Cotswold Archaeology

Land North of Roman Way Bourton-on-the-Water Gloucestershire

Archaeological Excavation

for
Bloor Homes Ltd

CA Project: 9210
CA Report: 16416

February 2017

Andover Cirencester Exeter Milton Keynes

Land North of Roman Way
Bourton-on-the-Water
Gloucestershire

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SUMMARY

Project Name:	Land North of Roman Way
Location:	Bourton-on-the-Water, Gloucestershire
NGR:	Centred on SP 1727 2150
Type:	Excavation
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An archaeological excavation was undertaken by Cotswold Archaeology, on behalf of Bloor Homes Ltd, between June and July 2015 on Land North of Roman Way, Bourton-on-the-Water, Gloucestershire, in advance of residential development.

Remains were found in the northern part of the site (Area 1), the earliest comprising an arc of postholes located along the eastern edge of a small gravel island on the clay valley floor between the Rivers Eye/Dikler and Windrush. Radiocarbon dating demonstrated that these dated to the second half of the 9th millennium BC (the Early Mesolithic).

A few sherds of Neolithic pottery were recovered from the site, but most remains were of a Middle Bronze Age cemetery focussed on the western edge of the gravel island. The cemetery seems to have been exposed in its entirety and comprised the inhumations of two adult women and the cremated remains of a further ten unsexed individuals, comprising eight adults and two non adults. Radiocarbon dating placed these burials within the middle to late second millennium BC (the Middle Bronze Age). The burials were concentrated across an area 29m in diameter and may have been covered by a barrow, of which no traces survived, but were more probably within a flat cemetery.

The investigation also examined a possible continuation of the Iron Age ramparts of Salmonsbury Camp into the southern part of the site (Area 2) but showed that no such continuation was present. Iron Age remains were restricted to an abraded pottery sherd within a palaeochannel and a second abraded sherd within a posthole found within the area of the Middle Bronze Age cemetery. Later remains related to the site's location within the agricultural hinterland of Bourton-on-the-Water from the medieval period onwards.

1. INTRODUCTION

1.1 Between June and July 2015, Cotswold Archaeology (CA) carried out an archaeological investigation at the request of Bloor Homes Ltd at Land North of Roman Way, Bourton-on-the-Water, Gloucestershire (centred at NGR: SP 1727 2150; Fig. 1).

1.2 Outline planning permission for residential development to provide up to 148 dwellings and associated works was granted by Cotswold District Council (CDC), conditional on a programme of archaeological work being undertaken in advance of development (CDC planning reference 13/00291/OUT; Condition 27). The work was undertaken in accordance with a brief (GCC 2015) for archaeological recording issued by Charles Parry, Archaeologist, Gloucestershire County Council (GCC), the archaeological advisor to CDC. It was also undertaken in accordance with the *Standard and Guidance: Archaeological excavation* issued by the Chartered Institute for Archaeology (2014), the *Statement of Standards and Practices Appropriate for Archaeological Fieldwork in Gloucestershire* issued by GCC (1996), the *Management of Archaeological Projects 2* issued by English Heritage (1991) and the *Management of Research Projects in the Historic Environment (MORPHE): Project Manager's Guide* issued by English Heritage (2015). It was monitored by Mr Parry, including a site visit on 9 July 2016.

The site

1.3 The site is 8.5ha in extent and comprised three fields on the north-eastern edge of Bourton-on-the-Water. The fields were pasture at the time of the fieldwork and were divided by mature hedgerows. The site is located between the Rivers Eye/Dikler and Windrush, both of which form part of the Thames catchment. It lies at around 135m AOD and is generally flat, forming part of the valley floor of the Eye/Dikler and Windrush, but slopes very gently downwards to the south-east and in the wider landscape is flanked by high ground either side of the Windrush valley.

1.4 The underlying solid geology of the area is mapped as the Charmouth Mudstone formation, overlain in the northernmost field by superficial gravel deposits associated with the Eye/Dikler and Windrush (BGS 2015). Excavation revealed clay, overlain in areas by gravel, which was especially prevalent within the northernmost field.

2. ARCHAEOLOGICAL BACKGROUND

2.1 Prior to the recording reported on here, no archaeological remains had been found within the site. However, it lies within 10m of the north-western corner of Scheduled Monument (SM) 32392, *Salmonsbury Camp*, a Late Iron Age enclosure with ramparts surviving in places (Fig. 1). A geophysical survey undertaken in 2004 revealed that the Camp includes a Neolithic causewayed enclosure (GSB 2004). The geophysical survey also identified a possible Neolithic cursus monument immediately north of Salmonsbury Camp and 90m south-east of the current site. Beyond Salmonsbury Camp, early 20th-century excavations 350m north of the current site recorded three pits associated with Neolithic pottery and an inhumation associated with Beaker pottery (Dunning 1932, 279). Small numbers of Late Neolithic/Early Bronze Age features were found at The Cotswold School and Bourton-on-the-Water Primary School, 400m south-west of the site (Hart *et al.* forthcoming).

2.2 Limited excavations within Salmonsbury Camp have recorded traces of Early Iron Age activity beneath the ancient turf line onto which the Late Iron Age ramparts of the camp were built (Timby 1998; CA 2005). An unenclosed Early to Middle Iron Age settlement located on a gravel terrace of the Windrush was recorded at the Cotswold School, 350m south-west of the current site (Hart *et al.* forthcoming). This settlement had been abandoned by the Late Iron Age, although its relationship, if any, to Salmonsbury Camp remains unknown. The 2004 geophysical survey of the Camp suggested that the Late Iron Age ramparts turned immediately south of the current site (Figs 1 and 2); however, observations in the 1970s suggested that they might extend into its south-eastern corner (Dunning 1976; Fig. 1).

2.3 Occupation within Salmonsbury appears to have continued into the Early Roman period (CA 2005), and then to have declined with the corresponding development of a Roman settlement at Bourton Bridge, where the Fosse Way Roman road crossed the Windrush (Fig. 1). Excavations there revealed a possible Roman *mutatio* or *mansio* (posting house), probably part of a Roman roadside settlement that developed from the 1st century AD onwards (Timby 1998). This settlement extended south-eastwards into the Lansdown area of Bourton and included particularly high levels of activity during the 4th century AD (ibid., 378–81). The Roman settlement is therefore contemporary with a Late Roman cemetery found at The Cotswold School (Hart *et al.* forthcoming).

2.4 Post-Roman activity at Bourton is evidenced by an Anglo-Saxon sunken-featured building and burials found separately alongside the Fosse Way (Timby 1998, 359, 376) and by further Anglo-Saxon sunken-featured buildings found north of Bourton Business Park (Walsh 2011, 245). Small quantities of Anglo-Saxon pottery have also been recovered from the schools sites (Hart *et al.* forthcoming). Bourton itself was first known to be recorded in the 8th century AD and appears in the Domesday Book as a small settlement. The medieval settlement was located within the core of the current town, and it is likely that the site formed part of the agricultural hinterland of this. Curving ridge-and-furrow earthworks (no longer extant), typical of medieval cultivation, are apparent on historic aerial photographs of the site, and historic mapping shows the site as remaining in agricultural use throughout the post-medieval period into the present (CA 2011).

2.5 The archaeological potential of the site was summarised within an archaeological desk-based assessment (CA 2011); subsequent works comprised a geophysical survey (GSB 2012), a trial trench evaluation (CA 2012a) and a heritage statement (CA 2012b).

2.6 The geophysical survey of the site identified a possible large oval enclosure within the northernmost field (within the southern part of Area 1 as shown on Fig. 2). The origin of this feature was uncertain, but one possibility was that it was a prehistoric feature, perhaps contemporary with the Neolithic causewayed enclosure at Salmonsbury Camp. The survey also recorded a number of possible anomalies relating to pits within and beyond the possible enclosure, as well as anomalies relating to ridge-and-furrow cultivation which were recorded across the whole site (GSB 2012).

2.7 The subsequent trial trench evaluation identified archaeological features located on areas of slightly higher gravel overlying the clay within the northernmost field (CA 2012a). The earliest feature was a broad cut with a single fill containing prehistoric flints and Beaker pottery, the latter dateable to *c.* 2400–1700 BC. The nature of this feature was not apparent within the confines of the evaluation trench. Later remains comprised intercutting features, of which one contained a sherd of abraded Iron Age pottery. A few possible pits or postholes were also found within the northernmost field. Several trenches were sited to investigate the possible oval enclosure but physical evidence for its existence proved to be slight and its status as an archaeological feature remained unproven. Aside from furrows relating to medieval

cultivation, no archaeological features were identified within the southernmost two fields and there was no evidence that the ramparts of Salmonsbury Camp extended into the site.

3. AIMS AND OBJECTIVES

3.1 As a result of the preliminary works, two areas were selected for excavation by the archaeological advisor to CDC: Area 1 (2ha), within the northernmost field, which was intended to investigate the archaeological features and possible oval enclosure identified during the geophysical survey and evaluation, and Area 2 (0.5ha), within the southernmost field, located to investigate whether features and/or deposits associated with Salmonsbury Camp extended into the site (Fig. 2).

3.2 The objectives of the archaeological mitigation were to:-

- record the nature of the main stratigraphic units encountered;
- assess the overall presence, survival and potential of structural remains; and
- assess the overall presence, survival, condition, and potential of artefactual and ecofactual remains.

3.3 The specific aims of the work were to:-

- ensure the adequate recording of any buried archaeological remains exposed within the excavation area;
- determine whether archaeological features continued beyond the excavation area and, if so, define the area of archaeological activity within the site;
- produce a plan of all archaeological features exposed within the excavation area;
- investigate and record exposed archaeological features/deposits in order to clarify their date, character and significance and to provide a clear understanding of their chronology;
- ensure that any artefactual/environmental evidence was recorded, assessed and – if appropriate – analysed and published to an acceptable standard; and
- make available the results of the investigations.

4. METHODOLOGY

4.1 The fieldwork followed the methodology set out within the WSI (CA 2015). The excavation areas were set out on OS National Grid co-ordinates using a Leica GPS and scanned for live services by trained staff using CAT and Genny equipment in accordance with the Cotswold Archaeology *Safe System of Work for avoiding underground services*. The final 'as dug' areas were recorded with GPS.

4.2 Initially works comprised the mechanical removal of non-archaeologically significant soils using a toothless ditching bucket. All machining was conducted under archaeological supervision and ceased when the first archaeological horizon or natural substrate was revealed (whichever was encountered first). The generated spoil was visually monitored in order to recover artefacts. Hand-cleaning of the stripped surface, to better define any identified archaeological deposits/features, was undertaken where appropriate. All archaeological features were recorded in plan using Leica GPS equipment.

4.3 Examination of features concentrated on recovering the plan, with particular emphasis also placed upon retrieving a stratigraphic sequence and obtaining details of the phasing of the site. All funerary/ritual activity (i.e. burials, cremations, associated postholes) were 100% excavated. All discrete features (pits and postholes) were sampled by hand excavation (average sample 50%).

4.4 All archaeological features were planned and recorded in accordance with CA Technical Manual 1: *Fieldwork Recording Manual*. Each context was recorded on a pro-forma context sheet by written and measured description; principal deposits were recorded electronically using Leica GPS and drawn sections (scale 1:10 or 1:20 as appropriate). Where detailed feature planning was undertaken using GPS this was carried out in accordance with CA Technical Manual 4: *Survey Manual*. Photographs (digital colour) were taken as appropriate. All finds and samples were bagged/contained separately and related to the context record. All artefacts were recovered and retained for processing and analysis in accordance with CA Technical Manual 3: *Treatment of Finds Immediately after Excavation*.

4.5 Due care was taken to identify deposits which may have had environmental potential and a programme of environmental sampling was initiated accordingly. Samples were taken, processed and assessed for potential in accordance with CA Technical

Manual 2: *The Taking and Processing of Environmental and Other Samples from Archaeological Sites*.

4.6 Following the discovery of human remains, the client and the archaeological advisor to CDC were informed immediately. The excavation of human remains was undertaken following the provisions of the Coroners Unit in the Ministry of Justice.

5. RESULTS (Figs 2–7)

5.1 This section provides an overview of the excavation results; detailed summaries of the contexts, finds, environmental samples (biological evidence), radiocarbon dates and Bayesian analysis are to be found in Appendices A–I. By convention, dates resulting from the Bayesian analysis are quoted in italics.

5.2 Archaeological features were identified within Area 1; aside from furrows, no archaeological remains were revealed within Area 2 (Fig. 2). The remains from Area 1 are described below; contexts relating to Area 2 are detailed in Appendix A but are not discussed further. Contexts were assigned to three chronological periods:

- Period 1: Early Mesolithic (*mid to late 9th millennium BC*)
- Period 2: Middle Bronze Age (*mid to late 2nd millennium BC*)
- Period 3: Iron Age (700 BC to AD 43)
- Period 4: medieval to modern (13th century to present)

5.3 In addition to the remains described below, a small number of flint blades of likely Mesolithic or Early Neolithic date were recovered from the topsoil.

Geological/alluvial deposits

5.4 Across Area 1, the underlying solid geology was found to comprise clay. This was overlain by superficial gravel deposits which formed an oval island within the southern part of Area 1 and a more amorphous raised area within the northern part. The oval island within the southern part of Area 1 corresponded to the possible oval enclosure identified during the geophysical survey and exposure of this during the excavation revealed that it was a geological feature. Linear feature 5084 which had been recorded as a possible ditch (310) within Trench 3 of the evaluation was shown to have been part of a palaeochannel extending along the edge of one of the

gravel deposits. It contained a fill that included two sherds of Beaker pottery dateable to *c.* 2400–1700 BC, along with prehistoric flint flakes. A second palaeochannel flanked the southernmost gravel island (see Period 2, below).

Period 1: Early Mesolithic (mid to late 9th millennium BC)

5.5 Three large postholes (5020, 5041 and 5034) were found in an arc along the eastern edge of the gravel island (Fig. 3). A further, smaller, posthole (3603) may also have been part of this alignment. Posthole 5034, the largest example, was 1.5m in diameter and 1.15m deep with steep sides tapering to a flat base 0.4m wide. It contained a central post-pipe, 0.5m wide, resting on a primary silt fill which produced a small concentration of charred hazelnut shell fragments, two of which produced Early Mesolithic radiocarbon determinations of 8530–8295 cal. BC and 8470–8295 cal. BC (95.4% probability; SUERC 71132 and 69986; Table 8). This primary fill was sealed by the post-packing deposits and the material from it can therefore be regarded as providing secure dating evidence.

5.6 Postholes 5020 and 5041 were similar to one another, comprising steep-sided, fairly flat-based cuts up to 1.2m wide and 0.8m deep (Fig. 6). These also contained central post-pipes, *c*. 0.6m wide, and the lowest fill of posthole 5020, a brown silty clay, produced a hazelnut wood charcoal, a fragment of which radiocarbon dated to 8221–79671 cal. BC (95.4% probability; SUERC 71131; Table 8). Postholes 5020 and 5034 each yielded modest assemblages of ancient snails indicative of open deciduous woodland.

Period 2: Middle Bronze Age (mid to late 2nd millennium BC)

5.7 A Middle Bronze Age cemetery was identified within Area 1, dated on the basis of a number of radiocarbon determinations. Statistical modelling of these data (see Appendix I) indicated that the cemetery was in use between *1485–1065 cal. BC*, a range within the Middle Bronze Age, and for a duration of *1–230 years (95% probability)* or *40–175 years (68% probability)*. The cemetery included the remains of twelve individuals (two inhumations and ten cremations), along with pits and postholes, all located on, or just off, the oval gravel island (Figs 3 and 4). Details of the human bone and a full burial catalogue can be found in Appendix G.

Inhumations

5.8 Grave 5035 was found towards the south-western edge of the gravel island. It was an oval, 1.2m long, 0.65m wide and 0.15m deep, with steep sides and a slightly

concave base. A young adult female (burial 5037; Fig. 5), aged 18 to 35 years at death, had been placed on the base of this grave, fitted tightly to the grave edges and in a crouched supine position, with her legs drawn up at the knees to fall on her right side. Her head also faced right and her arms were crossed over her torso. She is estimated to have been 1.59m (5ft 3 inches) tall and to have suffered from some injuries relating to activity and trauma, including stress fractures in both ankles and what may have been a healed wound on her upper skull, from blunt force trauma. A bone sample from this skeleton was radiocarbon dated to *1385–1220 cal. BC (95% probability; SUERC-66962)*, a range within the Middle Bronze Age. Following burial, the grave had been backfilled with a gravelly deposit, presumably upcast from the grave. There were no indications that the grave had been left open for any significant period and a small scrap of medieval pottery from this backfill was certainly intrusive.

5.9 Grave 5038 was also located on the gravel island, 5m north-east of grave 5035. It was also an oval, 1.15m long, 0.6m wide and 0.2m deep, with steep sides and a flat base. The body of a female (burial 5040; Fig. 5) aged over 45 years at death, and possibly much older, had been laid out on the base of this grave in a crouched position tilted onto her right side, and so tightly up against the grave edges that her head had been pushed backwards, although the latter might relate to post-burial movement of the head. Her legs were flexed so that her feet were beneath her pelvis. Her right arm was beneath her body whilst her left arm lay straight alongside it. Her lower right leg and right foot had been lost to ploughing. This woman showed evidence of pathology associated with age, including tooth loss, degeneration of the vertebrae in her neck and lower back, degeneration of some limb joints and an overall low bone weight which probably indicates osteoporosis. She had been buried with a lead object (Ra. 55; Figs 5 and 8), probably a hair ring, by her left ear; green staining indicated that a copper-alloy object, now entirely lost to corrosion, had been placed by her right ear and it is possible that these objects were worn rather than added as grave goods. A bone sample from this woman returned a radiocarbon date of *1305–1130 cal. BC (95% probability; SUERC-66963)*.

Cremations

5.10 The cemetery also included ten graves containing cremated human remains (graves 5045, 5052, 5078, 5083, 5094, 5096, 5111, 5112, 5118 and 5120). These were located south-west of the inhumation burials, along the edge of, or just off, the gravel island. These graves were all small, circular features, 0.4m–1.1m wide and up to

0.25m deep. Cremated human remains within charcoal-rich deposits, presumably representing pyre debris, had been placed into these graves. No urns were present and there was no evidence that the remains had been placed in organic containers which have since perished, although the graves were excavated in quadrants to test this possibility. Aside from the deposits of cremated human remains and pyre fuel, the only other fills noted were within graves 5052, 5078 and 5120, each of which contained an upper gravelly fill capping the cremated remains. The absence of such capping fills from the other cremation graves suggests that these burials had been partially truncated, and that other, shallower graves may have been entirely lost.

5.11 Analysis of the cremated remains revealed that eight of the graves (5045, 5052, 5083, 5094, 5111, 5112, 5118, and 5120) each contained the remains of a single adult. Grave 5078 contained the remains of a child aged 2–4 years at death and grave 5096 also contained the remains of a child. It was not possible to determine the sex of any of these individuals, or to identify any pathological traits.

5.12 The quantity of human bone recovered suggests that only a token amount of cremated bone was interred in each of the graves, with the exception of grave 5120, where the weight of bone is appropriate for a slightly built adult (Appendix G). However, it is also possible that some or most of the bone from the majority of the graves had been lost to truncation, or that, in the cases of deposits of very little bone (for example graves 5118, 5052 and 5094) that the bone was unintentionally deposited in a pit dug for other purposes, perhaps deriving from a nearby pyre. Analysis of the charcoal within the cremation deposits showed that the main fuel used was alder which, although not commonly used for cremations, would have been readily available in the damp environment of the valley floor and which does burn well if seasoned. Insect tunnels on some of the charcoal fragments confirmed that the wood had indeed been seasoned. Fired-clay fragments, all probably from the cremation process itself, were found within several of the graves, most notably within grave 5094 which included 140 pieces of fired clay and a few fragments of burnt stone. In addition, graves 5094 and 5096 contained a few struck flint flakes of likely later Neolithic to Bronze Age date, none of which were burnt. Grave 5096 also contained a piece of unburnt slate, a non-local item.

5.13 Cremated bone from five of the graves was sampled for radiocarbon dating. The determinations all fell within the Middle Bronze Age and overlap with those from the two inhumation burials (Appendix I). The adult within grave 5052 was dated to

1415–1235 cal. BC (95% probability; SUERC-66954); the adult within grave 5111 was dated to *1385–1225 cal. BC (95% probability; SUERC-66957)*; the adult within grave 5045 was dated to *1380–1195 cal. BC (95% probability; SUERC-66955)*; the non-adult within grave 5096 was dated to *1380–1185 cal. BC (95% probability; SUERC-66956)* and the adult within grave 5120 was dated to *1370–1155 cal. BC (95% probability; SUERC-66961)*.

Other features

5.14 Two pits or postholes, 5138 and 5061, within the cemetery contained fills rich in charcoal but lacking in burnt bone. Neither feature contained any other dating evidence but their locations and fills suggest association with the Middle Bronze Age cemetery. It is possible that these were the truncated remains of further cremation graves, although this is uncertain and they might have related to other ceremonies undertaken within the cemetery. Several small pits and pits/postholes (features 1003, 5022, 5024, 5059, 5066 and 5068) within the cemetery may also have related to its use, as might a small, undated, posthole, 710, found towards the centre of the gravel island during the evaluation. Most lacked dating evidence but pit 5059, a bowl-shaped cut up to 0.7m wide and 0.15m deep, contained a single Neolithic to Bronze Age flint flake as well as fired-clay fragments. Of potential significance was tree-throw pit 5102, the fill of which had been cut by grave 5078 (see Discussion).

Period 3: Iron Age (700 BC–AD 43)

5.15 A group of intercutting features interpreted as pits was found during the evaluation within Trench 11, just off the south-western edge of the gravel island. The edges of these were poorly defined. They were not identified during the subsequent excavation and may instead have been parts of a natural feature, most probably a palaeochannel. They contained fills with a few charcoal flecks, one of which, late in the fill sequence, contained an abraded sherd of Iron Age pottery.

5.16 Posthole 5024, located within the Middle Bronze Age cemetery, contained a single abraded sherd of later prehistoric pottery, probably dateable to the later Iron Age.

Period 4: medieval to modern

5.17 Subsoil up to 0.25m thick was found across Areas 1 and 2, along with furrows relating to medieval ridge-and-furrow cultivation, visible on the geophysical survey plot as characteristically sinuous alignments. A worked stone spindlewhorl (Fig. 8),

broadly dateable to the Roman to medieval periods, was recovered from the topsoil, along with a few fragments of medieval tile and sherds of medieval pottery.

Undated

5.18 A small number of features on the gravel island within the northern part of Area 1 contained no artefactual material and had no obvious association with any dated remains. None contained any deposits suggestive of association with the Middle Bronze Age cemetery. An additional pit/posthole, 303, was found on the clay within the northern part of Area 1 and a sample from this produced poorly preserved wood charcoal, of which the identifiable fragments were oak. It is not clear whether or not this feature was associated with the cemetery to the south.

6. THE FINDS

6.1 Finds recovered are listed in the table below. Details are to be found in Appendices B to F.

Context	Class	Description	Ct.	Wt. (g)	Spot Date
5000	worked stone	Spindlewhorl	1	17	C14-C15
	flint	blade, discoidal scraper, flake	3	35	
	iron	nails	2	15	
	CBM	Minety ware tile	3	45	
5001	flint	flakes and one blade	5	15	
5039	lead alloy	Ra. 500	1	7	
5046	burnt stone		4	1	
5060	flint	flake	1	7	
	fired/burnt clay		7	1.3	
5062	flint	flake	1	0.1	
5070	fired/burnt clay		1	6.4	
5086	fired/burnt clay		81	28	
5088	fired/burnt clay		39	10	
5092	fired/burnt clay		20	7	
	flint	flake	1	0.8	
5097	slate		1	0.1	
5100	flint	flake	1	0.9	
5124	fired/burnt clay		4	0.7	
5125	fired/burnt clay		15	6	
	fired/burnt clay		16	2.9	
5128	fired/burnt clay		6	2.7	

6.2 The finds assemblage is very small and generally of little significance. The pottery consists of a few body sherds mainly of medieval date. The prehistoric worked flint is largely unstratified and contains few recognisable tool types and the fired clay comprises formless pieces, where function is unknown. Of most interest is a lead object interpreted as a possible hair/tress ring which was recorded from Bronze Age-dated burial 5039.

7. THE BIOLOGICAL EVIDENCE

7.1 Two human inhumation burials dating to the Middle Bronze Age were recorded. Skeleton 5037 was that of a 18-35 year old female while skeleton 5040 was at of an over 45 year old female. The remains of 10 individuals, eight of which were adult and two which were non-adult, were identified from the Middle Bronze Age cremation burials. Generally very low weights of cremated bone were recovered from these deposits but cremation burial 5120 stands out as an exception to the group as an intentional deposit of most or all of the individual.

7.2 Biological evidence is detailed in Appendix H. Samples were taken from cremation graves and a number of pits/postholes suspected to contain cremation-related deposits for the recovery of cremated bone and charred remains. Mollusc shells were also preserved in a number of the samples.

7.3 The small charred plant assemblages included tubers of false oat-grass (*Arrhenatherum elatius* var. *bulbosum*), which are commonly found in assemblages from cremation deposits, in particular those of Middle Bronze Age date. A small assemblage of hazelnut (*Corylus avellana*) shell fragments was recovered from postholes 5034 and 5020 and fragments were radiocarbon dated to the Early Mesolithic.

7.4 The charcoal assemblages included fragments of *Quercus* sp. (oak), *Alnus glutinosa* (alder), *Corylus avellana* (hazel) and *Fraxinus excelsior* (ash) and conform to the Middle Bronze Age pattern of single-taxon dominance in cremations. The small mollusc assemblages include a range of open country, intermediate and woodland species and appear to be indicative of a landscape of open deciduous woodland during the Early Mesolithic and of a generally well-established open landscape during the Middle Bronze Age period, with some areas of longer grass and hedgerow/scrub/woodland edge in the vicinity.

8. DISCUSSION

8.1 The Mesolithic posthole alignment is one of a very small corpus of such monuments known from Britain and, with an example at Stonehenge, the earliest. Three large postholes found beneath Stonehenge car park were radiocarbon dated to the 7th–9th millennia cal. BC (Cleal *et al.* 1995, table 3); dating for the Roman Way postholes falls mainly within the first half of the 9th millennium BC, conventionally the Early Mesolithic. The curving alignment of the Roman Way postholes suggests that the gravel island was apparent at this time, perhaps because it was drier than the surrounding clay. The later 9th millennium BC saw rising temperatures, with the earlier tundra conditions giving way to summer temperatures of 15˚C by 8000 BC (Darvill 2011, 48). The postholes must have been dug during these improved conditions and contained molluscs indicative of a landscape of open deciduous woodland which would have attracted game and thus renewed interest from hunter-gatherers whose ancestors had retreated during the previous climatic deterioration. The early dates from the postholes suggest that they had been dug by people who were amongst the earliest of these colonisers.

8.2 The Stonehenge car park postholes were 1.5–2 m wide and *c*. 1.3 m deep and had supported pine posts 0.6–0.8 m in diameter and which had stood some 3–4 m high (Cleal *et al.* 1995, 43; Darvill 2006, 62–3). The postholes at Roman Way were slightly smaller: the clearest post pipe, that within posthole 5034, was 0.5m wide and 1m deep and may have been the base of a post which stood some 2–3 m high whilst posts within the other postholes may have been slightly smaller. The function of the post alignment is uncertain, but the postholes beneath Stonehenge car park have been suggested as supports for totem poles (Cleal *et al.* 1995, 55; Darvill 2006, 62–3) and something similar might be envisaged at Roman Way. Such monuments might have been carved with designs that related complex narratives and, like those of Native Americans, could have lasted centuries (Cleal *et al.* 1995, 55). The fact that the radiocarbon dates from the two dated postholes at Roman Way do not overlap may hint that groups visited the site on an intermittent basis, perhaps based on hunting-gathering seasons or in order to celebrate calendrical or commemorative events. The few unstratified Mesolithic or Early Neolithic flints cannot be related to these features with any certainty and could have been discarded by hunter-gatherers over the course of many millennia.

8.3 The significance of the flints and the two Beaker pottery sherds, found within a palaeochannel fill and dateable to *c.* 2400–1700 BC, is unclear, although they indicate an active channel at this time or subsequently, and probably a wetter environment than exists today. The nearest known contemporary remains comprise an inhumation associated with Beaker pottery found 350 m to the north (Dunning 1932, 279).

8.4 The previously unrecorded Middle Bronze Age cemetery is dateable to the middle to late second millennium BC *(1485–1065 cal. BC at 95% probability)*. This cemetery was sited on a gravel island within the valley floor close to the confluence of the Rivers Eye/Dikler and Windrush. Although the second millennium BC climate was warmer and drier than previously and than today (Darvill 2011, 133), it seems likely that the gravel on which the cemetery was located was chosen for its position in an otherwise damp, or intermittently damp, environment on the valley floor, an impression strengthened by the dominance of alder, a tree inhabiting wet ground, amongst the charcoal from the graveyard deposits (Appendix H). It is possible that the cemetery located on this slight gravel rise did indeed appear to occupy something of an island, surrounded by otherwise damp ground and perhaps with the palaeochannels flowing. Although it is possible that a few graves containing cremated remains may have been entirely lost to truncation, the absence of funerary features from other parts of the site indicates that the entire extent of the cemetery has been revealed and that this, representing as it does, the remains of twelve individuals, was most likely a family plot.

8.5 Grave 5078 had been cut through an infilled tree-throw pit. The mollusc assemblages from the graves and associated postholes are indicative of a well-established open landscape (Appendix H) and so standing trees, other than those in patches of woodland, may have been notable features along the valley floor when the cemetery was in use. No other tree-throw pits were recorded and it is possible that the tree was a point of reference in the local landscape, recently fallen, or felled deliberately, and memorialised by the insertion of the grave. A similar occurrence was noted at a barrow at Foxcote Hill, Withington, located on the Gloucestershire Cotswold Hills, where a tree seems to have influenced the siting of a barrow (Hart *et al.* 2016, 198 and fig. 2.13). Closer to Roman Way, cremated human remains buried within a Middle Bronze Age settlement at Blenheim Farm, Moreton-in-Marsh (Hart and Alexander 2007) were found within a tree-throw pit which represented part of the remains of a small cluster of trees prominent within the settlement topography.

8.6 There is no direct evidence that the graves were marked, but none were intercutting, so markers in the form of posts or small mounds might be envisaged. It is possible that the burials were beneath a barrow, since ploughed away. The graves containing the cremated remains cover an area up to 22m across; if the inhumations are included, this rises to 29m across. These measurements are within the range of Gloucestershire barrows and ring ditches, which range from 6m–50m in diameter, clustering between 11m and 25m (Darvill 2011, fig. 68). No ditch was found in association with the burials, but ditch-less barrows such as Swell 8 at Cow Common, Lower Swell (Saville 1979) are known within the county and Darvill (2011, 134) suggests that many more may have been lost to the plough. However, barrow building had been in decline from about 1500 BC (ibid., 150), and cremations beneath barrows were rare at the time the Roman Way cemetery was in use (Timothy Darvill, pers. comm.). On balance, therefore, this is likely to have been a flat cemetery. If so, it is unusual in not having had at least a proportion of the graves containing urns, as is usual for cemeteries of this date in Britain (Darvill 2011, 150) but this might simply reflect a bias in the archaeological record whereby un-urned cremation burials remain undated unless associated with radiocarbon dates (Timothy Darvill, pers. comm.).

8.7 Some amongst the pits and postholes may have been graveyard features or have related to ceremonies undertaken within the cemetery. The placement of burials on the western side of the gravel island would have left a largely open area some 47m across and it is possible that this was the setting of ceremonies undertaken during funerals and commemorative events. Whether this was also the setting for the cremations themselves is not known, since pyres do not necessarily leave sub-surface evidence for archaeologists to recover (McKinley 1997, 134).

8.8 The finds and palaeoenvironmental evidence from the site were sparse, but some observations can be made regarding the ceremonies undertaken within the Roman Way cemetery. The copper and lead items found with the mature female in grave 5038 were probably personal adornments attached to her when she was buried, rather than grave goods. In contrast, the flints found within a few of the cremation graves were all unburnt and were therefore added during the burial ceremony. Where dateable, all of these flints were consistent with Bronze Age technology. The slate fragment within one of the graves was also unburnt and may have had significance given that it is a non-local material, although it showed no evidence of having been worked. Fuelwood for the pyres seems to have been gathered locally,

based on the predominance of wet ground-loving alder which would have been readily available along the valley floor. There was evidence that some of this wood had been seasoned, and so it is possible that fuel was collected well in anticipation of future deaths and presumably stored on the relatively dry gravel island. The collection of wood specifically for funeral pyres may itself have formed part of the wider ceremonies associated with death, burial and commemoration within the community served by the cemetery.

8.9 Both inhumations were of adult females and both were buried in the crouched position that is typical for the period. Very tightly crouched positions have recently been seen as an indicator that bodies may have been mummified (Booth *et al.* 2015) but the individuals at Roman Way were not so tightly flexed as those where mummification has been proposed. Both women faced to the right, and broadly westwards (allowing for some movement of the remains during decomposition). Although this is too small a sample to draw definitive conclusions from, it is tempting to speculate that these women were laid out to face the setting sun.

8.10 For most of the cremated individuals, it is possible that only token amounts from each were buried within the graves, a practice typical for the period (Appendix G). What happened to the remainder of the cremated remains is not known, although obvious possibilities include scattering or burial elsewhere. Brück (2009), albeit with reference to female remains from Early Bronze Age barrows, raises the possibility that cremated remains were circulated amongst the living in order to foster inter-personal relationships. Other less obvious possible uses for parts of the missing assemblages remain to be evidenced within the archaeological record but include use as memorial jewellery or, following crushing, as pigmentation for memorial tattoos or as temper within pottery as a means of incorporating the dead within the sphere of the living. In contrast, the remains of the adult within grave 5120 were probably buried in their entirety. It is noted in Appendix G that high bone weights from cremations are consistently associated with primary burials within Bronze Age barrows (McKinley 1997, 142), although in the case of the adult from grave 5120, Bayesian modelling of the site data suggests that this was not a founder grave (see Appendix I). Similarly, neither of the inhumation burials seem to have constituted the earliest use of the cemetery and there was no chronological distinction between the inhumation and the cremation burials. The earliest dated grave was 5052 which contained a cremated adult and had no distinguishing features. However, it is worth noting that the grave cut into the tree-throw pit was not dated and it is therefore

possible that this was the earliest in the sequence. Overall, statistical modelling of the burial sequence revealed no discernible pattern in the dates that they were buried (see Appendix I).

8.11 Middle Bronze Age settlement is poorly attested within the Cotswolds. However, the enclosed Middle Bronze Age roundhouse settlement at Blenheim Farm, Moreton-in-Marsh (Hart and Alexander 2007) shows that the uplands certainly were settled during this period, perhaps by pastoralist colonisers opening up virgin territory during the improved climatic conditions of the middle of the 2nd millennium BC (Darvill 2007, 55). The Blenheim Farm settlement was broadly contemporary with the Roman Way activity but lies 12km to the north, and those buried at Roman Way surely belonged to a more local family group whose presence partially fills a previous lacuna in the archaeological record between the activity at the Salmonsbury Camp Neolithic causewayed enclosure and that of the Early to Middle Iron Age settlement at the Cotswold schools sites.

8.12 Although pathological traits were not present on the cremated bone, the two inhumed females provide some insights into the lives of this Middle Bronze Age community. Both women exhibited injuries or degenerative disorders associated with physical labour. The causes of the possible blunt force trauma on the skull of the younger woman are not known and this wound could as easily have been caused by an accidental bump as by interpersonal violence (Sharon Clough, pers. comm.). In this case, the woman had survived her injury, which had healed.

8.13 The excavation demonstrated that the ditches and ramparts of Salmonsbury Camp did not survive within the site. Iron Age activity was restricted to an abraded sherd of pottery within a palaeochannel and a posthole containing a second abraded sherd, located within the Middle Bronze Age cemetery. The location of the latter might be mere coincidence, but, in the absence of other such remains, perhaps points to visitation of the cemetery long after it had fallen into disuse, in which case indicating that its setting persisted in the local memory, or was marked in some way.

8.14 The presence of sinuous medieval furrows confirms the suggestion that the site lay within Bourton-on-the-Water's agricultural hinterland.

9. CA PROJECT TEAM

9.1 Fieldwork was undertaken by Mark Brett, assisted by Daniel Aguiar, Alistair Barber, Peter Busby, Charlotte Haines, Lizzie Raison, Alison Roberts, Steven Sheldon and Elisa Vecchi. This report was written by Mark Brett and Jonathan Hart. The pottery, worked flint, metal items, ceramic building material/fired clay and worked stone reports were written by Katie Marsden. The human bone report was prepared by Sharon Clough and the reports on the palaeoenvironmental evidence and mollusc shell were written by Sarah Wyles. The charcoal report was prepared by Dana Challinor and the report on the radiocarbon dating and Bayesian analysis was prepared by Frances Healy, Sarah Cobain and Elaine Dunbar. The illustrations were prepared by Rosanna Price. The archive has been compiled and prepared for deposition by Hazel O'Neill. The fieldwork was managed for CA by Cliff Bateman and the post-excavation was managed by Jonathan Hart and Andrew Mudd.

10. STORAGE AND CURATION

10.1 The archive is currently held at CA offices in Kemble whilst post-excavation work proceeds. Upon completion of the project, and with the agreement of the legal landowners, the site archive and artefactual collection will be deposited with Corinium Museum, Cirencester upon completion of the project. A summary of information from this project, set out within Appendix J, will be entered onto the OASIS online database of archaeological projects in Britain.

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APPENDIX A: CONTEXT DESCRIPTIONS

Context	Context type	Fill of	Context description	Spot date
5000	layer		Modern topsoil. 0.3m thick.	
5001	layer		Subsoil. 0.2m thick.	
5002	layer		Alluvial deposit. Light yellow brown silt. 0.8m thick.	
5003	layer		Natural geology.	
5004	fill	5005	Single fill of pit. Red brown clay sand with gravel and pebbles.	
5005	cut		Sub-circular pit with steep sides and flat base. 1.2m wide, 0.3m deep.	
5006	fill	5007	Single fill of posthole. Grey brown clay sand with gravel.	
5007	cut		Posthole with straight sides and a flat base. 0.5m diameter, 0.1m deep.	
5008	fill	5009	Single fill of posthole. Greyish brown clay sand with gravel.	
5009	cut		Posthole with slightly concave base. 0.4m wide, 0.1m deep.	
5010	fill	5011	Single fill of posthole. Red brown silty clay.	
5011	cut		Posthole with moderately sloping sides. 0.4m wide, 0.2m deep	
5012	fill	5013	Fill of post-pipe. Dark pink brown with abundant gravel.	
5013	cut		Post-pipe within large post-pit 5020. Steep straight sides with concave base. 0.85m diameter, 0.6m deep.	
5014	fill	5020	Uppermost backfill of post-pit. Light brown yellow sandy silt with abundant gravel.	
5015	fill	5020	Backfill deposit around post set within post-pit 5020. Light greyish yellow silt with rare gravel.	
5017	fill	5020	Outer fill of post-pit. Probable packing material around post. Dark brownish grey sandy silt with abundant gravel.	
5018	fill	5020	Second backfill of post-pit 5020. Red brown clay silt with common gravel and patches of charcoal.	
5019	fill	5020	Backfill of probable post-pit 5020. Dark red brown silty clay.	*8221–7961cal. BC*
5020	cut		Possible post-pit. Steep, slightly concave sides with flat base. 1.2m diameter, 0.8m deep.	
5021	fill	5022	Possible natural infilling of posthole. Yellow brown clay silt with frequent gravel.	
5022	cut		Sub-square posthole with steep sides and concave base. 0.55m diameter, 0.35m deep.	
5023	fill	5024	Single fill of posthole/pit. Dark brown clay silt with frequent gravel and moderate stone fragments.	LPre
5024	cut		Sub-circular posthole/pit. Moderate sides, concave base. 0.6m wide, 0.15m deep.	
5025	cut		Oval pit. Gently sloping sides with concave base. 1.40m x 0.45m, 0.25m deep.	
5026	fill	5025	Second fill of pit. Light brown grey gravelly silt.	
5027	fill	5025	First fill of pit. Light orang brown silty sand.	
5028	fill	5034	Upper fill of pit/posthole. Dark brown silty clay.	
5029	fill	5034	Post-pipe fill. Light grey brown sandy silt with frequent gravel.	
5030	fill	5034	Backfill of pit/posthole. Pale yellow brown sandy silt with frequent gravel.	
5031	fill	5034	Deliberate backfill of pit/posthole. Light grey brown sandy silt with frequent gravel.	
5032	fill	5034	Backfill of pit/posthole. Pale yellow brown sandy silt with frequent gravel.	
5033	fill	5034	Lower fill of pit/posthole. Dark brown silt with charred remains	*8470–8295 cal. BC; 8530–8295 cal. BC*
5034	cut		Circular pit/posthole with steep to vertical sides and concave base.1.5m diameter, 1m deep.	
5035	cut		Grave: oval with concave base. 1.2m x 0.65m, 0.15m deep.	
5036	fill	5035	Grave fill. Single backfill over skeleton. Red brown sandy gravel.	Med
5037	fill	5035	Crouched inhumation within grave.	*1385–1220 cal. BC*

5038	cut		Grave: sub-oval with steep sides and flat base.1.15m x 0.6m, 0.2m deep.	
5039	fill	5038	Backfill of grave. Mid orange brown sandy silt with frequent gravel.	
5040	fill	5038	Inhumation within grave.	*1305–1130 cal. BC*
5041	cut		Sub-circular pit with moderately sloping sides, dropping to vertical, and a concave base.	
5042	fill	5041	Redeposited natural fill of pit. Yellow brown gravel.	
5043	fill	5041	Fill of pit. Mid brown grey sandy silt with gravel.	
5044	fill	5041	Third fill of pit. Mid grey brown silty sand.	
5045	cut		Grave: circular with gently sloping sides and flat base. 0.6m diameter, 0.1m deep.	
5046	fill	5045	Fill of north-east quadrant of grave. Dark grey brown sandy silt with occasional gravel and rare burnt bone and charcoal.	*1380–1185 cal. BC*
5047	fill	5045	Fill of north-west quadrant of grave. See (5046).	
5048	fill	5045	Fill of south-east quadrant of grave. See (5046).	
5049	fill	5045	Fill of south-west quadrant of grave. See (5046).	
5050	fill	5052	Upper fill of grave. Grey brown sandy silt with occasional fired clay flecks, charcoal flecks and gravel.	
5051	fill	5052	Lower fill of grave. Dark grey brown sandy silt with frequent charcoal flecks and occasional fired clay flecks.	
5052	cut		Grave: circular with steep sides and uneven base. 0.7m diameter, 0.2m deep.	
5053	fill	5052	Grave upper fill, south-east quadrant. See (5051).	
5054	fill	5052	Grave lower fill, south-east quadrant, see (5051).	
5055	fill	5052	Grave upper fill, north-east quadrant, see (5051).	
5056	fill	5052	Grave lower fill, north-east quadrant. See (5051).	*1415–1235 cal. BC*
5057	fill	5052	Upper fill of grave, south-west quadrant. (See 5051).	
5058	fill	5052	Lower fill of grave, south-west quadrant. See (5051).	
5059	cut		Oval pit, steep sides, concave base. 0.7m wide x 0.15m deep.	
5060	fill	5059	Single fill of pit. Grey brown sandy clay with gravel.	
5061	cut		Pit/posthole: sloping sides, flat base. 0.5m diameter, 0.08m deep.	
5062	fill	5061	Fill of north-west quadrant of pit/posthole. Mid grey brown sandy silt with frequent charcoal flecks.	
5063	fill	5061	Fill of north-east quadrant of pit/posthole. See (5062).	
5064	fill	5061	Fill of south-west quadrant of pit/posthole. See (5062).	
5065	fill	5061	Fill of south-east quadrant of pit/posthole. See (5062).	
5066	cut		Sub-circular posthole/pit with gently sloping sides and concave base. 0.3m wide, 0.05m deep.	
5067	fill	5066	Single fill of posthole/pit. Grey brown sandy clay.	
5068	cut		Sub-circular posthole with steep sides and concave base. 0.5m wide x 0.2m deep.	
5069	fill	5068	Single fill of posthole. Grey brown sandy clay.	
5070	fill	5078	Upper fill of grave, north-east quadrant. Dark grey brown clay silt with frequent flecks of charcoal and burnt bone.	
5071	fill	5078	Lower fill of north-east quadrant of grave. Very dark brown grey clay silt with frequent flecks of charcoal.	
5072	fill	5078	Upper fill of grave, south-west quadrant. See (5070).	
5073	fill	5078	Lower fill of grave, south-west quadrant. See (5071).	
5074	fill	5078	Upper fill of grave, north-west quadrant. See (5070).	
5075	fill	5078	Lower fill of grave, north-west quadrant. See (5071).	
5076	fill	5078	Upper fill of grave, south-east quadrant. See (5070).	
5077	fill	5078	Lower fill of grave, south-east quadrant. See (5071).	
5078	cut		Sub-circular grave with almost vertical sides and flat base. 0.5m diameter, 0.27m deep.	
5079	fill	5083	Fill of north-west quadrant of grave. Mid grey brown silty clay with gravel and occasional charcoal and burnt clay.	
5080	fill	5083	Fill of north-east quadrant of grave. See (5079).	
5081	fill	5083	Fill of south-west quadrant of grave. See (5079).	
5082	fill	5083	Fill of south-east quadrant of grave. See (5079).	
5083	cut		Grave: circular with moderately sloping sides and slightly concave base. 0.5m diameter, 0.11m deep.	
5084	cut		Wide shallow palaeochannel.	

5085	fill	5084	Fill of palaeochannel. Red brown sandy silt.	
5086	fill	5094	Upper fill of north-west quadrant of grave. Dark grey brown clay silt with frequent charcoal and occasional fired clay.	
5087	fill	5094	Lower fill of north-west quadrant of grave. Very dark brown clayey silt with frequent manganese flecks and occasional charcoal flecks, fired clay flecks, small stone fragments and gravel.	
5088	fill	5094	Upper fill of south-east quadrant of grave. See (5086).	
5089	fill	5094	Lower fill of south-east quadrant of grave. See (5087).	
5090	fill	5094	Upper fill of north-east quadrant of grave. See (5086).	
5091	fill	5094	Lower fill of north-east quadrant of grave. See (5087).	
5092	fill	5094	Upper fill of south-west quadrant of grave. See (5086).	
5093	fill	5094	Lower fill of south-west quadrant of grave. See (5087).	
5094	cut		Sub-circular grave with almost vertical sides and slightly concave base. 1.1m diameter, 0.19m deep.	
5095	fill	5078	Lowest deposit of grave. Dark grey brown clay silt. Abundant gravel, rare charcoal and burnt bone.	
5096	cut		Grave: circular with moderately sloping sides and flat base. 0.6m diameter, 0.2m deep.	
5097	fill	5096	Fill of south-east quadrant of grave. Mid grey brown sandy silt with occasional burnt bone and stones, frequent charcoal.	
5098	fill	5096	Fill of north-west quadrant of grave. See (5097).	*1380–1185 cal. BC*
5099	fill	5096	Fill of south-east quadrant of grave. See (5097).	
5100	fill	5096	Fill of north-east quadrant of grave. See (5097).	
5101	fill	5102	Fill of probable tree-throw hole. Dark grey brown silty clay.	
5102	cut		Probable tree-throw hole; straight sides and irregular base.	
5103	fill	5111	Upper fill of north-east quadrant of grave. Dark grey brown clay silt with charcoal, burnt bone and gravel.	
5104	fill	5111	Lower fill of north-east quadrant of grave. Dark red brown clay silt; rare flecks of burnt bone, charcoal, gravel and fired clay.	
5105	fill	5111	Upper fill of south-west quadrant of grave. See (5103).	
5106	fill	5111	Lower fill of south-west quadrant of grave. See (5104).	
5107	fill	5111	Upper fill of north-west quadrant of grave. See (5103).	*1385–1225 cal. BC*
5108	fill	5111	Lower fill of north-west quadrant of grave . See (5104).	
5109	fill	5111	Upper fill of south-east quadrant of grave. See (5103).	
5110	fill	5111	Lower fill of south-east quadrant of grave. See (5104).	
5111	cut		Circular grave with moderately sloping sides and a concave base. 0.6m diameter, 0.15m deep.	
5112	cut		Circular grave with moderately sloping sides and a concave/flat base. 0.4m diameter, 0.15m deep.	
5113	fill	5112	Upper fill of north-west quadrant of grave. Mid grey brown stony silt with gravel, burnt bone and charcoal.	
5114	fill	5112	Upper fill of north-east quadrant of grave. See (5113).	
5115	fill	5112	Upper fill of south-west quadrant of grave. See (5113).	
5116	fill	5112	Upper fill of south-east quadrant of grave. See (5113).	
5117	fill	5112	Lower fill of grave. Mid orange brown stony silt with gravel and charcoal.	
5118	cut		Circular grave with moderately sloping sides and flat base. 0.7m diameter, 0.15m deep.	
5119	fill	5118	Same as 5129	
5120	cut		Oval grave with vertical sides and flat base. 0.6m x 0.55m, 0.15m deep.	
5121	fill	5120	Uppermost fill of north-west quadrant of grave. Redeposited natural clay. Deliberate sealing of grave. Light orange brown clay with occasional charcoal and burnt bone.	
5122	fill	5120	Uppermost fill of north-east quadrant of grave. See (5121).	
5123	fill	5120	Uppermost fill of south-west quadrant of grave. See (5121).	
5124	fill	5120	Uppermost filll of south-east quadrant of grave. See (5121).	*1370–1155 cal. BC*
5125	fill	5120	Lower fill of north-west quadrant of grave. Dark grey brown clay silt with abundant charcoal and burnt bone.	
5126	fill	5120	Lower fill of north-east quadrant of grave. See (5125).	
5127	fill	5120	Lower fill of south-west quadrant of grave. See (5125).	

5128	fill	5120	Lower fill of south-east quadrant of grave. See (5125).	
5129	fill	5118	Upper fill of north- west quadrant of grave. Grey black sandy silt with charcoal, burnt bone and small stones.	
5130	fill	5118	Upper fill of north-east quadrant of grave. See (5129).	
5131	fill	5118	Upper fill of south-west quadrant of grave. See (5129).	
5132	fill	5118	Upper fill of south-east quadrant of grave. See (5129).	
5133	fill	5118	Lower fill of north-west quadrant of grave. Dark orange brown clay silt with charcoal flecks.	
5134	fill	5118	Lower fill of north-east quadrant of grave. See (5133).	
5135	fill	5118	Lower fill of south-west quadrant of grave. See (5133).	
5136	fill	5118	Lower fill of south-east quadrant of grave. See (5133).	
5137	fill	5138	Single fill of posthole. Black silty clay with charcoal.	
5138	cut		Sub-circular posthole with steep sides and slightly concave base. 0.4m diameter, 0.1m deep.	

APPENDIX B: POTTERY BY KATIE MARSDEN

A small assemblage amounting to four sherds (46g) was recovered (Table 1). The pottery has been fully recorded and quantified according to sherd count/weight by fabric. Fabric type codes used for recording, in parenthesis below, and set out in Table 1 are matched where possible to the Cirencester type series (Ireland 1998). The sherds are abraded and moderately fragmented, with a mean sherd weight of 11.5g.

Late prehistoric

A single bodysherd (4g) from posthole 5024 (fill 5023) is unfeatured although later Iron Age dating suggested by the fabric/firing characteristics.

Medieval

Three medieval sherds (42g) were recorded. A small scrap in an unglazed sandy fabric (1g), possibly of Worcestershire type (**239**), was recorded from grave 5035 (fill 5036). This is an intrusive find from a burial radiocarbon dated to the Middle Bronze Age. The remainder came from the topsoil. A bodysherd in local oolitic limestone-tempered fabric (**202**) is broadly dateable within the 11th to 13th/early 14th century range. One sherd, a rim, occurs in a limestone and flint-tempered fabric, probably of East Wiltshire type (**205**). The form is identifiable as a jar with everted rim. Dating across the 12th to 15th centuries is probable.

Table 1: pottery summary quantification

Period	Context	Fabric	Description	Count	Weight (g)	EVEs
Late prehistoric	5023		shell and limestone tempered	1	4	
Medieval	5000	**202**	Cotswold oolitic limestone tempered	1	28	
	5000	**205**	East Wiltshire Ware	1	13	0.07
	5036	**239**	Worcestershire sandy ware	1	1	

References

Ireland, C.A. 1998 'The Pottery' in Wilkinson, D. and McWhirr, A. 1998, 98-140

Wilkinson, D. and McWhirr, A. 1998 *Cirencester Excavations IV: Cirencester Anglo-Saxon Church and Medieval Abbey* Cirencester, Cotswold Archaeological Trust

APPENDIX C: WORKED FLINT BY KATIE MARSDEN

A total of 12 pieces of worked flint (58.8g) was recovered. The majority (8 pieces) were from topsoil/subsoil deposits (5000/5001), the remainder from Period 2 pit 5061 (fill 5060) and graves 5094 (fill 5092) and 5096 (fill 5100). Small chips, weighing less than 1g, came from bulk soil samples taken from cremation burials. The raw material consists of mid-grey flint with most pieces exhibiting a whitish patina (re-cortication). Edge damage and breakage are common throughout the assemblage. A single piece, a discoidal scraper from the topsoil, features secondary working. The remaining pieces are un-retouched and are flakes with the exception of two pieces which are blade-proportioned (having a length/breadth ratio of 2:1 or greater). As a largely unstratified group and with diagnostic tool forms absent, dating is uncertain. The typically broad, squat proportions of the flakes and scraper would be consistent with later Neolithic or Bronze Age technologies, although flint procurement/availability might also factor. The presence of blades reflects activity in the Mesolithic or Early Neolithic periods.

APPENDIX D: METAL ITEMS BY KATIE MARSDEN

Three metal objects were recovered during the excavation, including two probably modern nails from the topsoil. A small iron fragment recovered from soil sample 94, taken from fill 5079 of grave 5083 is an intrusive piece. The metal artefacts were examined by a specialist conservator (Karen Barker) and assessment has included x-radiography.

A coiled lead object 1 (Ra. 500; Fig. 7, no. 2) was recorded from Middle Bronze Age grave 5039 (fill 5038). Its location to the rear of the skull implies possible use as a hair/tress ring. A tradition of metal hair ornaments, albeit mostly of gold, is in evidence throughout the British Bronze Age (Hawkes 1961; Eogan 1997) whilst use of lead in this period is evidenced by leaded bronze alloys and occasional finds of lead objects including a palstave of Middle Bronze Age type from Canterbury (BM Reg. 2000.0321).

1. (Ra. 500) Length of lead rod, bent into ring with overlapping terminals (Fig. 7, no. 2). Hair ring? Diameter 18–23mm; thickness 3.8mm. Grave 5039 (fill 5038).

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APPENDIX E: CERAMIC BUILDING MATERIAL AND FIRED CLAY BY KATIE MARSDEN

Ceramic Building Material

Three abraded fragments of roof (ridge) tile weighing 45g were recorded from the topsoil. The fabric is a calcareous gravel-tempered fabric with sparse glaze which is identifiable as Minety ware, dateable to the 14th or 15th centuries.

Fired clay

Seven fragments (1.3g) of fired clay were recovered from Period 1 pit 5059 (fill 5060). A further 182 pieces (63.7g) were recovered from bulk soil samples, all from the fills of cremation burials and probably resulting from the cremation process.

APPENDIX F: WORKED STONE BY KATIE MARSDEN

A single worked stone object (Fig. 7, no. 1) was recorded from the topsoil. The object is a spindlewhorl of plano-convex form and is comparable to examples in use from the Roman to medieval periods; as an unstratified find, closer dating is not possible for this example.

1. Limestone spindlewhorl (abraded). Plano-convex with central perforation. Diam. 33.5mm; thickness 11.7mm; weight 17g. Topsoil 5000.

APPENDIX G: HUMAN BONE BY SHARON CLOUGH

Methodology

All skeletal material was examined and recorded in accordance with national guidelines (Hillson 1996a; Brickley and McKinley 2004; Mays *et al*. 2004).

Age Estimation

Aging is a highly variable process whose causative factors and biological mechanics are not fully understood (Cox 2000). In addition, 'biological age' does not always equate to 'chronological age' or 'social age' (Lewis 2007) of which adulthood is primarily a culturally defined concept (Cox 2000, Lewis 2007). With this in mind, a multi-method approach was taken (Table 2) to provide a range of estimates. Then each indicator was weighted on reliability. Where only one (less reliable) method was available, then this individual was determined to be only Adult or Subadult.

Table 2: Macroscopic techniques used

Pubic symphysis –Suchey and Brooks 1990
Auricular surface – Lovejoy *et al* 1985 – Buckberry and Chamberlain 2002 (used for older adults)
Dental attrition – Miles 1962
Cranial suture closure – Meindl and Lovejoy 1985
Sternal Rib ends – Işcan & Loth 1984 & 1985
Epiphyseal fusion – McKern and Stewart 1957; Webb and Suchey 1985
Dental eruption – Moorees, Fanning and Hunt 1963, AlQahtani 2010

Sex Estimation

Determination of the biological sex was based on examination of standard characteristics of the skull and pelvis (Ferembach *et al*. 1980; Schwartz 1995), with greater emphasis on features of the latter as they are known to be more reliable (Cox and Mays 2000). Measurements of the femoral and humeral heads were employed as secondary indicators (Giles 1970). Adult skeletons were sexed depending on the degree of sexual dimorphism. No attempt was made to sex subadults (individuals below 20 years of age) for whom there are no accepted methods (Cox 2000).

Skeletal condition and completeness

The completeness of each skeleton was classified as a percentage of the whole and divided into four groups , 0-25%, 25-50%, 50-75%, and 75+%. The condition of the bone surface of each skeleton was recorded after McKinley (2004, 16) and given an overall summary score.

Metrics

Measurements of long bones were used to estimate stature in adults (Trotter 1970). Measurements of other long bones and skulls were taken (where appropriate) and used in the calculation of indices to explore variation in the physical attributes of the population.

Nonmetric

The presence or absence of frequently recorded non-metrical cranial and post-cranial traits were scored (Berry and Berry 1967; Schwartz 1995; Hillson 1996).

Dental

Dentition was recorded using the Palmer notation. Caries were graded into small (<1mm), medium (2-4mm) and large (>4mm). Abscesses were recorded with reference to Dias and Tayles (1997). Periodontal disease and dental enamel hypoplasia were graded using Ogden 2008. Calculus was graded per tooth (flecks, slight, medium, heavy after Brothwell (1981) and recorded as sub and supra gingival.

Pathology

Skeletal pathology and/or bony abnormality were described and differential diagnoses explored with reference to standard texts (Ortner and Putschar 1981; Resnick 1995; Aufderheide and Rodriguez-Martin 1998).

Cremation burials

Where a deposit was identified as containing cremated bone, it was quarter sectioned and then excavated in spits of 20mm. These spits were collected and processed as individual environmental samples, which involved wet sieving using flotation and 1mm residue mesh. The dry bone was removed and sieved through 10, 5 and 2mm mesh sizes. The weight of the bone retained in each fraction and spit was recorded and its percentage of the total weight of the cremation was calculated. This enabled the degree of fragmentation to be quantified in each cremation. The bones retained from each sieve size were examined in detail and sorted into the following identifiable bone groups: skull (including mandible and dentition); axial (clavicle, scapula, ribs, vertebra and pelvic elements); upper limb and lower limb. Where possible, the presence of individual bones within the defined bone groups was noted. Any unidentifiable fragments of long bone shafts or cancellous bone, which are often the majority recovered from cremations, were weighed and incorporated into any subsequent quantitative analysis.

Age estimations from cremated remains are dependent on the survival of particular age diagnostic elements. In adult cremations, the most useful age indicators are degenerative changes to the auricular surface (Lovejoy *et al.* 1985), pubic symphysis (Suchey and Brooks 1990) and cranial suture closure (Meindl and Lovejoy 1985). For subadults, unerupted teeth, cranial thickness and size of bones help to identify age. Sex estimation of adult burnt bone relies on the preservation of specific elements and is uncommon in cremated material. The cremated human remains were subjected to full analysis which sought to identify type of deposit, weight of bone, degree of fragmentation, bone element, number of individuals, demographic and pathologic data and efficiency of the cremation (Brickley and McKinley 2004; Mays, Brickley and Dodwell 2004).

Results: inhumations

Two human burials were found within separate graves and have been radiocarbon dated to the Middle Bronze Age.

Skeleton 5037 slightly crouched within grave 5035, the body fitted tightly to the grave edges. More than 75% of the skeleton was present and the bone surface was grade two (more extensive erosion of surface). All areas were fragmented. It lay supine with the legs flexed at the knee together on the right side, feet together. The left arm crossed the body flexed slightly at the elbow to rest on the right pelvis. The right arm tightly flexed at elbow so that the hand lay on the right upper chest. The head lay slightly to the right side. This individual was a female aged 18–35 years (young adult). The stature was estimated from the left femur to be 1.59 m +- 3.72 (5ft 2.6 inches) (Trotter 1970). Stature for Bronze Age (Roberts and Cox 2003) females ranged from 154-161cm with a mean of 161cm. This means the individual was shorter than the average for the period (but note the range and average is from 20 individuals). The following indices are likely to have a biomechanical origin and are generally used on a population level to attempt to discern ancestry.

Platymeric index Femur – 68 (L) & 70 (R) = <85 platymeria (very flattened)
Platycnemic index Tibia – 70 (L) & 79 (R) = >69.9 eurycnemic (broad, wide)

Dentition and pathology
There were 31 teeth available for examination. Of these, 12 displayed dental calculus, predominantly on the right mandibular teeth lingual surface, the rest on the mandibular left. There were no other dental pathologies, which is consistent with the young age of the individual. Non-metrical traits were left double facet on the calcaneus, exotosis in the left trochanteric fossa and squatting facet on the left tibia. These traits are all of probable activity-related origin (Kennedy 1989).

On the left posterior parietal bone was a 9mm curved indentation superior to the lamboid suture. This may have been a very well healed trauma. The right talus had a groove along the talar process on the articular surface. The left talus had a half moon-shaped indentation at the point of talar process. These are suggestive that *Os Trigonum* had occurred (left) or a stress fracture has begun (right) at this point. *Os Trigonum* is thought to occur from repetitive ankle plantar flexion (Scheuer and Black 2000, 460).

Skeleton 5040 was found within grave 5038. Between 50% and 75% of the skeleton was present and the bone surface was grade 2. The whole skeleton was highly fragmented. It was laid on the right side with the head on the side, almost upright and abutting the grave edge. The right arm lay below the body, slightly flexed at the elbow, so that the right hand was under the stomach area. The left arm was straight at the side of the body. The left leg was tightly flexed at the knee, the left ankle drawn up to lie under the pelvis, the right leg less tightly flexed which would have placed the right foot (which had been lost to truncation) a slight distance from the left. Green staining was present on the right mandibular ramus, right temporal mastoid and auditory meatus; this is the ear area. It is likely that a copper alloy object (since eroded) had been placed here, in addition to the lead object which was found in the close vicinity of the left ear area. This individual was a female aged over 45 years at death, and possibly much older. There were no long bones available for measurement. The tibiae were available for Platycnemic index 65 (L) & 65 (R) = 63-69.9 mesocnemic (moderately flat). Non-metric traits comprised two lambdoid ossicles on the left side.

Dentition and pathology
There were 19 teeth available for observation, from 17 alveolar. There were three caries; maxilla left second incisor distal surface very small, second molar (same side) distal small on the root and on the buccal root of the right mandibular second molar. Although not strictly periodontal disease the mandibular alveolar was reduced in height leaving the roots exposed. Two teeth had been lost before death, probably to caries. Calculus was present mostly on the mandibular dentition (7 teeth, 1 maxilla) of a medium quantity on the buccal and lingual surfaces.

The left facets of two cervical vertebrae (position unclear but probably 3 and 4) were porotic and the bodies also porotic. Additionally a lumbar vertebrae (probably 5) arch left facet was also porotic. This indicates degeneration of the joints of the vertebrae in the neck and lower back. Further joints across the skeleton indicated joint degeneration. The bone appeared to be very light weight, this may be taphonomic or indicate possible osteoporosis. Cranial thickening and arachnoid granulations were also present and are further age-related changes.

Carbon and Nitrogen Isotopes

SK5037 Carbon and Nitrogen results from femur shaft - 21‰ δ^{13} C, 10.1‰ δ^{13}N.

SK 5040 Carbon and Nitrogen from femur shaft – 21.2‰ δ^{13} C, 9.4‰ δ^{13}N

These results have not been placed in a local context (no animal bone has been tested) and there are only two results. It is though possible to observe that the carbon is slightly high and the nitrogen slightly low (especially SK 5040) when compared to other periods in UK but it is not possible to suggest the type of diet these results represent.

Results: cremation Burials

Ten cremation deposits within graves were present. Five were radiocarbon dated to the Middle Bronze Age. They were found to be the cremated remains of eight adults, one child and one possible non-adult. No animal bone was observed amongst any of the cremated bone deposits.

Weight of cremated bone

The total weight of bone from each cremation burial varied from 7.2g–1513g (Table 3). Seven were under 100g, two were under 300g and only a single deposit was over 1000g. McKinley (2000, 404) stated that the weight of bone of an adult cremation from modern crematoria varies from about 1000 to 3600g whilst Trotter and Hixon (1973) demonstrated that a complete cremated juvenile will produce around 500g of bone. This would suggest that possibly only one of the cremation deposits comprised the majority of the individual (in grave 5120). With the exception of grave 5120, it is possible that truncation has resulted in some bone loss but it is also possible that the bone collected from the pyre and deposited in the pit was a token amount. Experiments (McKinley 1997a) have found that it is fairly easy to collect all the bones from an undisturbed pyre, which often remain in anatomical order. However, it is frequently found that 50% or less of the bone available after cremation is included in archaeological burials (McKinley 2000).

An average of 82% of the bone fragments were not identifiable, but there does not appear to have been any collection bias towards different body parts (Table 3). The highest weighted cremation deposit had each area represented. The higher amount of long bone and cranial bone observed probably has more to do with the ease with which they are identified compared to other bones. These bones also have thicker cortical bone than those of the axial skeleton and it is thought that areas of high trabecular bone content (epiphyses and os coxae) will disintegrate easily (McKinley 1998). The resulting high quantities of cranial and long bone identified are not unusual for highly fragmented cremation deposits. The Bronze Age site at Westhampnett (McKinley 1997b) had a similar finding.

The cremated bone from grave 5120 was notable in that it had a significantly higher weight than all the other deposits (1513g). This would suggest that almost the entire adult was buried. All parts of the skeleton were represented, including small bones and tooth root fragments. There were no repeated elements observed which would have suggested the greater bone weight resulted from the burial of multiple individuals.

Fragmentation

The average fragment size from the ten cremations was 22mm, ranging from 11–39mm. The majority of fragments, 57% (average), were in the 2-5mm fraction. This was followed by the 10-5mm fraction (32% average). These figures suggest very high fragmentation levels. Table 4 presents the results by grave; there is little difference between them, except for grave 5120, and the low weights affect the percentages. Adding more fuel and stoking the pyre would result in a more even burning of the body and contribute to higher fragmentation

levels, which have been observed in these cremation deposits. The bones may have been shovelled up whilst still hot, then deposited in water or winnowed which would cool the bone rapidly causing further fragmentation. McKinley (1994, 340-1) observed that in a sample of over 4000 cremations, over 50% of bone fragments were in excess of 10mm in size with the largest fragment 134mm and an average maximum fragment size of 45.2mm (including immature and disturbed cremations). As the average fragment from Roman Way was 22mm, below half of that found by McKinley, this confirms that there was more than average fragmentation amongst the cremated bone. It has been observed that post-depositional protection offered by urns can result in larger recorded fragment sizes (McKinley 1994, 341) and this suggests that the very high fragmentation levels observed here are most likely to have been caused by post-depositional disturbance which increased the fragmentation of the brittle cremated bone.

Table 3: Weight of cremated bone by skeletal area
It is expected that in a complete dry skeleton (which is approximately the same as a cremated skeleton) the percentages by weight of the different elements are as follows: Skull: 18.2% (cranium, facial bones and jaw); Upper Limbs: 23.1% (shoulders, arms and hands); Axial Skeleton: 20.6% (vertebrae, ribs, pelvis); Lower Limbs: 38.1% (legs and feet)

Context	Total Weight (g)	Skull (g)	Skull %	Axial (g)	Axial %	Upper limb (g)	Upper Limb %	Lower limb (g)	Lower limb %	U Long bone (g)	U Long Bone %	Un-identified (g)	U %
5045	119.1	3.7	3.1									115.4	96.89
5052	17.1									2	11.69	15.1	88.3
5078	39.5	3.3	8.3							3.6	9.11	32.6	82.5
5083	26.2	0.2	0.7					6.8	25.95	1.3	4.96	17.9	68.3
5094	16.5									3.4	20.6	13.1	79.3
5096	42	0.8	1.9							14	33.3	27.2	64.7
5111	221	2.8	1.2							22.9	10.36	195.3	88.3
5112	26.2	2.7	10.3							3	11.4	20.5	78.2
5118	7.2									0.6	8.33	6.6	91.6
5120	1513	35.6	2.35	6.1	0.4	31.2	2.06	91.1	6.02	19.7	1.3	1329.3	87.85

Table 4: Weight of bone by fraction to determine level of fragmentation

Ctxt	>10mm weight	>10mm %	10-5mm Weight	10-5mm %	5-2mm Weight	5-2mm %	1-2mm weight	1-2mm %
5045	4.6	3.8	49	41.1	65.5	54.99		
5052	0	0	5.5	32.16	11.6	67.83		
5078	0	0	8.9	22.53	30.6	77.46		
5083	7.4	28.24	0.9	3.43	17.9	68.32		
5094	0	0	7.7	46.66	8.8	53.33		
5096	0	0	17.8	42.38	24.2	57.61		
5111	15.8	7.14	78.7	35.61	126.5	57.23		
5112	4.3	16.41	7	26.71	14.9	56.87		
5118	0	0	2	27.77	5.2	72.22		
5120	145.9	9.6	719.2	47.53	105.8	6.99	542.4	35.84

Distribution by spits and quadrants

The cremation burials were excavated in quadrants and spits. As there was less than 100g in seven of the ten features, any apparent distribution across the quadrants or spits would be skewed by the low weight. The highest weighted cremation burial, 5120, had 10 spits containing bone. Distribution throughout the feature was fairly even, with slightly more in the north-west and south-east quadrants. Vertically there was more bone in the lowest part of the feature. There was no evidence that the bone had been deposited within biodegradable containers.

Pyre technology

The efficiency of a cremation is influenced by the following factors: the construction of the pyre, the quantity of wood, the position of the body, tending of the pyre, the weather, the duration of the cremation and the pyre temperature (McKinley 2000, 407; McKinley 1994, 82-84). These factors influence the nature of the cremated bone which may range in colour from brown or black (slightly charred), through hues of blue and grey and the brilliant white associated with full oxidisation produced by pyre temperatures quoted variously as over 645°C (McKinley 2000, 405), over 750°C (Lyman 1994) and over 800°C (Schmidt and Symes 2008). All ten cremation deposits were predominantly white in colour. There was some variation, mostly hints of blue, grey and pink. Four deposits had parts of bones black in colour (5045, 5078, 5083, 5096). Two of these have been identified as non-adult (5078, 5096). It is known that adults cremate better than children due to higher levels of body fat. So it is not unexpected that the non-adult deposits had some slightly charred bones resulting in the black colour. The cremated bone deposits which were fully white did include parts of the body with little fat, such as the hands and feet. This indicates that the position of the corpse on the pyre was good and that the pyre burnt at a sufficient heat (over 645°C) and for enough time.

Ageing, Sex and pathology

Of the ten cremation deposits, eight were determined to be from adults and two from non-adults. Deposit 5078 was probably a child of approximately 2-4 years and 5096 probably a child also. Due to the low weights and high fragmentation of the cremated bone it was not possible to observe sexually dimorphic features or pathological lesions.

Discussion

The ability in the Bronze Age to cremate the dead very efficiently, resulting in fine white, fragmented bone compounds the problem of identification of individual elements and therefore age and sex. The cremated bone deposits from this site have revealed limited information. They comprised the remains of ten individuals of whom eight were adult, and two were non-adult. Since even the small bones were white, then the pyres used must have been well-tended. The black colour observed on the minority of the cremated bone, notably from the non-adults, does however suggest that it was not always possible to fully combust the body, due perhaps to low body fat. Complete recovery of the entire cremated remains was seemingly not important or desired in the Bronze Age (Rebay-Salisbury 2010). The very low weights of bone recovered from the current site may in part be explained by truncation, but it is well documented phenomenon that Bronze Age cremated bone deposits have low weights of bone. An average of 327g-466g (McKinley in Davis and Mates 2005,14) has been calculated for this period, which is still substantially more than recovered for the majority of the cremation deposits with an average of 57g (not including deposit 5120). It is considered that the remainder of the cremated bone not buried may have been scattered or distributed amongst the mourners (Chapman and Gaydarska 2007). Cremation burial 5120 stands out as the exception in this group when it comes to completeness (1513g). It lies to the furthest west of all the burials and was a similar size and depth to 5118, which lay close by and only contained 7.2g of bone. It is

therefore inferred that this was an intentional deposit of most or all of the individual. High weights have been observed to be consistently from primary burials associated with Bronze Age barrows (McKinley 1997a, 142).

Burial Catalogue by Mark Brett

Abbreviations – frag-fragment, unid-unidentified, uln–ulna, artic-articular, rad-radius, MC-metacarpal, tib-tibia, hum-humerus, fem-femur, perm-permanent, dist-distal, CV-cervical

Grave 5035; Sk 5037

Grave: NW/SE oval pit.

Burial: supine, crouched, partial skeleton (>75%).

Human bone: young adult female, 18-35 years; stature 159cm.

Pathology summary: talus (left) os trigonum, (right) fracture line seen, but not complete. Left posterior parietal 9mm curved indentation superior to the lamboid suture - possible healed trauma.

Grave fill finds: none.

Dating: 1401-1221 cal BC (95.4% probability; SUERC-66962).

Grave 5038; Sk 5040

Grave: N/S oval pit.

Burial: crouched, partial skeleton (<75%).

Human bone: old adult female, ≥45; stature unknown.

Pathology summary: two cervical vertebrae (position unclear but probably 3 and 4) porotic. A lumbar vertebrae (probably 5) arch left facet porotic. Further joints across the skeleton indicated joint degeneration. Possible osteoporosis. cranial thickening and arachnoid granulations.

Grave fill finds: lead object (Ra. 500); copper alloy object indicated by staining but did not survive. Both items may have been worn rather than placed as grave goods

Dating: 1368-1058 cal BC (95.4% probability; SUERC-66963).

Grave 5045; deposits 5046/5047/5048/5049

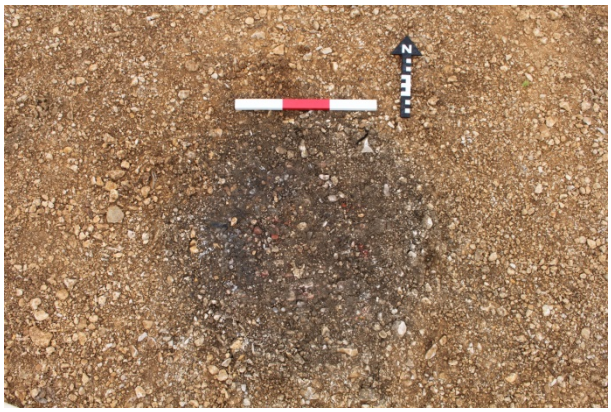
Grave: circular pit.

Cremated human bone: adult; sex unknown.

*Identified bones: c*ranial, tooth roots, long bone.

Grave fill finds: 4 x burnt stone.

Dating: 1389-1129 cal BC (95.4% probability; SUERC-66955).



Grave 5052; deposits 5050/5051/5053/5054/5055/5056/5057/5058

Grave: circular pit.

Cremated human bone: adult; sex unknown.

Identified bones: unid long bone.

Grave fill finds: none.

Dating: 1441-1285 cal BC (95.4% probability; SUERC-66954).

Grave 5078; deposits 5070/5071/5072/5073/5074/5075/5076/5077/5095

Grave: sub-circular pit.

Cremated human bone: child (2-4 years); sex unknown.

Identified bones: tooth root frag, cranial, fem or hum, perm canine crown 2-4 y.

Grave fill finds: 1 x fired/burnt clay fragment.

Dating: Middle Bronze Age, based on intra-site comparisons.

Grave 5083; deposits 5079/5080/5081/5082

Grave: circular pit.

Cremated human bone: adult; sex unknown.

Identified bones: femur.

Grave fill finds: none.

Dating: Middle Bronze Age, based on intra-site comparisons.

Grave 5094; deposits 5086/5088/5089/5090/5091/5092/5093

Grave: sub-circular pit.

Cremated human bone: adult; sex unknown.

Identified bones: unid long bone.

Grave fill finds: 1 x worked flint, 140 x fired/burnt clay fragments.

Dating: Middle Bronze Age, based on intra-site comparisons.

Grave 5096; deposits 5097/5098/5099/5100

Grave: circular pit.

Cremated human bone: ?non-adult; sex unknown.

Identified bones: cranial frags, tooth root frag, unid long bone.

Grave fill finds: 1 x worked flint, 1 x slate.

Dating: 1382-1127 cal BC (95.4% probability; SUERC-66956).

Grave 5111; deposits 5103/5104/5105/5106/5107/5108/5109/5110

Grave: circular pit.

Cremated human bone: adult; sex unknown.

Identified bones: cranial, unid long bone, tib? & hum, tooth root.

Grave fill finds: none.

Dating: 1411-1231 cal BC (95.4% probability; SUERC-66957).

Grave 5112; deposits 5113/5114/5115/5116/5117

Grave: circular pit.

Cremated human bone: adult; sex unknown.

Identified bones: mandible, cranial, tooth root.

Grave fill finds: none.

Dating: Middle Bronze Age, based on intra-site comparisons.

Grave 5118; deposits 5119/5129/5130/5131/5132/5133/5134/5135

Grave: circular pit.

Cremated human bone: adult; sex unknown.

Identified bones: unid long bone.

Grave fill finds: none.

Dating: Middle Bronze Age, based on intra-site comparisons.

Grave 5120; deposits 5121/5122/5123/5124/5125/5126/5127/5128

Grave: oval pit.

Cremated human bone: adult; sex unknown.

Identified bones: tooth root, fem, tib, dist pedal phalanx, dist hand phalanges, temporal, cranial, petrous, MC? radius, sesmoid, patella, rib, prox phalanx, dist rad artic, uln artic, prox tib, lunate, pelvic frag,?tarsal, CV1 frag..

Grave fill finds: 41 x fired/burnt clay fragments.

Dating: 1374-1111 cal BC (95.4% probability; SUERC-66961).

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APPENDIX H: THE PALAEOENVIRONMENTAL EVIDENCE BY SARAH WYLES (CHARRED PLANT REMAINS AND MOLLUSCS) AND DANA CHALLINOR (CHARCOAL)

Plant Macrofossils

A series of 122 bulk soil samples were analysed from the cremation graves and from selected pits/postholes. These features were all of Early Mesolithic or Middle Bronze Age date. The samples were processed following standard flotation methods, using a 250µm sieve for the recovery of the flot and a 1 mm sieve for the collection of the residue. All identifiable charred plant remains were identified following the nomenclature of Stace (1997). The results are recorded in Table 5.

Generally very few charred plant remains were recovered from these samples. A concentration of hazelnut (*Corylus avellana*) shell fragments were present in Period 1 posthole 5034 (sample 114) and a few more from Period 1 posthole 5020. Period 2 Graves 5052, 5083 and 5094 and pit/posthole 5061 contained tubers of false oat-grass (*Arrhenatherum elatius* var. *bulbosum*), in particular from sample 98 (fill 5086 in grave 5094). Small quantities of monocotyledon stem/rootlet fragments were recorded from graves 5118 and 5120. A single seed of vetch/wild pea (*Vicia/Lathyrus* sp.) was recovered from grave 5120. A low number of monocotyledon stem/rootlet fragments from posthole 5138 (sample 172).

The Hazelnut shell fragments are consistent with gathered food which would have formed part of the Mesolithic diet. The small assemblages from the graves are comparable with others from Bronze Age cremation related deposits. Plant tubers, in particular those of false oat-grass, can be found in cremation deposits (Godwin 1984; Robinson 1988), most commonly in those of Middle-Late Bronze Age date as was the case in those from some of the cremation related deposits at North of Saltwood Tunnel, Kent (Stevens 2006), Kingsborough Manor, Isle of Sheppey, Kent (Stevens 2008) and Twyford Down (Clapham 2000). It is considered that some of these tubers and stems may represent material uprooted while creating a fire break around the cremation site and then used as tinder (Stevens 2008).

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Table 5: Charred plant Identifications

Feature	Context	Sample	Vol (L)	Flot size	%Roots	Charcoal	Species Name	*Corylus avellana* L. (frags) hazelnut	*Vicia* L./ *Lathyrus* sp. L. vetch/wild pea	*Arrhenatherum elatius Var. bulbosum* (Willd) false oat-grass	Monocot. stem/rootlet frag	Tuber/ Rhizomes
5045	5047	50	2	2	50	+		-	-	-	-	-
	5047	51	2	1	75	0		-	-	-	-	-
	5048	52	3	2	60	0		-	-	-	-	-
	5048	53	3.5	1	75	0		-	-	-	-	-
	5046	60	4	2	50	+		-	-	-	-	-
	5046	61	2.5	2	60	0		-	-	-	-	-
	5049	62	4	2	70	+		-	-	-	-	-
	5049	63	4	2	70	+		-	-	-	-	-
5052	5050	54	1.5	7	20	++		-	-	-	-	-
	5051	55	2	3	25	++		-	-	-	-	-
	5051	56	1.4	1	25	+		-	-	-	-	-
	5053	57	4	8	20	+++		-	-	-	-	-
	5054	58	1	3	50	++		-	-	-	-	-
	5054	59	1	1	50	0		-	-	-	-	-
	5055	64	3	4	25	++		-	-	-	-	-
	5056	65	5	8	20	+++		-	-	1	-	-
	5056	66	4	3	20	++		-	-	-	-	-
	5057	67	2	3	35	++		-	-	-	-	-
	5058	68	5.3	8	20	+++		-	-	-	-	-
	5058	69	2	3	25	++		-	-	-	-	-
5061	5062	70	3.4	2	50	++		-	-	-	-	-
	5062	71	2	2	25	0		-	-	-	-	-
	5065	72	2	3	35	+		-	-	-	-	-
	5065	73	2	2	25	0		-	-	-	-	-
	5063	74	2.7	4	20	++		-	-	-	-	-
	5063	75	2	3	20	0		-	-	-	-	-
	5064	76	2.6	3	25	+		-	-	1	-	-
	5064	77	2	2	25	0		-	-	1	-	-
5078	5070	78	2	2	25	+		-	-	-	-	-
	5071	79	2	2	40	+		-	-	-	-	-
	5071	80	2	2	25	+		-	-	-	-	-
	5071	81	1.6	3	10	++		-	-	-	-	-

Feature	Context	Sample	Vol (L)	Flot size	%Roots	Charcoal	Species	*Corylus avellana* L. (frags)	*Vicia* L./ *Lathyrus* sp. L.	*Arrhenatherum elatius* Var. *bulbosum* (Willd)	Monocot. stem/rootlet frag	Tuber/ Rhizomes
	5072	82	3	3	15	+		-	-	-	-	-
	5073	83	2	2	25	++		-	-	-	-	-
	5073	84	1.7	2	20	0		-	-	-	-	-
	5073	85	1.6	2	10	+		-	-	-	-	-
	5074	86	2.5	1	5	++		-	-	-	-	-
	5075	87	1.8	3	20	+		-	-	-	-	-
	5075	88	1.8	2	50	+		-	-	-	-	-
	5075	89	1	1	25	++		-	-	-	-	-
	5076	90	4	5	20	++		-	-	-	-	-
	5077	91	2	10	20	+		-	-	-	-	-
	5077	92	4	5	20	+		-	-	-	-	-
	5077	93	4	5	20	+		-	-	-	-	-
	5095	115	11.5	7	15	+		-	-	-	-	-
5083	5079	94	3	5	20	++		-	-	-	-	-
	5079	95	2.5	5	25	++		-	-	-	-	-
	5082	96	3	5	30	0		-	-	-	-	-
	5082	97	2	5	20	+		-	-	-	-	-
	5080	110	4	5	50	+		-	-	1 stem	-	-
	5080	111	4	5	20	0		-	-	-	-	-
	5081	112	4.5	5	25	+		-	-	-	-	-
	5081	113	8	5	20	+		-	-	-	-	-
5094	5086	98	9	10	25	++		-	-	11	-	-
	5087	99	10	10	30	+		-	-	-	-	-
	5087	100	9	5	20	0		-	-	-	-	-
	5088	101	16.5	5	40	++		-	-	1	-	-
	5089	102	15	10	40	0		-	-	1	-	-
	5089	103	14	7	20	0		-	-	-	-	-
	5090	104	13	5	50	++		-	-	-	-	-
	5091	105	12	5	25	0		-	-	-	-	-
	5091	106	8	5	20	0		-	-	-	-	-
	5092	107	18	10	30	+		-	-	1	-	-
	5092	108	17	5	20	+		-	-	-	-	-
	5093	109	10	5	20	0		-	-	-	-	-
5096	5097	117	2	2	25	+		-	-	-	-	-
	5097	118	2	2	20	++		-	-	-	-	-
	5097	119	2	3	20	++		-	-	-	-	-

Feature	Context	Sample	Vol (L)	Flot size	%Roots	Charcoal	Species	*Corylus avellana* L. (frags)	*Vicia* L./ *Lathyrus* sp. L.	*Arrhenatherum elatius Var. bulbosum* (Willd)	Monocot. stem/rootlet frag	Tuber/ Rhizomes
	5097	120	1	1	20	+		-	-	-	-	-
	5098	121	4	2	20	+		-	-	-	-	-
	5098	122	3	3	20	+		-	-	-	-	-
	5098	123	2	1	20	0		-	-	-	-	-
	5098	124	1	1	50	+		-	-	-	-	-
	5099	125	2.5	2	40	+		-	-	-	-	-
	5099	126	2	1	25	0		-	-	-	-	-
	5099	127	2	1	20	0		-	-	-	-	-
	5099	128	1.5	1	25	+		-	-	-	-	-
	5100	129	2	2	20	+		-	-	-	-	-
	5100	130	2	1	25	+		-	-	-	-	-
	5100	131	1	2	25	++		-	-	-	-	-
	5100	132	1	2	25	0		-	-	-	-	-
5111	5103	137	2	2	25	0		-	-	-	-	-
	5104	138	2	1	50	0		-	-	-	-	-
	5104	139	1	1	50	0		-	-	-	-	-
	5105	140	2	1	40	0		-	-	-	-	-
	5106	141	2	1	40	0		-	-	-	-	-
	5106	142	0.5	1	40	0		-	-	-	-	-
	5107	143	5	2	50	0		-	-	-	-	-
	5108	144	2	1	50	0		-	-	-	-	-
	5108	145	0.6	1	50	0		-	-	-	-	-
	5109	146	2	1	50	+		-	-	-	-	-
	5110	147	2	1	50	0		-	-	-	-	-
	5110	148	1	1	50	0		-	-	-	-	-
5112	5113	133	1	1	40	0		-	-	-	-	-
	5114	134	2	2	40	0		-	-	-	-	-
	5115	135	2.5	1	50	+		-	-	-	-	-
	5116	136	2	1	50	0		-	-	-	-	-
	5117	149	8	1	50	0		-	-	-	-	-
5118	5119	162	5	12	30	+++		-	-	-	++	
	5129	163	9	30	20	+++		-	-	-	-	1
	5130	164	2	5	20	++		-	-	-	-	-
	5131	165	9	7	30	++		-	-	-	-	-
	5132	166	5	7	20	++		-	-	-	++	-
	5133	167	10	7	25	++		-	-	-	+	-

Feature	Context	Sample	Vol (L)	Flot size	%Roots	Charcoal	Species	*Corylus avellana* L. (frags)	*Vicia* L./ *Lathyrus* sp. L.	*Arrhenatherum elatius Var. bulbosum* (Willd)	Monocot. stem/rootlet frag	Tuber/ Rhizomes
	5134	168	9	5	60	+		-	-	-	-	-
	5135	169	7	2	60	+		-	-	-	-	-
	5136	170	9	2	50	+		-	-	-	-	-
5120	5121	150	5	3	50	++		-	-	-	-	-
	5122	151	4	2	50	+		-	-	-	-	-
	5123	152	6	3	50	+		-	-	-	-	-
	5124	153	4	5	20	+++		-	-	-	-	-
	5125	154	4	10	20	+++		-	-	1	-	-
	5125	155	3	10	15	+++		-	-	-	+	-
	5126	156	4	20	10	+++		-	-	-	-	-
	5126	157	4	2	25	+		-	-	-	-	-
	5127	158	5	15	25	+++		-	-	-	++	-
	5127	159	4	15	25	+++		-	-	-	++	-
	5128	160/1	9	12	30	+++		-	1	1	-	-
5020	5019	116	38.5	100	50	++		-	-	-	-	-
5034	5033	114	20	10	5	+		68	-	-	-	-
5138	5137	171	9	3	30	++		-	-	-	-	-
	5137	172	10	8	20	++		-	-	-	++	-

Key: + = 1-5, ++ = 6-20

Charcoal

Samples from the Mesolithic postholes and from the Middle Bronze Age cremation graves and related features were taken. The charcoal was variable in preservation and condition, but offered the opportunity to examine the fuelwood used for cremation. The excavation and sampling method for the cremation burials resulted in samples from both horizontal and vertical layers throughout the features. A suitable methodology for the charcoal was adopted to reflect this, with fragments examined from each sample (where possible) rather than focussing on only the richer assemblages. This approach also allowed adequate fragment counts to be achieved, which would not have been possible from the examination of a sole sample per feature. Standard identification procedures were followed using identification keys (Hather 2000, Schweingruber 1990) and modern reference material. The charcoal was fractured and examined at low magnification (up to X45), with representative fragments examined in longitudinal sections at high magnification (up to X400). Observations on maturity and other features were made where appropriate. Classification and nomenclature follow Stace 1997.

The preservation of the charcoal was generally poor and the material was soft, friable and heavily imbued with sediment. The quantity of charcoal in the features was extremely variable and only four produced enough identifiable charcoal to merit quantification and allow relative comparisons to be made. In the absence of any

significant compositional differences between the contexts and spits of individual features, the results have been presented by feature, amalgamating the results from each sample in an individual feature (Table 6). The full results are held in the archive.

A total of 500 fragments were examined, though many of these were of indeterminate taxa. Table 6 presents the summary results: relative abundance has been assigned where a minimum of 50 fragments was positively identified, with X=dominant (>90%) and x=present (<10) of the assemblage. The results from features with too few identifiable fragments (<20) have been given the presence indicator (x). Four taxa were positively identified; *Quercus* sp. (oak), *Alnus glutinosa* (alder), *Corylus avellana* (hazel) and *Fraxinus excelsior* (ash). It is likely that the undifferentiated *Alnus/Corylus* fragments were mostly alder, since only one fragment was confirmed as hazel, and this was from a non-cremation related feature. Maturity indicators were generally obscured by fragment size and sediment infusion, but some heartwood was recorded in the ash charcoal from 5118. No small twigs or roundwood were recorded and, although this may partly due to survival issues, it suggests that trunkwood or large branchwood was most frequent. Insect tunnels were observed in alder fragments from two features; 5052 and 5078.

Table 6: Summary results of the charcoal analysis

		5052	5061	5078	5083	5094	5096	5118	5120	5138	5020
Quercus sp. (oak)									X		
Alnus Glutinosa Gaertn. (alder)		X		X			x			X	
Corylus avellana L. (hazel)											x
Alnus/Corylus (alder/hazel)			x		x	x		x			
Fraxinus excelsior L. (ash)								X			

X=dominant; x=present

Discussion

The charcoal from the quantifiable deposits associated with cremated human bone clearly exhibited low diversity, with only three confirmed identified taxa from 410 fragments. The majority of the charcoal (by fragment count) and the mostly frequently occurring taxon was alder, representing at least 47% of the whole assemblage (and probably more if the undistinguished category included mostly alder). Alder is a tree preferring wet ground conditions that would have flourished along the riversides of the River Windrush and the palaeochannels located at the site. Traditionally, the wood is considered poor for fuel (Edlin 1949, 156), but it provides a high enough heat when well-seasoned. The presence of insect tunnels, observed in some fragments, suggests that the wood had been seasoned prior to use and the remains of the human bone from the cremation burials indicated that the requisite high temperatures for efficient cremation had been achieved (Clough, this report). Alder is not commonly used in cremations, although there are occasional examples, such as in some Late Bronze Age cremation deposits near Dartford (Challinor 2011). The use of a single taxon for fuel in cremation is well attested in other Bronze Age graveyards; such as Rollright Stones, Oxfordshire (Straker 1988), Barrow Hills, Oxfordshire

(Thompson 1999), Cotswold Community, Gloucestershire (Challinor 2010). This evidence demonstrates that, although oak and ash are most common, the choice of taxon often varied; presumably depending upon factors such availability of resources, season and practical considerations, but also possibly ritual ones. Possible links to gender or age have been postulated (Campbell 2007), but the evidence from Bourton does not offer any specific patterns; both adults and children at Roman Way have charcoal assemblages dominated by alder. The non-alder dominated assemblages (5118 and 5120) were both adults and, in the absence of gender data, it is not possible to explore further trends. In any case, the absence of enough identifiable charcoal from non-funerary related features at the site precludes a comparison of domestic and ritual fuel use. Oak and ash were clearly available, to some extent, since they were used for two of the cremations, but the dataset is too small to say whether these were unusual/special burials or would have been part of a wider exploitation of these taxa.

In conclusion, the charcoal from Bourton conforms to the Middle Bronze Age pattern of single-taxon dominance in cremations. Although the choice of taxon may have varied, and despite the lack of non-funerary comparative evidence, this indicates deliberate selection for fuel wood, rather than *ad hoc* gathering of local resources. The lack of diversity in the assemblages shows that even if the wood was supplied from seasoned stockpiles, it was chosen with some care.

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Molluscs

Mollusc shells were recovered from Mesolithic postholes 5020 and 5034 and from Middle Bronze Age graves 5045, 5078, 5083, 5094, 5096, 5118 and 5120, and from posthole 5138. All identifiable mollusc remains were identified following the nomenclature of Anderson (2005) and habitat preferences according to Kerney (1999) and Davies (2008). The results are recorded in Table 7. Generally very few mollusc shells were recovered from these samples.

Early Mesolithic

The moderately low number of shells recovered from posthole 5034 included shells of the open country species *Vallonia costata* and *Vallonia excentrica*, the intermediate species *Cepaea* sp. and the shade-loving species *Carychium tridentatum, Acanthinula aculeata, Vitrea* sp., *Aegopinella pura, Aegopinella nitidula*, and *Clausilia bidentata*. The mollusc assemblage recorded from posthole 5020 included shells of the open country species *Vallonia costata* and *Vertigo pygmaea*, the intermediate species *Cepaea hortensis* and *Cepaea* sp. and the shade-loving species *Carychium tridentatum, Discus rotundatus, Acanthinula aculeata, Aegopinella pura, Aegopinella nitidula*, and *Cochlodina laminata*.

Middle Bronze Age

The small assemblages from the graves mainly comprised shells of the open country species *Vallonia costata, Vallonia excentrica, Vertigo pygmaea* and *Helicella itala* with a few of the intermediate species *Trochulus hispidus* and *Cochlicopa* sp. A single shell of *Trochulus hispidus* was noted from posthole 5138.

Discussion

The Mesolithic assemblage is small but suggestive of a landscape of open deciduous woodland. The Middle Bronze Age assemblage appears indicative of a generally well-established open landscape, with some areas of longer grass and hedgerow/scrub/woodland edge in the vicinity.

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Table 7: Mollusc Identifications

Cut	Context	Sample	Vol (L)	Flot size	*Carychium tridentatum*	*Carychium* spp.	*Cochlicopa* sp.	*Vertigo pygmaea*	*Vallonia excentrica*	*Vallonia costata*	*Discus rotundatus*	*Acanthinula aculeata*	*Vitrea* sp.	*Aegopinella pura*	*Aegopinella nitidula*	*Clausilia bidentata*	*Cochlodina laminata*	*Helicella itala*	*Trochulus hispidus*	*Cepaea hortensis*	*Cepaea* sp.	*Cecilioides acicula*	Total Open country species	Total Intermediate species	Total Shade-loving species
Grave 5045	5049	62	4	2	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0
Grave 5078	5071	80	2	2	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0
	5076	90	4	5	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0
	5077	91	2	10	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0	0
	5077	92	4	5	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	2	0	0
	5077	93	4	5	-	-	-	-	1	-	-	-	-	-	-	-	-	1	1	-	-	-	2	1	0
	5095	115	11.5	7	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0
Grave 5083	5082	96	3	5	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0
	5080	110	4	5	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	1	1	0
Grave 5094	5086	98	9	10	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0
	5088	101	16.5	5	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0
	5089	103	14	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	0	1	0
	5090	104	13	5	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	0	0
Grave 5096	5097	120	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	2
	5099	125	2.5	2	-	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	0	0
	5100	129	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	0	0
Grave 5118	5129	163	9	30	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0
	5133	167	10	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	0	1	0
Grave 5120	5123	152	6	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	0	1	0
	5128	160/1	9	12	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	0	0
PH 5034	5033	114	20	10	1	-	-	-	1	2	-	1	1	4	3	1	-	-	-	-	3	-	3	3	11
PH 5020	5019	116	38.5	100	1	-	-	1	-	3	2	1	-	2	2	-	2	-	-	1	2	3	4	3	10
PH 5138	5137	172	10	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	0	1	0

APPENDIX I: RADIOCARBON DATING AND BAYESIAN MODELLING BY FRANCES HEALY, SARAH COBAIN AND ELAINE DUNBAR

Scientific dating

Radiocarbon results have been obtained for two Mesolithic postholes and for five of the ten Bronze Age cremation burials and both the Bronze Age inhumation burials (Table 8). All were measured by AMS at the Scottish Universities Environmental Research Centre, East Kilbride. Samples were prepared and measured as described by Dunbar *et al.* (2016), with $\delta^{13}C$ and $\delta^{15}N$ values measured independently by Isotope Ratio Mass Spectrometry (IRMS). The laboratory maintains continuous programs of internal quality control. It also takes part in international intercomparisons (Scott 2003; Scott *et al.* 2007; 2010a–b).

Sampling

The two samples from inhumation burials (SUERC-66962, -66963) date the deaths of the individuals concerned and should also be contemporary with their burial, since both were fully articulated (i.e. their bones were still connected by soft tissue) and hence buried soon after death. The five samples of cremated bone are slightly more problematic. They were from coherent cremation deposits, each from a single individual and should thus, on the face of it, date the deaths of those individuals. Enthusiasm for the dating of apatite from cremated bone has, however, been modified by the realisation that carbon can be exchanged between bone apatite carbonate and other sources, notably fuel and the corpse itself, during the cremation process (Hüls *et al.* 2010). This effect should be insignificant if the fuel consisted of short-lived taxa or of branchwood from longer-lived taxa, but could be substantial if fuels with a considerable inbuilt age were used. The relationship between fuel type and the final composition of a cremated bone sample is not straightforward, since the nature and extent of such exchanges can vary with the particular circumstances of individual cremations, experimental results being highly variable (Snoeck *et al.* 2014). The pyres for the cremation burials at this site seem to have consisted mainly of Alder (*Alnus glutinosa*; Challinor this report), which is relatively short-lived. There is thus probably little age offset in the dates measured on cremated bone here.

Chronological modelling

The methods employed here have been fully described by Bronk Ramsey (1995; 2001; 2009), Bronk Ramsey and Lee (2013), and Bayliss *et al.* (2012). In essence, the calibrated radiocarbon dates are analysed in the context of related archaeological information by expressing both as probability density functions (Bayliss *et al.* 2007). This has been done using OxCal v4.2.4 (http://c14.arch.ox.ac.uk/) and the INTCAL13 calibration curve (Reimer *et al.* 2013). Once the calibrated probability distributions of individual radiocarbon ages have been calculated, the program attempts to reconcile these distributions with the other information by repeatedly sampling each distribution to build up a set of solutions consistent with the model structure. This is done using a random sampling technique (Markov Chain Monte Carlo or MCMC) which generates a representative set of possible dates. This process produces a posterior density distribution for each sample's calendar age, which occupies only a part of the calibrated probability distribution (the prior distribution). Posterior distributions are also calculated for events that that are not directly dated, such as estimates for the starts and ends of episodes of activity (e.g. Fig. 9: *start Roman Way cemetery*). Both are printed in italics to show that they are dependent on the model, and can vary according to how it is constructed. The Boundary command used here allows for the probability that the very first and the very last event in a group have not been dated. Statistics calculated by OxCal provide a guide to the reliability of a model. One is the individual index of agreement which expresses the compatibility of the prior and posterior distributions (e.g. Fig. 9: '*[SUERC-66954 [A:73]*'). If the posterior distribution is situated in a high-probability region of the prior distribution, the index of agreement is high. If the

index of agreement falls below 60 (a threshold value analogous to the 95% significance level in a χ^2 test), the place of the radiocarbon date in the model requires further assessment. Another index of agreement, Amodel, is calculated from the individual agreement indices, and indicates whether the model as a whole is likely, given the data. It too has a threshold value of 60.

Results and calibration

Bayesian modelling (see below) was undertaken for the Bronze Age remains. This was not done for the Mesolithic remains, which were only found to be so dated following the initial phase of radiocarbon dating, which produced a single Mesolithic determination. This was supplemented during a second phase of radiocarbon dating, undertaken after the Bayesian analysis had been undertaken, designed to test the Mesolithic date and which produced an additional two Mesolithic determinations. Since there are no stratigraphic relations between the dated features, they are simply modelled as belonging to a single episode of activity (Figure 9), on the grounds that they were clustered together and are all burials. The overall agreement is good (Amodel 96), as are all the individual indices of agreement.

The radiocarbon results and associated measurements are listed in Table 8. All are conventional radiocarbon ages that have been corrected for fractionation (Stuiver and Polach 1977). In the 'Calibrated date range BC (2σ)' column of Table 8, the radiocarbon results have been calibrated by the maximum intercept method (Stuiver and Reimer 1986); in the '*Highest posterior density interval cal BC (95% probability)*' column, the illustrations, and the Bayesian modelling calibration has been undertaken using the probability method (Stuiver and Reimer 1993). Wiggles in the calibration curve for the second half of the second millennium cal. BC make the probability distributions wider than they would be if they fell in some other periods, and sometimes make them bimodal.

The estimated date for the start of burial is *1485–1245 cal BC* (*95% probability)*, probably *1395–1280 cal BC* (*68% probability*; Fig. 9: *start Roman Way cemetery*). The estimated end date for the end of burial is *1285–1065 cal BC* (*95% probability*), probably *1260–1165 cal BC* (*68% probability*; Fig. 9: *end Roman Way cemetery*). The estimated period over which burials were made is *1–230 years* (*95% probability*), probably *40–175 years* (*68% probability*; Fig. 10: *duration Roman Way cemetery*).

Table 9 shows an ordering of the burials, derived from the model shown in Figure 9. The cremation burial in grave 5052 was probably the earliest. The latest was probably either the exceptionally complete cremation burial in grave 5120 or the inhumation burial in grave 5038, it being 54% probable that 5120 was earlier than 5038 and 46% probable that 5038 was earlier than 5120. The two inhumation burials were separate events, it being 84% probable that the individual buried in grave 5035 died before the individual buried in grave 5038. To put it another way, the interval between them can be estimated as *−45 to +185 years* (*95% probability*), probably *−15 to +95 years* (*68% probability*; Fig. 10: *interval between inhumations*). The interval is partly negative because there is an overlap between the two distributions.

Discussion

The two inhumation burials, while on the face of it exceptional for the period, may be less so than they appear. Inhumation was certainly practised in the second half of the second millennium cal BC. Its extent, however, is unclear because the burials in question were almost always unaccompanied and therefore tend to be recognised only if they are radiocarbon-dated. Dated examples from the Upper Thames catchment and Wessex are summarised in Table 10 and shown in Figure 11. While the instances at Tormarton and Dorchester-on-Thames could be seen as expedient interments of combat victims, the others were found in pre-existing funerary

complexes, as at Shorncote (Barclay *et al.* 1995) and Barrow Hills (Barclay and Halpin 1999), or near Bronze Age settlements, as at Roughground Farm (Allen *et al.* 1993) and Hambledon (Mercer and Healy 2008). It seems that, in this period, inhumation was the appropriate rite for certain individuals in certain circumstances.

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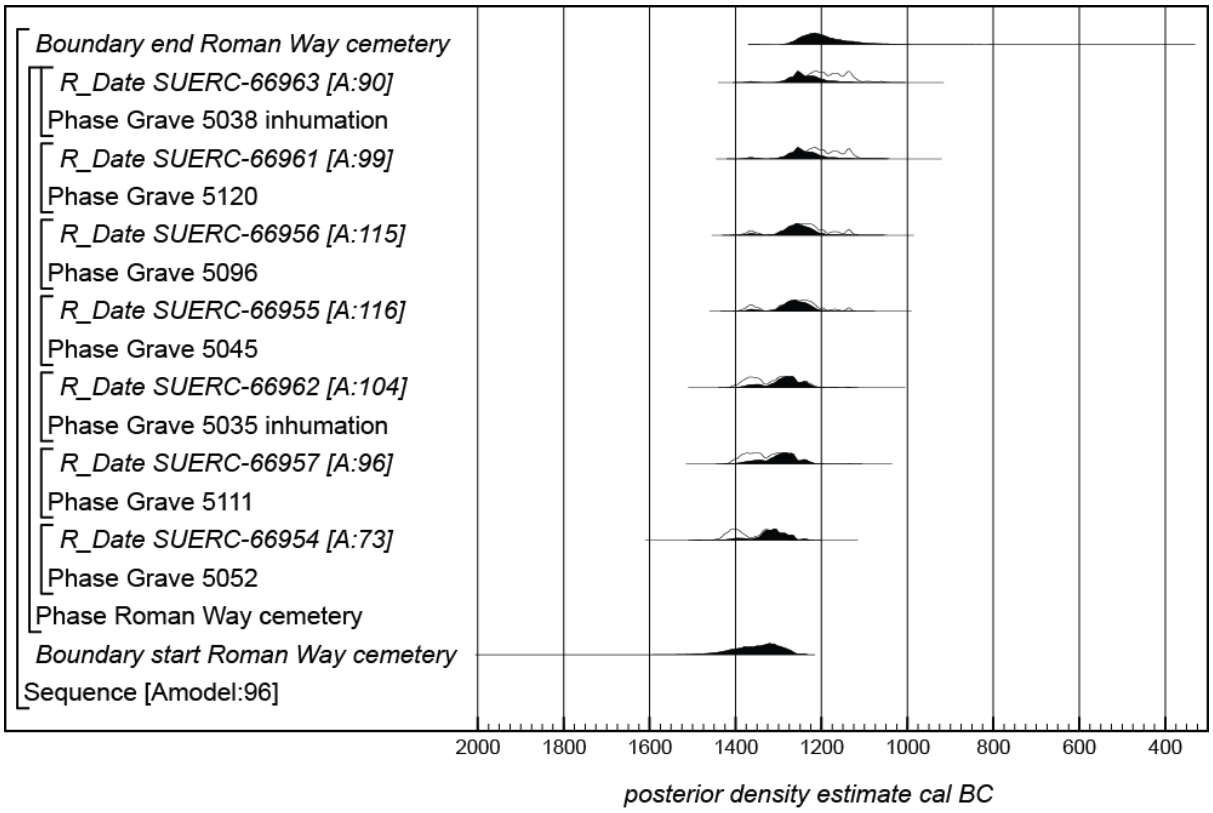


Figure 9. A model for the period of burial at Roman Way, defined by the square brackets at the left-hand side and by the OxCal keywords (Bronk Ramsey 2009). For each date, the total distribution represents the simple radiocarbon date and the solid distribution is derived from and constrained by the model. The parameters *start Roman Way cemetery* and *end Roman Way cemetery* are estimated by the model. The numbers in square brackets which follow the dates, for example '*[SUERC-66954 [A:73]*', are individual indices of agreement which express the consistency of each date with the prior beliefs incorporated in the model. The dates are listed in Table 8.

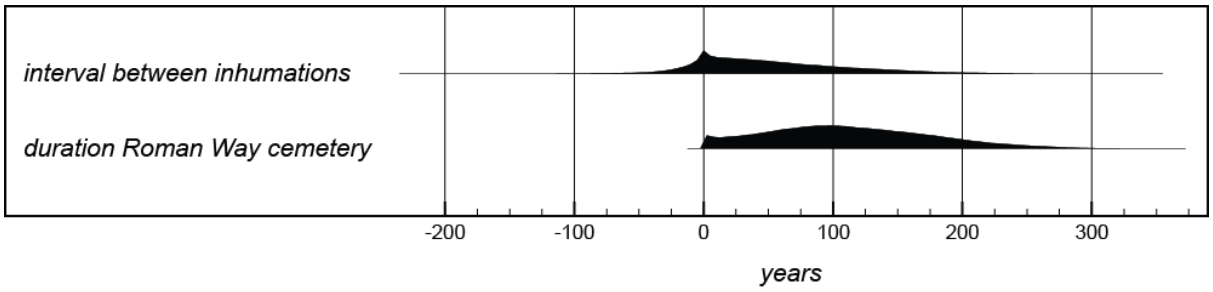


Figure 10. The use-life of the cemetery and the interval between the two inhumation burials, derived from the model shown in Figure 9. The interval between the two inhumations is partly negative because the posterior density estimates for the two dates overlap.

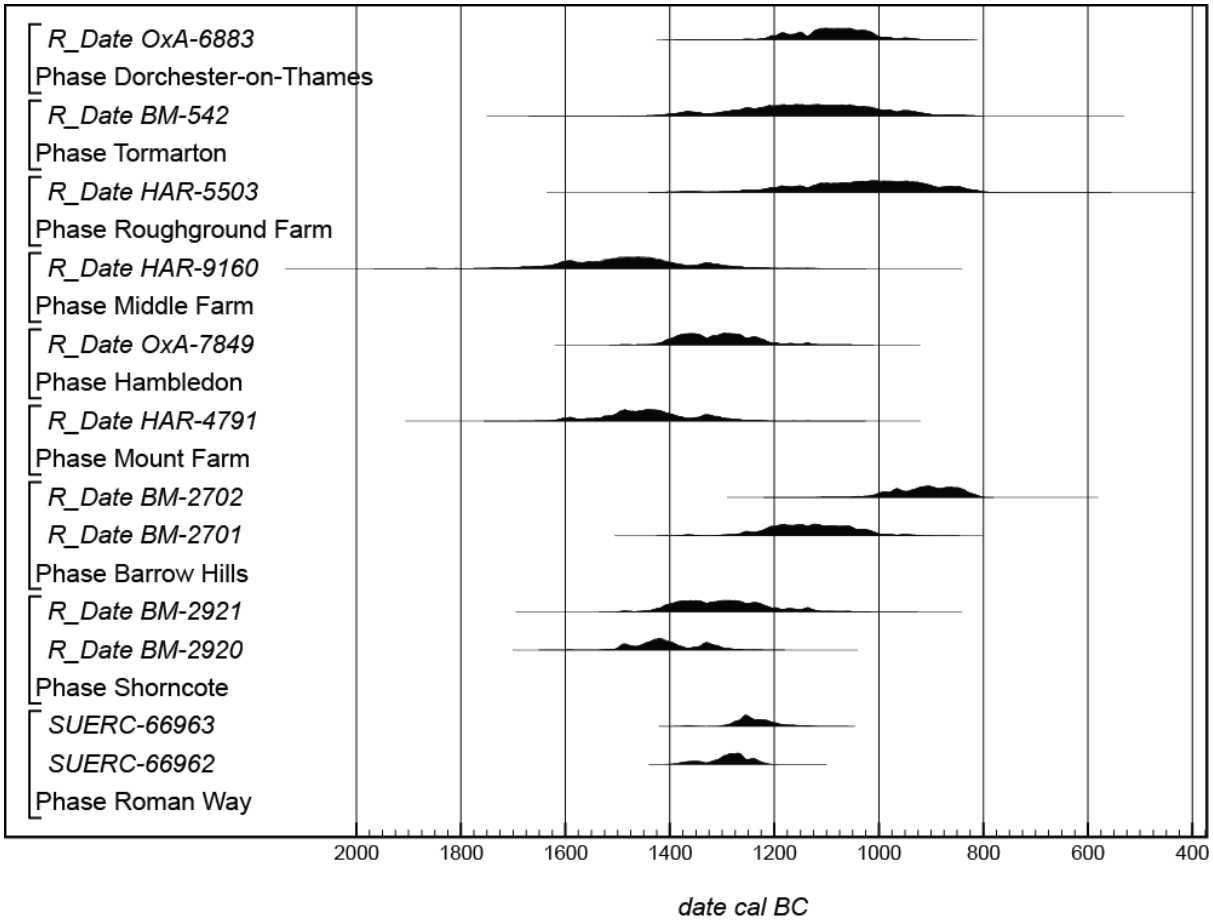


Figure 11. Posterior density estimates for the two inhumation burials at Roman Way, derived from the model shown in Figure 9, and simple calibrations of radiocarbon dates for other later second to early first millennium cal BC inhumations in the Upper Thames catchment and in Wessex. These are listed in Table 10.

Table 8. Radiocarbon dates. The calibrations in the 'calibrated date range (2σ)' column are calculated by the maximum intercept method (Stuiver and Reimer 1986) and are cited as recommended by Mook (1986): rounded outwards by 10, since the standard deviations are 25 or more. Those in the '*Highest Posterior Density interval (cal BC)*' columns are derived from the model shown in Figure 9 and are rounded outwards by 5. All the samples are of human bone.

Lab. No.	Material	Context	Radiocarbon age BP	$\delta^{13}C$ (‰)$_{IRMS}$	$\delta^{15}N$ (‰)	C:N	Calibrated Date range BC (2σ)	*Highest Posterior Density Interval cal BC (95% probability)*	*Highest Posterior Density Interval cal BC (68% probability)*
SUERC-66954	Cremated long bone	Grave 5052, Context 5056	3111±31	−22.8	-	-	1440–1280	*1415–1255 (94%)* *1245–1235 (1%)*	*1345–1265*
SUERC-66955	Cremated femur with *linea aspera*	Grave 5045, Context 5046	3015±31	−21.0	-	-	1390–1130	*1380–1340 (7%)* *1320–1195 (88%)*	*1295–1225*
SUERC-66956	Cremated ?long bone	Grave 5096, Context 5098	3004±31	−25.0	-	-	1390–1120	*1380–1340 (5%)* *1315–1185 (90%)*	*1285–1220*
SUERC-66957	Cremated long bone, ulna or fibula?	Grave 5111, Context 5107	3060±31	−23.0	-	-	1420–1220	*1385–1225*	*1345–1340 (1%)* *1325–1255 (63%)* *1245–1235 (4%)*
SUERC-66961	Cremated upper limb long bone	Grave 5120, Context 5124	2982±31	−21.2	-	-	1370–1110	*1370–1360 (1%)* *1305–1155 (94%)*	*1280–1210*
SUERC-66962	Distal femur shaft from articulated inhumation	Grave 5035	3046±31	−21.0	10.1	3.4	1410–1210	*1385–1220*	*1315–1230*
SUERC-66963	Proximal femur shaft from articulated inhumation burial	Grave 5038	2975±31	−21.2	9.4	3.4	1290–1110	*1305–1130*	*1280–1205*

Lab. No.	Material	Context	Radiocarbon age BP	$\delta^{13}C$ (‰)$_{IRMS}$	$\delta^{15}N$ (‰)	C:N	Calibrated Date range BC (2σ)	*Highest Posterior Density Interval cal BC (95% probability)*	*Highest Posterior Density Interval cal BC (68% probability)*
SUERC-69986	Carbonised seed – *Corylus Avellana* (Hazelnut shell)	Context 5033 Posthole 5034	9771 ± 29 yr BP	-24.8‰	-	-	8470–8295 Cal BC (95.4%)	-	-
SUERC-71132	Carbonised seed – *Corylus Avellana* (Hazelnut shell)	Context 5033 Posthole 5034	9180 ± 32 yr BP	-30.1‰	-	-	8530–8295 Cal BC (95.4%)	-	-
SUERC-71131	Charcoal – *Corylus Avellana* (Hazel)	Context 5019 Posthole 5020	8892 ± 30 yr BP	-27.6‰	-	-	8221–7961 Cal BC (95.4%)	-	-

Table 9. An ordering of Highest Posterior Density Intervals derived from the model shown in Figure 9. Each cell expresses the % probability that the burial in the first column is earlier than the burials in the subsequent columns. It is, for example, 84% probable that the occupant of grave 5035 died before the occupant of grave 5038, but only 26% probable that the occupant of grave 5035 died before the occupant of grave 5052. Inhumation burials are shown in **bold**

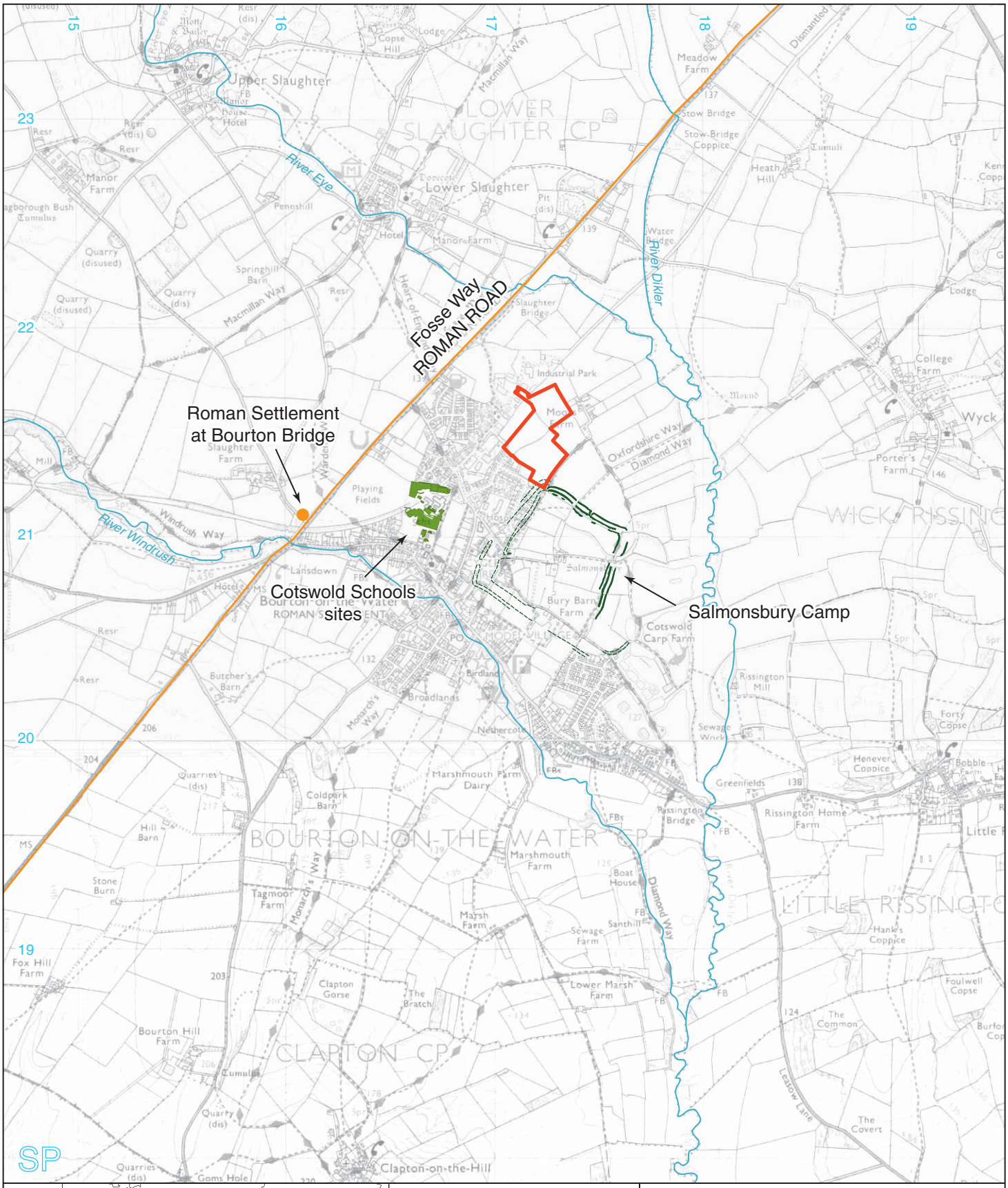
	Grave 5052 *SUERC-66954*	Grave 5111 *SUERC-66957*	**Grave 5035 *SUERC-66962***	Grave 5045 *SUERC-66955*	Grave 5096 *SUERC-66956*	Grave 5120 *SUERC-66961*	**Grave 5038 *SUERC-66963***
Grave 5052 *SUERC-66954*	-	68%	74%	86%	89%	93%	94%
Grave 5111 *SUERC-66957*	32%	-	57%	74%	79%	86%	88%
Grave 5035 *SUERC-66962*	26%	43%	-	68%	73%	82%	84%
Grave 5045 *SUERC-66955*	14%	26%	32%	-	56%	68%	71%
Grave 5096 *SUERC-66956*	11%	21%	27%	43%	-	62%	65%
Grave 5120 *SUERC-66961*	7%	14%	18%	32%	38%	-	54%
Grave 5038 *SUERC-66963*	6%	13%	16%	29%	35%	46%	-

Table 10. Radiocarbon dates for later second to early first millennium cal BC inhumation burials in the upper Thames catchment and in Wessex, shown in Figure 11. The calibrations are calculated by the maximum intercept method (Stuiver and Reimer 1986) and are cited as recommended by Mook (1986): rounded outwards by 10, since the standard deviations are 25 or more.

Site	Lab. No.	Material	Context	Radiocarbon age BP	$\delta^{13}C_{IRMS}$	Calibrated Date range BC (2σ)	References
Shorncote, Gloucs	BM-2921	Femur, humerus and tibia from articulated skeleton of 14- to 15-year-old	Grave 42. In flat grave outside recut ring ditch which contained a middle Bronze Age cremation cemetery	3050±60	−22.9	1440–1120	Barclay and Glass 1995, 31–38
Shorncote, Gloucs	BM-2920	L tibia from articulated skeleton of adult ?male	Grave 60. Flat grave outside ring ditch which contained a middle Bronze Age cremation cemetery ,	3140±45	−22.5	1510–1280	Barclay and Glass 1995, 31–38
Barrow Hills pond barrow 4583, Oxon	BM-2701	Femur from articulated skeleton of adult male	Burial A/B, 4583/C/1 and /2. Crouched near centre of same pit as individual dated by BM-2702	2930±50	-21.0	1280–990	Barclay and Halpin 1999, 52−55, 335
Barrow Hills pond barrow 4583, Oxon	BM-2702	Femur from articulated skeleton of 14- to 16-year-old	Burial C, 4583/D/1. Crouched near edge of large pit cut into infilled pond barrow	2760±50	-19.9	1020–810	Barclay and Halpin 1999, 52−55, 335
Mount Farm, Berinsfield, Oxon	HAR-4791	Ribs, sternum, clavicles and foot bones from articulated skeleton of young woman	In grave inside ring ditch, along with nearby cremation burial, predating Bronze Age waterhole	3170±70	-23.2	1620–1260	Lambrick 2009, 296–297; Bayliss *et al.* 2012, 25
Hambledon Hill, Stepleton spur, Dorset	OxA-7849	R femur from articulated skeleton of mature/older adult male	ST82 F16. In pit outside Neolithic Stepleton enclosure, subsequently the site of a Bronze Age settlement	3050±45	−21.2	1430–1130	Mercer and Healy 2008, 314
Middle Farm, Dorchester, Dorset	HAR-9160	articulated skeleton of adult male	Burial 3421. One of three tightly contracted inhumations in ditch	3200±90	−24.8	1690–1260	Smith *et al.* 1997, 75–79
Roughground Farm, Lechlade, Gloucs	HAR-5503	Bone from 30- to 35-year-old male	F1157. From tightly crouched burial in shallow grave	2840±90	−22.6	1270–810	Allen *et al.* 1993, 45, fig. 32; Bayliss *et al.* 2012, 181–182
West Littleton Down, Tormarton, Gloucs	BM-542	Tibia of young adult male	Pelvis and spine pierced by bronze spearheads which were still *in situ*. Buried in boundary ditch with remains of 3 other young males, 1 of them also wounded by a spear	2927±90	-	1410–900	Osgood 2005, 10–15
Queenford Farm, Dorchester-on-Thames, Oxon	OxA-6883	Bone from skeleton	Pelvis was pierced by a triangular-bladed basal-looped spearhead	2900±40	−20.5	1220–940	Osgood 1998, 19–21

APPENDIX J: OASIS REPORT FORM

PROJECT DETAILS		
Project Name	Land north of Roman Way, Bourton-on-the-Water, Gloucestershire	
Short description	An archaeological excavation was undertaken by Cotswold Archaeology, on behalf of Bloor Homes Ltd, between June and July 2015 on Land North of Roman Way, Bourton-on-the-Water, Gloucestershire, in advance of residential development. Remains were found in the northern part of the site (Area 1), the earliest comprising an arc of postholes located along the eastern edge of a small gravel island on the clay valley floor between the Rivers Eye/Dikler and Windrush. Radiocarbon dating demonstrated that these dated to the second half of the 9th millennium BC (the Early Mesolithic). A few sherds of Neolithic pottery were recovered from the site, but most remains were of a Middle Bronze Age cemetery focussed on the western edge of the gravel island. The cemetery seems to have been exposed in its entirety and comprised the inhumations of two adult women and the cremated remains of a further ten unsexed individuals, comprising eight adults and two non adults. Radiocarbon dating placed these burials within the middle to late second millennium BC (the Middle Bronze Age). The burials were concentrated across an area 29m in diameter and may have been covered by a barrow, of which no traces survived, but were more probably within a flat cemetery. The investigation also examined a possible continuation of the Iron Age ramparts of Salmonsbury Camp into the southern part of the site (Area 2) but showed that no such continuation was present. Iron Age remains were restricted to an abraded pottery sherd within a palaeochannel and a second abraded sherd within a posthole found within the area of the Middle Bronze Age cemetery. Later remains related to the site's location within the agricultural hinterland of Bourton-on-the-Water from the medieval period onwards.	
Project dates	3 June to 22 July 2015	
Project type	Excavation	
Previous work	Desk-Based Assessment (CA 2011); Evaluation (CA 2012); Heritage Statement (CA 2012); Geophysical survey (GSB 2012)	
Future work	Unknown	
PROJECT LOCATION		
Site Location	North of Roman Way, Bourton-on-the-Water, Gloucestershire	
Study area (M^2/ha)	2.5ha	
Site co-ordinates	Centred on NGR: SP 1727 2150	
PROJECT CREATORS		
Name of organisation	Cotswold Archaeology	
Project Brief originator	Gloucestershire County Council	
Project Design (WSI) originator	Cotswold Archaeology	
Project Manager	Cliff Bateman	
Project Supervisor	Mark Brett	
MONUMENT TYPE	Cremation burial, crouched inhumation, palaeochannel, pit, post hole	
SIGNIFICANT FINDS	Cremation burial, crouched inhumation	
PROJECT ARCHIVES	Intended final location of archive (museum/Accession no.)	Content
Physical	Corinium Museum	Ceramics, human remains, metal items, lithics
Paper	Corinium Museum	Paper records, permatrace drawings
Digital	Corinium Museum	Database, digital photos, report
BIBLIOGRAPHY		
CA (Cotswold Archaeology) 2016 *Land north of Roman Way, Bourton-on-the-Water, Gloucestershire: Archaeological Excavation.* CA typescript report **16416**		



site boundary
Cotswold School sites
Roman
ditches plotted from geophysics (GSB 2004)
banks plotted from Dunning 1976

N

0 1km

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PROJECT TITLE
Land North of Roman Way
Bourton-on-the-Water, Gloucestershire

FIGURE TITLE
Site location plan

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CHECKED BY	RP	DATE	27/06/2016	1
APPROVED BY	JH	SCALE@A4	1:25,000	

170

175

215

Area 1

Area 2

Fig. 3

T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
T11
T12
T13
T14
T15
T16
T17
T18
T19
T20
T21
T22
T23
T24
T25
T26
T27
T28
T29
T30
T31
T32
T33
T34
T35
T36

Salmonsbury Camp (GSB 2004)

SP

N

site boundary
excavation areas
evaluation trench
extent of geophysical survey
archaeological feature
furrow
gravel island

0 100m

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PROJECT TITLE
Land North of Roman Way, Bourton-on-the-Water, Gloucestershire

FIGURE TITLE
Plan of site, showing Areas 1 and 2

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Area 1

palaeochannel
5084

T3
310
303
T4
T31
T32
T5
T35
T1
5020
A
A
T9
B
C
5041
C
T6
3603
T36
B
B
5034
T33
T7
T8
T34
T10
T11

Fig. 4

N

site boundary
limit of excavation area
evaluation trench
archaeological feature
furrow
tree-throw hole
gravel island
palaeochannel
projected continuation
Period 1: Early Mesolithic
Period 2: Middle Bronze Age
Period 3: Iron Age

0 25m

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PROJECT TITLE
Land North of Roman Way,
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FIGURE TITLE
Plan of Area 1

DRAWN BY	SO	PROJECT NO.	9210	FIGURE NO.
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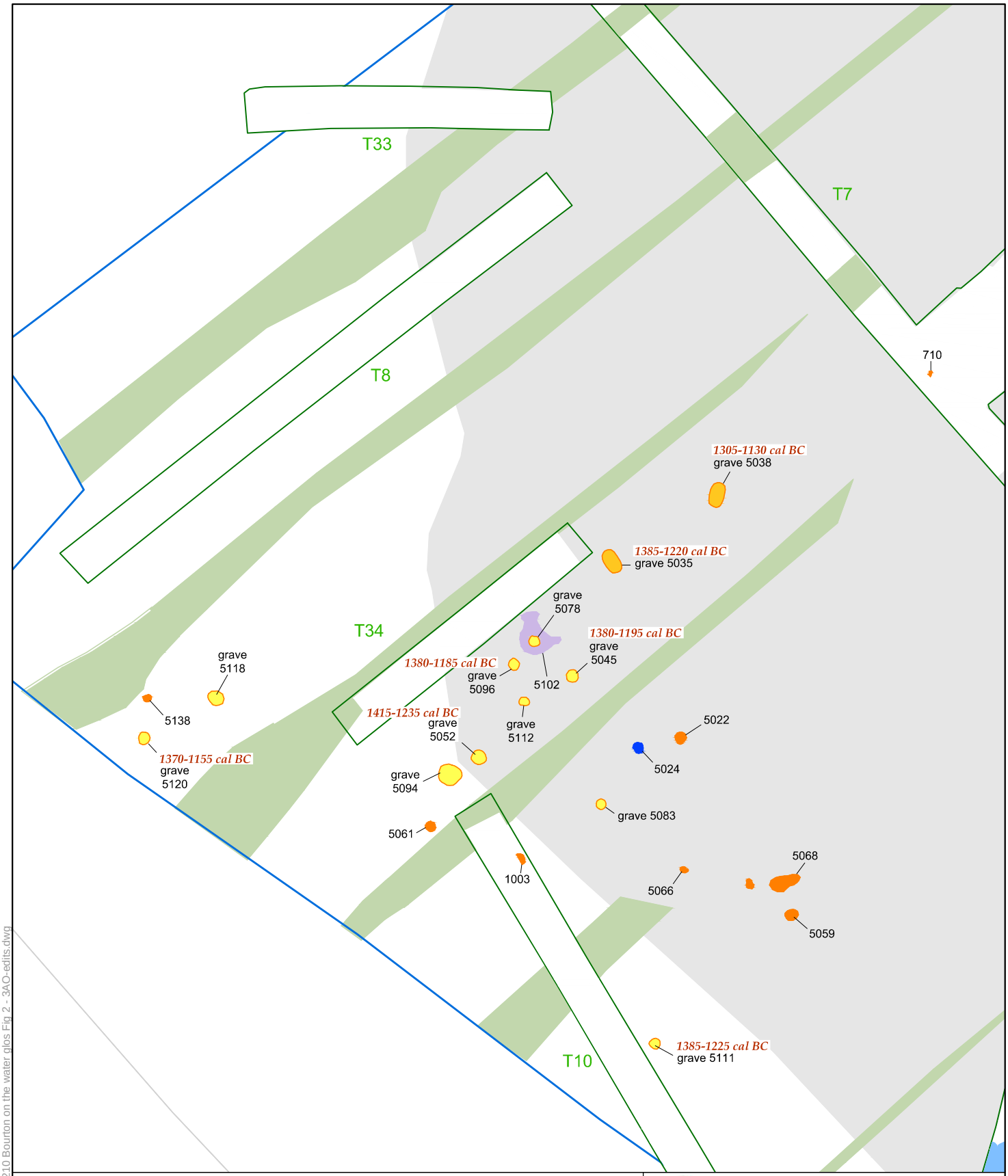

limit of excavation area
evaluation trench
furrow
tree-throw hole
gravel island
palaeochannel
projected continuation
Period 1: pits and postholes
Period 1: inhumation grave
Period 1: cremation grave
Period 2: Iron Age

N

0 10m

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FIGURE TITLE
Detail plan of cemetery

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Burial 5037 within grave 5035, looking south-west (scale 0.5m)

Burial 5040 within grave 5038, looking north

Close-up of lead object adjacent to head of burial 5040 within grave 5038

Grave 5120 during excavation, looking south-east (scale 20cm)

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PROJECT TITLE

Land North of Roman Way
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FIGURE TITLE

Photographs

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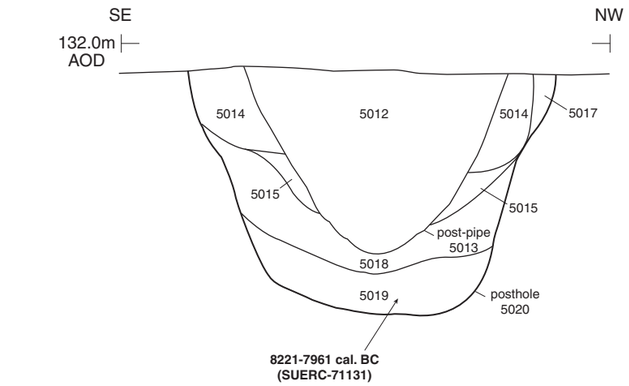

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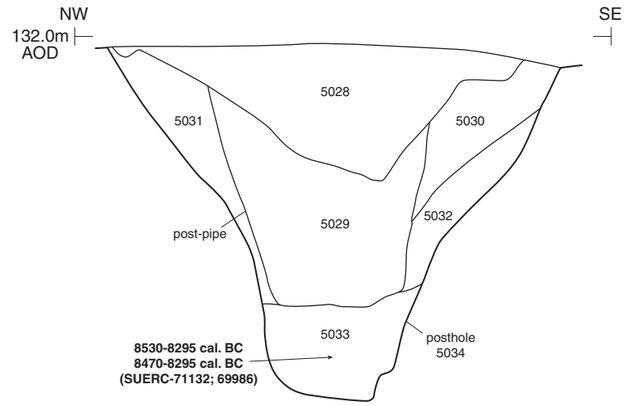
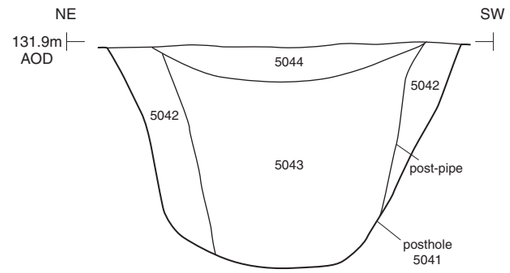


Posthole 5020 looking south-west (scales 0.5m and 1m)

Section CC



0 1m

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PROJECT TITLE
Land North of Roman Way
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FIGURE TITLE
Early Mesolithic postholes, sections and photograph

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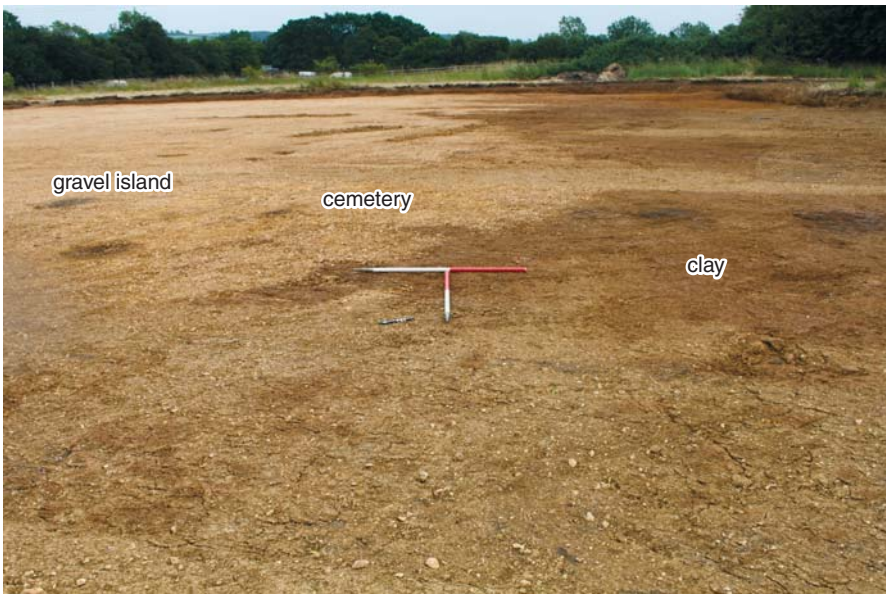
CHECKED BY	DJB	DATE	06/03/2017	6
APPROVED BY	JH	SCALE@A3	1:20	

Northen part of Area 1, looking east with palaeochannel 5084 in foreground (scale 1m)



Southern part of Area 1, looking south-east (scales 1m)

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FIGURE TITLE

Photographs

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FIGURE TITLE

Finds photographs

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