinley 2004c, 300–1).

Burial remains inclusive of two individuals

(generally cremated together) are found with an average frequency of about 5%; they usually comprise an adult with an immature individual, and that of two young children—as seen here—represents a very rare example (McKinley 1997).

Cremated remains, being fragmentary and readily subject to curation as dispersed fragments, may appear as *memento mori* in both cremation and inhumation burials. There are several similarly dated cases of the recovery of such ‘token’ fragments of bone – small symbolic amounts (<10g) retained by the deceased’s friends or relatives and included in later burials (McKinley 2006; 2013). In this case, it may have been felt that the children required some adult accompaniment and the single bone could have derived from the pyre of the adult buried in grave 5332.

The inclusion of animal remains on the pyre was a relatively common part of the rite in the Bronze Age (around 16% burials) with sheep/goat and pig being the most commonly recognised species (McKinley 1997).

Particulars of the burial formation processes were ascertained from the detailed excavation and osteological data. Evidence from the remains of both urned burials suggests the bone was placed in a bag before being put in the vessel and that, in the case of burial 5079 (grave 5078), a small amount of pyre debris was added to the vessel prior to its inversion and burial; both characteristics for which there is growing evidence (e.g. McKinley forthcoming b; 2015). In the latter, the bone from both individuals was mixed throughout the c. 130mm concentration of material, as were the animal remains; the ‘token’ adult bone was found in spit 5.

Unfortunately, the excavation procedures employed in the recovery of the remains from grave 5332 render the formation process indecipherable with confidence; however, it seems likely that the inhumation burial of the neonate preceded the cremation burial being made in the same grave by at least several months, potentially much longer. A familial link between the two individuals is implicit but inconclusive. There are numerous examples of ‘communal’ or ‘shared’ graves from the Beaker/Early Bronze Age, the variety of forms including the mixed rite combination seen here; e.g. at Amesbury Down (McKinley forthcoming a), within the Stonehenge Environs and elsewhere within the wider region (Brayne 2004; Boyle and Harman 1999; Henderson 1990). There is no conclusive link between the mortuary treatment and the age/sex of the individuals (infants and juveniles being

buried together, as well as immature individuals with adults), nor in the primacy of one or other rite, though in general, the cremation burials appear to be made subsequent to the inhumation burials.

Animal bone, by L. Higbee

398 fragments (or 2.39kg) of animal bone were recovered, but once conjoins are taken into account this figure falls to just 209 fragments. Bone came from Beaker/Early Bronze Age segmented ring-ditch 5225 and C-shaped enclosure 5545, as well as from the upper (Romano-British) fills of various ditches that make up the Middle Bronze Age field system, a waterhole and a small number of undated pits and tree-throw holes.

Bone preservation is generally quite poor; cortical surfaces are badly eroded and/or root etched and some fragments, notably those from Romano-British contexts, are in an abraded condition. It is likely that these fragments have been reworked from earlier deposits. The number of gnawed bones is extremely low, though poor preservation is probably a factor here.

There are 29 fragments from Early Bronze Age contexts. Cattle bones are common amongst the small number of identified fragments, and most are from the foot and ankle. Other identified cattle bones include fragments of horn core and post-cranial bones from both the fore- and hindquarters.

Other identified species in the Early Bronze Age assemblage include sheep, pig, dog, and both red and roe deer. Of note is a complete red deer antler tine (ON 218) from the segmented barrow ditch that shows signs of use wear around the tip. Digging tools such as picks and rakes, crudely fashioned from red deer antlers are reasonably common finds from prehistoric monuments such as this since, once worn or broken they were usually discarded or placed back into the excavated feature. Tree-throw holes 5351 and 5458 both contained fragments of aurochs bone including a horn core and a proximal radius. One of the large-mammal long bone fragments recovered from waterhole 5319 appears to be an off-cut from bone object manufacture.

The Romano-British assemblage is almost entirely from the uppermost fills of Middle Late Bronze Age ditches and comprises 23 fragments, over half of which can be identified to species. Again cattle bones from the foot and ankle area of the carcass are common. The other identified bones belong to sheep/goat, pig and dog.

Environmental remains, by Sarah F. Wyles

Charred plant remains

Early Neolithic pit 5553 contained a moderate number of cereal remains, a large quantity of hazelnut (*Corylus avellana*) shell fragments and a few seeds of vetch/wild pea (*Vicia/Lathyrus* sp.). The cereal remains included grain fragments of hulled wheat, emmer or spelt (*Triticum dicoccum/spelta*). The dominance of hazelnut shell fragments is typical of Neolithic deposits and may be indicative of the exploitation and general reliance on wild food resources during this period (Moffett *et al.* 1989; Stevens 2007; Robinson 2000).

A moderately large quantity of false oat-grass (*Arrhenatherum elatius* var. *bulbosum*) tubers and crab apple (*Malus sylvestris*) type fruit and pip fragments were recorded in the assemblage from Early Bronze Age cremation-related deposit 5532. False oat-grass in particular has an association with cremation-related deposits (Godwin 1984). Crab apple fragments have been recovered from Neolithic deposits and it is thought that they are generally an indication of the exploitation of the wild food resource as with the hazelnut shell. In some instances however, such as at Hengistbury Head (Wessex Archaeology 2001), whole fruits have been recovered from cremation-related deposits and it is believed that in these cases they could have been votive offerings.

Other samples were largely devoid of charred plant remains and none was recovered from C-shaped enclosure ditch 5545, though the latter did contain some wood charcoal. The very small assemblages observed in the samples from Middle/Late Bronze Age watering hole/dew pond 5319 included a grain fragment of barley (*Hordeum vulgare*) and a seed of ribwort plantain (*Plantago lanceolata*). The small numbers of weed seeds are of species typically found in grassland, field margins or arable environments.

Molluscs

The assemblage from Early Neolithic pit 5553 included shells of the shade-loving species *Discus rotundatus*, *Carychium* sp., *Aegopinella nitidula*, *Oxychilus cellarius* and *Clausilia bidentata*, together with the intermediate species *Trochulus hispidus*, *Cochlicopa* sp., *Pomatias elegans* and *Punctum pygmaeum*, and open country species *Vallonia excentrica*, *Vallonia costata*, *Pupilla muscorum* and

Vertigo sp. This assemblage may be indicative of an open grassland environment with some areas of scrub/woodland and longer grass in the vicinity of the pit. Similar assemblages were recorded from Early Neolithic pits from the wider area such as near Old Sarum (Powell *et al.* 2005) and south of Amesbury (Wyles forthcoming).

The sample from C-shaped enclosure ditch 5545, of possible Early Bronze Age date, contained a moderately high number of shells. The land snail assemblage was dominated by the open country species, in particular *Vallonia costata*, *Vallonia excentrica*, *Pupilla muscorum* and *Helicella itala*. The presence of the rarity *Truncatellina cylindrica*, an obligatory xerophile which favours short dry grassland is noteworthy. This species also occurred in small quantities from deposits of Neolithic and Bronze Age date on other sites in the area, for example south of Amesbury (Wyles forthcoming), Durrington Walls (Evans 1971), Figchellean (Allen and Wyles 1993), Woodhenge (Evans and Jones 1979), Dunch Hill, Tidworth (Allen 2006) and King Barrow Ridge (Allen and Wyles 1994). The assemblage may be indicative of an established open downland landscape, with grazed grassland and some areas of longer grass in the vicinity of this enclosure.

There is a greater presence and range of shade-loving species in the assemblages from Middle/Late Bronze Age watering hole/dew pond 5319, although the open country species, including *Truncatellina*

cylindrica, are still present. These assemblages may be indicative of an open downland landscape, again with grazed grassland and a patch of scrub, with longer grass in the vicinity of the watering hole/dew pond.

Radiocarbon dating, by Alistair J. Barclay and Michael J. Grant

Nine samples were sent for radiocarbon dating (one failed) to the Scottish Universities Environmental Research Centre (SUERC-43369, 43373–6, 56364, 62632–3 and GU39041) (Table 8). They have been calculated using the calibration curve of Reimer *et al.* (2013) and the computer program OxCal (v4.2.3) (Bronk Ramsey and Lee 2013) and cited in the text at 95% confidence and quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years. The ranges in plain type in the radiocarbon tables have been calculated according to the maximum intercept method (Stuiver and Reimer 1986). All other ranges are derived from the probability method (Stuiver and Reimer 1993).

A Bayesian approach has been adopted for the interpretation of the chronology from this barrow

Table 8: Radiocarbon dates. The posterior density estimates derive from the models defined in Figures 12 and 13

Laboratory Code	Feature and context	Material identification	Radiocarbon Age (BP)	$\delta^{13}\text{C}$ (‰)	$\delta^{15}\text{N}$ (‰)	C:N ratio	Calibrated date range (95.4% confidence)	Posterior density estimate (at 95% probability)
SUERC-43369	5003 (5002)	Human bone, right femur	3144 ± 27	-20.7	8.30	3.2	1500–1320 cal BC	
SUERC-43373	5104 (5105)	Human bone, right tibia	3569 ± 27	-21.5	11.30	3.2	2020–1820 cal BC	2030–1870 cal BC
SUERC-43374	5110 (5108)	Human bone, left femur	3646 ± 27	-21.5	9.10	3.2	2140–1940 cal BC	2140–1940 cal BC
SUERC-43375	5169 (5223)	Human bone, right rib	3728 ± 24	-21.7	10.00	3.2	2210–2020 cal BC	2210–2040 cal BC
SUERC-43376	5171 (5224)	Human bone, left tibia	3832 ± 27	-21.6	9.10	3.2	2460–2200 cal BC	2390–2150 cal BC
SUERC-56364	5541 (5257) ON 218	Red deer antler	3828 ± 39	-21.5	4.80	3.4	2470–2140 cal BC	2400–2130 cal BC
SUERC-62632	5553 (5556)	Charred hazelnut shell	5000 ± 34	-25.9			3940–3700 cal BC	3820–3700 cal BC (72.9%)
SUERC-62633	5553 (5556)	Charred hulled wheat grain	5008 ± 34	-22.1			3950–3700 cal BC	3830–3700 cal BC (69.9%)
GU39041	5550 (5551)	Carbonised residue on the internal surface of three sherds from a Barrel Urn	failed					

(Bayliss *et al.* 2007). Although the simple calibrated dates are accurate estimates of the dates of the samples, it is the dates of the archaeological events, which are represented by those samples, which are of interest. In the case of Porton Down, it is the chronology of the burials and associated activity that is under consideration, not just the dates of individual samples. The OxCal program provides the methodology to combine the dates to produce realistic estimates.

The $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values for each individual (see Table 8) are consistent with a terrestrial diet and, therefore, the potential for date offsets is unlikely (see Bayliss *et al.* 2004). Dietary offsets can cause radiocarbon measurements to appear older than their actual date, which in turn can lead to misleading

conclusions about the phase of a site.

Two measurements were obtained on different short-lived plant material (charred grain and hazelnut shell) from the same deposit (5556) from a Neolithic pit. Both produced almost identical radiocarbon measurements (SUERC-62632–3). This would suggest that the dates on the material could relate to a single event and that the pit was deliberately dug for the burial of this and other material. The date on this material is likely to be close to the digging of the pit which appears to fall either at the end of the 39th century or at some point during the 38th century BC (*modelled as First dig pit: 3830 to 3710 cal BC (61.4%) at 95% probability*)(Figure 12). This feature belongs to an early phase within the Neolithic before the construction of monuments

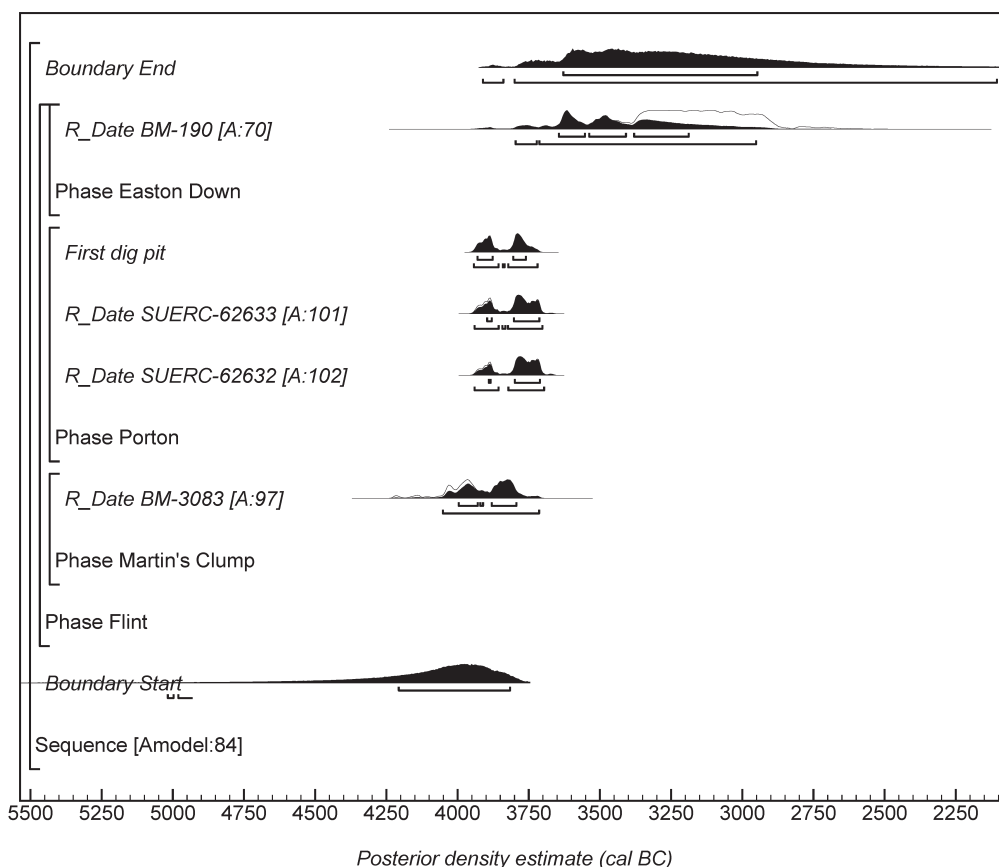


Fig. 12 Probability distributions for the dates from the Neolithic pit and other sites. Each distribution represents the relative probability that an event occurred at a particular time. For each of the dates two distributions have been plotted, one in outline which is the result produced by the independent calibration of the radiocarbon measurement and a solid one which is based on the chronological information provided by the model. The large square brackets down the left-hand side of the diagram, along with the OxCal keywords, define the overall model exactly

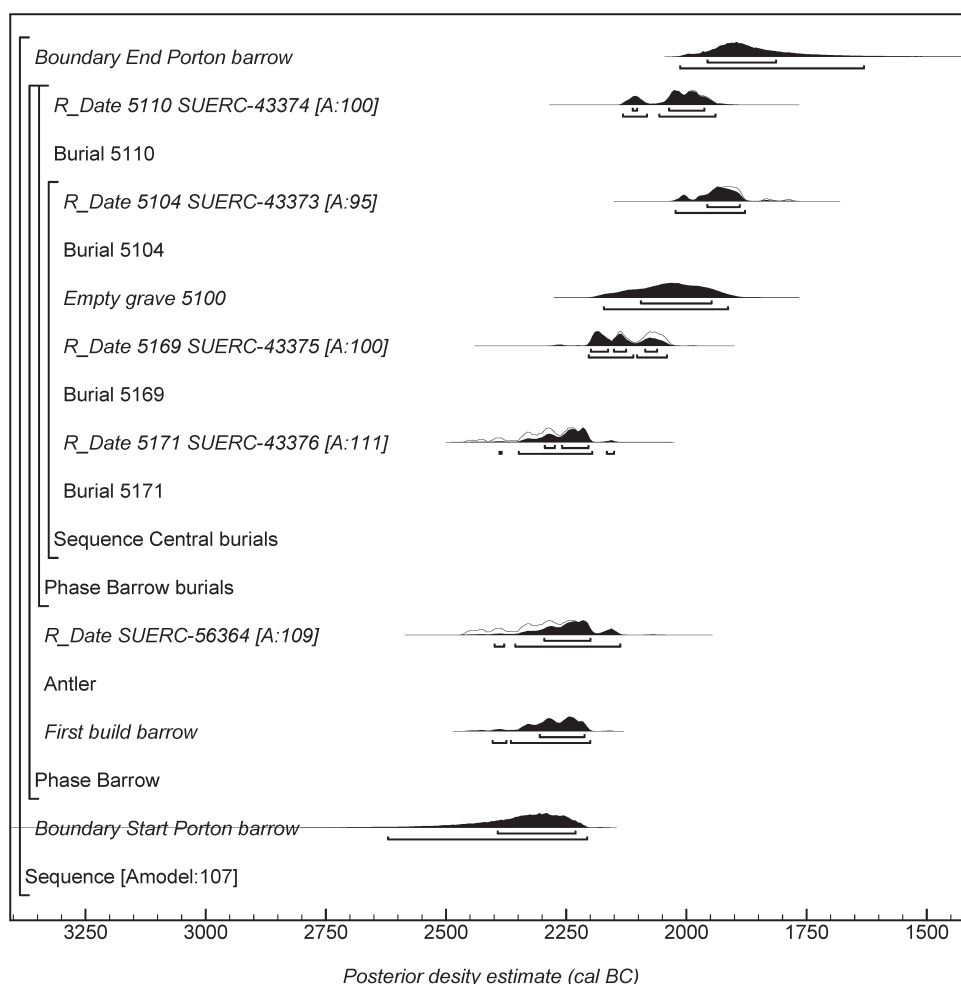


Fig. 13 Probability distributions for the dates from the barrow at Porton Down. Format is the same as Figure 12

(e.g. Robin Hood's Ball enclosure and the Fussell's Lodge long barrow; Whittle *et al.* 2011, 200–201 and fig 4.53). Perhaps earlier or of a similar date to the pit at Porton Down (see Figure 12) is the flint mine at Martin's Clump (BM-3083 5150 ± 70 BP; Barber *et al.* 1999, 82), although the flint mine at nearby Easton Down appears to be slightly later (BM-190 4490 ± 150 BP; Barber *et al.* 1999, 81).

Five samples were dated from the barrow, four on human bone from burial deposits and a single date on an antler from the base of the ditch (Table 8). Only two of the five dates (SUERC-43376 and 56364) from the barrow are statistically consistent ($T' = 0.0$; $v = 1$; $T'(5\%) = 3.8$) and, therefore, are likely to be of a similar age. This indicates that the primary burial (5171) and the digging of the barrow ditch are almost certainly part of the same phase of activity.

The five dates (four on the central burials) are shown in Figure 13, which has a good index of agreement (Amodel 107). This model includes the stratigraphy described in the report above, and includes the fact that graves 5171, 5169 and 5104 can be placed in a sequence. No two of the radiocarbon dates from burials are statistically consistent, which appears to indicate that each burial belongs to a different phase of activity. If just the duration of the radiocarbon dated inhumations is considered then the mortuary activity is known to have lasted for at least 190 years and possibly 460 years (modelled as *span Inhumation burials 190 to 460 years at 95% probability*). However, other burials, undated by radiocarbon, were recorded with Collared Urns indicating further mortuary use in the period 1900 to 1600 BC. The initial phase of the barrow has been modelled as *First build barrow*

2370 to 2200 cal BC (92.1%)(at 95% probability) which indicates an Early Beaker or Chalcolithic date for the barrow. However, the 'founder' burial (5171) is the only pre-Early Bronze Age burial as the subsequent burial (5169) and those that follow this are all Early Bronze Age (after 2200/2150 cal BC). The dating programme demonstrates that a segmented ditched barrow and a chambered Beaker burial (adult female) were created in either the later 24th or 23rd century BC and at a time when Beaker ideas and values had been newly adopted. The barrow then became a persistent place for selective and episodic burial over a period that stretched across 400 or more years. The date for the primary burial also supports the view that relatively tall sinuous Beakers with all-over impressed comb were in use by the later 24th and 23rd century BC as noted elsewhere (Powell and Barclay forthcoming).

A single measurement (SUERC-43369) on inhumation burial 5003 indicates a date within the Middle Bronze Age (1500–1320 cal BC at 95% confidence) and contemporary with the use of Deverel-Rimbury pottery. Three sherds from a Deverel-Rimbury Barrel Urn with internal carbonised residue, probably charred food, were sent for radiocarbon dating (GU39041). However, this sample failed due to insufficient carbon.

Discussion, by *Phil Andrews and Jacqueline I. McKinley*

The excavation revealed a moderate number of features, relating predominantly to two main phases of activity: Early Beaker–Early Bronze Age and the Middle–Late Bronze Age. However, the discovery of a single Early Neolithic pit, containing a notable assemblage of worked flint, provides a significant extension to the chronology of activity at the site. It also forms an important addition to the distribution of archaeological features in the valley of the River Bourne, where the Early Neolithic is poorly represented, and it is possible that other pits lie beyond the area of excavation in the northeast corner of the site. Although the pit may be of similar date to the flint mine at Martin's Clump, and slightly earlier than that at Easton Down (based on single radiocarbon dates), the worked flint is from a gravel source rather than mined and suggests a link with the river valley.

Subsequently, the nature of the activity on the site changed between the Early Bronze Age and the

Late Bronze Age. During the Early Beaker period a funerary monument was established comprising a complex sequence of burials enclosed by a segmented ring-ditch. In the Middle–Late Bronze Age the emphasis was different, and there is evidence for the partitioning of the landscape through land divisions marked by two or more phases of ditches.

The site can be examined against the known background for the immediate area and also has the potential to contribute to broader regional research agendas that have been identified in the South West Archaeological Research Framework (Webster 2008). In particular, the chronology of burial in the Early Beaker–Early Bronze Age and the placement and grouping of barrows can be examined, whilst in the Middle–Late Bronze Age the process of formal land division can be demonstrated.

Early Beaker–Early Bronze Age

The Early Beaker–Early Bronze Age saw changes to mortuary practices, with both inhumation and cremation taking place, the latter coming to dominate, though the sequence is often complex and not straightforward. Some burials were made unaccompanied but often featured a new and diverse range of pottery including Beakers, Food Vessels and Collared Urns. Both mortuary rites and all of these types of pottery vessel are present in the one burial group at Porton Down, and this provides further evidence on how mortuary practices changed from the communal inhumation burials of the Late Neolithic to the individual inhumation graves of the Early Bronze Age via complete, incomplete, articulated, disarticulated, inhumation and cremation burials made within the intervening and overlapping 'Beaker' or Chalcolithic period (Gibson 2007).

There is an unusually extended Early Beaker–Early Bronze Age chronology to the burial group at Porton Down, with evidence for episodes of re-visiting and re-use over a period of four centuries. Radiocarbon dating of several of the burial events has enabled the sequence to be further refined, and it also provides dates for a diversity of broadly contemporary traditions of funerary practice (Sheridan 2008, 57–63). As a result, the use of the monument can be better understood in terms of the history of its use and how it may have been perceived by a succession of people who used it over many generations for the burial of selected members of their group or groups (Last 1998). Within the

central sequence, four graves have been identified, beginning with 5171 (adult female, accompanied by a Beaker), then 5169 (adult female), 5100 ('empty' grave) and 5104 (infant possible female) in that order. These burials are likely to span a period of at least two centuries and possibly much longer (see Radiocarbon, above). Unfortunately, there was insufficient bone to enable radiocarbon dating of the neonate and infant burials accompanied by a Food Vessel (5116), miniature Collared Urn (5087) and two (inverted) Collared Urns (5078 and 5362), all to the east of the central sequence. However, the Food Vessel and miniature Collared Urn are both likely to fall within the same date range, the Food Vessel probably nearer the beginning, whereas the Collared Urns, each containing the remains of a single cremated infant, are likely to be later and may even post-date this range. A further, undated grave (5332) on the eastern edge of this group contained the unaccompanied, unburnt remains of a neonate, above which the cremated remains of a young/mature adult had been buried. In terms of other recently excavated burials in the area, the earliest dated Beaker burial at Porton Down (with tall and sinuous all-over-comb Beaker), in grave 5171 (2390–2150 *cal BC* at 95% probability: SUERC-43376), is slightly later than the 'Amesbury Archer' and the earliest burials within the 'Boscombe Bowmen' grave (with squat Bell Beakers), but similar in date to the Archer's 'Companion' and the 'Bowmen' adult (Fitzpatrick 2011), and fits with Needham's (2005) Fusion Horizon.

There is clear evidence of a substantial timber grave structure associated with the earliest surviving burial remains (5171) in this group, and the digging of a circular, segmented ring-ditch which provided material for a mound that was erected at the beginning of the sequence of inhumation and cremation burials. Such a group of diverse Early Beaker–Early Bronze Age burials is a relatively rare occurrence, though Salisbury Plain and the surrounding area have some notable examples. Burials in timber chambers or large central graves include Amesbury G15 (Lawson 2007, 231), G51 (Ashbee 1978) and, particularly, G71 (Christie 1967), Wilsford G2b (Field 1961; Lawson 2007, 153) and Shrewton G5k (Green and Rollo-Smith 1984). Amesbury G71 also provides an example where a timber chamber containing the remains of an inhumation burial was preceded by another inhumation burial, the latter surrounded first by a stake circle and then by a 7m diameter ring-ditch and mound, the ditch being infilled and the mound

levelled prior to construction of the timber chamber (Christie 1967). Other complex sequences have been recorded at, for example, West Overton 6b (Smith and Simpson 1966), Durrington 7 (Richards 1990), Wilsford G1 (Field 1961; Lawson 2007, 153) and Wilsford G52 (Smith 1991).

The meticulous excavation at Porton Down has allowed a rare opportunity to examine in detail the treatment of bone and bodies, in particular the disarticulated bone and associated Beaker within the early timber grave structure (5171). The material here, representing the remains of an adult female, is interpreted as evidence for revisiting the grave rather than grave robbing or the placing of selected disarticulated bone in the chamber. Revisiting the grave, for whatever purpose, resulted in the re-arrangement of the bones and, it would appear the removal of the skull and mandible, perhaps an example of the continuation of a Neolithic mortuary practices (Gibson 2007). Perhaps the fibula and vertebra from the same individual found in the chalk packing around the timber structure were dropped there when the grave was revisited, falling into voids in the packing. Comparable examples of disarticulated bone groups can be cited from Radley, Oxfordshire (Barclay and Halpin 1999) and Crichel Down, Dorset (Piggott and Piggott 1944) but, as Lawson (2007, 156) has remarked, '...only where they [barrow sequences] have been carefully excavated can interesting conclusions be drawn'. Grave 5100 may provide further evidence for the revisiting of a grave, but it would appear here that all the—probably skeletalised—remains were removed as the grave was 'empty' in the sense that it contained only a relatively small number of bones, none of them large. Two adult females and an infant were represented, with some of the adult bone almost certainly derived from grave 5169 which was cut by grave 5100, and the remainder perhaps the very disturbed remains of two individuals originally buried in the grave. Grave 5100 contained sherds from two Beakers, one of them the Beaker in grave 5171, and the sherds clearly therefore redeposited. The second group of sherds may derive from a Beaker that accompanied the burial in grave 5169, or possibly from a Beaker that had been placed in grave 5100, but this cannot be determined. What is clear, however, is that the timber grave structure (5171) must have collapsed and become infilled, or perhaps deliberately backfilled, before grave 5169 was dug. The radiocarbon dates for these two burials are unsurprisingly statistically inconsistent as their posterior density estimates do not overlap

(see Table 8: SUERC-43375–6) with a probable modelled *difference* of at least 35 years and *possibly as many as 175 years* between the making of the two burials (not shown in Figure 13). In other words, a significant gap in time of nearly two and possibility several generations occurred between the placing of the two burials.

The absence of grave-goods other than the pottery vessels means that none of the burials can be regarded as ‘rich’, and so there is little potential for analysing the burials in terms of their associated material culture. Nevertheless, the presence of pots (including Beakers, a Food Vessel, a miniature Collared Urn and two Collared Urns) in some graves and not others does reflect some differences in material culture between the burials. It can be noted here that in 2000 only ten graves inclusive of Food Vessels were known in the Stonehenge landscape (Exon *et al.* 2000).

The excavation at Porton Down has provided an opportunity to understand an Early Beaker–Early Bronze Age burial monument in its local topographic setting and also in terms of the disposition of other, presumably later, Bronze Age barrows in the vicinity (*cf* Pollard and Healy 2008, 79). The burial monument at Porton Down, comprising a segmented ring-ditch with associated bank or low mound, would have been a small and simple earthwork. This was associated with the Early Beaker burial within a timber chamber (5171), bone from the burial and an antler pick from the base of a ditch segment on the north side returning identical radiocarbon dates (see Table 8), with the large part of a second Beaker coming from a ditch segment on the south side. Thereafter, there is no evidence that the earthwork was increased in size or modified during the remainder of its use during the Early Bronze Age (Plate 6). However, the visibility of the monument was probably enhanced by its location on a low false crest and, though small, it provided a focus not only for subsequent burials, but perhaps also for additional burial mounds, of which eight barrows or ring-ditches are known nearby, all on the lower sloping ground to the southwest. Tree-throw holes which pre-dated the segmented ditch and limited environmental evidence indicate that these burial monuments stood in an open downland landscape, largely cleared of secondary woodland by the Middle Bronze Age, and mainly comprising grazed grassland.

The small burial group associated with the segmented ring-ditch is intriguing and has some similarities with its contemporaneous near

neighbour at Amesbury Down. In both cases the majority of the depositions were by inhumation rather than cremation (70% and 77.8% respectively). Both are at odds with the data for the period from the Stonehenge Environs (SE) and the wider region (WR) where a far smaller proportion were disposed of this way (56.1% and 41.6%), and the cremation rite appears to have been predominant (McKinley forthcoming a). This is likely, however, to reflect a temporal variation rather than differences in mortuary rite between locations. Both Porton Down and Amesbury Down benefited from extensive radiocarbon dating programmes demonstrating the early date of some/many of the inhumation burials; the two earliest from Porton Down being commensurate with the earliest from Amesbury Down. Detailed temporal analysis of the material from the latter (McKinley forthcoming a) shows that the first quarter of the period comprised exclusively unburnt remains, cremation dominating only in the final quarter. Similarly at Porton Down, the three cremation burials fall in the latter part/at the end of the burial sequence (on the basis of the Collared Urns).

The proportion of immature individuals (64.3%)—particularly infants and juveniles—seen at Porton Down is substantially higher than that reported elsewhere (SE 32%; WR 46%), the closest similarities being with Amesbury Down (47.2%) where many of the children’s graves were concentrated in one area (Plateau Zone; *ibid*). The other point of interest is the marked paucity of adult females in the other assemblages, particularly in view of the suggested high fertility rate indicating their presence in the living population. This has raised the question as to where the women were being buried. Porton Down, and sites like it yet to be discovered, may well hold the answer.

A future programme of isotope analysis has the potential to provide information on the origin of the people buried in this one place (Sheridan 2008, 63–7), while any aDNA analysis may indicate whether any of the individuals were related.

The date of C-shaped enclosure 5545 is unclear and its function remains enigmatic (Plate 8). On the basis of the geophysical results, and prior to excavation in 2014, it was thought most likely that it would be of late prehistoric date, perhaps some form of animal enclosure associated with the probable Middle Bronze Age land divisions (see below). However, no finds came from the fills of what was a relatively substantial ditch, in contrast to the limited amounts of pottery from the nearby



Plate 8 Excavation area in 2014: Early Beaker/Early Bronze Age burial group 5225 in foreground and C-shaped enclosure 5545 in background, separated by Middle Bronze Age ditch 5232, with Moll Harris's Clump behind (from west)

smaller Middle Bronze Age ditches, suggesting that the C-shaped enclosure was earlier. Whether it was contemporary with the Early Bronze Age segmented ditch only 20m to the west cannot be demonstrated, but if it were then it could have served a related ritual or religious purpose, though such an interpretation remains entirely speculative. Whatever the function of the enclosure, the northeast-facing entrance appears to have been subsequently narrowed by the digging of a curvilinear shallow gully.

Middle–Late Bronze Age

The two principal ditches assigned to this broad period represent different phases of land division associated with pastoral agriculture and, in the Late Bronze Age in particular, a greater emphasis on cattle rearing and stock control during the later 2nd millennium BC. Both ditches can be related to the

wider pattern of complex ditch systems on Porton Down and the surrounding area, though the precise dates of these systems are uncertain and undoubtedly they saw modification and development over time (Ride 2006, 92–4).

It is suggested that the smaller, segmented ditch (5230, 5231, 5232, 5233 and 5235) which crossed the site is of Middle Bronze Age date, partly on the basis of the apparent association with grave 5003 which has been radiocarbon dated (SUERC-43369: see above). This grave was located at one of three narrow gaps in the ditch, where the offset ditch terminals provide a further indicator of stock control, the location for the burial presumably chosen because of its liminal position at an access point along the boundary formed by the ditch and associated bank. Part of the course of this ditch followed a slight false crest on which Early Bronze Age burial monument 5225 was sited, and it is likely that some vestige of the latter was still extant and provided a marker in

the landscape when the Middle Bronze Age ditch was dug. If the C-shaped enclosure was also earlier then this and several other Bronze Age round barrows nearby may also have been utilised in setting out the course of this ditch, particularly a group of five to the west. It may be no coincidence that the northern arm of ditch 5232 ran approximately equidistant between monument 5225 and the C-shaped enclosure, the former perhaps incorporated within the southeast corner of a large enclosure or field which appears to have been open to the northeast. No structures were identified amongst the few, undated postholes within this area, but a possible watering-hole lay immediately outside to the southeast. The Barrel Urn placed in a small pit on the northeast edge of the site appears to be isolated, though other Middle Bronze Age features may lie beyond the limit of excavation. Indeed a recent watching brief just under a kilometre to the northwest (see Figure 1) has recorded a shallow sinuous ditch, two pits, and an inhumation grave containing an adult probable male cut into the top of the ditch, all these features assigned a Middle to Late Bronze Age date; the grave has a radiocarbon date of 1500–1300 cal BC (SUERC-62802) (Wessex Archaeology 2015), almost identical to grave 5003 (SUERC-43369: 1500–1320 cal BC at 95% confidence).

The ‘Wessex Linear’ ditch (5234) was substantially larger than the Middle Bronze Age segmented ditch, followed a different alignment and has been assigned to the Late Bronze Age, though there is no conclusive dating evidence and it may be later. Suggested date ranges for the ‘Wessex Linear’ ditches span various periods between c.1500–c. 600 BC, and it is likely that the earliest of these ditch and bank systems was in place by the beginning of the first millennium BC (Ride 2006, 99–101. See also Bradley *et al.* 1994; McComish *et al.* 2002; Allen 1997). The relatively large size of the ‘Wessex Linear’ ditches and associated banks means that they may have functioned not only as ‘ranch’ boundaries, often enclosing large strips of land with upland grazing and access to rivers or streams, but also served as symbolic, perhaps territorial markers in the landscape. How the length of ‘Wessex Linear’ ditch found at Porton Down fits into the pattern of boundaries is not clear, but it may have been one of several linear earthworks which extended from the higher ground at Boscombe Down East to the River Bourne approximately 4km to the northwest.

There was no evidence for contemporary Bronze Age settlement in the immediate vicinity of either of the land boundary ditches, not altogether surprising

in this pastoral downland landscape. The small quantity of early–late Romano-British pottery in the upper fills of the Middle Bronze Age ditches presumably reflects some local activity during this period, but there is insufficient evidence to demonstrate settlement nearby.

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The archive is currently stored at the offices of Wessex Archaeology under project numbers 72830–33, but will in due course be deposited with Salisbury Museum.

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