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Middle Neolithic pits and a burial at West Amesbury, Wiltshire

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ABSTRACT

Excavations on the south-eastern slopes of King Barrow Ridge, 1.5 km east of Stonehenge, revealed five pits, a grave and other features of Middle Neolithic date. Analysis of the pit assemblages and the partial inhumation interred in the grave has provided insights into lifeways in this landscape in the late fourth millennium cal BC. Evidence suggests that the area was visited by a pastoralist, mobile community on a semi-regular basis for a significant period, in late autumn or winter. Selected remnants of craft-working and consumption were deposited in pits, before deliberate infilling. These depositions repeatedly memorialised activity on the hillside at a time of contemporary activity elsewhere on King Barrow Ridge and at the future site of Stonehenge. Middle Neolithic pits are present in significant numbers across King Barrow Ridge, and alongside pits in the Durrington area, form one of the densest concentrations of such activity in the region. Long distance mobility is suggested by the possible Irish origins of the inhumation, the first Middle Neolithic individual excavated in the environs of Stonehenge. Whilst of significance for understanding the Middle Neolithic in the WHS and the region, this research also hints at the roots of Late Neolithic monumentalisation of this landscape.

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Supplemental data for this article can be accessed here.

Background

The Stonehenge landscape is probably the most intensively studied prehistoric landscape in Britain. Alongside Avebury, it has been co-designated as a UNESCO WHS because of its outstanding Neolithic and Bronze Age archaeology (UNESCO 2013). Despite this, relatively little is known about the area in the centuries between the end of the Early Neolithic around 3400 cal BC and the digging of the Stonehenge ditch in *2990–2755 cal BC* (*95% probability*; Marshall et al. 2012). Recent fieldwork has revealed evidence for Middle Neolithic pit digging, deposition, and funerary activity between King Barrow Ridge and Coneybury Hill, and we explore how that activity fills chronological, spatial, and narrative gaps in our understanding of the WHS in the last quarter of the fourth millennium cal BC. The excavations conducted by this project were distributed over a considerable area (Figure 1) and revealed archaeology of distinct periods in particular areas. Results and interpretations have been presented in a series of specialist papers that allow a more multivocal approach than would be possible in a traditional monograph, and to reach more specialist audiences (Roberts et al. 2017; Valdez-Tullett and Roberts 2017; Mays et al. 2018; Roberts et al. 2018; Pelling 2019; Worley et al. 2019; Bishop et al. in press; Russell et al. forthcoming). This article draws together our research on the Middle Neolithic features encountered by the project, and sets them in their wider context.

Whilst there has been considerable research into Neolithic pits in recent years (e.g. Garrow 2006, 2007, 2010; Harding 2006; Edwards 2009; Carver 2011; Tabor 2016 and papers in Anderson-Whymark and Thomas 2011), very little of this has been focused on Wiltshire, with a few important exceptions (Harding 1988; Richards 1990; Pollard 2001; Reynolds 2011). This is no doubt in part due to a feeling that academic discourse needed to move beyond the traditional monumental heartlands of Neolithic archaeology in mainland Britain (Jones 2011), but also to the geographic biases of developer-funded excavations. Recent discussion regarding Neolithic pits has placed considerable emphasis on 'structured deposition', developing ideas first articulated by Richards and Thomas (1984) and elaborated by many others, especially Pollard (2001) and Garrow (2012), and also on the materiality of the objects being deposited, following archaeology's wider 'material turn' (Chapman 2000; Harris 2009).

The relative absence of Wiltshire from these discussions has begun to change due to discoveries of significant numbers of Neolithic pits during several large-scale commercial excavations in the Amesbury/Old Sarum area in particular (Powell et al. 2005; Wessex Archaeology 2013, 2015a, 2015b), alongside smaller commercial (Harding and Stoodley 2017), community (Amadio 2010) and research excavations (Pollard 2014), such as that reported here. The Stonehenge Research Framework (Leivers and Powell 2016, 15) recognises that much work remains to be done to understand chronology and lifeways at non-monumental sites in the Neolithic. It is therefore important not only for national debates, but for scholarship of the Stonehenge landscape in particular, that the significance of the Middle Neolithic pits excavated by this project has allowed us to undertake detailed analysis of their sequences, assemblages, and wider context. We can thus begin to draw together ideas from wider discourses on Neolithic pits with research issues pertaining to the development of the landscape of Stonehenge.

The features

Between September 2015 and February 2016 Historic England carried out aerial, geophysical, and analytical earthwork surveys and excavations across a transect through the centre of the Stonehenge landscape, south of the A303 (Last 2017; Figure 1). Geophysical survey at West Amesbury revealed a range of features, including a mass of pit-like anomalies across almost the entire survey area of 21 ha (Linford, Linford, and Payne 2015). Excavation trenches investigated the eastern part of this distribution, in addition to linear features and a large area of disturbance (Figure 2). Pit-like anomalies in the northern excavation trench were revealed to be tree-throws, but in the central trench five Middle Neolithic pits and a burial were discovered, just east of four apparently contemporary postholes in a curving line and two short linear features. These latter two features were truncated by part of a large near-contemporary badger sett, the southern extent of which was encountered in the southern excavation trench

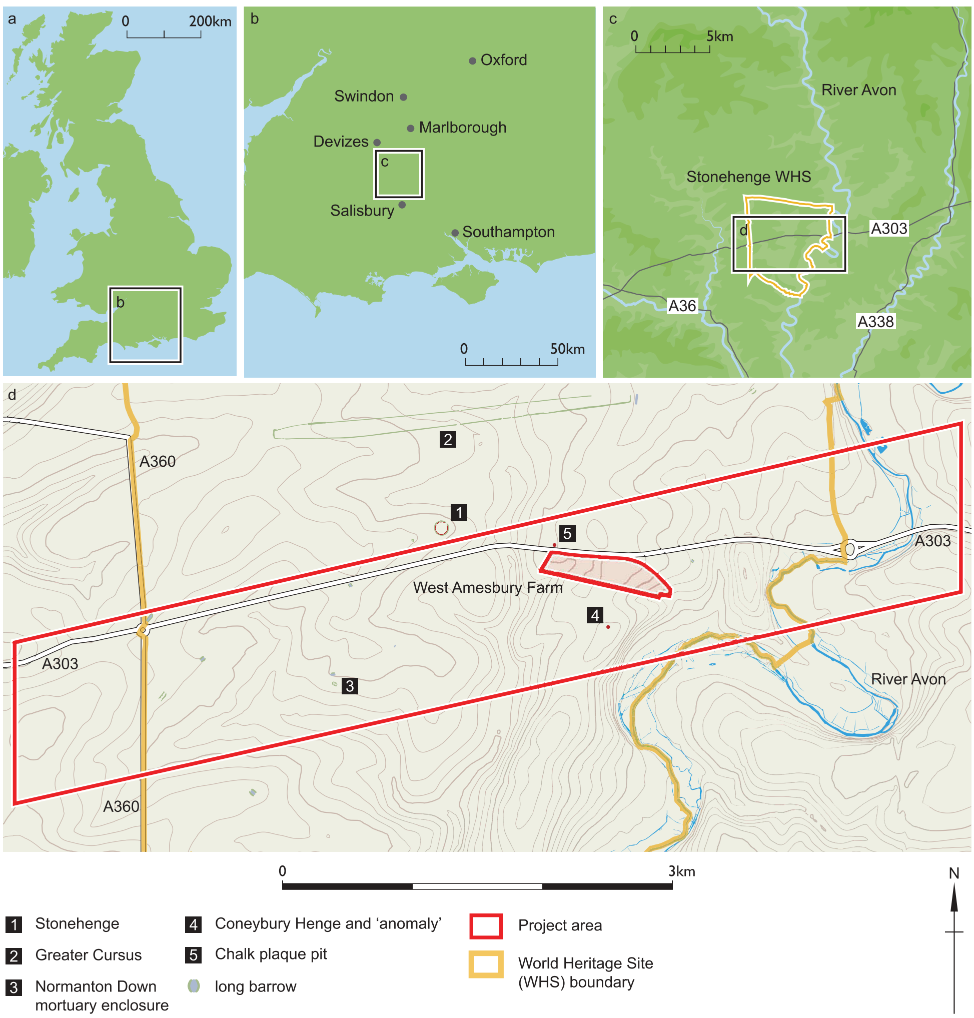

Figure 1. Site location map of West Amesbury Farm, showing key sites in the vicinity.

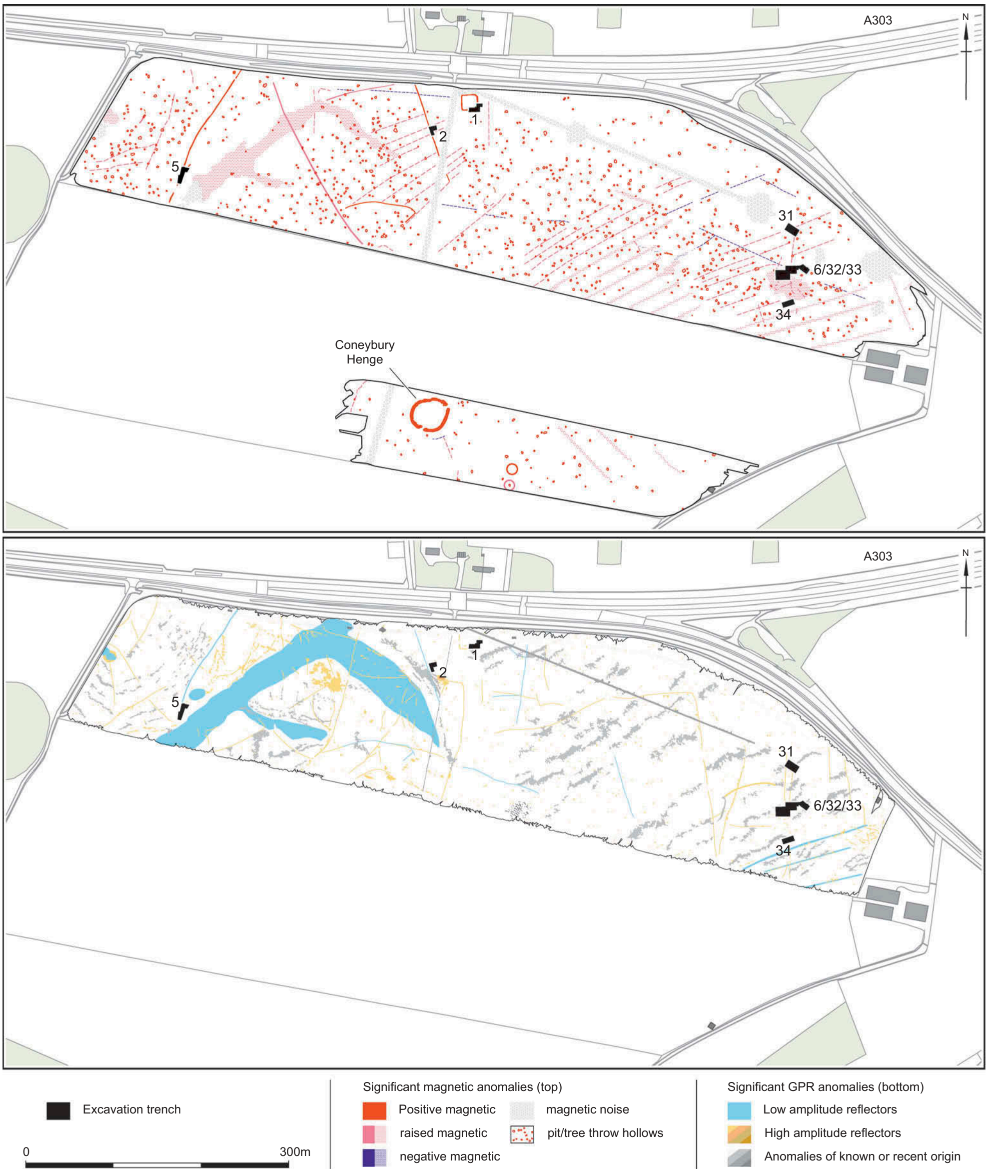

Figure 2. Geophysical survey results (see Linford, Linford, and Payne 2015) and excavation trench locations.

(Figure 3). A Middle Bronze Age linear feature was also present and is reported elsewhere (Roberts et al. 2017).

The pits were unevenly distributed, with pit [93201] *c*. 12 m north-west of the others (Figure 3). Pits [93201] and [93205] were cut into natural chalk and overlain by ploughsoil. Pit [93208] was cut by rectilinear grave [93240], which in turn was cut by pit [93233], which also cut tree throws [93209] and [93207], as did pit [93206] to the south. All five pits were circular in plan (1.0–1.34 m diameter) and between 0.57 m and 0.78 m deep. All pits had rounded bases and near-vertical to overhanging sides, with

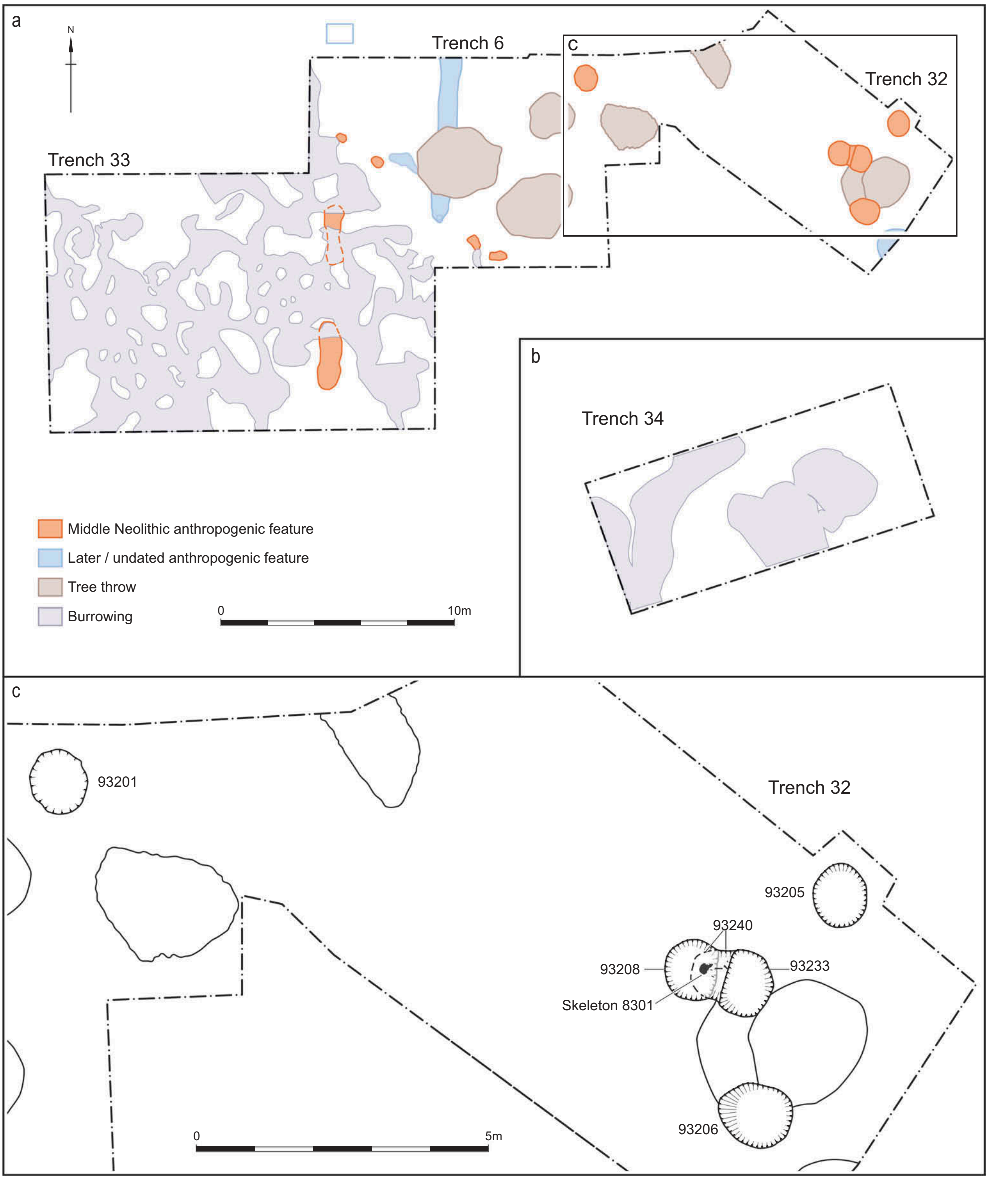

Figure 3. Plan of trenches discussed in the text.

several showing signs of overhanging material having fallen in (Figure 4). [93205], the shallowest pit, also differed from the other pits in having been disturbed and re-filled to accommodate a post at one side. A thin primary fill remained *in situ* below the level of the post-pipe, but the later fills appeared to derive from the mixing of a fill sequence similar to that present in the other pits. All five pits were 100% excavated, and were intensively sampled (Table 1), allowing reliable comparisons of artefactual and ecofactual distribution. 100% of the fill of grave [93240] was taken as a flotation sample. The pits contained significant assemblages of worked flint, pottery, and animal bone as well as smaller assemblages of other materials.

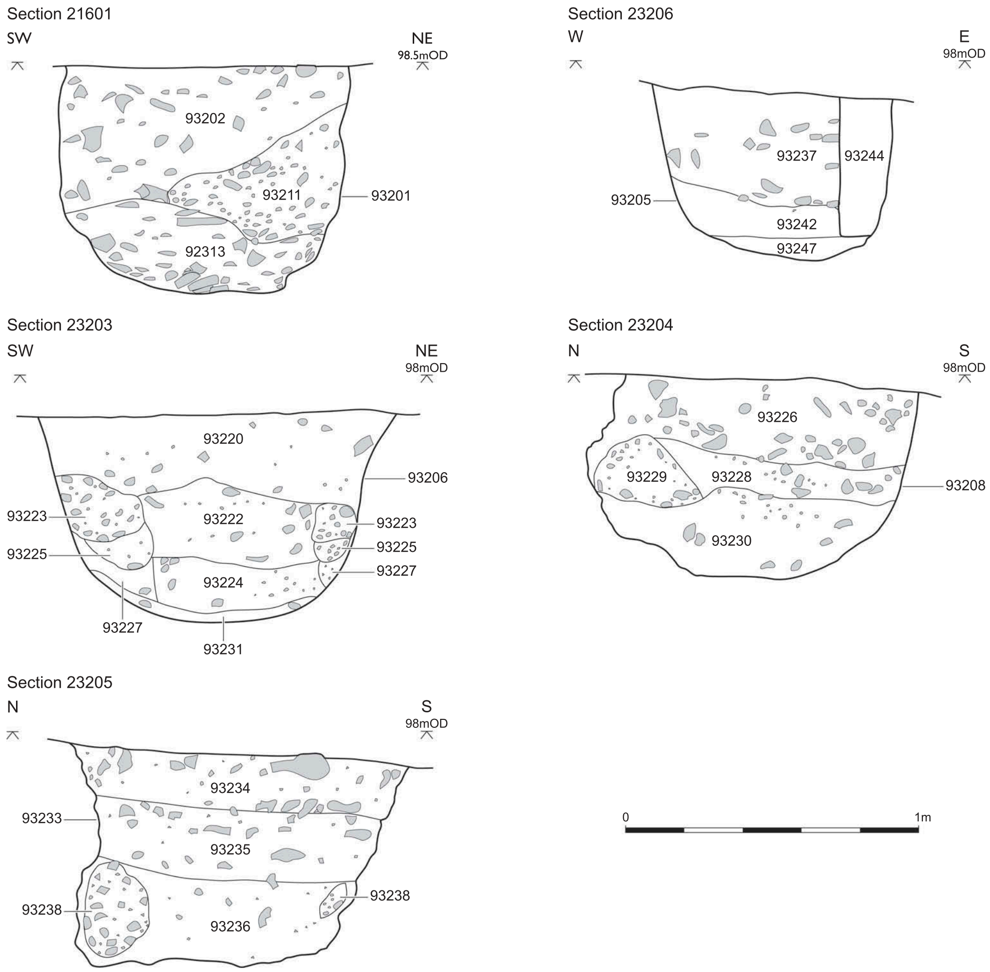

Figure 4. Sections of Middle Neolithic pits.

Table 1. Sampling strategy and volume by context and pit. These figures are based on measured volumes of samples, and percentages reported unsampled on site for hand-collected material.

Pit	Flotation (litres)	Sieved @ 5 mm (l)	Hand Collected (l)	Total volume. (l)	Notes
93201	290	120	408	818	Greater hand collected volume as was first pit excavated.
93205	175	170	0	345	
93206	420	235	90	745	
93208	300	30	110	440	*c.* 225 l removed by [93240].
93233	260	355	0	615	

A recurring characteristic of the initial infilling of the pits was the nature of the primary fill (in [93201], [93208], [93205]) or the first fill following limited natural erosion of pit sides (in [93206], [93233]). These deposits were regularly described on site as 'ashy' and in one case noted to emit a smell of burnt straw, and macroscopically

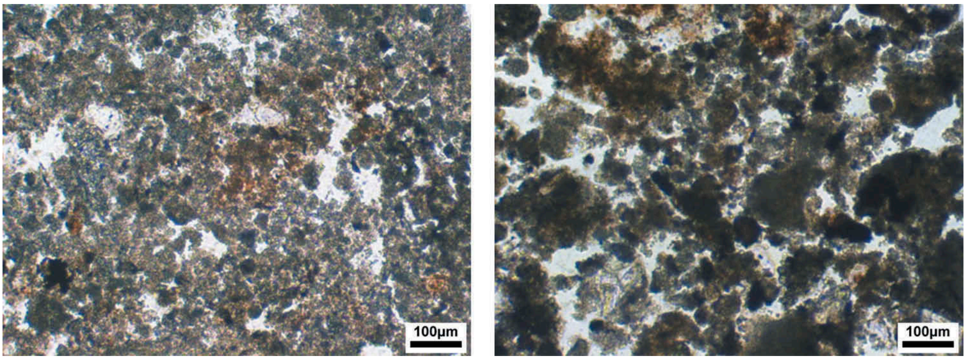

Figure 5. (Left) Mainly druse and occasional prismatic ash pseudomorphs preserved in Saxon deposits at Flixborough, UK, in plane polarised light (Canti 2007); (Right) Sample 5104 from Pit 93201. This was the ashiest sample, as interpreted in the field. The overall aggregation is much less than in the other pits, and there are clearly more lumps at the right type of size to be ash pseudomorphs. However, close examination shows that these are all amorphous, and do not show any pseudomorph characteristics.

were a grey to dark brown mix of silt, sand-sized particles, and pea-grit sized chalk. However, there was little evidence for charcoal in any of these fills, except in [93201]'s primary fill, and microscopic examination of these deposits from three pits demonstrated that none of the calcium carbonate pseudomorphs characteristic of ash were present (Figure 5). Nonetheless, these primary anthropogenic fills (PAFs) were distinct from the other pit fills, particularly because in most pits they contained significantly higher densities of material culture (Figure 6).

Figure 6 illustrates the densities per litre for animal bone, lithic macro-debitage (>15 mm), lithic micro-debitage (<15 mm), and pottery from the pit fills. All deposits except the first half section of [93201] were sieved and flotation samples taken from each fill. The value of this is demonstrated by the retrieval rate of struck flint from each half of pit [93201] (Table 2). The second half section produced 109% more tools, 116% more micro-debitage and overall 86% more struck flints than the first. As the section line can be considered to create two random equally sized samples, this discrepancy is almost certainly due to the sampling strategy. The other pits were sampled more thoroughly than [93201], and thus despite its very large assemblage of flint, finds counts from [93201] must be assumed to under-represent the original assemblage.

Deposition within the pits at West Amesbury shows some quite distinctive characteristics. All five pits had the largest assemblages within the primary or secondary anthropogenic fill, although these figures may be inflated by micro-debitage moving downwards post-deposition. There was no evidence within the pits for particular artefacts being placed in a formal manner, with the exception of an antler rake found at the base of the PAF of [93206], although it is certainly the case that the majority of the flint tools, worked bone, worked stone, antler, and pottery from each pit were within the PAF. Observations on-site following excavation suggested that the small quantity of erosion observed in [93206] and [93233] could have taken place in two–three weeks during the winter. Such a short time between pit digging and deposition is not contradicted by the evidence from the assemblages – the poor condition of the bone

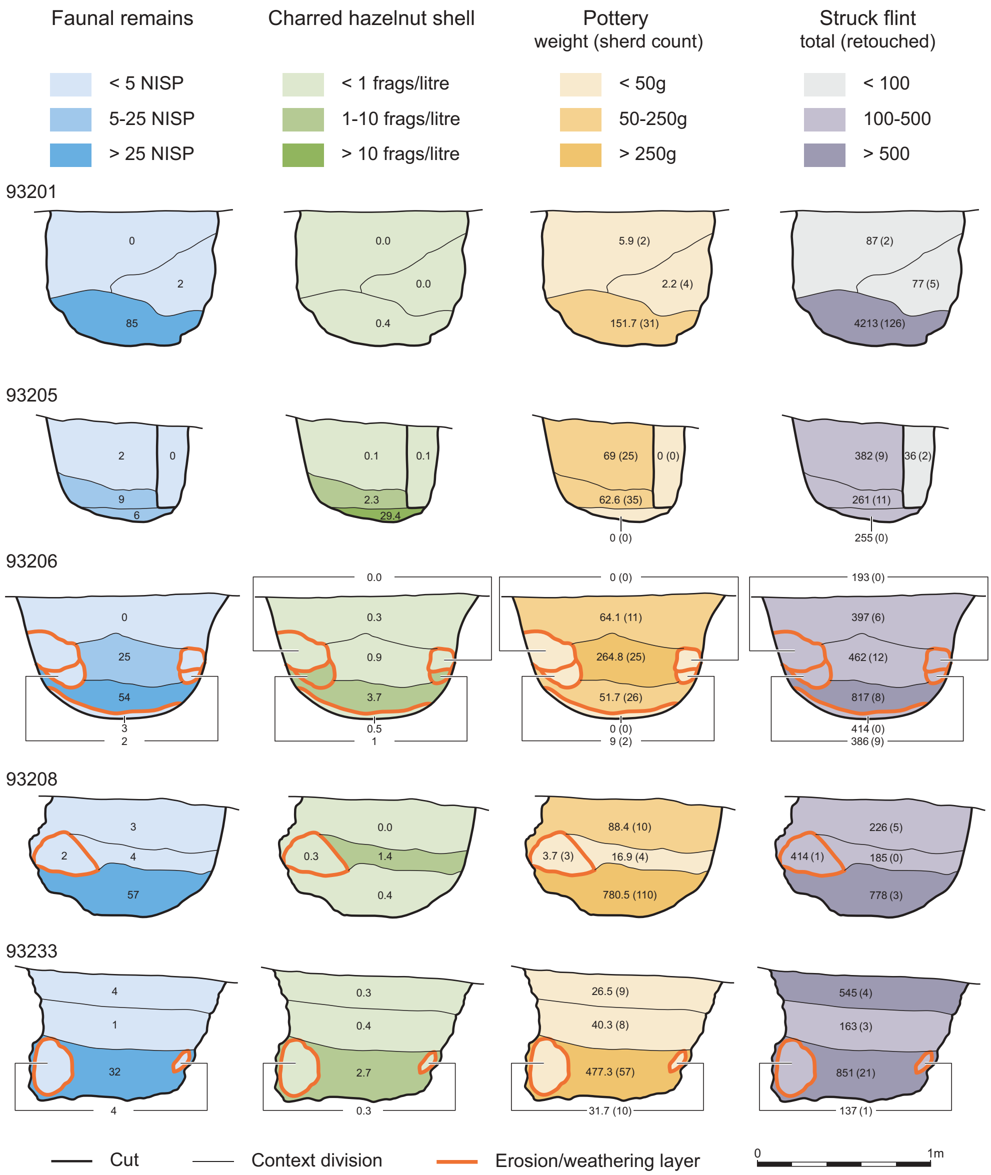

Figure 6. Schematic representation of quantities of faunal remains, charred hazelnut shell, pottery and struck flint in pit contexts.

is the result of post-depositional taphonomy, and the lack of abrasion to pottery suggests only a short period of surface exposure.

[93201]'s primary fill was near-immediately partly covered by a large dump of chalk-rich material. Contrastingly in [93208] and [93206], following deposition of the primary fill – or during it, in the case of [93233] – the pits remained open long enough for parts of their overhanging edges to erode into them. [93208] and [93206] also show secondary episodes of deposition of struck flint and pottery in their final fills. [93201] and [93233] appear deliberately backfilled with material resembling topsoil and containing

Table 2. Comparative sampling methods and lithic retrieval in each half section of pit [93201].

Section of [93201]	Flotation (l)	Sieved @ 5 mm (l)	Hand Collected (l)
[91640] – 1st half excavated	130	0	279
[93213] – 2nd half excavated	160	120	119
Lithic type/Section of [93201]		**[91640]**	**[93213]**
Flakes and blades		199	306
Flake fragments		326	546
Cores		6	8
Shatter		169	187
Retouched implements		44	92
Total excluding micro-debitage		**744 (39.5%)**	**1139 (60.5%)**
Micro-debitage		805	1739
Total		**1549 (35.0%)**	**2878 (65.0%)**

a moderate quantity of Middle Neolithic finds, together likely representing the contemporary ground surface.

A notable point regarding the pit sequences is the low proportion of chalk in non-erosional fills. The pits are dug deep into natural chalk, and this would have produced considerable chalk spoil, very little of which appears to be incorporated into the pit fills. The uppermost parts of the pits and the prehistoric ground surface have been truncated by modern ploughing; therefore, the chalk spoil must have been used to fill the uppermost part of the pits, left adjacent to the pit on the ground surface, or removed from the site. The latter seems unlikely given the effort involved, so it is probable that the pits would have remained marked, or noticeable, through the presence of small chalk mounds on the surface. This inversion of topsoil/bedrock would have marked the locations of pits where the material remains of previous activities at this locality had been deposited. The insertion of a post into [93205] also suggests a concern with marking pit locations, yet the cutting of grave [93240] and its truncation by another pit suggests that on occasion sufficient time could pass between a pit or grave being sealed and a return to the site that its location could be forgotten.

Assemblages

The assemblages in the pits drew on a common suite of materials – struck flint, pig and cattle bones, Fengate substyle Peterborough Ware, and hazelnuts were present in all five pits – but the combination of materials, their taphonomic pathways and the particular characteristics of each assemblage differed.

Lithics

The five pits produced a total of 11,329 pieces of struck flint, of which 4,210 measured in excess of 15 mm (macro-debitage) with the remainder comprising small flakes, flake fragments, and pieces of knapping shatter (micro-debitage). The assemblage has been subjected to detailed metrical and technological analyses (Bishop et al. in press); this account reports on the main findings arising from that research.

Struck flint was present in all pits although in different quantities, ranging from 934 pieces in pit [93205] to 4,427 pieces in pit [93201], the latter almost certainly being an underestimate as it was the only pit not 100% sampled (Table 3). The struck flint was concentrated in the PAF in every pit except [93205], whose fills appear to have been

Table 3. Composition of lithic assemblages by pit.

Pit	Flake	Blade	Flake/Blade Fragment	Micro-debitage	Core	Shatter/ Conchoidal chunk	Retouched	Total	Total Macro-debitage
93201 Total (no.)	456	49	872	2544	14	356	136	4427	1883
93201 Total (%)	10.3	1.1	19.7	57.5	0.3	8.0	3.1	100.0	
93205 Total (no.)	127	54	76	635	6	14	22	934	299
93205 Total (%)	13.6	5.8	8.1	68.0	0.6	1.5	2.4	100.0	
93206 Total (no.)	406	83	213	1862	29	41	35	2669	807
93206 Total (%)	15.2	3.1	8.0	69.8	1.1	1.5	1.3	100.0	
93208 Total (no.)	190	54	225	1102	9	14	9	1603	501
93208 Total (%)	11.9	3.4	14.0	68.7	0.6	0.9	0.6	100.0	
93233 Total (no.)	397	99	146	976	19	30	29	1696	720
93233 Total (%)	23.4	5.8	8.6	57.5	1.1	1.8	1.7	100.0	
All pits (no.)	**1576**	**339**	**1532**	**7119**	**77**	**455**	**231**	11329	**4210**
All pits (%)	**13.9**	**3.0**	**13.5**	**62.8**	**0.7**	**4.0**	**2.0**	100.0	

mixed during the insertion of a post (Figure 6). In [93206] and [93208], whilst the PAF contained more struck flint than the other fills, there is clear evidence of a second episode of deposition within the final fill.

The assemblage was made from flint of a reasonable knapping quality comparable to that commonly present in local superficial deposits, its main limitations being the presence of frequent cherty patches and thermal (frost fracture) flaws. It is in a variable but mostly good or only slightly weathered condition, the only notable exception to this being the assemblage from pit [93208], in which burnt and fragmented pieces accounted for over half of the total assemblage. The assemblage is also recorticated and many pieces have patches of firmly adhering limescale on their surfaces. This hampered attempts at refitting and only a handful of short sequences could be made, all of which occurred within the same fills. It is evident, however, that the assemblages from the pits contain only a small proportion of the struck flint that would have been generated during knapping. This, along with the variations in the condition of the assemblages from the different pits, would indicate that the material was gathered from larger and probably separate accumulations of knapping debris and discarded tools.

The assemblages represent the entire knapping process, from the decortication of raw materials to the discard of used tools and cores but, although broadly focused on simple flake production, a diverse suite of reduction strategies appear to have been followed, resulting in the production of a wide array of flake types. It is notable that whilst the proportions from each stage in the knapping sequence are present in all pits, the extent to which the different reduction methods are represented varies within the individual pits. This suggests that the material was drawn from distinct suites of flint working, which may relate to the changing functional needs of the communities at different times, or alternatively may reflect differences in composition of the larger accumulation(s) from which the pit assemblages were gathered.

The approaches to reduction include semi-systematic blade production, which could be seen as an inheritance from Early Neolithic strategies, as well as the manufacture of a range of flake types from single platformed, multi-platformed, keeled and discoidal cores, much of which is more reminiscent of Later Neolithic industries. The assemblage here can therefore be regarded as transitional. It links the distinct flintworking practices of the Early and the Late Neolithic, and provides a key resource for understanding developments in lithic technology at this time.

Retouched implements form a relatively high proportion of the struck flint from the pits, ranging from 4.0–7.2% if excluding micro-debitage, although the proportion in pit [93208] was only 1.8%, probably due to the highly burnt and fragmented nature of its assemblage. A wide range of tool types were identified, four of which were present in all five pits: scrapers, petit tranchet arrowheads, burins, and simple edge-retouched tools. Other retouched implements include notched and serrated implements, piercers, truncated flakes, and 'mini-rods'. Four core-tools, including a chopper, a notched tool and two pick-like implements, were also recovered (Figure 7).

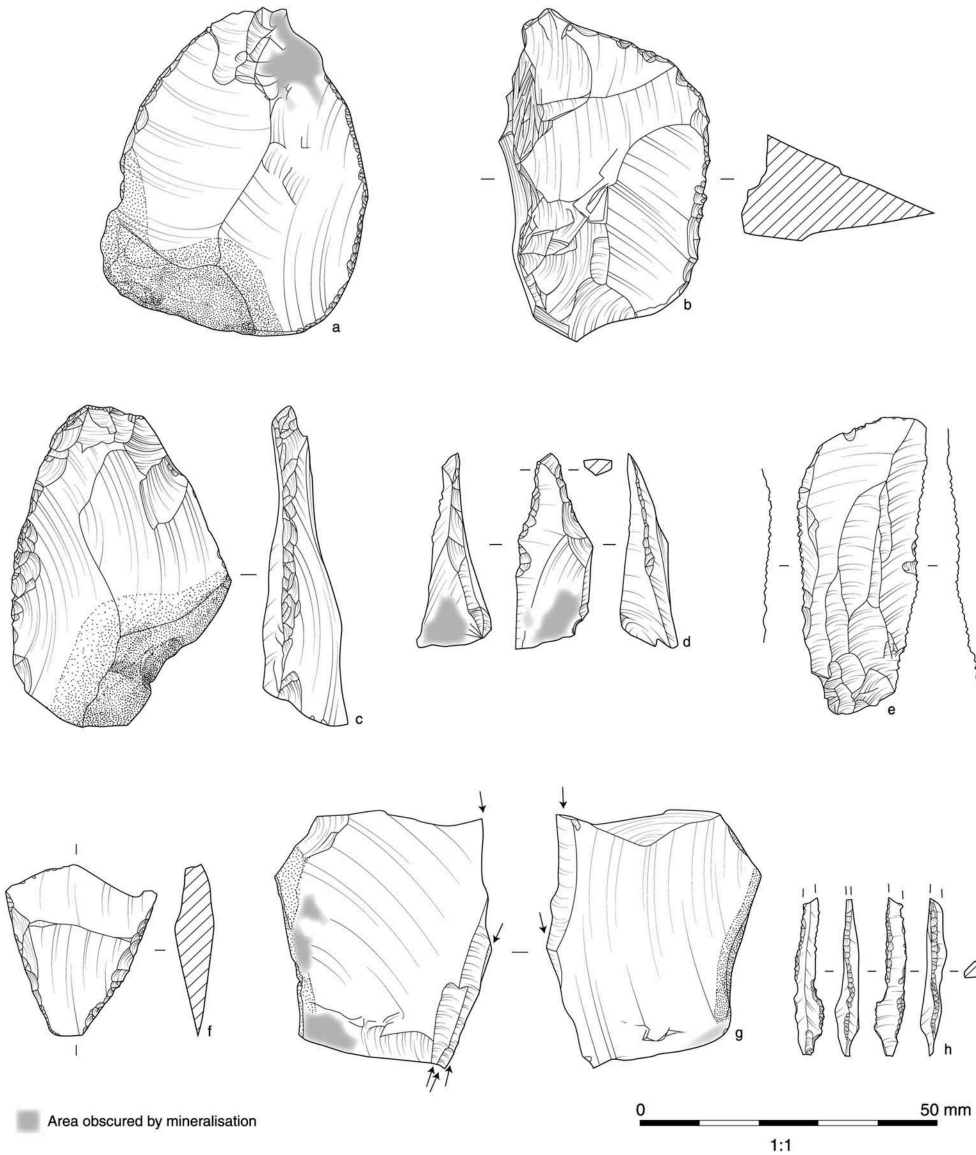

Figure 7. Selected illustrated lithics from the Middle Neolithic pits; a) knife b) side scraper c) backed knife d) piercer e) bilateral serrate f) petit tranchet arrowhead g) double angled burin with re-sharpening h) rod/needle like point.

Of particular note is the presence of the burins and the 'mini-rods'. The latter are steeply retouched needle-like implements that measure less than 5 mm in width and resemble Mesolithic rod microliths, which they were initially assumed to be. However, it is evident that they were made in different ways; often using inverse retouch or worked on three faces and sometimes using burin spalls as blanks. At least 13 of these were recovered and, considering the differences in manufacture and the complete lack of any other Mesolithic material from the pits, are assumed to be a genuine but rare, or at least rarely identified, Middle Neolithic tool type, although so far they appear to be confined to this site.

The presence of flakes with burin-like removals is also notable. Burins are normally considered to be an Upper Palaeolithic or Mesolithic implement although occasionally examples are found in Early Neolithic assemblages. At West Amesbury they are the most common tool type and were present in all five pits, although the great majority came from pit [93201]. In a few cases they may have acted as 'cores' for the production of the 'mini-rods', but many others have light wear and rubbing around the burinated edge, providing good evidence that most were used in a similar fashion to those from earlier industries and were used on hard materials such as wood, bone, or antler. Recently, burins have been recovered from a few similarly dated pits in the area, most notably that at Old Sarum Airfield (Wessex Archaeology 2015b), although often in insufficient quantities to exclude residuality (M Leivers pers. comm.). This can be ruled out at West Amesbury and burins can join the repertoire of Middle Neolithic tool types, at least in this part of the country.

The high proportions and wide range of tools indicate that varied tasks were being performed, consistent with routine, relatively broad-based settlement-type activities. Equally, variations in the proportions and types of implements recovered from the individual pits suggest that their assemblages reflect subtly different suites of activities, helping to reinforce the view that the assemblages were created and the pits filled during separate visits to the area.

Worked stone/shale

Seventeen definitely worked or possibly utilised artefacts made from chalk, sarsen, and shale were recovered from the pits and grave, and another from the badger sett. The assemblage is heavily reliant on local lithologies, with only a piddock-bored chalk pebble and the shale deriving from further afield, testifying to links with the south coast. The chalk artefacts comprise a lozenge-shaped pendant or plaque, perforated at one corner (Figure 8(1)), from the sett, a carved ball or cube (Teather 2016, 72) from pit [93206] (Figure 8(2)) and another possible plaque also from pit [93206] (Figure 8(3)). The obverse face of the pendant or plaque illustrated as Figure 8(1) is decorated with three parallel striations incised 10 mm apart. Possible shorter grooves are placed in between and a single short groove in the left corner is set at 90° to all the other grooves. The reverse surface has two closely spaced wide grooves near the right-hand edge but no other markings apart from the occasional short and fine lines. This may be a pendant made from a fragment of a decorated plaque or tabular block of chalk as it is within the size range of such objects (Teather 2016, 69). However, unlike the two plaques from King Barrow Ridge and the single example from Butterfield Down (Lawson 2007, figure 4.14), there appears to be no clearly discernible pattern or design.

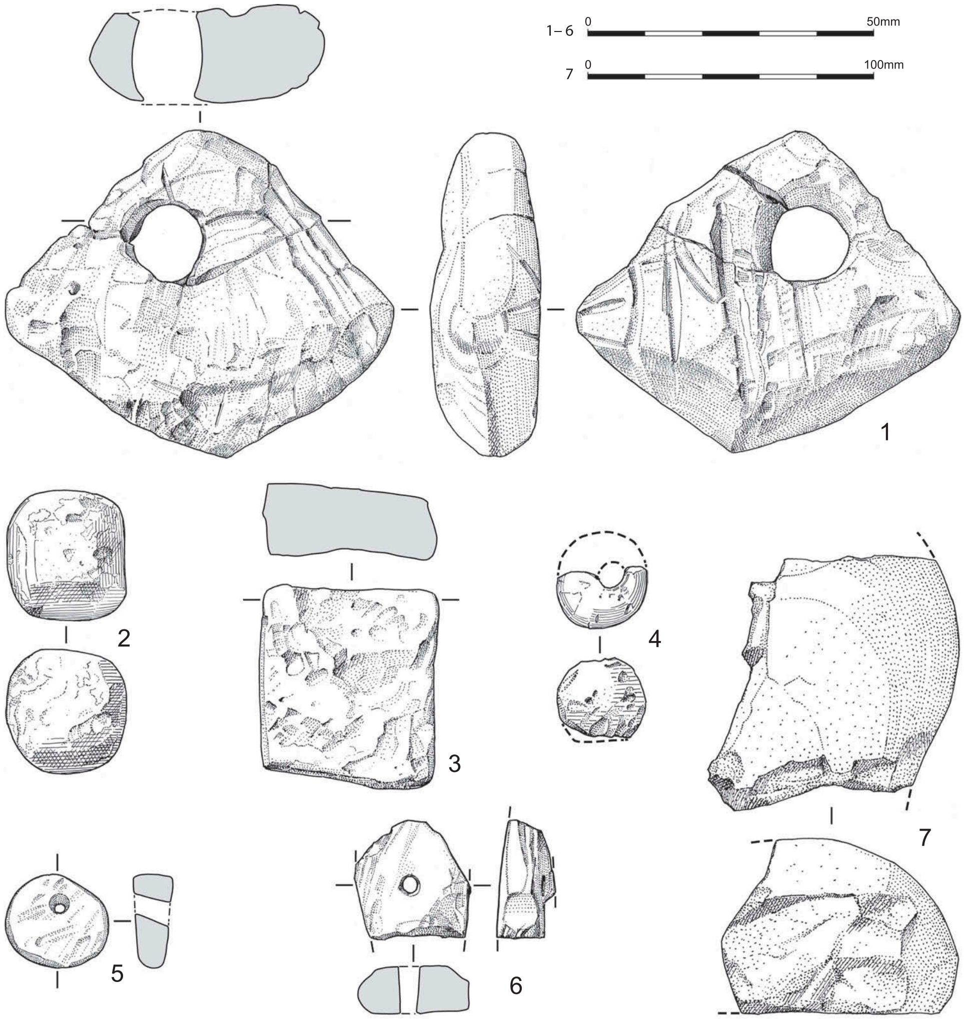

Figure 8. Selected illustrated worked stone objects from the Middle Neolithic pits.

The only known possible plaque fragment from another Middle Neolithic pit context comes from Greentrees School near Old Sarum (Wessex Archaeology 2015c, 13–14).

Approximately half of a globular flint bead made by enlarging the osculum of a fossil sponge was found in the fill of a posthole west of the pits (Figure 8(4)). Several flint nodules from the pits had been used as hammerstones. Six fossil sponges were also deposited across three pits; full details of these and other worked stone/shale objects are available in the assessment report (Roberts, Valdez-Tullett, and Forward 2016, 110–113). All pits except [93205] produced shale. Four shale beads were found, alongside three possibly unfinished examples (e.g. Figure 8(5,6)). One of the beads may be made from part of a recycled belt slider (Figure 8(6)). The size and morphology of an elongated belt slider (e.g., McInnes 1968, figure 29:2; Barclay and Halpin 1999, 20 and figure 3.3:J1) fit well with this bead, and alongside the perforated pendant may provide rare examples of recycled objects in this period. In total ten pieces (12.7 kg) of mostly unworked sarsen were recovered from across all pits except [93205]. The largest piece, from [93201], weighed 8.4 kg. Four pieces of sarsen (two re-joining) are from an object with at least three smoothed surfaces set at right-angles to each other. Unfortunately, no complete dimensions survive and it is not possible to identify the object type. Other notable pieces of sarsen include a rubber or quern fragment (Figure 8(7)), a probable burnt but unworked lump, and a flake, all from the PAF of [93233].

Shell bead

A single cowrie (probably *Trivia* cf. *arctica*) shell bead was found in the PAF of pit [93206], pierced twice on its dorsal side by abrasion against a hard surface, with the piercings showing signs of wear by a string. Shell beads were scarce in the British Neolithic (this may be the first from the period for the Stonehenge region), cowrie beads are rare amongst those beads (they were almost supplanted early in the period by flat discoidal beads with a single central perforation made from cockle-shells: Álvarez-Fernández 2010), and it is very likely to have been imported from far outside southern England (piercing by abrasion is a Scottish technique used early in the period: Hardy 2010). The bead is unbroken, so accidental loss is slightly less likely than intentional deposition, and the depositing of Neolithic beads into pits tended to follow distinct procedures (Ó Drisceoil 2006), so the placing of this bead in this pit-deposit reinforces the view that items were carefully selected for deposition in the pits. A pair of rare Bronze Age examples of such beads have also been found locally, in Amesbury 61a, a disc barrow (Ashbee 1985).

Pottery

The pits contained 373 sherds and 78 crumbs (<10 mm) of Fengate sub-style Peterborough Ware, totalling 3.173 kg from 39 different vessels, and two sherds of possibly Early Neolithic pottery from pit [93201] (Figures 6 and 9; Russell et al. forthcoming). Two small, derived, Peterborough Ware sherds were found in grave [93240]. Interestingly, both Fengate and Mortlake sub-style Peterborough Ware were found in the adjacent badger sett, comprising an additional assemblage of 69 sherds and 11 crumbs (263.1 g) interpreted as residual finds within a nonetheless Middle Neolithic feature (see Radiocarbon Dating below). The badger sett may have destroyed earlier Middle Neolithic features, and in excavation aspects of the sett suggested the existence of preceding features, as did the quite concentrated distribution of pottery within the sett. Pottery in the sett could also derive from surface or topsoil deposits brought into the burrow through animal action or later collapse of topsoil into the sett. Mortlake Ware was represented by an assemblage of 24 sherds and five scraps (102 g) found in the two co-aligned short linear features cut by the badger sett. Full details of the assemblages, and their implications for understanding Peterborough Ware, are given in Russell et al. (forthcoming), but key characteristics of the pit assemblages are summarised here.

Eleven Peterborough Ware fabrics were identified, predominantly flint tempered, some in combination with grog, sandstone, and fossil shell, and more rarely with chalk; all of these materials can be found on geology local to the site (Russell et al. forth-forthcoming). Glauconite was also identified in 6.3% of the assemblage by weight, and

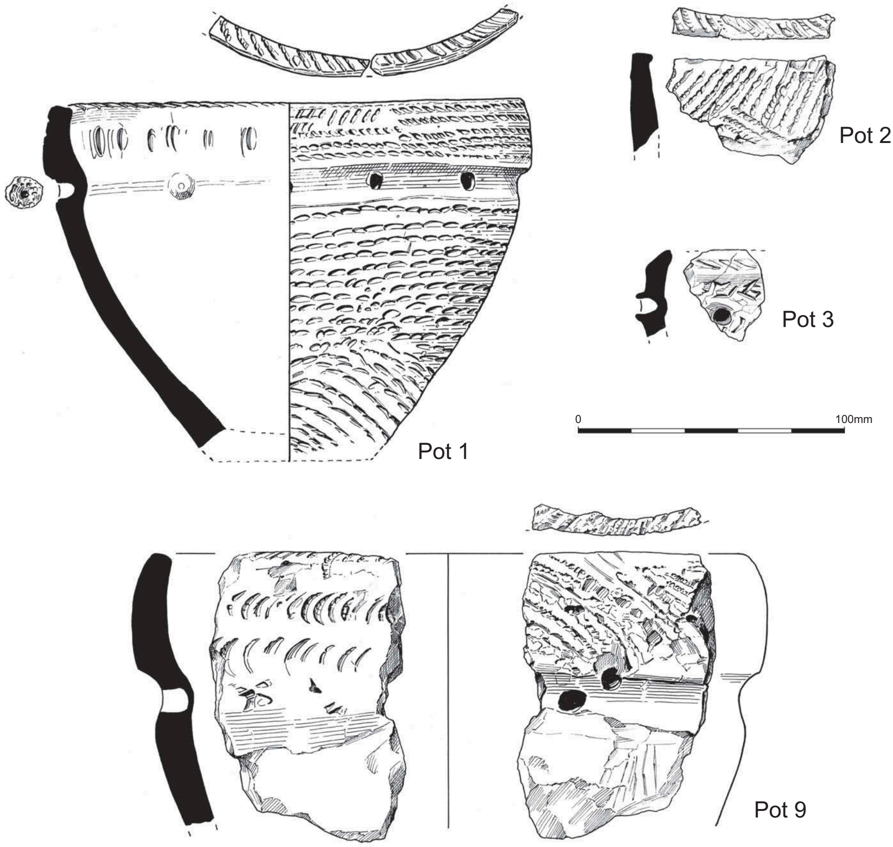

Figure 9. Selected illustrated pottery from the Middle Neolithic pits.

the closest outcrops of this material are *c.* 15 km to the west, in the Upper Greensand formation on the northern flank of the Nadder valley. The sandstone inclusions are similarly non-local, and may be from the same area, given their association with limestone, which outcrops close to the Greensand in the Nadder valley; greensand has also been recorded in a small area of the valley bottom north of the Avon in West Amesbury, so this is another possible source, although no limestone is present in the vicinity (Smith 1973). It is notable that fabrics containing combinations of greensand, sandstone, and limestone are entirely in the Mortlake sub-style, suggesting a difference in origin for the Fengate and Mortlake elements of the assemblage. The presence of Mortlake sub-style pottery in the sett, but not in the extant pits, may indicate different phases of activity by different groups, though the cultural significance of the different styles of Peterborough Ware, which overlap spatially and chronologically, remains uncertain (Ard and Darvill 2015). Elsewhere in the Neolithic, 'compositionally divergent assemblages' may indicate differences between activities or depositional practices at pit sites and surface scatters (Knight in Tabor 2016, 172–8).

The Fengate vessels from the pits are characterised by expanded collars and commonly an inward-sloping bevel or flat-topped rim (Figure 9; Ard and Darvill 2015, types F1–3; Russell et al. forthcoming). The body forms were difficult to determine owing to fragmentation, although Pot 1 is a trunconic bowl and the form of Pot 9 suggests a jar. Impressed decoration is present on 80% of sherds, with a diverse array of techniques, the most common of which is twisted cord (on 33% of decorated sherds) but also including bird bones, fingernails, fingertips, and sticks. The assemblage is generally highly fragmented, with an average sherd weight of between 2.2 g and 7 g across the pits; this is undoubtedly biased downwards in comparison to pits on other sites where material was mainly hand-collected, the intensive sampling at West Amesbury having resulted in increased recovery rates of smaller material.

Despite the high fragmentation, the sherds from all pits except [93233] showed little or no abrasion, suggesting that they were only exposed on the surface for a short period before deposition, but they were quite thoroughly broken, perhaps deliberately. [93233] contained more sherds with medium and high levels of abrasion, alongside sherds with no or low abrasion, suggesting that part of the assemblage in this pit had been treated differently prior to deposition. [93208] and [93233] produced the sole cross-join across pits, with a single sherd in the former refitting to a group of sherds from Pot 1 in the latter. Two rim sherds definitely belonging to Pot 3 but not conjoining were also found in [93208] and [93233]. Given that [93208] is cut by grave [93240], which in turn is cut by [93233], and the presence of variable levels of abrasion in [93233], it is likely that redeposition of a small amount of material took place between [93208] and [93233], possibly via [93240]. Rims from Pot 2 were present in both [93208] and [93205], although not conjoining.

Despite the large assemblage, only four conjoining sherd groups within individual pits were identified, of which all except two groups from Pot 1 in [93208] comprised only two sherds. Within Pot 1, sherds with consistent orange surfaces and breaks join directly to sherds that are consistently darker, including the broken edge. This demonstrates that these sherds underwent considerably different taphonomic processes before deposition, despite their only brief exposure to the elements (cf. Garrow, Beadsmoore, and Knight 2005, 148–9). Although only a small proportion of the vessels entered the pits, there was no evidence of the selection of particular elements of the vessels for deposition, nor of the placing of sherds in formalised arrangements similar to those sometimes found in Late Neolithic pits (Pollard 2001).

Thirty-five sherds underwent organic residue analysis, of which 18 contained absorbed lipids. 56% of the surviving lipid-containing extracts were routinely used to process dairy products, and 44% to process ruminant carcase products (Russell et al. forthcoming). No clear evidence for porcine product processing was identified, although this signal could theoretically have been disguised by mixing dairy and ruminant carcase processing products. This evidence of the use of pottery on the site contrasts strikingly with the zooarchaeological evidence.

Animal bone

Three thousand and seventy-seven fragments of animal bone were retrieved from the pits, 128 from grave [93240] (Worley 2017a; Worley et al. 2019), and a small quantity of material from other features, including a partial fox skeleton from the badger sett. When criteria for ‘countable’ bones were applied, these figures drop to 295 and one respectively. The assemblage was in generally poor condition, brittle, lightweight, and

Table 4. Summary of faunal remains from the Middle Neolithic pits. Figures include remains from hand collection and samples. Five and six per cent of pig and cattle NISP are probable identifications which do not affect the ubiquity of these species. Approximately half of the fox, pine marten, mustelid and bank vole identifications from [93206] and three mustelid specimens from [93208] are also to a probable level of certainty. Number of radiocarbon measurements by material type given in superscript.

Pit number	[93201]		[93205]		[93206]		[93208]		[93233]	
Zooarchaeological remains	**NISP**	**MNI**	**NISP**	**MNI**	**NISP**	**MNI**	**NISP**	**MNI**	**NISP**	**MNI**
Sus scrofa (pig)	71^{1}	4	11	2	56^{1}	3	35	2	12	2
Bos taurus (cattle)	3	2	5^{1}	2	11	3	13^{2}	2	21^{2}	3
Bos primigenius (aurochs)	1	1	1	1	-	-	-	-	-	-
Canis familiaris (dog)	-	-	-	-	1	1	-	-	-	-
Cervus elaphus (red deer; antler)	1	1	-	-	1	1	-	-	1	1
Capreolus capreolus (roe deer; post-cranial)	-	-	-	-	-	-	-	-	1	1
Vulpes vulpes (fox)	-	-	-	-	2	1	2	1	-	-
Martes martes (pine marten)	-	-	-	-	3	1	1	1	-	-
Mustelid	-	-	-	-	2	1	4	1	-	-
Myodes glareolus (bank vole)	-	-	-	-	2	1	-	-	-	-
Small rodent	2	1	-	-	1	1	-	-	-	-
Large mammal	4	n/a	1	n/a	1	n/a	-	-	5	n/a
Small bovid/cervid (sheep/goat/deer)	1	1	-	-	-	-	-	-	-	-
Medium mammal	3	n/a	-	-	4	n/a	7	n/a	1	n/a
Bird	1	1	-	-	-	-	4	1	-	-
Total NISP	**87**	**n/a**	**17**	-	**84**	**n/a**	**66**	**n/a**	**41**	**n/a**
NISP burnt	7	n/a	0	-	0	n/a	30	n/a	0	n/a

missing much of the cortical surface; most also showed root etching. Much of the assemblage had been burnt, although pit [92308] contained far more burnt bone than other pits. Pig bone dominated the countable assemblages from all pits except [93233], whereas cattle bone was the most abundant species by Number of Identified Species (NISP) in [93233] (Table 4).

Although seemingly contrary to wider patterns of Middle Neolithic species representation (e.g., Serjeantson 2011), work by Worley (2017a) collating faunal data from ten Middle Neolithic pit groups across Wiltshire indicates that a change in the balance of cattle and pig exploitation took place in the Middle Neolithic, not the Late Neolithic. As such, most of the West Amesbury pit assemblages appear typical for Middle Neolithic pit groups in the region. Despite the dominance of pig in most NISP, the overall minimum numbers of individuals of pigs were only slightly higher than those for cattle. From this we can infer that approximately equal numbers of pigs and cattle were killed, but far fewer cattle bones were deposited in the pits. Indeed, given the much greater meat yield of cattle than pigs, the bulk of meat consumed at the site was probably beef. This is borne out by the near-complete emphasis on ruminant product processing from lipid analysis discussed above; perhaps pigs were processed for eating without the use of pottery? Sheep/goat/deer, dog, small rodent, aurochs, roe deer, mustelid (pine marten), fox, and bird (including duck and falconiform) were also present.

All regions of pig and cattle carcases were present, but there was considerable diversity in elements deposited in different pits (Worley 2017a). There is insufficient data to construct age-at-death profiles for cattle or pigs, although all pits contained at least one young calf, including neonates, and all except [93201] contained mature cattle. Immature pigs – although no neonates – were present in every pit, including three in [93201]. These individuals are likely to have been killed at between 6–12 months old.

Sub-adult (12–24 months old) pigs were present in [93205], [93206] and [93208], and adult pigs in [93201] and [93233].

The cattle neonates imply husbandry local to West Amesbury, with isotopic evidence supporting this interpretation. $^{87}Sr/^{86}Sr$ isotope analysis was undertaken on three cattle from the site, and all results were consistent with the values for the Wessex chalk and its immediate environs, allowing a broad herding range given the limited $^{87}Sr/^{86}Sr$ isotope biosphere variation in the region (Worley et al. 2019). A canopy effect may also be present, as the depleted $\delta^{13}C$ results from cattle at West Amesbury are comparable to those from Early Neolithic sites such as Ascott-under-Wychwood (Hedges, Stevens, and Pearson 2006) and a Neolithic aurochs from Hazelton (Hedges, Saville, and O'Connell 2008). $\delta^{15}N$ values in pigs are enhanced in comparison to cattle, suggesting that pigs had an omnivorous diet. $^{87}Sr/^{86}Sr$ results from pigs were highly consistent, and less radiogenic than those from cattle. This may be due to more restricted foddering and/or movement, but may also be due to different feeding practices; pigs root in the ground for food, and may thus consume some local sediment, meaning that their biogenic $^{87}Sr/^{86}Sr$ isotope values might be expected to be closer to those of the local lithology than herbivore grazers such as cattle (Worley et al. 2019). $\delta^{34}S$ isotope analysis showed limited variation across the nine animals, supporting the interpretation of broadly local origins. Both $^{87}Sr/^{86}Sr$ and $\delta^{34}S$ isotope values have a far narrower range than for pigs and cattle at Late Neolithic Durrington Walls (Madgwick et al. 2019; Evans et al. 2019), albeit in a much smaller sample.

Young cattle may die or be slaughtered for various reasons, but this could indicate a dairying strategy (Vigne and Helmer 2007; Gillis et al. 2016; Worley 2017a), and dairying is attested at West Amesbury by the lipid evidence discussed above, as well as by the presence of milk proteins detected within dental calculus (see below). The deaths of young cattle and pigs, especially neonate cattle, allows consideration of seasonality at the site. Immature pigs from several pits were killed at similar ages, which have been interpreted previously as autumn/winter deaths (Worley 2017a), assuming a spring breeding season similar to that suggested for Early Neolithic cattle found at the Coneybury 'Anomaly' based on isotopic evidence (Gron et al. 2018, 126–7). Whilst cattle were bred year-round in Early Bronze Age England (Towers et al. 2011), calves born later in the year would have had less chance to gain weight before winter, and would require additional fodder (Worley et al. 2016). The absence of fodder provided by arable farming (Worley et al. 2019; Pelling 2019), could have made it difficult to maintain these animals, perhaps necessitating regular slaughter of immature cattle during winter. If some older animals were retained for dairying, meat, and breeding this would provide a similar age-at-death profile to that seen in the pits.

Unshed antler from the site is also consistent with the pits being filled in winter, especially given the lack of gnawing that might be expected had the antler been retained for long periods or scavenged months after death.

Butchery evidence comprises fine cuts from sharp blades on several elements, including repetition of the same filleting technique on several mandibles, suggesting the removal of cheek meat or careful disarticulation of the lower jaw; this technique is paralleled at nearby sites (Maltby 1990, 122; Worley 2017b). All pits produced evidence of the breaking of bones for marrow, sometimes facilitated by scorching to weaken the bone. Chop marks indicate the creation of butchery portions.

Worked bone and antler

Bone was also worked at the site; the range of antler tools is represented by a tine from [93201], a rake from [93206] and a pick from [93233]. A worked bone pin, a point/awl and a possible handle were also present, the latter comprising a circumferentially grooved pig radius broken mid-shaft. The three grooves are *c.* 2–4 mm apart, and may represent decoration, or anchor points for attaching a flint blade. It is also possible, although less likely, that the grooves indicate the manufacture of decorative bone rings.

Archaeobotanical remains

Few archaeobotanical remains were recovered from the pits, despite the intensive sampling strategy (Table 5; Pelling 2019). Carbonised grain and hazelnut fragments were present in all pits, alongside a small quantity of charcoal, which included Pomoideae type (fruit taxa including apple, pear, rowan and white beam), oak (*Quercus* sp.), and alder/hazel (*Alnus*/*Corylus* sp.). Very small numbers of pulses were also present in [93201], [93206] and [93233]. Given the known prevalence of intrusive grains in prehistoric contexts (Pelling et al. 2015), particularly free-threshing wheat and rye which are extremely rare prior to the Saxon period and thereafter common (Van der Veen, Hill, and Livarda 2013) and the fact that pulses are only very rarely recorded prior to the Middle Bronze Age (Treasure and Church 2017), it was suspected that the majority or all these remains were intrusive. Radiocarbon dating was undertaken on six grains from the pits. Five samples proved to be medieval or post-medieval in date, and one sample failed (Worley et al. 2019). These results corroborate those from Middle and Late Neolithic sites across the region (Stevens and Fuller 2012; Campbell and Pelling 2013; Pelling et al. 2015), and emphasise the lack of evidence for arable cultivation in this region in the Middle Neolithic; all cereal remains from the pits can be considered to be intrusive, although dental calculus results hint that cereals may have been consumed (see below).

Sub-sampling and assessment of flotation samples for the recovery of phytoliths produced small quantities of grass phytoliths (Poaceae) from all pits (except [93201], where no material was available for sampling), and a single dendritic phytolith which may represent a cultivated taxon from pit [93208]. Microcharcoal was also noted in all pits. Given the considerable potential for phytoliths to be intrusive, and the presence of only a single phytolith possibly from a cultivated taxon, this work supports the other evidence that crop-processing was not undertaken at the site, or that evidence for it did not enter pits. The possible rubber or quern fragment from [93233] need not have been used for cereal processing.

Hazelnuts were present in all pits, although in highly variable quantities (Table 5; Pelling 2019). They were concentrated in the PAF in all pits except [93208], where they were predominantly from secondary fill (93228) (Figure 6). Shell fragment counts are difficult to relate to nut quantities, but a very conservative estimate of one nut per ten shell fragments suggests that hazelnuts were a regular part of diet at West Amesbury (consistent with the detection of hazelnut in dental calculus – see below). This is similar to many other pit sites in the region, although exceptionally large deposits of hazelnuts were occasionally made (Powell et al. 2005; Pelling 2019; Worley et al. 2019).

Table 5. Summary of charred plant remains from the Middle Neolithic pits and Grave 93240. NB all cultivated plants are likely to be intrusive. Number of radiocarbon measurements by material type given in superscript.

Sample Volume (l)	300	420	260	175	290	28	
Number of Samples	8	14	6	7	9	2	
Feature	93208	93206	93233	93205	93201	93240	
Crops (intrustive)							**English Name**
Hordeum vulgare L.	4	3	1	1	3	-	Barley grain
cf. *Hordeum vulgare* L.	-	1	-	-	-	-	Barley grain
Secale cereale L.	-	-	-	1	-	-	Rye grain
Triticum aestivum/turgidum	3	2	2	5	3	1	Naked wheat grain
Triticum aestivum/turgidum	-	-	-	-	1	-	Naked wheat rachis
Triticum sp.	1	10	4	-	4	-	Wheat grain
cf. *Triticum* sp.	-	1	-	-	-	-	Wheat grain
Cerealia indet.	19	22	-	2	6	-	Cereal grain
Fabaceae (cultivated)	-	1	2	-	1	-	Pulses
Fruits and nuts							
Corylus avellana L.	163[1]	554[1]	274	634	37	11	Hazelnut shell fragment
Other							
Poaceae	-	-	1	-	-	-	Grasses, rhizome
Indet	1	4	-	1	1	-	Seed
Indet	-	-	-	-	-	2	Bone fragment
Charcoal frags (estimated)							
cf. *Corylus avellana* L.	-	-	-	1	-	-	Hazel
Quercus sp.	-	-	-	-	5	1	Oak
Pomoideae	-	1	-	1	-	-	Apple/Pear/Rowan
Indet/Other (not identified)	20	80	20	90	5	10	

A range of other plants must have played important though archaeologically invisible roles in diet for this community, given the unbalanced nature of the evidence for food from the pits (Pelling 2019; Worley et al. 2019). The presence of Pomoideae charcoal suggests that fruit resources were available locally, and finds of crab apple and sloe stones at other nearby pit sites hint at their consumption (Carruthers 1990; Powell et al. 2005).

*Grave 93240 and individual *8301**

Human remains *8301* from grave [93240] also give some insight into diet at the site, alongside a range of other issues (Mays et al. 2018). The remains comprised a fragmented but near complete cranium with articulated mandible, together with fragments of right scapula, left humerus, right femur, and other unidentifiable bone fragments. The grave may have originally been a full crouched inhumation, as suggested by the orientation of the fragments of post-cranial skeleton that were present in the grave cut. Due to the grave's truncation to the south, however, it is possible that this was always a partial inhumation. A single tooth that must be from a second individual – it duplicates a tooth present in *8301* – was present in the uppermost fill of pit [93233], which cut the grave, but perhaps surprisingly [93233] contained no other human remains. As such, any additional post-cranial remains relating to *8301* were either removed and deposited elsewhere when they were encountered during the digging of [93233], or were never present in the grave. No definite grave goods were present; a small number of finds were retrieved from [93240], but given the known redeposition of material from [93208] via [93240] to [93233], this material cannot be considered to be *in situ*.

Individual *8301* was male, and dental wear suggests he was between about 30 and 50 years old when he died. Dental calculus was present, and microscopy revealed that this contained Triticae starch granules, although it is uncertain whether these were from wild or domesticated plants, Fabeae granules – possibly vetches – and a very small amount of hazelnut epidermis spermoderm, indicating consumption of hazelnut (Mays et al. 2018). Proteomic analysis of dental calculus revealed the presence of oral bacteria, human, and dietary proteins, including the milk whey protein beta-lactoglobulin, a robust biomarker for dairy consumption (Warinner et al. 2014). The identified beta-lactoglobulin peptides could be taxonomically assigned to the sub-family Bovinae, which includes cow's milk.

Carbon, nitrogen, strontium and oxygen isotopic analysis was also undertaken on *8301* (Mays et al. 2018). The $\delta^{13}C$ results were consistent with other individuals of Neolithic date in the area. The $\delta^{15}N$ results from *8301* suggest a very high level of consumption of meat, if cattle were the primary protein source. High consumption of pigs, which as omnivores have a higher trophic level than cattle, may be an alternative explanation, as might high levels of freshwater fish consumption, which would also account for the depleted $\delta^{13}C$ results, although this latter explanation is problematic given the absence of fish bone from the site, and the general lack of evidence for consumption of fish in the Neolithic (Richards and Schulting 2006).

$\delta^{18}O$ values indicate that *8301* was born and grew up in Cornwall, Devon, South Wales, or Ireland, though his $^{87}Sr/^{86}Sr$ values suggest an origin on relatively non-radiogenic geology, eliminating most of Cornwall and Devon, North and Central Wales. When his $\delta^{15}N$ and $\delta^{13}C$ results are also considered, it appears that he moved to the Wessex chalk sometime in adulthood, perhaps from Ireland (Mays et al. 2018, 704–5).

Chronology

The aims of the scientific dating programme were:

- to provide a precise chronology for the human activity at West Amesbury Farm;
- to contribute to a better understanding of the currency of Peterborough Ware ceramics;
- to confirm the suspicion that cereals contained in the fills of negative features would be intrusive (cf Pelling et al. 2015).

Radiocarbon dating

The radiocarbon dating programme for West Amesbury Farm was conceived within the framework of Bayesian chronological modelling (Buck, Cavanagh, and Litton 1996). Suitable samples for radiocarbon dating were identified following the criteria outlined in Bayliss and Marshall (forthcoming).

A total of 27 radiocarbon measurements are available from West Amesbury Farm (Table 6). Technical details of these results and the methods used to produce them are provided in the Supplementary Radiocarbon Dating Report (S1).

Chronological modelling

Intrusive medieval and post-medieval carbonised cereal grains from pits [93206] and [93208] and ditch [91202] (Table 6) have been excluded from the chronological modelling (with the probability distributions of these dates shown in Fig. S1a). These results confirm the intrusive nature of cereals in Middle and Late Neolithic contexts throughout the Stonehenge and Avebury World Heritage Site (Pelling et al. 2015; Worley et al. 2019).

The chronological modelling of the 21 radiocarbon determinations deriving from Neolithic activity has been undertaken using OxCal 4.2 (Bronk Ramsey 1995, 2009), and the internationally agreed calibration curve for the northern hemisphere (IntCal13: Reimer et al. 2013). The model is defined by the OxCal CQL2 keywords and by the brackets on the left-hand side of Figure 10. In the diagrams, calibrated radiocarbon dates are shown in outline and the posterior density estimates produced by the chronological modelling are shown in solid black. The Highest Posterior Density intervals which describe the posterior distributions are given in italics.

The model that includes the dated samples from the pits and grave (see S1 for further details of the chronological modelling) in a single continuous phase of activity (Buck, Litton, and Smith 1992) has good overall agreement (Amodel = 94; Figure 10). The model suggests that activity began in *3370–3155 cal BC* (*94% probability; start_west_amesbury_farm*; Figure 10) or *3135–3120 cal BC* (*1% probability*) and ended in *3325–3310 cal BC* (*1% probability; end_west_amesbury_farm*; Figure 10) or *3295–3255 cal BC* (*4% probability*) or *3235–3060 cal BC* (*90% probability*). As the activity falls on the late fourth millennium plateau on the radiocarbon calibration curve (Reimer et al. 2013) discerning the order in which the pits without stratigraphic relationships were dug is not feasible (Figure 11; Table 7). The plateau in the calibration curve is also likely to mean an over-estimate of the span of time over which digging and filling of the pits took place; *1–210 years* (*95% probability*; Figure 12). Key parameters for activity at West Amesbury Farm derived from the model shown in Figure 10 are given in Table 7.

The fox that died in badger sett [93347] provides a *terminus ante quem* for its digging and demonstrates that people, foxes and badgers were co-existing in this piece of Salisbury Plain at the same time in the later part of the fourth millennium cal BC.

Depositional processes

The artefactual assemblages from the pits demonstrate variable levels of abrasion, fragmentation and burning, and it is clear from the pottery and flint assemblages that they are incomplete, despite the high quantities of artefacts in comparison to other pits in the region. Rejoining sherds with contrasting levels of burning such as those from Pot 1 further demonstrate that parts of the same original artefact could undergo very different post-breakage pre-depositional trajectories. However, the minimal occurrence of conjoining pottery or refitting flint between pits suggests that the assemblages deposited in the pits came from almost completely different sources, whether

Table 6. West Amesbury Farm radiocarbon and stable isotope results. Replicate measurements have been tested for statistical consistency and combined by taking a weighted mean before calibration as described by Ward and Wilson (1978; T′(5%) = 3.8, ν = 1 for all).

Laboratory code	Sample ref	Material & context	$\delta^{13}C$ (‰) – IRMS	$\delta^{15}N$ (‰) – IRMS	C:N	Radiocarbon age (BP)
Pit 93201						
GU40166	(93213) – pig	Animal bone, pig, metacarpal with refitting distal epiphysis (F Worley) from the primary fill (93213) of pit [93201]	Failed: insufficient carbon			
UBA-33222	(93213) – pig sample B	Replicate of GU40166	−20.8 ± 0.22	6.2 ± 0.15	3.2	4518 ± 35
Pit 93205						
UBA-31619	(93247) <53259> – sample A	Charcoal, Pomoideae (single fragment) (R Pelling) from the primary fill (93247) of pit [93205]	−25.1 ± 0.22	-	-	4509 ± 30
SUERC-66779	(93247) <53259> – sample B	Carbonised nutshell, *Corylus avellana* (R Pelling) – as UBA-31619	−26.8 ± 0.2	-	-	4502 ± 30
SUERC-71149	(93247) cattle	Cattle tooth, mandibular M7 (F Worley), one of three teeth from a left mandible – as UBA-31619	−23.2 ± 0.2	5.3 ± 0.3	3.3	4492 ± 34
OxA-35148	(93242) corylus	Carbonised *Corylus* nutshell (single fragment) from (93242) one of three fills of pit [93205], equivalent to (93247)	−23.4 ± 0.2	-	-	4493 ± 31
Pit 93206						
UBA-31614	(93227) <53239> – sample A	Carbonised nutshell, *Corylus avellana* (R Pelling) from the primary fill (93227) of pit [93206]	−22.7 ± 0.22	-	-	4462 ± 27
SUERC-66777	(93227) <53239> – sample B	Charcoal, Pomoideae (single fragment) (R Pelling) from the same context as UBA-31614	−24.5 ± 0.2	-	-	4492 ± 30
SUERC-74012	93227_cereal_1	Carbonised free-threshing grain (single), *Triticum* (R Pelling) from the same context as UBA-31614	−25.0 ± 0.2			401 ± 30
UBA-34945	93227 cereal_2	Carbonised grain (single), *Hordeum vulgare*/distichon (R Pelling) from the same context as UBA-31614	Failed			
UBA-31617	(93221) <53222>	Carbonised grain (single), *Hordeum* (R Pelling) from fill (93231) of pit [93206]. (93231) probably represents erosion of the chalk base of the pit through worm action with mixing of the primary ashy fill	−24.9 ± 0.22	-	-	184 ± 60
SUERC-71148	(93224) pig	Pig ulna (RHS) from Animal Bone Group (F Worley) from (93224) one of the fills of pit [93206]	−20.9 ± 0.2	6.6 ± 0.3	3.3	4561 ± 34
UBA-31620	(93224) SF 33201	Antler, red deer (F Worley) from (93224) one of the fills of pit [93206]	Failed due to low collagen yield			
UBA-33221	(93224) SF 53213	Carbonised residue adhering to the interior of a sherd of Peterborough Ware (M Russell)	−28.5 ± 0.22	-	-	4517 ± 41
Pit 93208						
SUERC-66776	(93230) sample A	Animal bone, cattle, refitting proximal epiphysis and 1st phalanx (F Worley), from the basal fill (93230) of pit [93208] the first of a series of intercutting pits and cut by grave [93240]	−23.5 ± 0.2	4.8 ± 0.3	3.3	4435 ± 32
UBA-31615	(93230) sample B	Replicate of SUERC-66776	−23.6 ± 0.22	4.8 ± 0.15	3.2	4452 ± 47
^{14}C: 4540 ± 27 BP, T′ = 0.1; $\delta^{13}C$: −23.5 ± 0.15‰, T′ = 0.1; $\delta^{15}N$: 4.8 ± 0.13‰, T′ = 0.0						

(*Continued*)

Table 6. (Continued).

Laboratory code	Sample ref	Material & context	$\delta^{13}C$ (‰) – IRMS	$\delta^{15}N$ (‰) – IRMS	C:N	Radiocarbon age (BP)
SUERC-66778	(93230) <53228> – sample C	Carbonised nutshell, *Corylus avellana* (R Pelling), from the same context as SUERC-66776	−24.0 ± 0.2	-		4499 ± 30
UBA-31616	(93230) <53228> – sample D	Carbonised grain (single), *Hordeum* (R Pelling) from the same context as SUERC-66776	−25.0 ± 0.22	-	-	825 ± 39
OxA-35988	93230 cereal_3	Carbonised free-threshing grain (single), *Triticum* sp. (R Pelling) from the same context as SUERC-66776	−22.9 ± 0.2	-	-	824 ± 24
Grave 93240						
SUERC-66775	(8301)	Human bone, skull fragment from grave [93240] that cuts Pit [93208] and is cut by a second pit [93233]	−21.7 ± 0.2	11.2 ± 0.3	3.3	4341 ± 30
SUERC-75184	SK8301.D	Human bone, skull fragment from the same context as SUERC-66775	−21.5 ± 0.2	11.5 ± 0.3	3.2	4396 ± 30
OxA-35714	SK8301.B	Human bone, skull fragment from the same context as SUERC-66775	−21.8 ± 0.2	11.0 ± 0.3	3.2	4507 ± 34
SUERC-76338	SK8301.B2	Replicate of OxA-35714	−21.8 ± 0.2	11.3 ± 0.3	3.3	4535 ± 34
^{14}C: 4545 ± 25 BP, T′ = 0.2; $\delta^{13}C$: −21.8 ± 0.15‰, T′ = 0.1; $\delta^{15}N$: 11.2 ± 0.21‰, T′ = 0.5						
OxA-35715	SK8301.C	Human bone, right femur from the same context as SUERC-66775	−21.9 ± 0.2	11.0 ± 0.3	3.2	4554 ± 34
SUERC-76339	SK8301.C2	Replicate of OxA-35715	−21.6 ± 0.2	11.3 ± 0.3	3.3	4509 ± 34
^{14}C: 4508 ± 25 BP, T′ = 0.0; $\delta^{13}C$: −21.8 ± 0.15‰, T′ = 1.1; $\delta^{15}N$: 11.2 ± 0.21‰, T′ = 0.5						
Pit 93233						
GU40536	(93236) smaller A	Animal bone, cattle, metacarpal with refitting epiphysis RHS (F Worley), from (93236) the basal fill of pit [93233] of the last of a series of intercutting pits		Failed insufficient carbon		
OxA-35181	(93236) smaller A	Replicate of GU40536	−23.1 ± 0.2	5.1 ± 0.3	3.3	4497 ± 33
UBA-31618	(93236) larger B	Animal bone, cattle, metacarpal with refitting epiphysis RHS, from the same context as GU40536.	−22.9 ± 0.22	4.4 ± 0.15	3.2	4508 ± 51
Ditch 91202						
SUERC-66323	(91215) <51205> – sample A	Carbonised grain (single), *Triticum* sp. free-threshing wheat (R Pelling) from a fill (91215) of ditch [91202]	−24.2 ± 0.2	-	-	268 ± 29
UBA-31359	(91215) <51205> – sample B	Carbonised plant macrofossil (single), *Pisium/Vicia* sp. (R Pelling) – from the same context as SUERC-66323	−23.8 ± 0.22	-	-	503 ± 27
Badger sett [93311]						
UBA-31621	(93325) SF 33302	Animal bone, fox, tibia, part of an ABG, from (93325) the fill of an 'old badger sett' [93311]	−20.3 ± 0.22	8.7 ± 0.15	3.2	4402 ± 42

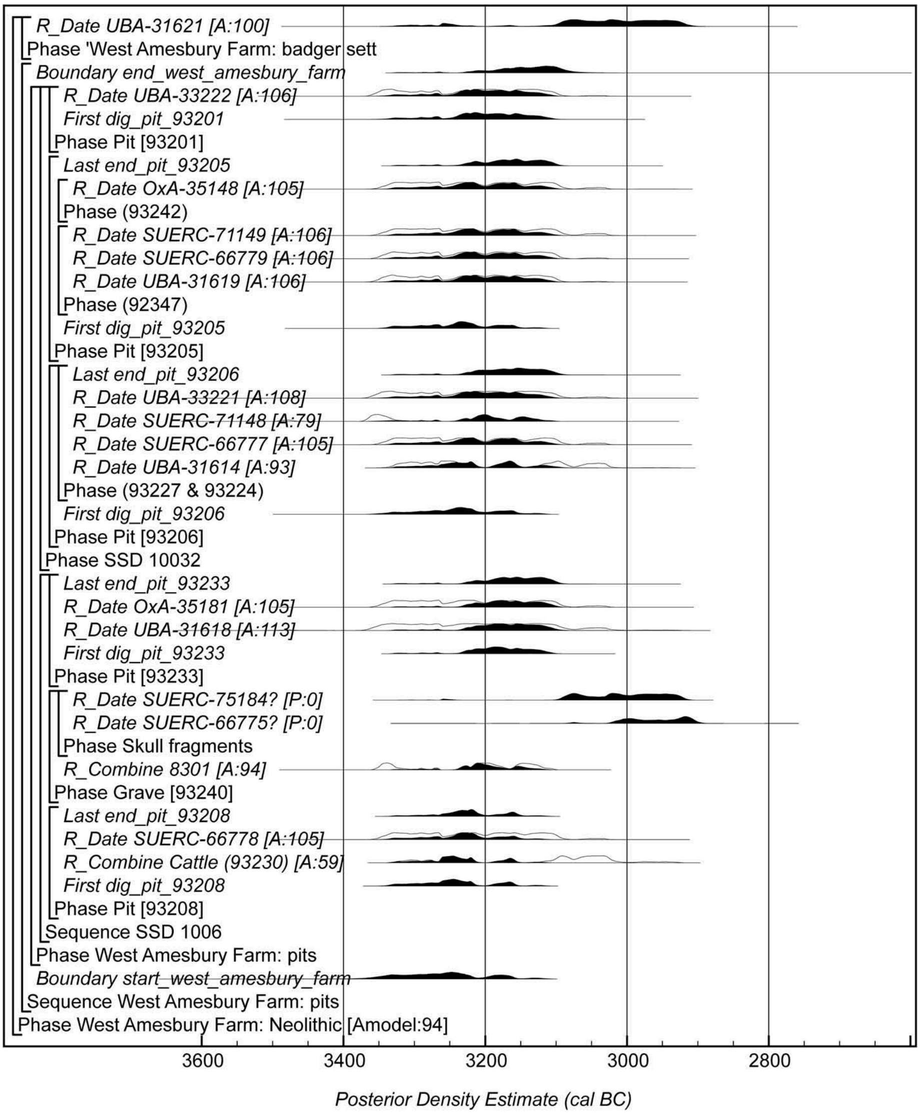

Figure 10. Probability distributions of dates from West Amesbury Farm. Each distribution represents the relative probability that an event occurs at a particular time. For each of the dates two distributions have been plotted: one in outline, which is the result of simple radiocarbon calibration, and a solid one, based on the chronological model used. Distributions other than those relating to particular samples correspond to aspects of the model. For example, the distribution *'dig_pit_93208'* is the estimated date when Pit [93208] was dug. The measurement followed by a question mark and shown in outline has been excluded from the model for reasons explained in the text, and is a simple calibrated date (Stuiver and Reimer 1993). The large square brackets down the left-hand side of the figure along with the OxCal keywords define the model exactly.

chronologically or spatially separated. This contrasts with the key pit site of Kilverstone (Garrow, Beadsmoore, and Knight 2005), where assemblages from spatially clustered pits showed a sequence of increasing fragmentation of sherds from the same vessel, thus allowing the creation of a narrative of sequential pit digging within a cluster. At

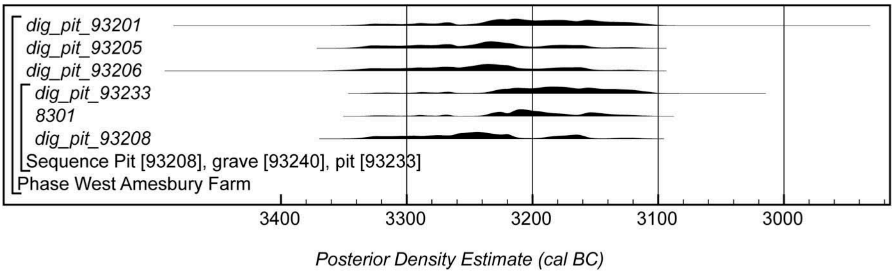

Figure 11. Probability distributions for the digging of pits and deposition of the inhumation at West Amesbury Farm. The distributions are derived from the model shown in Figure 10.

Table 7. Key parameters for Middle Neolithic activity at West Amesbury Farm.

Parameter name	*Parameter description (OxCal v4.2 commands are cited in Courier font)*	*Posterior Density Estimate (95% probability unless otherwise stated) cal BC*
start_west_amesbury_farm	`Boundary` parameter estimating the start of the activity	*3370–3155 (94%) or 3135–3120 (1%)*
dig_pit_93208	`First` parameter estimating the first dated event in pit [93208]	*3340–3210 (76%) or 3195–3150 (18%) or 3135–3120 (1%)*
end_pit_93208	`Last` parameter estimating the last dated event in pit [93208]	*3330–3145 (94) or 3130–3120 (1%)*
93240	`R_Combine` parameter estimating the date of the death of individual Sk 8301, buried in grave [93240]	*3325–3310 (1%) or 3300–3260 (8%) or 3245–3110 (86%)*
dig_pit_93233	`First` parameter estimating the first dated event in pit [93233]	*3325–3310 (1%) or 3300–3260 (5%) or 3245–3100 (89%)*
end_pit_93233	`Last` parameter estimating the last dated event in pit [93233]	*3320–3310 (1%) or 3295–3260 (4%) or 3240–3090 (90%)*
dig_pit_93206	`First` parameter estimating the first dated event in pit [93206]	*3350–3145 (94%) or 3135–3120 (1%)*
end_pit_93206	`Last` parameter estimating the last dated pit [93206]	*3325–3310 (1%) or 3295–3260 (4%) or 3240–3090 (90%)*
dig_pit_93205	`First` parameter estimating the first dated event in pit [93205]	*3345–3150 (94%) or 3130–3120 (1%)*
end_pit_93205	`Last` parameter estimating the last dated event in pit [93205]	*3295–3260 (5%) or 3245–3090 (90%)*
dig_pit_93201	`First` parameter estimating the first dated event in pit [93201]	*3335–3105*
end_west_amesbury_farm	`Boundary` parameter estimating the end of activity	*3325–3230 (1%) or 3295–3255 (4%) or 3235–3060 (90%)*

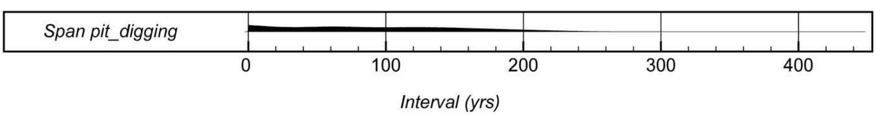

Figure 12. Probability distribution for the number of years that pit digging and infilling occurred, derived from the model shown in Figure 10.

Kilverstone, this and other evidence strongly indicated that the basic 'unit' of occupation, in temporal and spatial terms, was the pit cluster. At West Amesbury the pit cluster appears to be a less meaningful associative group, although this is not to suggest that single pits are the most meaningful level at which to understand activity at the site;

after all, geophysical survey shows that the hillside is very widely and densely covered with pit-like anomalies, and contemporary pit features need not be spatially clustered.

It is tempting to consider the human remains from [93240] as just another part of the repertoire of materials found in Neolithic pits, but this does not seem to be the case. Lamdin-Whymark's data from the Middle Thames valley show no occurrences of human bone in Middle Neolithic pits, and he suggests 'a transition can be observed from the practice of depositing disarticulated bone [in the Early Neolithic] to articulated burial' (Lamdin-Whymark 2008, 195). Importantly, this differs in Ireland where a greater amount of human bone, articulated and disarticulated, ended up in pits in the Middle Neolithic (Smyth 2012, 20) – which may be suggestive given the likely origins of the buried individual. Notably, disarticulated remains are present in another Middle Neolithic pit at nearby Old Dairy, Amesbury, although there is no hint that these are from a formal burial (Harding and Stoodley 2017).

We should probably consider [93240] as a formal inhumation made, apparently uniquely for this period in southern Britain, within a pit site and subsequently truncated by further pitting. Although incomplete, it provides an important addition to the small corpus of burials of confirmed Middle Neolithic date. The late fourth millennium is characterised by the presence of various small funerary monuments, usually containing single inhumations, as well as isolated flat graves (e.g. Eton Rowing Course: Allen et al. 2013); some cremations are also known. While this contrasts with the large long barrows of the Early Neolithic, there is no hard and fast distinction: small monuments and single burials are both found in the earlier period, while dates from sites in north Wiltshire suggest it is possible that long barrows were still being constructed at the time of the West Amesbury Farm occupation (Roberts et al. 2018).

However, one new feature of the Middle Neolithic is the occurrence of 'complex burials' with special artefacts such as polished flint knives and jet belt sliders. Although these are usually found within round or oval barrows, of which there is no sign at West Amesbury Farm, a possible link is provided by the shale bead from [93201] that may have been recycled from a belt slider, a rare item usually found with inhumations of adult males (Sheridan 2012). Examples from central southern England include Handley 26, a barrow with a penannular ring-ditch adjacent to Wor Barrow on Cranborne Chase (Barrett, Bradley, and Green 1991, 85), as well as Stanton Harcourt and Radley in the Thames valley (Garwood 2011). Both the burial and the bead are unusual. Could an object displaced from the grave have been reworked and subsequently deposited nearby?

Beyond the pits and grave

The pits and grave are not the only Middle Neolithic features on the site (Figure 3). To the west, four small postholes appear likely to date to the Middle Neolithic, although none can be definitively dated by material culture or independent scientific dating. One [93623] remained unexcavated, but was very similar in morphology to an adjacent excavated posthole [91621] cut by an animal burrow. To the northwest, small circular features [91605] and [91607] had sufficient depth and regularity of profile to be convincing postholes, although like the other postholes, lacked definitive dating evidence, with worked flint from all of them comprising mostly micro-debitage and technologically resembling the widespread 'background' assemblage present across the

King Barrow Ridge hillside (Richards 1990, 15–22). It is notable that the postholes form a line at the edge of the large Middle Neolithic badger sett to the west, which may also coincide with the location of a patch of woodland (Roberts et al. 2017) – perhaps they mark a boundary of this possible area of woodland, as their form and arrangement do not support a structural interpretation?

Two linear features of similar dimensions, 2.6–2.96 m in length, 0.44–0.68 m in width and 0.45–0.48 m in depth, were excavated to the west of the postholes, within the badger sett. They were coaligned, with a 2.25 m gap between them, but had been much truncated by badger activity. Their fills were notably different in character to those of the sett, being darker and with fewer flint nodules, and the cuts had more regularly sloping sides. The northern linear produced four sherds including one with bird bone impressions typical of the Mortlake sub-style, whilst the southern linear contained 20 sherds and five scraps mainly in Mortlake or indeterminate sub-styles, with a single Fengate Ware collar sherd from the upper fill of the feature which may be intrusive.

These features are clearly truncated by badger burrowing, but given the potentially long duration of the sett (Roberts et al. 2017, 137) they may well be contemporary with the other Middle Neolithic activity to the east. Few similar Middle Neolithic features have been excavated in the region. As with the postholes, these features are difficult to interpret. Their form hints at the type of intermittent boundary found in early Neolithic monuments, but there is no additional feature of the same type present on the same alignment to the north, where the extent of excavation would certainly encompass any such continuation. Their angle of intersection with the posthole alignment is not suggestive of contemporaneity, although the collective presence of these features certainly indicates that activity beyond pit-digging was taking place in the area during the Middle Neolithic.

Assembling lifeways

How then to interpret the West Amesbury landscape in the Middle Neolithic? The excavated features at West Amesbury are clearly part of very widespread Neolithic activity, with geophysical survey demonstrating the spatial extent of several hundred pit-like anomalies across the southern slopes of King Barrow Ridge (Linford, Linford, and Payne 2015; Figure 2). Some of the pit-like anomalies revealed by geophysical survey are certainly tree-throws, which are found across this landscape (e.g. Roberts et al. 2018). Figure 3 demonstrates the intensity of both tree-throws and pits in a small area, and it is difficult to understand – despite reanalysis of both GPR and magnetometer data in the light of excavation records (Linford and Linford 2017) – how many of the anomalies are really pits. Prior to excavation the geophysical survey team interpreted five anomalies in trenches 31 and 6/32/33 as pits, two in the former and three in the latter. Five pits were indeed excavated – and a further probable pit remained unexcavated (Figure 3) – but all were in trench 6/32/33. Whilst this is too small a sample to be reliable, it hints that a broad estimate of a few hundred pits is not unreasonable; our excavations are highly unlikely to have located the sole concentration of pits in the survey area. Further excavation is necessary to fully resolve this issue.

Indeed, previous excavations further north (Harding 1988; Richards 1990, 109–22; Cleal and Allen 1994; Cleal, Cooper, and Williams 1994; Darvill 1995) and south

(Richards 1990; Reynolds 2011; Barclay 2014) have shown that Neolithic pit digging extends from the crest of King Barrow Ridge to Coneybury Henge and the Coneybury 'Anomaly', with further examples just to the north-east at the Cuckoo Stone, Woodhenge (Bowden et al. 2015, 26), and to the east and south-east at sites in and around Amesbury (Stone 1935; Harding and Stoodley 2017). Spanning the entire Neolithic, these pits form part of a remarkable concentration within Wiltshire and Wessex as a whole. In view of this, the West Amesbury pits must be treated as part of one of the most intense concentrations of Neolithic pit-digging within the wider distribution of activity across the downland around the River Avon.

The evidence from West Amesbury shows that for a period in the final centuries of the fourth millennium cal BC, people returned to the southern slopes of King Barrow Ridge to dig pits and deposit material culture within them. In one case, they dug a grave for a man who had perhaps grown to adulthood in Ireland. Pit digging could be followed by deposition immediately, or sometimes a few weeks later. Some pits then appear to have been left open for longer periods, before being backfilled with topsoil, and perhaps material derived from flint knapping undertaken after the initial deposition. Overall, a picture of repeated short-term activity emerges; the hazelnuts, mortality profile of the animals killed on the site and the presence of unshed antler suggests that people were here in the late autumn and winter.

The material deposited within the pits comprised groups of objects unique to each pit; there were very few examples of parts of a single object deposited into two pits. The assemblages are incomplete, despite the high quantities of various materials; the material in the pits represents only a sub-set of what had initially been deposited elsewhere. This may indicate the curation of a 'representative' cache of materials to be deposited in a location marked by white chalk or a post as a place to be remembered. Alternatively, it may be that further pits beyond the area of excavation contain more of the material that was left on the site. In either case, part of the occupation assemblage is likely to have been incorporated into the ploughzone.

The field in question was not surveyed by the Stonehenge Environs Project (Richards 1990), but the area to the south around Coneybury Henge contained consistently higher densities of struck flint than King Barrow Ridge to the north. However, parts of the field to the north and west of the excavation area, covering around 7 ha in each case, were surveyed during subsequent work associated with previous plans for improvement of the A303, with the northern survey producing around 2,000 worked flints from test-pitting and fieldwalking (Darvill 1995) and the western one some 500 flints from fieldwalking only (Wessex Archaeology 1992).

Much of the surface lithic assemblage around Stonehenge is interpreted as Late Neolithic/Early Bronze Age (Chan 2003), but our limited understanding of the nature of Middle Neolithic flintworking has been touched on above. Such material may therefore be hard to distinguish in the absence of pottery, which as Cleal (1990) notes, survives poorly in these conditions. The material collected elsewhere in the field did not include any Middle Neolithic pottery, while the lithic assemblage lacks the evidence of blade production seen in the pits but does include petit tranchet derivative and chisel arrowheads, which may indicate a Middle Neolithic component.

Alternatively, perhaps the very large deposit of worked flint in pit [93201] suggests lithic material was less likely to be deposited on the surface in the Middle Neolithic (cf.

Healy 1987). However, we also know that pit-digging and deposition continued into the Late Neolithic in this area, as shown by the discovery of a Grooved Ware pit 150 m to the north (Darvill 1995, 46).

There were certain materials and objects present in all the pits, and these might be considered to be the remnants of tasks carried out during most, if not all, periods of activity at the site. People used Peterborough Ware pottery, processed and ate hazelnuts, milk, pork, and beef, and made and used flint tools, always including scrapers, petit tranchet arrowheads, burins, and simple edge-retouched tools. These tools would have been used to process food, bone, wood, and other materials, in hunting and in a wide range of everyday tasks. More specialised craft-working is also attested by the presence of shale in all pits except [93205], including unfinished beads and a possible recycled shale belt-slider converted into a bead. Stone, shell, and animal bone were also worked, being transformed into decorative and practical items such as a lozenge-shaped pendant created from a fragment of a carved chalk plaque, a carved chalk ball, a cowrie bead, bone pins and antler tools.

The high quantity of struck flint recovered reaffirms the importance of lithic production and use in this period and area; although struck flint is found in virtually all pits of this period in the area, the quantity from West Amesbury is unusual, as is the presence of numerous burins and 'mini-rods'. Perhaps this hints at an increased focus on lithic production and use at the time of year this site was visited? The slaughter and butchery of animals we suggest may have taken place at the site would certainly require a significant quantity of flint tools. Regardless, the size and secure dating of this assemblage will allow considerable advances in the understanding of Middle Neolithic flintworking practices in the region.

The assemblages from the pits also hint at the wider links of the groups depositing material in this part of the landscape, providing further insight into rhythms of life in the Middle Neolithic. The Fengate sub-style Peterborough Ware was probably made locally, but the Mortlake sub-style Peterborough Ware is most likely to have been made in the Nadder valley to the west. If we accept the arguments of Worley et al. (2019), Stevens and Fuller (2012), and other evidence (Pelling et al. 2015) for a genuine absence of cereal remains at most sites in southern England in the Middle and Late Neolithic, it follows that the people visiting West Amesbury were predominantly pastoralists. As such, the location of winter pasture would be of paramount importance to them, whether they were nomadic or locally transhumant pastoralist. The pollen and macrofossil evidence from the Stonehenge landscape in the Middle Neolithic is limited, but interpolating from the Early and Late Neolithic evidence suggests that the Middle Neolithic landscape was a complex mosaic of fairly open woodland and increasingly widespread open grassland on the Plain, more open grassland on the slopes of the downs, and alder-hazel carr woodland in the base of the Avon valley (French et al. 2013; Hazell and Allen 2013, 21–23; Gron et al. 2018; Roberts et al. 2018).

Significant local variation was present in this landscape though, and this change takes place differently in different localities in the Stonehenge environs through the Neolithic (French et al. 2013, 27–30). Sheltered year-round springs are located nearby at Blick Mead (Jacques, Phillips, and Lyons 2018); alongside the relative shelter of the Avon valley and mixed woodland and grassland in this landscape, these may have provided a hospitable environment for over-wintering. $\delta^{13}C$ values from cattle hint at a possible minor canopy effect; perhaps this subtlety could be the result of occasional woodland grazing of cattle in and around the Avon valley? Both French et al. (2013) and Tresset (2003) suggest that considerable grazing activity would be required to maintain the relatively open landscape of this area, and that therefore perhaps there was significant animal management activity in this region.

It is possible, then to envisage the West Amesbury pits – and possibly those from the wider King Barrow Ridge – Amesbury landscape – as the place of repeated over-wintering around the Avon valley. Pasturing of animals may have taken place around the relatively sheltered valley, perhaps particularly in winter, with other subsistence and craft activities such as cooking, butchery, and craft working (including flint knapping) undertaken in the clearer upland landscape. It is difficult to establish the size of community or communities undertaking this activity, but on the basis of the zooarchaeological evidence it is clear that significant quantities of meat were available for consumption on each visit, even if each pit is assumed to be a unique visit. The very large flint assemblages also hint at considerable numbers of people using the landscape, although it remains unlikely that the scale of these gatherings and the range of connections match those of the third millennium cal BC around Stonehenge (Chan et al. 2016) and across Wessex (Madgwick et al. 2019).

The local timescape in the fourth millennium

This part of Salisbury Plain was already a monumentalised landscape at the time of the Middle Neolithic activity at West Amesbury. The earliest dated Neolithic activity in the area (Figure 13) is the Coneybury, 'Anomaly', 400 m to the south-west, which dates to the thirty-eighth century cal BC and has recently been interpreted in terms of a formal gathering site (Richards 1990; Barclay 2014; Gron et al. 2018). Undated monuments in the vicinity include a long barrow 400 m to the north-east, which is presumably Early Neolithic in date, and a square enclosure a similar distance to the north-west, which might be a Neolithic mortuary enclosure (Valdez-Tullett and Roberts 2017). Further afield, the causewayed enclosure to the north-west at Robin Hood's Ball, built in the mid-thirty-seventh to the mid-thirty-sixth centuries cal BC, is broadly contemporary with the Netheravon Bake long barrow 2 km to the north-east; other nearby long barrows were probably built at the beginning of the thirty-fifth century cal BC, including Winterbourne Stoke 1 and Amesbury 42. Slightly later, but still pre-dating the activity at West Amesbury is the Greater Stonehenge cursus. Monuments dating to the Middle Neolithic are scarcer, but include the Normanton Down long mortuary enclosure (Vatcher 1961) and probably the Lesser cursus (Whittle, Healy, and Bayliss 2011, 201–2; Roberts et al. 2018).

On King Barrow Ridge, pit digging began in the Early Neolithic and continued in the Middle and Late Neolithic (Richards 1990, 114–6). The 'chalk plaque' pit, located on the slope from King Barrow Ridge to Stonehenge Bottom, contained Grooved Ware, cattle bone, and red deer antler with radiocarbon dating suggesting a date in the first half of the third millennium cal BC (Cleal and Allen 1994, 60–2; Cleal, Cooper, and Williams 1994). The Grooved Ware pit previously found close to the site contained substantial quantities of pottery and antler, as well as worked flint and stone (Darvill 1995, 46), so has potential to be radiocarbon dated in the future.

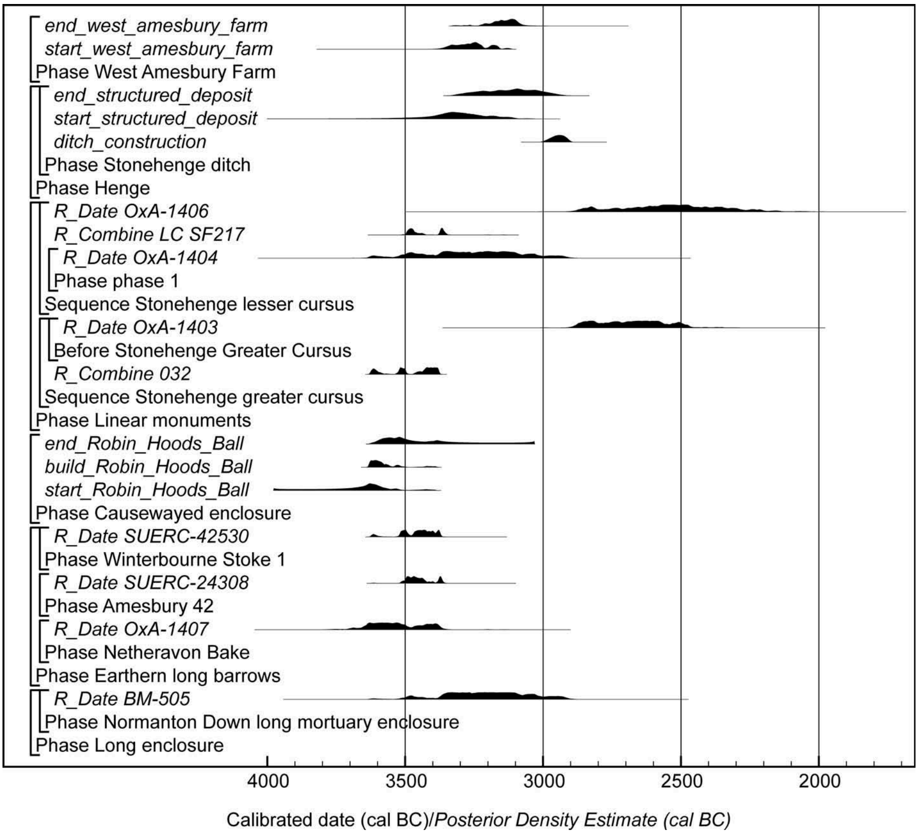

Figure 13. Posterior density estimates and calibrated dates for central Salisbury Plain in the fourth and late third millennia cal BC. Distributions have been taken from the models defined in Figure 10 (West Amesbury Farm), Whittle et al. (2011; figure 4.51; Robin Hoods Ball) and Willis et al. (2016, figure 10; Stonehenge); recalculated as necessary using IntCal13 (Reimer et al. 2013).

As discussed above, it is hard to assess how much of the occupation material that does not derive from pits belongs to the Middle Neolithic, because of the lack of clearly diagnostic lithic forms and the vulnerability of prehistoric pottery in the ploughsoil. However, Peterborough Ware was found in small quantities across the area surveyed for the Stonehenge Environs Project with concentrations from surface collection and excavation on Wilsford Down, around Fargo Wood and, significantly, on King Barrow Ridge (Cleal 1990, 235). Sample excavations north of the Avenue (area W59) produced over 7,000 worked flints from the ploughsoil in twelve 5 × 5 m squares, while another 650 (not including chips) came from five pits, one of which (440) produced Peterborough Ware and Middle Neolithic radiocarbon dates (Richards 1990, 116; Roberts and Marshall 2020). Around 90% of the lithic assemblage therefore came from surface contexts rather than cut features.

King Barrow Ridge has also produced residual Middle Neolithic material (though perhaps deliberately incorporated) from barrow mounds, especially Amesbury 39 (Ashbee 1981) but additionally from smaller interventions at monuments damaged by tree falls (Cleal and Allen 1994). While Ashbee emphasises the Grooved Ware occupation on King Barrow Ridge, the latter work yielded roughly equal quantities of Peterborough and Grooved Ware (Cleal and Allen 1994, table 1), which is consistent with the results from W59.

At Coneybury henge, definitive evidence of Middle Neolithic activity is scarcer; although a pit predating the henge has been dated to this period (3360–2870 cal BC; 2σ; OxA-1409; Richards 1990, 137), its upper fill contained Grooved Ware. However, it may be significant that chisel and petit tranchet forms account for the majority of the arrowheads in the ploughsoil whereas only oblique forms were found in the cut features.

Foreshadowing Stonehenge

The structured or placed deposits in the Stonehenge ditch terminals either side of the southern entrance and near the possible third blocked entrance in C29.4 (Allen and Bayliss 1995, 529) are contemporary with the use of the West Amesbury Farm pits, although the ditch itself was dug sometime in the thirtieth century cal BC (Darvill et al. 2012). The curated material may therefore have come from earlier pits such as those excavated at West Amesbury Farm or from earlier pits incorporated into the ditch terminals, i.e. Hawley's 'craters' (Pitts 2012).

If Pitts (2012) is correct that the terminals of the southern Stonehenge ditch began as pits, only to be later joined as part of the henge ditch, the dates from the 'curated' animal bone allow us to place activity on the site of Stonehenge as contemporary with that at West Amesbury. The unexplained and probably pre-ditch 'north barrow' at Stonehenge may be a small henge or an enclosed cremation cemetery. The latter possibility is suggested by Hoare's find of a cremation when digging in the 'north barrow', although it is perhaps more likely that this derived from Aubrey Hole 46 (Newall 1929, 82; Cleal, Walker, and Montague 1995, 96; Bowden et al. 2015, 27). The ditch of the north barrow, encircled by its low earth and chalk rubble bank, was excavated by Atkinson but produced no dating evidence (Cleal, Walker, and Montague 1995). Notably, unexcavated Aubrey Hole 47 lies on the line of the ditch hinting that it may post-date the 'north barrow' (Cleal, Walker, and Montague 1995, 276–77). A narrow gully running NNE-SSW underlies the bank of the 'north barrow', suggesting further chronological depth to this area of the Stonehenge palimpsest. There are strong hints, then, of both monumentalisation and depositional activity at Stonehenge before the construction of the henge ditch, and at least some of this activity is contemporary with that at West Amesbury.

Current scholarly consensus is that the most significant astronomical event enmeshed in the architecture of the megalithic phases of Stonehenge is the midwinter sunset, particularly given that the approach from the Avenue leads to a view in this direction (Sims 2006; Ruggles 2009). Midwinter feasting is also strongly evidenced at Durrington Walls, a site intimately linked to the Late Neolithic monumental phases of Stonehenge (Wright et al. 2014; Craig et al. 2015). West Amesbury's pits appear to demonstrate repeated visits by sizeable groups to the Stonehenge and Avon valley landscape in the early winter over half a millennium before this, and that these visits included the consumption of excess animal stock alongside a range of other activities. While it is tempting to see the focus on midwinter solstitial alignments at Stonehenge as emerging from a longstanding concern with this specific time of year, recent work on depositional patterning in the earlier phases of the monument suggests a more general concern with solar and lunar cosmological schemes that would be of relevance to the relatively mobile pastoralist communities of the Middle Neolithic (Pollard and Ruggles 2001).

Middle Neolithic pits and scatters in Wiltshire

It would be a mistake, however, to primarily understand the West Amesbury pits in relation to contemporary or later monuments. They are both part of a local aggregation of pit digging around the middle Avon valley, as discussed above, and a broader pattern of pit digging in the region. A recent review of Neolithic pits in Wiltshire, drawing on HER data, grey literature and published sources up to 2015, found 72 well-dated Middle Neolithic pits, defined as dated by pottery, radiocarbon dating or both, except in four cases by very clear association with well-dated contemporary pits (Roberts and Marshall 2020). The distribution of these pits to a considerable extent reflects research biases towards the Stonehenge and Avebury landscapes and concentrated commercial and housing development around Amesbury and Old Sarum (Figure 14). It is also notable, however, that extensive commercial excavations around the growing towns of north-west Wiltshire and gravel extraction in the far north of the county have yet to produce a single well-dated Middle Neolithic pit, and only a single possibly Middle Neolithic pit has emerged from research excavations in the area (Last et al. 2016, 24–5), even though a small number of long barrows are present in the area (Field and McOmish 2017, 58). Whilst we may be 'missing' Neolithic pits from the seldom excavated Salisbury Plain Training Area (an exception is the Early Neolithic example at Barrow Clump, Figheldean: Andrews et al. 2019, 34–5) and perhaps to a lesser extent the North Wiltshire Downs and Cranborne Chase, there is a clear contrast in the frequency of pit digging – and Neolithic activity in general – between the limestones and clays of north-west Wiltshire and the chalk of southern Wiltshire.

The greatest concentration of Middle Neolithic pits in Wiltshire – over 50% of the total – is in the vicinity of Old Sarum, set on the southern end of the chalk down between the Avon and the Bourne, just north of the wide alluvial plain presently occupied by Salisbury. The West Amesbury pits are part of the only other significant concentration, on either side of the Avon in the King Barrow Ridge/Durrington/Amesbury area. A few pits are present in the upper reaches of the river valleys to the west, and in the environs of Avebury and Windmill Hill, where Peterborough Ware from the secondary fill of part of the outer ditch of the causewayed enclosure also attests to Middle Neolithic use of part of the site (Whittle, Healy, and Bayliss 2011, 65). Peterborough Ware was also deposited in later ditch fills at several other causewayed enclosures and long barrows, so it is clear that a subset of these monuments continued to be visited in the Middle Neolithic. Nationally, however, far more Peterborough Ware is found in indeterminate contexts, as surface finds, or at pit sites (Ard and Darvill 2015, 18–24).

Material from contexts other than pits was not included in the county-wide review (Roberts and Marshall 2020), so it cannot be determined how far the Middle Neolithic is represented in topsoil assemblages in areas where pit digging did not take place.

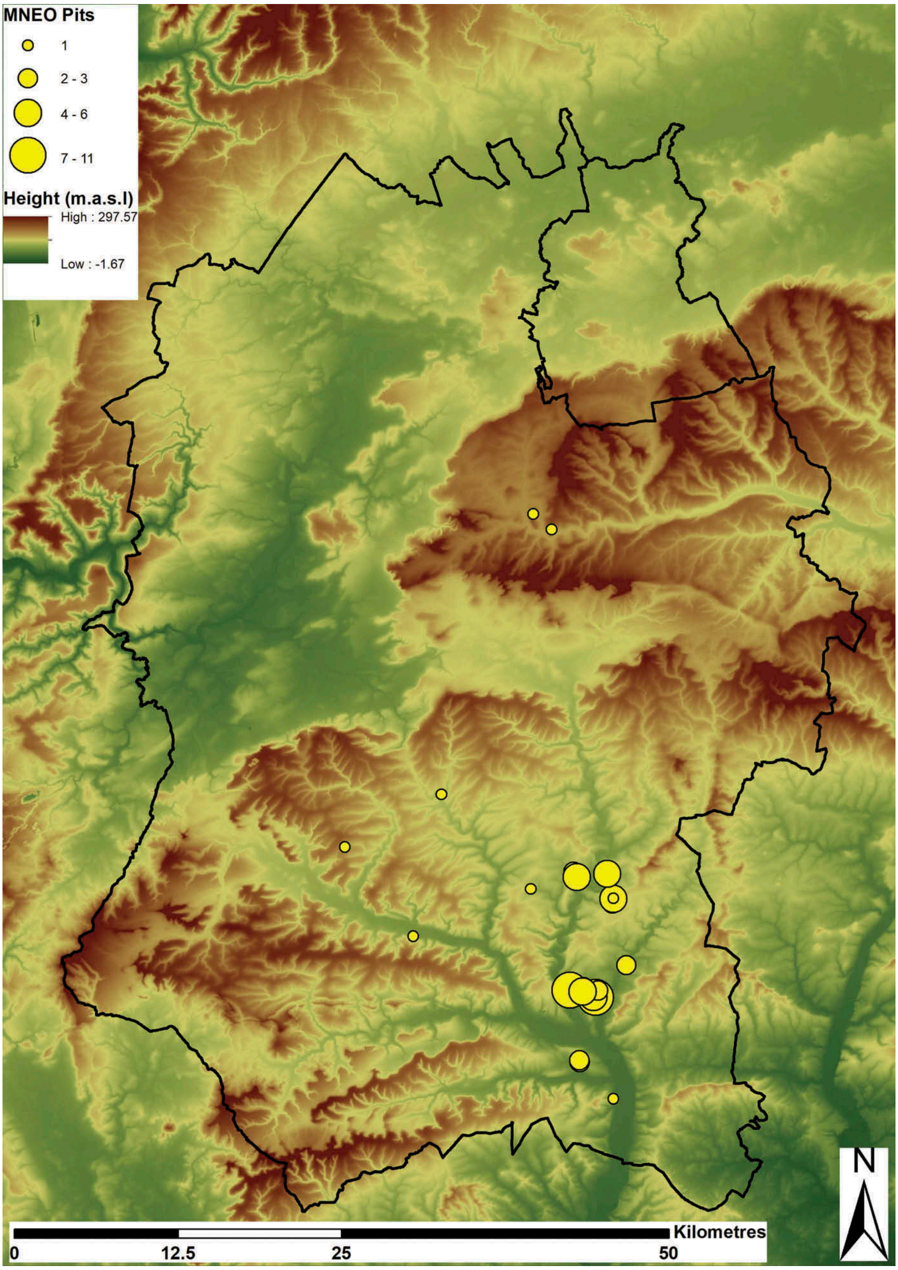

Figure 14. Distribution of Middle Neolithic pits in Wiltshire. Based on data from. Roberts and Marshall (2020).

However, the presence of 'near-ubiquitous' flint scatters across the chalkland testify to widespread activity in the Neolithic across much of Wiltshire (Field and McOmish 2017, 61), suggesting that pit digging took place in only specific circumstances and locations, as just one facet of life in a 'well occupied land' (Field and McOmish 2017, 65).

The potential for other forms of Middle Neolithic occupation is best illustrated on the West Kennet Avenue at Avebury, where a scatter of Peterborough Ware and worked flint covers an area at least 50 m across, associated with only occasional pits and post-holes (Smith 1965a; Allen and Davis 2009; Gillings et al. 2015). Elsewhere, as on King Barrow Ridge, material of this period is sometimes preserved beneath later round barrows. At Avebury G.55 all three styles of Peterborough Ware were represented in an assemblage that also included Early and Late Neolithic finds (Smith 1965b), while closer to Stonehenge a scatter of Mortlake Ware and worked flint was revealed under the mound at Barrow Clump (Andrews et al. 2019), an analogous location to West Amesbury on the edge of the downland overlooking the Avon valley. It is clear, therefore, that the known pit contents represent only a small fraction of the material that was once present and is now sometimes preserved in the ploughzone or in association with later monuments.

If the locations of pit sites at the fringes of river valleys are linked to the over-wintering of cattle, perhaps the time spent in these places was a suitable period for the effort to be made to dig pits, and deposit selections of objects in them. By their repeated visits to the same localities, communities reinscribed their links to particular places. Close-by pre-existing monuments were not a prerequisite for activity in these landscapes, although older and contemporary monuments were present in the Amesbury – Durrington landscape when pits were dug in the Middle Neolithic. There are as yet no significant Early or Middle Neolithic monuments known within or especially close to the other concentration of pitting on the tongue of land between the Bourne and the Avon. Reinforcing this, very few Middle Neolithic pits have yet been found in the Wylye valley, despite the presence of many long barrows (Eagles and Field 2004).

The activities that are materially evidenced in Middle Neolithic pits in Wiltshire are not completely consistent (Roberts and Marshall 2020). Almost all contain struck flint and Peterborough Ware – albeit in highly variable quantities – many contain animal bone with pig and cattle the most frequently present, and a relatively small minority contain antler and/or worked stone. When flotation samples have been taken most pits contain hazelnuts, with charcoal sometimes present in small quantities although relatively few charred plant remains are present. Where cereal is found it is almost certainly intrusive (Pelling et al. 2015). Most pits do not show formally placed materials, large or special groups of material culture or particular effort to arrange material in an aesthetically effective manner (Pollard 2001), although there are exceptions (e.g. Powell et al. 2005).

Setting West Amesbury's Middle Neolithic occupation in the landscape

In combination with the geographically restricted distribution of Middle Neolithic pits in Wiltshire, the apparent plethora of pits at West Amesbury and the large assemblages contained in the excavated examples imply an intense, seasonal area of activity. The slopes of King Barrow Ridge from Coneybury to Durrington, and across the Avon from south of Amesbury towards the north of the modern town, may have seen significant late autumn / winter gatherings of people and animals. These visits to this already monumental – and contemporarily monumentalised – landscape appear to have been one of the few times or places in the region during the Middle Neolithic where it was deemed appropriate to dig pits. Activities associated with the use of the West Amesbury landscape seem to be flint knapping – often quite roughly, but also in innovative ways – other forms of craft working, the consumption of pork and beef, and the deposition of selected materials relating to these processes in pits.

The deposition in these pits does not generally show the formal arrangement of materials, with the exception of an antler rake placed on the base of pit [93206], and the human burial. Nonetheless, only selected material was deposited, and this encompassed quite unusual or special objects such as carved chalk objects, shale, and shell beads and aurochs bones. Unusually large quantities of struck flint and pottery were also deposited at West Amesbury – although this pattern is partly the result of sampling strategies – and the presence of Mortlake Ware in non-pit features nearby hints at the specific selection of Fengate Ware for deposition in pits at this site, although this distinction does not apply more widely in Wiltshire. Whilst the lithic and ceramic evidence in two pits indicates two or more separate episodes of deposition, the main focus of deposition in each pit overall is the primary anthropogenic fill. These fills were considered 'ashy' on site, but significant doubt has been cast on this assertion through microscopy and most of the material contained in these layers showed no sign of burning. Whilst fire was surely an element of activity at West Amesbury, the amount of ash and charcoal that entered the pits is unclear. We therefore cannot subscribe to Parker Pearson et al.'s vision of the setting of 'huge fires' in pits above the Avon (Parker Pearson et al. 2006, 245–6), despite the very close similarity of the West Amesbury pits to the examples cited as evidence for this practice. Few of the objects found in the other 'ashy' layers cited by Parker Pearson et al. (2006) show signs of burning, and no indication of heating or burning of pit sides was recorded; if the grey, charcoal-rich layers in these pits were ash, it appears impossible that it was created *in situ*.

In general, current approaches to understanding pit digging in this landscape in the Middle and Late Neolithic are too anthropocentric, and too concentrated on symbolic and ritualised aspects of the lives of people occupying the landscape. This is not to call for a return to functionalism; instead, a rebalancing of interpretations towards a perspective inclusive of the apparently more mobile and pastoralist nature of lifeways in this landscape at this time, including recognition of the ritual/symbolic richness of those lifeways (Thomas 2015). In pastoralist societies, close relationships are formed between people and animals (Orton 2010, 189; Fijn 2011), and animal agency has considerable effects on practice and the local ecological niches co-created by people and animals (McClure 2015). Fijn (2011) discusses mutual enculturation between pastoralists and their animals, and ethnographic evidence shows that domesticated animals can often be afforded considerably more agency in pastoralist societies than as part of agropastoralist or sedentary farming societies (McClure 2015).

In the late autumn and winter it is likely that the natural movement of animals would be towards more sheltered ground, but away from areas more prone to flooding, mirroring the pattern observed in pit distribution on the edges of, but above, river valleys. There is very little evidence of animal pens or enclosures in the Middle or Late Neolithic in Wessex, providing a strong negative argument for a more mutually constituted relationship between people and animals; the commensal herding role of dogs may also have been important. It is also notable that the two most frequently found animals, in anthropogenic contexts, in the region in these periods are pigs and cattle. Sheep bones are considerably less commonly deposited at human activity sites than deer, although this is based on counts of archaeological remains that include antler. Pig and cattle, unlike sheep, are relatively comfortable in woodland grazing and may thus have been more suited to the complex mosaic of woodland, parkland and upland grassland of the region in this period (Allen and Gardiner 2009).

The geographic range of mobility of these animals and people is unknown, but the presence of an individual who may have been from Ireland buried at West Amesbury suggests contact beyond herding range, and with areas where arable agriculture is evidenced, albeit from a very small dataset and reducing in scale from the Early Neolithic (Whitehouse et al. 2014, 20). $^{87}Sr/^{86}Sr$ results from the earliest Late Neolithic individuals recovered from the Stonehenge landscape, cremations from the Aubrey Holes, also demonstrate that significant proportions of the people buried here lived beyond the chalk for at least some of their lives (Snoeck et al. 2018), although they may have lived, died, and been cremated elsewhere before being transported to their resting places. It is important, however, to avoid creating a dichotomy between pastoralists occupying central southern Britain, and agropastoralists or farmers in Ireland and around the Atlantic fringe and Scottish islands. There are a handful of sites in southern Britain with good evidence for arable agriculture – or at least the presence of arable crops – in the Middle and Late Neolithic (Wilkinson et al. 2012; Mann and Jackson 2018), and the presence of cattle and pigs from a range of regions at Durrington Walls (Viner et al. 2010; Evans et al. 2019; Madgwick et al. 2019) demonstrates a quite extreme manifestation of long-distance animal mobility in the Late Neolithic. Mobility, subsistence practices, lifeways, and social organisation were thus mediated by regional or local relations between people, animals, and landscape, and also linked to much longer distance networks and ritual/symbolic concerns.

Moving forward in the Middle Neolithic

We hope that this discussion has demonstrated the importance of understanding the Middle Neolithic to longer term narratives of the Stonehenge landscape and the wider region. Although this work is only a window into late autumn / winter in several likely non-consecutive years in the later fourth millennium cal BC, it may allow a view of the way ahead. A key change is a refocusing of archaeological efforts away from monuments towards the spaces in between (e.g. Gillings et al. 2014, although the importance of the pioneering work of Richards (1990) should be emphasised in this regard), particularly the shoulders of the downs around the Avon. Monuments are intrinsically linked to wider lifeways, but are only a part of their expression. We must look to the everyday worlds of relations between people, animals, and landscape to achieve a holistic understanding of Middle Neolithic society.

We have shown that a partial, but highly significant, view of Middle Neolithic life can be gained from detailed analysis of pits such as those at West Amesbury Farm. These pits, part of an apparently quite large-scale and long-term focus of pit digging across King Barrow Ridge's southern and eastern slopes, appear to be part of repeated seasonal visits to this downland by pastoral groups living with cattle, pigs, and other animals. There are broadly contemporary monuments nearby, such as the cursuses, and there is probably contemporary activity at the site that became Stonehenge, but the pits were themselves significant acts in the landscape. They were marked, selected artefacts were deposited within them in a consistent way, and they may have acted as a means of collectively memorialising a community's activities during an annual visit to this important hillside. Perhaps the movements of herds across the downs in this area could even have prompted the recognition of the alignment of subtle vegetational signs of periglacial stripes on the downland with the midwinter solstice (Allen et al. 2016, 998)?

Importantly, the presence of an individual possibly originating in Ireland who was buried in this landscape suggests that these communities were linked to wider networks, and groups with at least partially different lifeways. The communities using the downland were able to undertake large scale flint-knapping, create decorative stone, shale, bone, and ceramic objects, and consume meat on a relatively large scale, culling members of their herds in the approach to winter. In pastoralist societies the act of killing a herd animal is enmeshed in complex meanings and mediated by the relationships members of the community have with the animal (Fijn 2011; McClure 2015). These acts are of social and ritual importance, and alongside the repeated returning to this hillside, would have reinscribed the landscape with significance over generations. It is tempting, then, to locate the roots of later rituals and monuments in this landscape focusing on herd animals and midwinter, in the relations between Middle Neolithic pastoralists, their animals, and the landscape.

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Geolocation

The site at West Amesbury discussed in this article is approximately centred on Ordnance Survey grid reference SU 13784181. For more detailed geolocation information please consult the archive.

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