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The Brumut Hills: Two Neolithic long barrows near Flore

by

Jim Brown

with contributions by Philip L Armitage, Val Fryer, Alex Gibson, Graham Spurr, John Walford and Yvonne Wolframm-Murray

Illustrations by Olly Dindol and Joanne Clawley

Summary

Two Neolithic long barrows of the Cotswold–Severn type were confirmed by geophysical and trial trench investigation, supported by fieldwalking, to the north of Flore, Northamptonshire. Each long barrow comprises substantial parallel ditches cut into the natural limestone rock. The ditch fills indicate that material extracted from these paired ditches was used to raise long mounds between them and possibly to form stone revetments. The sequence within the ditch fills shows the abandonment, the degradation of the limestone mound and gradual silting of the ditches. Within the deposits were faunal remains, which included an aurochs, pottery sherds and plant macrofossils that provided a source for dating the process of deposition. Radiocarbon dates suggest that the southern long barrow was built earlier in the Neolithic than its northern counterpart and that the process of ditch silting continued into the Middle Bronze Age; after which the ditches were no longer visible at ground level as earthworks. Small to moderate collections of both pottery and flint were recovered and have helped to date their use and disuse. The remnant mounds were eventually ploughed out, and furrows crossing the top of the former long barrows derived from medieval and early post-medieval agriculture prior to the Enclosure Act of 1779.

Introduction

The site lies 10km to the west of Northampton and 1km north-west of Flore, immediately to the north of Hobhill Barn and crossed by the bridleway between Flore and Brockhall (NGR SP 63768 61308; Fig 1). Cropmarks were first noted on aerial images, and are comparable with long barrows more typically known from the Wiltshire Downs (HERSP6361/002–003; Fig 2). This site was highlighted during archaeological desk-based assessment of the proposed A45 Northampton–Daventry Link Road (Brown 2013a). What is known about the distribution of Neolithic funerary monuments has always been distorted by the distribution of surviving recognised sites. The existence of this site is of significant interest as there is only a single corroborated and excavated example of a long barrow in the county; Redlands Farm, Stanwick (Harding and Healy 2007, 73–83), which was an earthen mound. At a regional level the investigation of Neolithic funerary monuments is a significant target for research (Cooper 2006; Knight *et al* 2012, 54). In accordance with the *National Planning Policy Framework* a programme of archaeological evaluation and mitigation was attached to the planning condition for consent to build the road (Brown 2013b; DCLG 2012).

Northamptonshire County Council (NCC) Highways took pains to design around the archaeological constraints once they were confirmed by NCC Planning, and where this was not possible archaeological works were undertaken. This article is based on the evaluation and assessment stages of the work (Brown 2014 & 2015). The initial road design took the cutting through the middle of both long barrows, but after evaluation the route now takes a sharper bend to the south of the site, which now lies to the north at least 8m from the top of the cutting (HER7070). The monument is, however, still at threat from continued ploughing and the bridle route follows a modern field boundary ditch that cuts through what may have been the ceremonial end of the northern mound.

A photostat depicting fieldnames and/or owners in the Flore parish is held at the Northampton Record Office, drawn up in 1932 from a study of the parliamentary enclosure of 1779 (Fig 3; NRO Map 5069). Of particular interest is the name allocated to the field in which the monument is sited, which was called Brumut Hills, perhaps implying the existence of tumuli and is distinctly similar to the placename to the north; Broamenthill Spinney. The name is thought to derive from the plant, Brome, which is often found at the edges of arable fields and occurs archaeologically as a crop contaminant.

Flore itself also has an origin associated with arable production, as the Old English term, flōr, was often used in reference to a threshing floor (Ekwall 1966, 182). In Middle High German another similar term, vluor, is used to describe a cornfield. Domesday Book refers to the settlement as Flore and later sources also call it Flora, another botanical reference. The extent of the ridge and furrow in the parish demonstrates Flore had some of the larger open fields in the county.

Fig 1: Site location

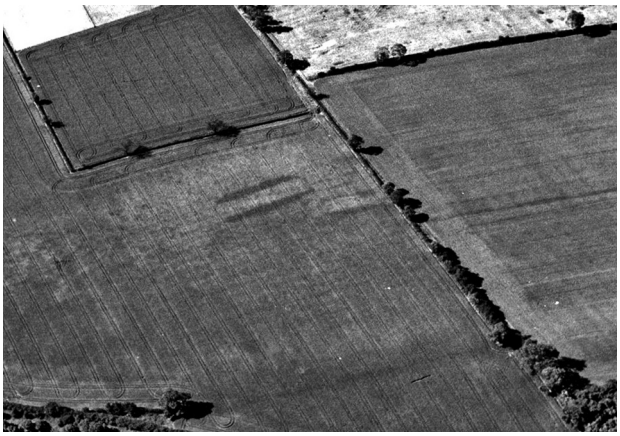


Fig 2: Aerial photograph of cropmarks at Flore, 17 July 1996, looking south-west (HERSP6361/002–003)

The long barrows may have lain within a wider, and as yet unconfirmed, monumental landscape. To the north of the motorway, an even larger broad linear stone feature, was recorded in 1996 that may indicate a further Neolithic monument (HERSP6361/004). Another cropmark that has been proposed as a possible long barrow was identified at Stowe Nine Churches (HER806) on the opposite side of the Nene Valley (NGR SP 64817 57295), but is not corroborated by excavation.

Stone Age finds from the parish are limited; a Mesolithic axe and part of a Neolithic polished axe were found in the area but their location was not recorded. Another polished Neolithic axe came from a garden in the village at Bricketts Lane in 1974. Worked flints of Mesolithic and Neolithic date lie in small scatters upon the plateau near to the monuments, one of which was the subject of a fieldwalking survey for the road scheme (HER912). No fieldwork was conducted on these sites prior to the planning application for the bypass, and due to the repositioning of the final road alignment there was no requirement for detailed open area excavation of the funerary site.

Acknowledgements

Archaeological investigations were conducted by MOLA Northampton for NCC Highways over 2013–15, in stages prior to road construction. The project was led for NCC Highways by Simon Levell and the archaeological element was monitored for the county by Lesley-Ann Mather. The initial desk-based assessment and archaeological design consultancy was undertaken by Jim Brown,

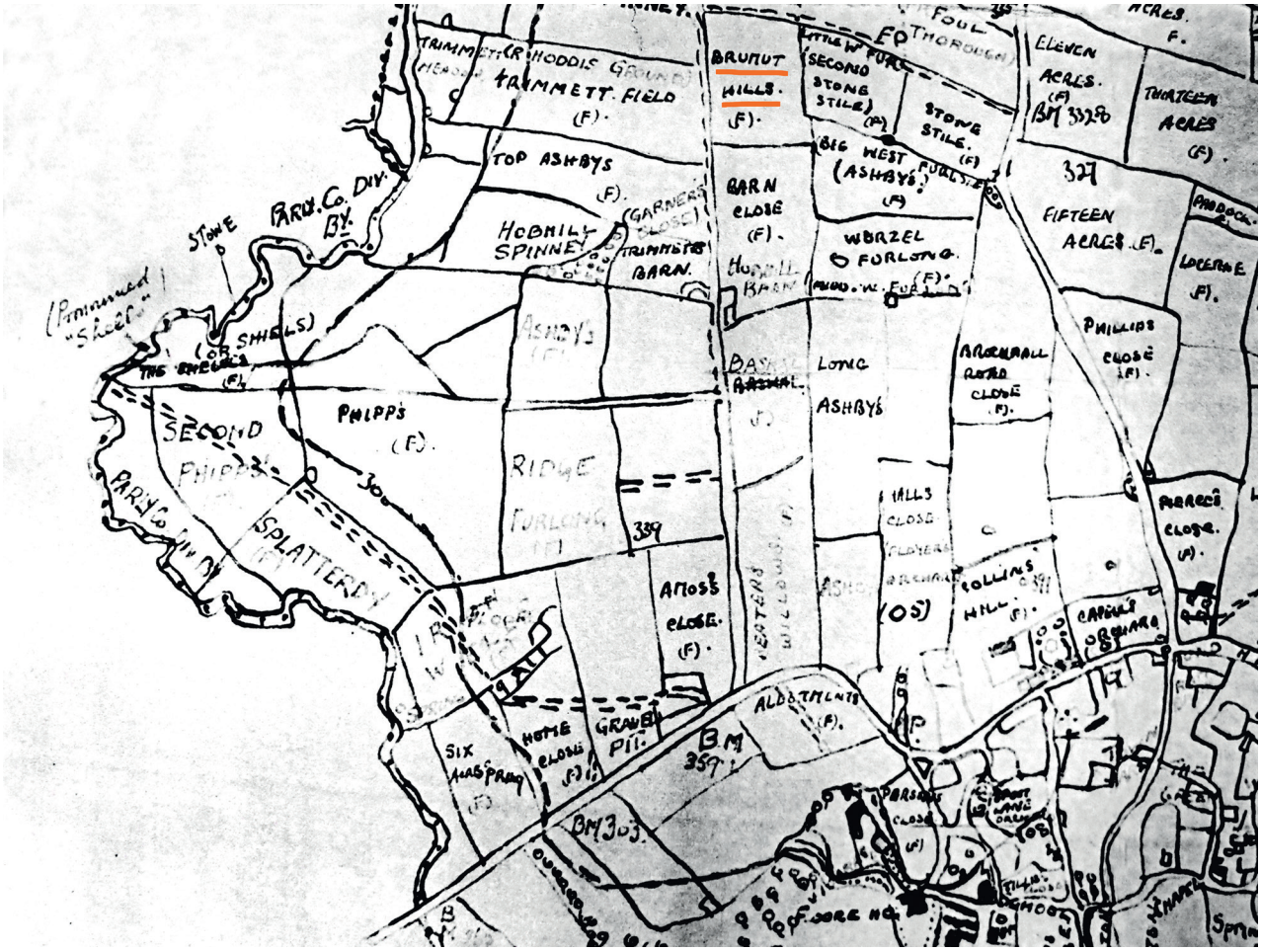


Fig 3: Photostat of 1779 parliamentary enclosure to the north of Flore, showing field names (NRO Map 5069)

who subsequently managed all stages of the fieldwork. For fieldwork pertaining to the long barrows the geophysical surveys were undertaken by Ian Fisher and reported on by John Walford, fieldwalking and worked flint analysis was by Yvonne Wolframm-Murray, trial trench evaluation was under the direction of Simon Markus, Anne Foard-Colby monitored the geotechnical test pits and targeted detailed excavation was directed by Jon Elston. Charlotte Walker of Northamptonshire HER kindly supplied photographs and records and Figure 3 is from Northamptonshire Record Office (NRO). Thanks are also due to the external specialists who contributed to this report; Alex Gibson (pottery), Philip Armitage (faunal remains), Val Fryer (plant macrofossils) and Graham Spurr (geoarchaeology). Rob Atkins and Andy Chapman are also thanked for commenting on this publication report.

Topography and geology

The site occupies the plateau of the valley ridge to the north-west of Flore between Hobhill Spinney and Broamenthill Spinney. Long term ploughing has made the natural contours difficult to distinguish, and the topography forms gentle undulations that characterise this part of the Northamptonshire wold.

The long barrows sit on a broad plateau at *c.*105m above Ordnance Datum that overlooks to the south the confluence of the River Nene and a tributary that joins it from the north-west (Fig 1). Both mounds were aligned east–west, and the view from the ceremonial end of the northern mound, westward towards the sunset, looked out across the tributary valley toward another confluence between the streams from Dodford and Brockhall. On the further side of the valley the view looked across to Dodford Hill.

When stood atop the long barrows the view to the north and east extended across the plateau, and a natural amphitheatre was formed by Waydale Hill and the northern ridge line, lying south of Little Brington, and to the east across the next tributary valley towards the ridge of Glassthorpe Hill. The greater extent of the Upper Nene Valley could not be seen over the brow of the plateau to the south and east as the view was blocked by Flore Hill. The long barrows could have been viewed clearly from all of the surrounding high points of land, assuming they were open or cleared.

The geology of the valley sides comprises a sequence of Upper, Middle and Lower Lias Clay (BGS 2001). Northampton Sand with Ironstone, Inferior Oolite Limestone and outcrops of cornbrash and clay are also present. The geology at the long barrows comprises predominantly Inferior Oolitic Limestone, which varies between white, greyish-brown, orange-brown and pinkish-red rock according to the proportion of iron and other salts present as mineral concentrations. The strong magnetic responses from geophysical survey are attributed to the iron content of the stone and the anomalies for the quarried ditches are particularly strong because the stone extracted from them and mounded up to create the long barrows, is scattered widely across the field by subsequent ploughing.

The soils of the valley bottom are stone-free clayey soils that form over river alluvium and are prone to waterlogging (LAT 1983, 813b). The valley sides are covered by fine loamy clay soils with slowly permeable subsoil and seasonal waterlogging that form over Jurassic and Cretaceous clay (LAT 1983, 572h). The soils at the top of the plateau comprise seasonally waterlogged clayey soils with some finer loamy clays and calcareous inclusions (LAT 1983, 712b).

Geophysical survey
by John Walford

The original tumuli have been completely plough-levelled, but their side ditches survive below ground and were detected as long, U-shaped positive anomalies aligned approximately east–west (Figs 4–5). The southern group of anomalies was *c.*60m long by 25m wide and was open to the east with a squarish western terminal. The northern group was *c.*70m long by 20m wide and had a rounded eastern end, whilst its western end was open and wider than the rest of the feature where the terminal ditches splayed outwards and then curved in like a pair of horns.

Both sets of anomalies are crossed by parallel linear features representing the buried furrows of medieval to early post-medieval ridge and furrow cultivation aligned east–west to the east of the modern bridleway and north–south to the west. This demonstrates that the former mounds were levelled well before 1779, when the open fields of Flore were enclosed. The flared end of the northern long barrow lies at a headland between two fields of ridge and furrow, and this may indicate that an earthwork had survived well enough to serve as a landmark when the open fields were first laid out.

To the south-west of the long barrows the survey detected a positive linear anomaly aligned roughly north–south and a further, weaker, anomaly at right angles to it, which appear to define ditches. Closer to the main group, there were a large number of small and irregular positive anomalies that may indicate pits or may be of geological origin, given the nature of the ferruginous limestone.

Trial trench excavation

Intrusive investigation of the cropmark (HER7070) was undertaken in November 2013 and comprised four trenches, each 50m long by 1.8m wide (Fig 5).

Features examined in Trenches 1–3 belonged to the cropmark (HER7070) and were identified as large negative anomalies by geophysical survey. The investigation tested the hypothesis that these were the ditches of two Neolithic long barrows; their dimensions in the range of 22–30m wide by 62–67m long and their overall forms favouring such an interpretation as those found elsewhere along the Jurassic Ridge. Trench 12 examined a linear ditch directly south of the monuments, and was later the subject of detailed excavation prior to construction of the road.

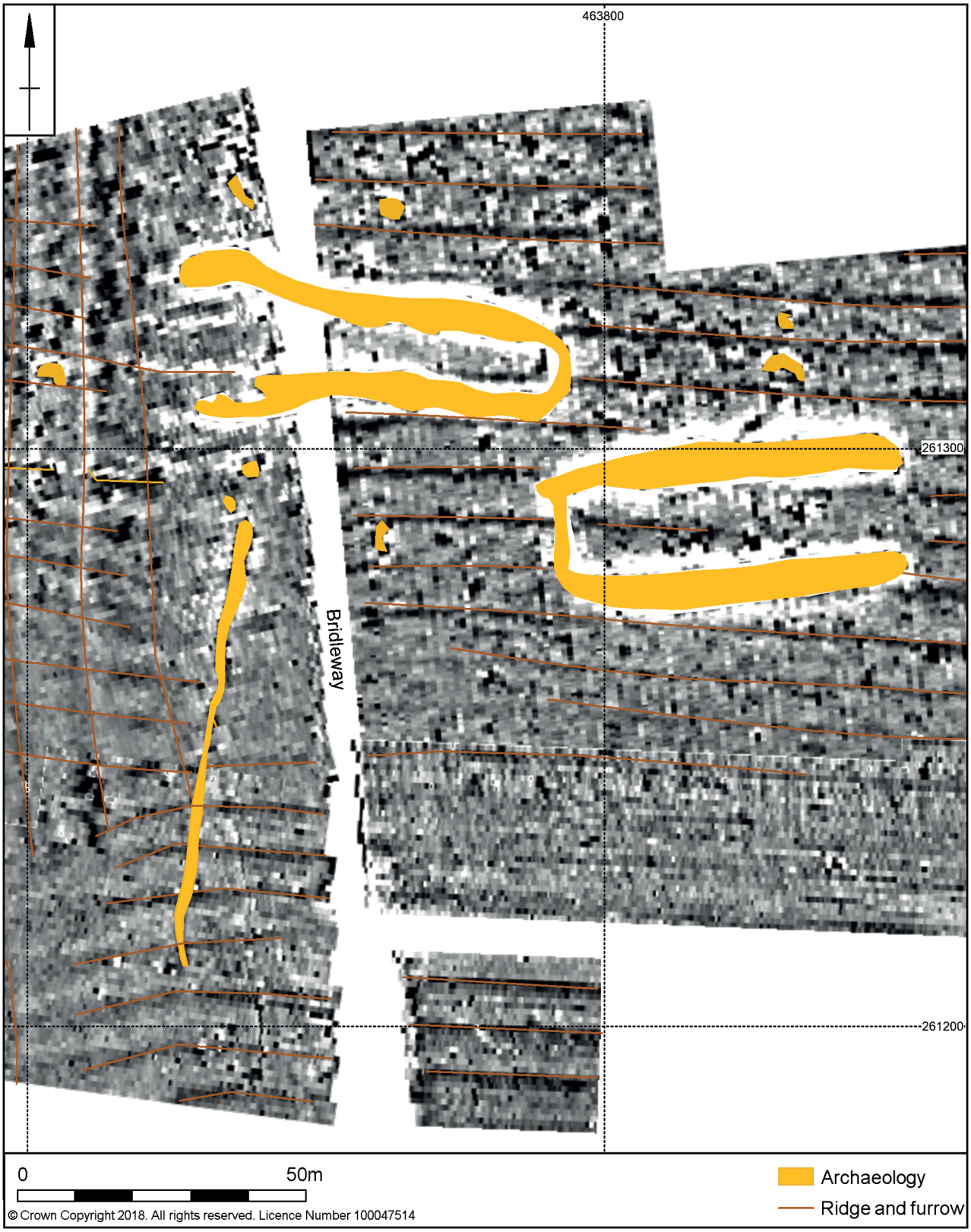


Fig 4: Magnetometer survey interpretation

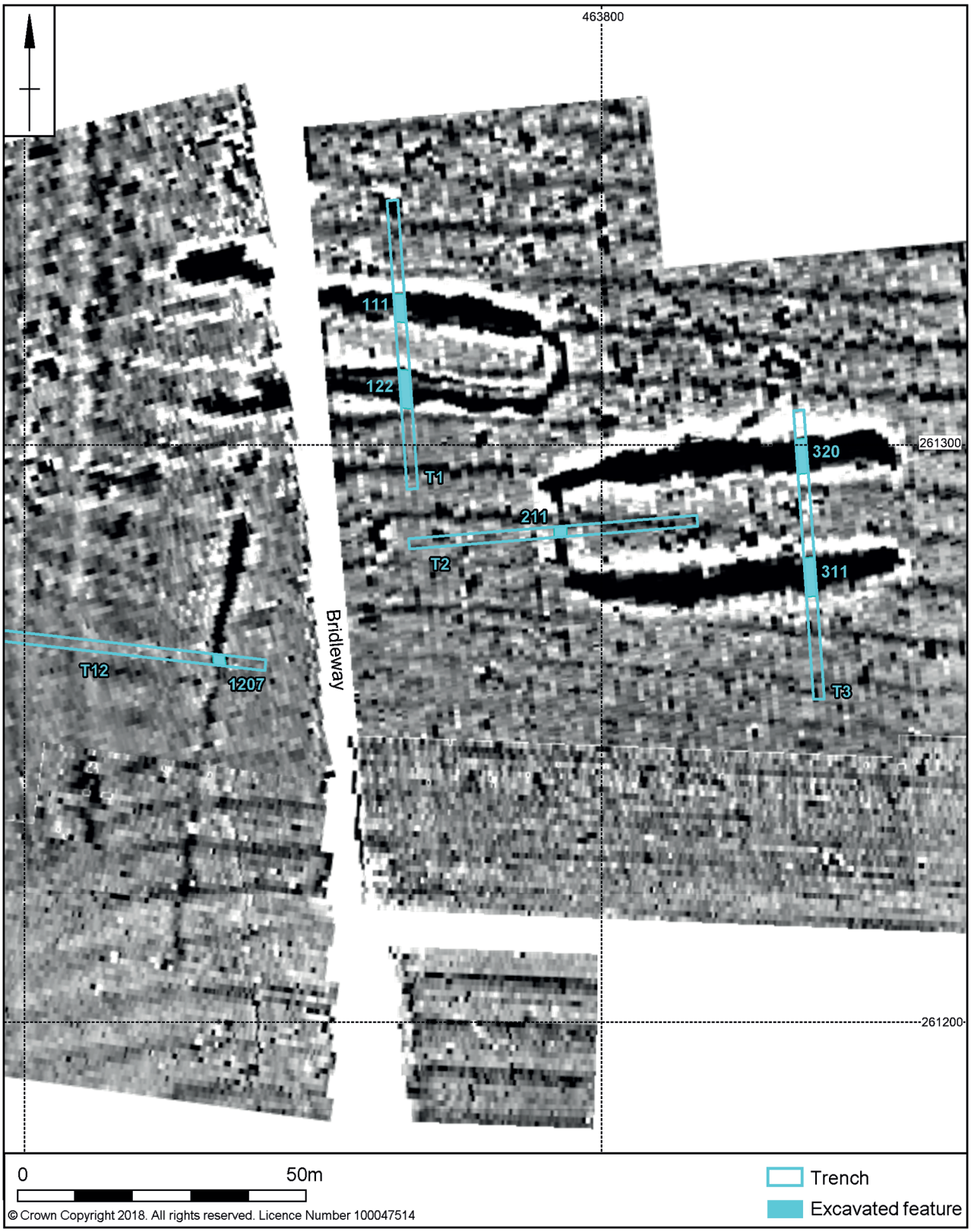


Fig 5: Trial trench layout

The northern long barrow (Flore North)

Trench 1 exposed the parallel side ditches of the northern long barrow. The ditch on the northern side, 111, was 5.90m wide and 0.58m deep with steep uneven sides and a broad flattish base, interrupted by a small hollow (Fig 6, S1; Fig 7). Pinkish-grey silty clay mound material lay against the inner (southern) side of the long barrow ditch (110–106). These early deposits contained high quantities of limestone as large flat slabs, up to 280mm in length, and also with dense concentrations of shattered smaller pieces throughout. A total 120+ sherds (508g) of pottery from fill (109) is Early Neolithic in date, and is consistent with an assemblage of 50 worked flints from fill (108) above it, and a radiocarbon date from animal bone in this deposit produced an Early Neolithic date (Table 11). Later deposits became mixed with increasing quantities of soft reddish-brown silty clay loam soils (105–104), whilst the stone content decreased rapidly in both the size of particles and their frequency towards the top of the ditch. The latest fill (104) produced seven sherds (24g) of Bronze Age pottery, indicating the extended duration before which the ditches were completely filled.

On the southern side of the long barrow, ditch 122 was 4.78m wide by 0.47m deep, and parallel to ditch 111 (Fig 6, S2; Fig 8). The distance between the ditches, the footprint of the mound at this point, was 8.8m wide. The ditch had fairly steep uneven sides and a broad flattish base. The fills were comparable to its northern counterpart. On the inner (northern) side of the ditch, pinkish-grey silty clay and limestone slabs, up to 300mm in size, filled the ditch (121–116). A minor difference occurred in that the initial fill was largely reddish-brown silty clay (121–120). This fill was devoid of artefacts and contained no seeds. The early fill was followed by deposits with high quantities of limestone, much as in ditch 111. No finds were recovered from these earlier deposits, but as the frequency of limestone became less towards the surface and deposits became mixed with increasing quantities of soft reddish-brown-silty clay loam soils (115–114), worked flint and animal bone were also found.

A depositional event occurred in both ditches late in

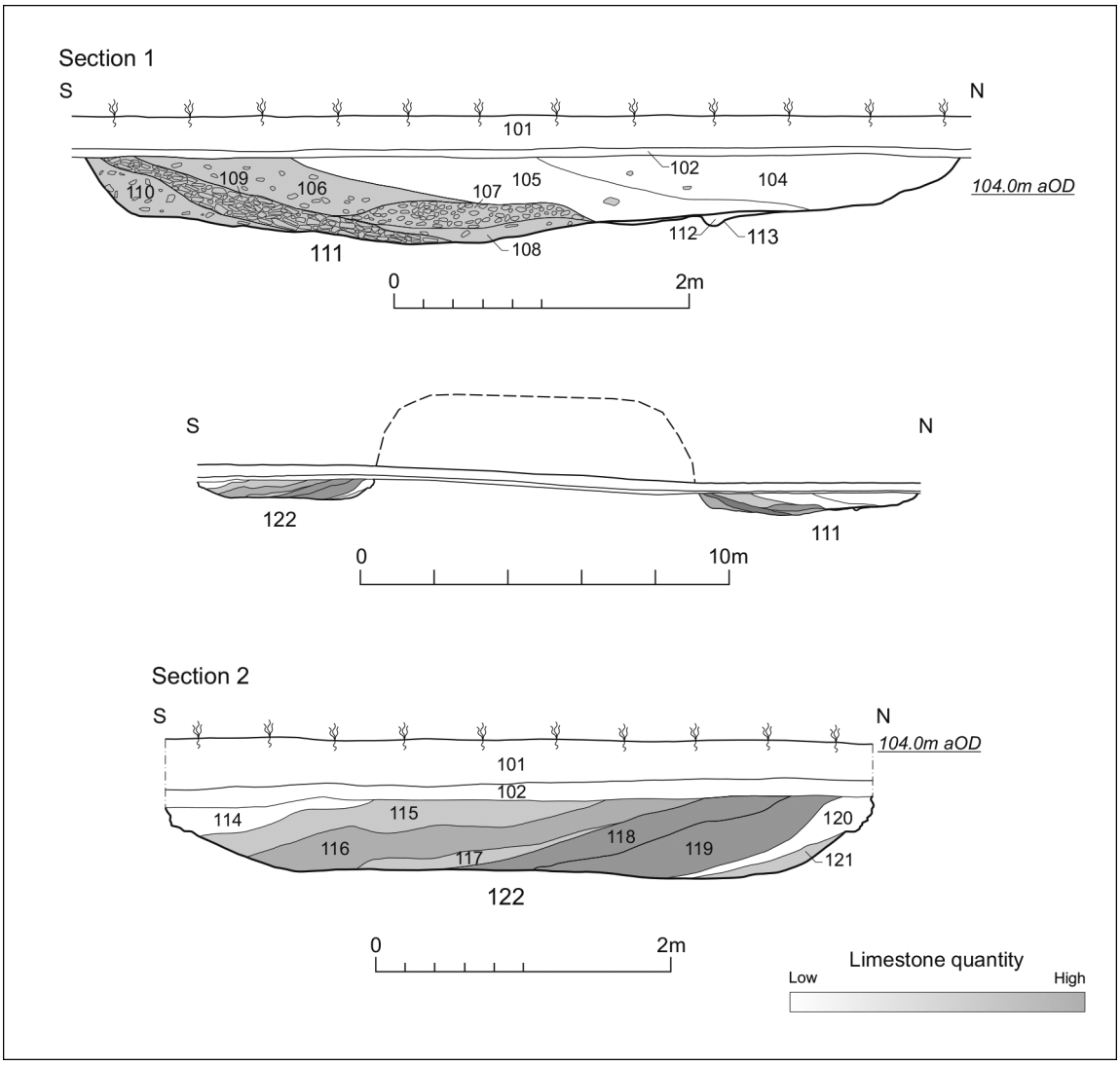


Fig 6: Cross-section of the northern long barrow, Sections 1–2

Fig 7: Ditch 111, looking north-west

Fig 8: Ditch 122, looking west

the sequence of the limestone rich deposits and before the loamy fills began accumulating. Thin darker bluish-grey bands of silty sandy loam, (108) and (117), were discoloured by charcoal. Environmental samples taken on the north side of the long barrow from fill (109) contained a few charred wheat grains alongside Early Neolithic pottery.

The southern long barrow (Flore South)

The parallel side ditches of the southern long barrow were examined in Trench 3. The ditch on the northern side, 320, was 8.80m wide and 1.32m deep (Fig 9, S5; Fig 10). The sides were steep and fairly even, with a sharp break of slope onto a broad flat base. Limestone slabs, up to 320mm in length, had slipped or fallen down the inner (southern) edge of the ditch together with large quantities of smaller shattered limestone (319–316). A small group of 27+ body sherds (83g) from fill (317) were from an Early Neolithic Carinated Bowl, although two accompanying sherds (13g) of Impressed Ware are Middle Neolithic in date. This fill also produced a piece of animal bone sharpened into a cutting/scraping implement. Soil samples from the fill contained charcoal, but no charred seed grains. Above these deposits, fill (315) marked a distinct change in colouration, although the overall silty clay matrix varied only in the proportions of stone and the particle size, which decreased towards the top of the ditch fill sequence. The deposits below fill (315) were generally reddish-brown, made darker by the moisture in the soil, but fill (315) took on a slightly more orange hue. Although not the same as the stark contrast from pinkish-grey to bright reddish-brown seen in the fill of the northern long barrow ditches, the boundary is likely to be synonymous with changes in the local soil environment. The soils above this level probably accumulated much more slowly after plant colonisation of the mound, and the date of the material from the later fills is consistent with this hypothesis.

Animal bone from fill (315) included a cattle humerus that was of a size proportional to an aurochs, a species of wild ox that became extinct before the end of the Bronze Age. Five worked flints from the upper fills, (315–313), included blades and scrapers mainly as residual artefacts. Two sherds of possible Early Bronze Age pottery (6g) were found in the uppermost fill (313).

The distance between the northern and southern ditches was 12.8m. Ditch 311 was 7.80m wide and 1.22m deep (Fig 9, S4; Fig 11). The sides were steep, but somewhat uneven, with a sharp break of slope onto a broad flat base. Large flat limestone slabs and fragmented pieces, up to 300mm in length, were mixed with silty clay and deposited against the inside (northern) edge of the ditch (310–308). Soil samples from the thin band of greyish-brown clayey silt (312) near the base, contained a few barley and wheat grains. There were eight sherds (22g) of pottery from fill (308), slightly higher in the ditch, of Middle Neolithic date. As with the other ditches there was a gradual change in the proportions of stone and the particle size, which were smaller towards the top of the fill sequence. The deposits above fill (308) were generally more reddish-brown, rather than reddish-grey-brown or orange and generally more silty (Fig 11). The evidence from datable artefacts for the duration and extent of deposition is less obvious, as fewer artefacts were found, but the overall sequence marked by changes in soil texture and inclusions was consistent with those observed in the other sections. One of the later fills (306) produced a piece of red deer antler.

The west end of the long barrow was examined in Trench 2. Ditch 211 was aligned north–south and was 3.40m wide by 0.44m deep (Fig 9, S3). The sides were fairly steep, if slightly uneven, and it had a flattish base. The initial fill (210) was largely dark reddish-brown silty clay with some larger stones. This was overlain by flat limestone fragments, up to 180mm in length, mixed with the silty clay (209) and (205), which had been deposited within the ditch from the east. The west side of the ditch had a thin layer of yellow sandy clay (206) at the base. Above these deposits were varying shades of mid reddish-brown silty clay (208–207) and (204), with very little stone. A small group of three sherds (49g) of pottery from fill (204) date from the Bronze Age indicating that the depositional sequence is consistent with the other features.

A possible prehistoric ditch extending to the south

A single ditch, 1207, aligned roughly north–south was 1.88m wide by 0.69m deep and over 40m long (Fig 5). The full width of the ditch was not exposed in Trench 1 since an agricultural tramway crossed the trench at this point and it could not be extended (Fig 12). The sides of the ditch were steep, with a rapid break of slope into a slightly uneven rounded base. The fill sequence was closely comparable to that observed in the long barrow ditches, with the basal fills containing large quantities of limestone, which decreased in size and frequency towards the top of the ditch, fills (1206–1204). There was no evidence for bank material sliding into the ditch or a collapsed stone wall on the west side, but since the east side was not visible, this may still be the origin of the limestone. The stone may otherwise have been deposited by more deliberate infilling with surface material, which would make the ditch much later in date than the truncation of the long barrows, given that the most obvious source of the limestone would be from the levelling of the mounds. Ditch 1207 is therefore undated. Only worked flint flakes were recovered, rather than the more closely datable pottery, although the geophysical data suggests that the ditch may be associated with the long barrows on the basis of its proximity, alignment and extent (Fig 5).

Mitigation by targeted detailed excavation

Further investigation of ditch 1207 took place in September 2014 following the adjustment of the planned road alignment to avoid the long barrows. An area of 30m by 20m was opened over ditch 1207 and a further three interventions were placed across the ditch at the north end, the southern end and a centrally placed section (Fig 13). The northern end was of similar size and profile as revealed by trial trench evaluation. The central and southern part

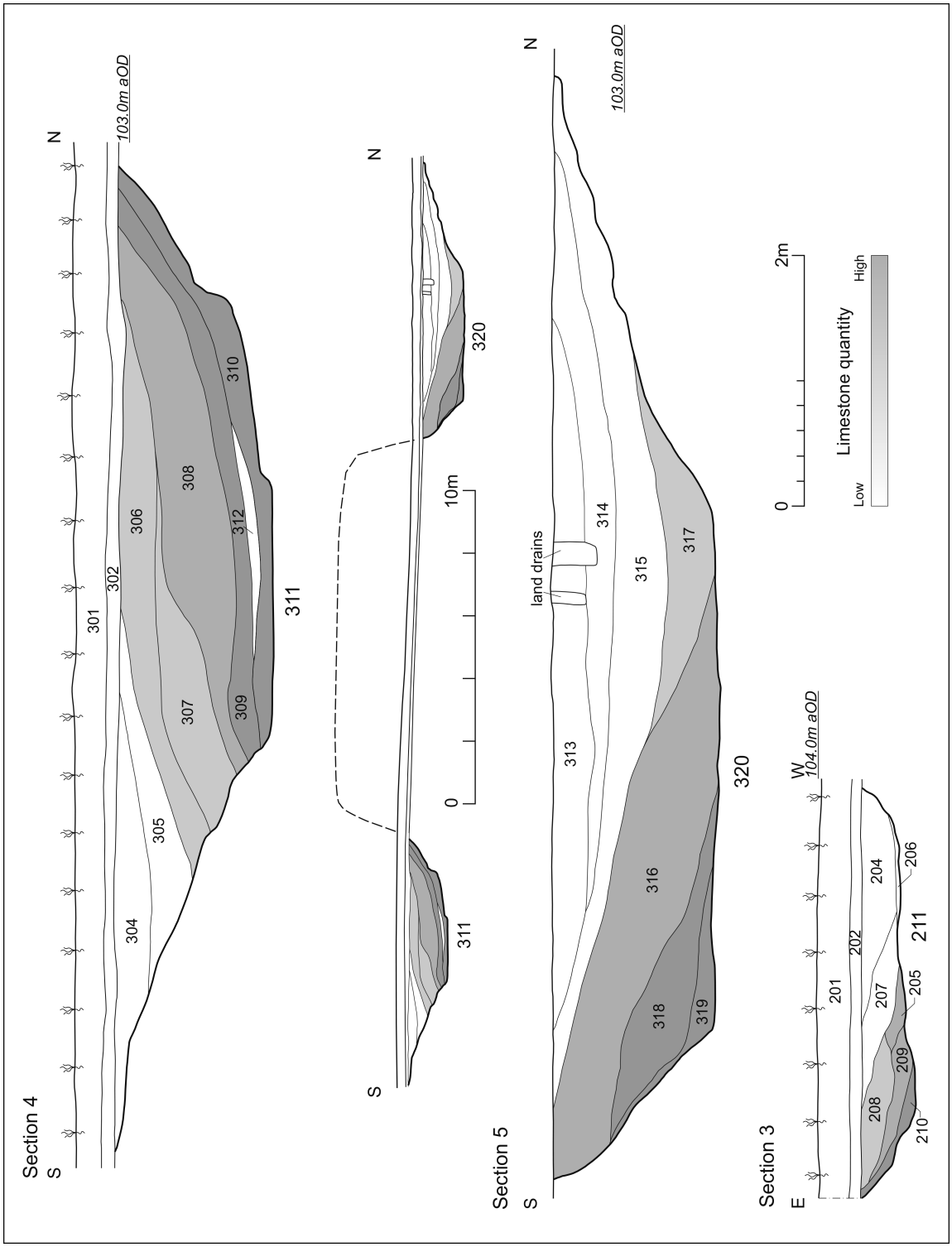


Fig 9: Cross-section of the southern long barrow, Sections 3–5

Fig 10: Ditch 320, looking north-east

of the ditch was 2.40m wide by 0.85m deep, increasing in depth to the south to 1.0m.

The sequence of deposits was also consistent along the ditch line. An initial mid-grey brown silty-clay (91) had frequent shell and charcoal close to the base. Radiocarbon dates from charcoal and animal bone from this deposit produced similar Middle Bronze Age dates (Table 11). Above this were frequent limestone inclusions, but no larger pieces or tip lines to indicate a bank. Later fills became darker with a decline in the stone content, but produced worked flint and animal bone. The central and southern interventions also included an upper silting sequence as a result of the ditches increasing depth.

A handful of very small sherds of pottery (nine sherds, 7g) are of broadly prehistoric date, but are not diagnostic enough to determine if they are from the Neolithic, Bronze Age or Iron Age. The lower and upper fills along the ditch contained sparse worked flint and animal bone, and several soil samples were taken from the primary fill, so that sufficient material was recovered to support a radiocarbon date.

Archaeological monitoring during construction of the Green Bridge

The Green Bridge is the crossing point of the bridleway with the newly established road, located where ditch 1207 approached the western end of the northern long barrow. At the northern tip of the area stripped for the Green Bridge the alignment reached a ditch terminal with two small postholes. The ditch was 1.72m wide by 0.78m deep at this point, with steep straight sides descending to a narrow flat base. The fill sequence comprised red-brown silty sandy clay with sandstone, limestone and some charcoal derived from gradual accumulations. A single sherd (8g) of Roman pottery came from the interface with a furrow above, and is therefore probably intrusive.

Immediately to the north of the terminal was a small pit or posthole, and to the south-east lay another, both of similar proportions; 0.35m in diameter and 0.12m deep, with sloping sides and a rounded base. The fills of these features was mid red-brown clay.

Fig 11: Ditch 311, looking south-east

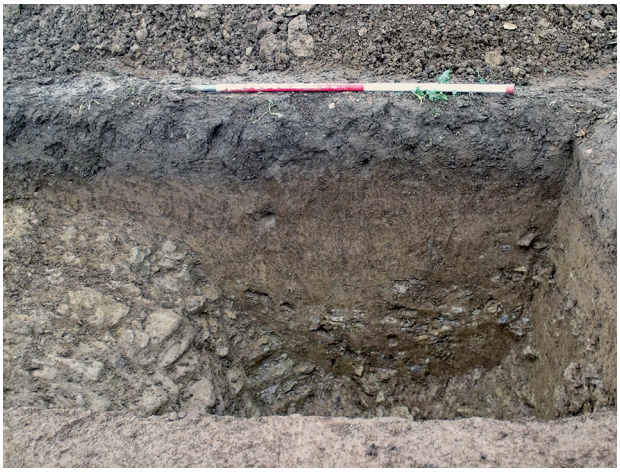


Fig 12: Ditch 1207, looking south

Fieldwalking
by Yvonne Wolframm-Murray

At the time of the survey in early November 2014, all the fields were able to be walked, either having been recently ploughed or under a new crop. The weather was sunny with overcast spells. The ground visibility was good, although growth over the cropmarks was fairly advanced making the ground visibility for artefacts poor.

The fieldwalking survey was undertaken by walking along parallel transects spaced at 20m intervals across the study areas. Surface finds were collected from a corridor extending *c.*1.0m to either side of the transect line, providing an overall sample of the surface area of *c.*10%.

The artefacts collected are summarised in Table 1 and the distribution of worked flint is plotted in Figure 14.

The majority of worked flint was recovered from Fields 1–2, especially close to the cropmarks. A second, slightly higher concentration was located to their west where a flint scatter was recorded previously (HER912). The worked flint generally thinned out towards the edges of the survey area. Only a relatively small number of worked flints were recovered and almost all the cores come from the general scatter to the west.

There are 59 natural pieces of burnt flint amongst the surface finds from all three fields that show heavy thermal fracturing, crazing, spalling and patination as a result of exposure to heat. The majority of the burnt flint was recovered from fields to the west, with the occasional piece from nearer the long barrows.

The majority of pottery sherds are of medieval origin, and the rest are Roman. The sherds were widely distrib-

Fig 13: Targeted excavation of possible prehistoric ditch, looking north

uted with no particular concentration evident and they are likely to have been derived from manuring.

Worked flint
by Yvonne Wolframm-Murray

There are 277 pieces of worked flint collected as surface finds during fieldwalking from the three fields surrounding the long barrows (Fig 14). The flint comprised: 28 cores, 218 flakes, 26 blades, and five retouched tool forms including a microlith. Table 2 provides an overview of the flint types by field.

There are a further 135 pieces of worked flint that were recovered from features during trial trench evaluation or as residual finds from the spoil heaps. The assemblage comprises 88 flakes, 32 blades, six cores, one hammer-stone fragment, and eight retouched tool forms comprising three scrapers, one microlith, one serrated blade, and three undefined tool forms (Table 3). The raw material strongly mirrors the material recovered from fieldwalking.

Raw material and condition

The majority of the raw material comprises vitreous flints ranging from light to dark grey and brown colours. There is also a smaller proportion of granular flint, mostly grey in colour, and one that is brown. The quality of the raw material is good to moderate. Flaws and inclusions affect the quality of the flint, thermal flaws are common. The flint has a thin, weathered or abraded cortex, light to dark brown in colour. The bulk of the material has cortex present on the dorsal surfaces. The raw material is most likely to be derived from local river gravels.

The condition of the worked flint is moderate to poor with artefacts showing post-depositional edge damage consisting of moderate to frequent nicks and crushing of the edges. Patination is present on two thirds of the assemblage; the majority have a thick white discolouration of the surface. The remainder display varying degrees of a light grey-blue to white discolouration. Burnt worked flint is present, probably accidental in nature. These flints display thermal fracturing and crazing, pot lids and discoloured cortex.

Assemblage composition

Cores

Thirty-four cores were recovered, comprising bladelet, blade and flake cores. The bladelet and blade cores

Table 1: Quantification of fieldwalking artefacts

Field	Flint		Pottery	
	Worked flint	Burnt flint	Roman	Medieval
1 – flint scatter (HER912)	136	19	1	10
2 – cropmarks (HER7070)	115	32	2	6
3 – road corridor to west	26	8	–	6
Total	**277**	**59**	**3**	**22**

Table 2: Quantification of worked flint recovered by fieldwalking

Field	Core	Flake	Fragment	Blade	Fragment	Implements	Total
1	17	54	48	8	7	2	136
2	10	53	40	5	4	3	115
3	1	17	6	1	1	–	26
Total	**28**	**124**	**94**	**14**	**12**	**5**	**277**

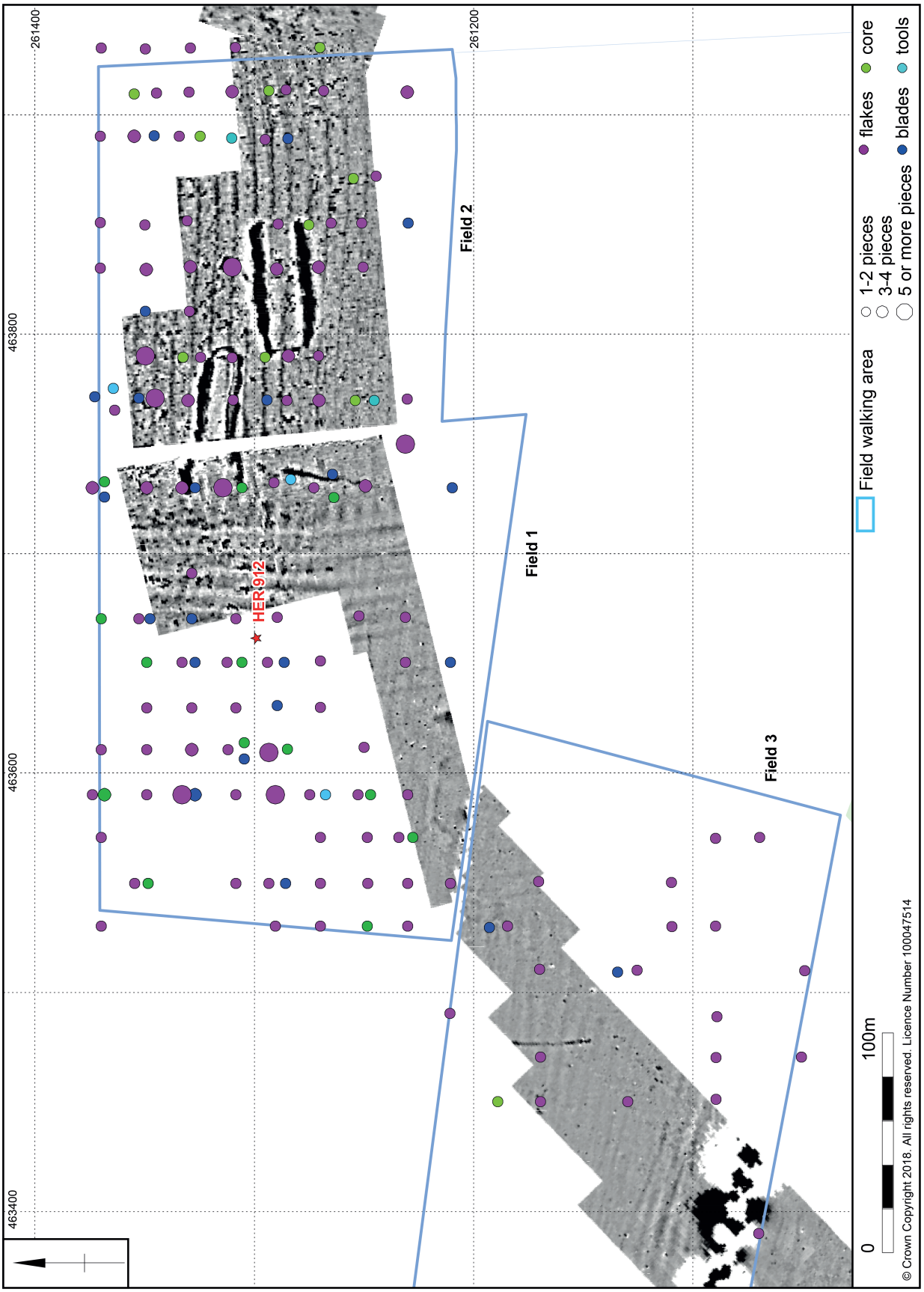


Fig 14: Distribution of flakes, blades, cores and tools

Table 3: Quantification of worked flint recovered by trial trench evaluation

Trench		**1**				**2**	
Context		**101**	**102**	**108**	**116**	**202**	**(204)**
	whole	5	1	12	–	3	1
flake	broken	3	1	15	–	–	–
	burnt	–	–	9	–	–	–
	whole	1	–	6	–	–	1
blade	broken	3	1	2	1	–	–
	burnt	–	1	3	–	–	–
core		2	–	–	–	1	–
misc. retouch		1	–	1	–	–	–
microlith		–	–	1	–	–	–
scraper		–	–	1	–	–	–
serrated blade		–	–	1	–	–	–
hammerstone		–	–	–	–	–	–
Total		**15**	**4**	**51**	**1**	**4**	**2**

Trench		**3**						
Context		**301**	**(306)**	**(308)**	**(309)**	**(313)**	**314**	**(315)**
	whole	–	–	14	–	–	–	–
flake	broken	4	–	8	2	–	–	–
	burnt	–	–	2	–	–	–	–
	whole	2	1	1	–	–	–	–
blade	broken	–	2	–	–	2	1	1
	burnt	–	–	–	–	–	–	–
core		1	–	1	1	–	–	–
misc. retouch		–	1	–	–	–	–	–
microlith		–	–	–	–	–	–	–
scraper		–	–	1	–	–	–	1
serrated blade		–	–	–	–	–	–	–
hammerstone		–	–	–	–	–	–	–
Total		**7**	**4**	**27**	**3**	**2**	**1**	**2**

Trench		**12**		**14**	**17**	**41**	**45**	**89**		**Total**
Context		**1201**	**1206**	**1401**	**1701**	**4 (104)**	**4501**	**8904**	**8905**	
	whole	–	–	–	–	–	1	1	–	38
flake	broken	1	–	–	2	–	1	–	1	38
	burnt	–	1	–	–	–	–	–	–	12
	whole	1	1	–	–	1	–	–	–	15
blade	broken	–	–	–	–	–	–	–	–	13
	burnt	–	–	–	–	–	–	–	–	4
core		–	–	–	–	–	–	–	–	6
misc. retouch		–	–	–	–	–	–	–	–	3
microlith		–	–	–	–	–	–	–	–	1
scraper		–	–	–	–	–	–	–	–	3
serrated blade		–	–	–	–	–	–	–	–	1
hammerstone		–	–	1	–	–	–	–	–	1
Total		**2**	**2**	**1**	**2**	**1**	**2**	**1**	**1**	**135**

have single or opposing prepared striking platforms and are cylindrical in cross-section. The flake and flake/blade cores are irregularly shaped with multiple striking platforms.

Debitage

The assemblage is dominated by unretouched waste flakes and blades. This comprises 306 flakes, of which 132 are broken and 12 burnt; and 58 blades, of which 25 are broken and four are burnt. There are also soft hammer struck blades, which are often patinated. A portion of the worked flint has been fragmented, post-deposition. There is possible utilisation on two blades and one flake, but post-depositional edge damage obscures the majority of examples.

Tools

A small number of retouched tool forms are present, comprising five scrapers, two microliths, one serrated blade, and five unidentified tool forms. Three end scrapers and two

side scrapers were manufactured on flakes and a natural flake with the retouch consisting of semi-abrupt to abrupt retouch on the distal ends or lateral edges. There are two microlith fragments; one has a lateral edge with retouch. Additionally there is one bi-facially retouched implement, but it is not possible to discern with certainty its intended function. The other implements have varying amounts of retouch on the edges but are obscured by heat damage.

Arrowhead

A barbed-and-tanged arrowhead has little post-depositional edge damage and both barbs are present. The raw material is a dark brown-grey vitreous flint, probably procured from local gravel deposits. The arrowhead was bi-facially invasively retouched and is 18mm long by 21mm wide. The tip is missing and this may be the result of utilisation. This arrowhead is highly diagnostic for the Late Neolithic/Early Bronze Age.

Discussion

The technological characteristics of the assemblage indicate a Neolithic date with a substantial Late Mesolithic and Early Neolithic component. The bladelet cores, microlith fragment, bladelets and the side scrapers are indicative of the Mesolithic period and the Early Neolithic. The presence of bladelets and soft hammer struck flakes and blades are also typical of the Late Mesolithic to Early Neolithic. However, the high percentage of flakes to blades is more typical of a Neolithic assemblage. The irregular multiplatform cores are Late Neolithic to Early Bronze Age in date, along with cortical striking platforms and squat flakes. The multiplatform core is Late Neolithic to Early Bronze Age in date.

One third of the worked flint was recovered from the Neolithic long barrow ditch fills or from the excavated spoil. A ninth of the assemblage was recovered from the lower silting, fill (108) of ditch 111. Beside the waste flakes and blades it comprises a microlith fragment, bladelets, and a serrated blade. Fills (308–309) from ditch 311 and fills (314–315) from ditch 320 contained bladelet cores and scrapers. All these fills represent gradual accumulations within the ditches whilst open. The Late Mesolithic to Early Neolithic component of the assemblage was incorporated during this time. A roughly contemporary oval barrow at Tansor Crossroads, Northamptonshire (Chapman 1997, 40), and a long barrow at Redlands Farm near Stanwick, Northamptonshire (Harding and Healy 2007), are each thought to have had a Late Mesolithic/Early Neolithic assemblage related to the clearance and initial construction of the monument, pre-dating the construction of the mound.

Another large component of the flint assemblage was collected from the subsoil and topsoil around the long barrows. In comparison to the worked flint from the ditches, the surface finds had a far lower Late Mesolithic to Early Neolithic component and included a Late Neolithic to Early Bronze Age flake core. A smaller component of the flint assemblage was recovered from trenches to the west of the long barrows and to the south of known prehistoric flint scatters. Similarly at Tansor and Stanwick the Late Neolithic/Early Bronze Age material related to later continuous use of these barrows and the surrounding landscape. At Tansor an Early Bronze Age deposit was recovered from the final and subsidence fills of the ditch (Chapman 1997). At Stanwick later intrusive Beaker burials and cremations were found, and Bronze Age barrows were also raised in the vicinity (Harding and Healy 2007). There was also evidence that the long barrow was used as a site to knap flint.

Overall, the fieldwalking produced a similar assemblage to that recovered by evaluation, which appeared to concentrate around the long barrows. The presence of the Mesolithic and Early Bronze Age worked flint, deposited either prior to the long barrows being raised or after their use, indicates continuous use of the landscape at key focal points. This phenomenon is not uncommon as, for example, the Neolithic causewayed enclosure at Briar Hill, Northampton, had a flint scatter spanning the Mesolithic to Early Bronze Age, similarly suggesting the area had been in use before the construction of the enclosure with respect continuing into the Middle Bronze Age with the addition of a cremation cemetery (Bamford 1985).

Neolithic and Bronze Age pottery

by Alex Gibson

A total of 710g of pottery from the ditches of the long barrows was laid out in good daylight and examined using a x10 hand lens. The ceramics were arranged into fabric groups by context. Two main fabric groups were identified. Fabric 1 was hard, well fired and contained abundant crushed shell inclusions many of which were visible on both surfaces, as well as in the fractures, and reached up to 10mm across. Fabric 2 was darker and contained finely crushed grog giving the sherds a smooth soapy texture.

The fabric groups were then subdivided into sherd groups, as catalogued below. These probably equate to individual vessels and can be equated to the Minimum Number of Individuals (MNI). In the absence of conjoining sherds and given the similarity of fabric, each sherd group may represent a number of different but similar vessels. Equally, given the variability of fabric coarseness and thickness commonly found in hand-mixed clays and hand-built pots, it remains a possibility that a number of sherd groups may be from a single pot. Some conjoining sherds were noted within the sherd groups.

Catalogue of Neolithic and Bronze Age pottery

Early Neolithic

Sherd group 1

9 sherds, 36g, fill (109), ditch 111, fabric 1

Rim sherds in a hard well fired fabric generally black throughout though some outer surfaces show the brown patches. The rim is smooth and rounded with a slight outer lip. The sherds are too small to accurately estimate the diameter of the vessel.

Sherd Group 2
2 sherds, 18g, fill (109), ditch 111, fabric 1
Rim sherd similar to Sherd Group 1 but with a more pronounced outer lip. The fabric is identical to Sherd Group 1 but with some larger shell inclusions visible. The inner surface is grey; the outer surface is brown and the core black. The fabric averages 8mm thick. There are traces of a shoulder *c*.18mm below the rim suggesting a bipartite vessel with a short neck. A second sherd with a similarly defined shoulder but lacking the rim may possibly also belong to this sherd group. The sherds are too small to accurately estimate the diameter of the vessel.

Sherd Group 3
1 sherd, 12g, fill (109), ditch 111, fabric 1
Rim sherd similar to Sherd Groups 1 and 2 but with a slightly more flattened top and a slightly smoother outer surface. The outer surface is grey-brown, the inner grey and the fabric black. The fabric averages 8mm thick. Some diagonal grooves on the outer surface may be a form of decoration, but their irregularity suggests that they are more likely to be accidental and a result of surface finishing. The sherds are too small to accurately estimate the diameter of the vessel.
108+ sherds, 442g, fill (109), ditch 111, fabric 1
There is a further quantity of featureless body sherds in fabric 1, generally brown in surface colour, which may belong to any of the sherd groups above.

Sherd Group 4
27+ sherds, 83g, fill (317), ditch 320, fabric 1
Quantity of featureless body sherds that may well belong to Carinated Bowl.

Middle Neolithic

Sherd Group 5
2 sherds, 13g, fill (317), ditch 320, fabric 1
A rim sherd and a body sherd from an Impressed Ware bowl. The rim has a slightly expanded top and a slight internal lip giving a slightly hooked appearance. The sherd is small and abraded and no decoration can be detected with certainty though there are some slight circular pits on the outer surface near the base of the rim. An internal surface irregularity on the inside may possibly part of a fingernail impression. The body sherd averages 9mm thick and is decorated with close-set fingernail impressions.

Sherd Group 6
6 sherds, 17g, fill (308), ditch 311, fabric 1
Abraded sherds with brown surfaces and a black core. One rim sherd is flat topped and T-sectioned. The fabric at the base of the rim is 10mm thick. It is undecorated but may be paralleled in Impressed Ware assemblages.

Sherd Group 7
2 sherds, 5g, fill (308), ditch 311, fabric 1
Hard and well-fired sherds in a black fabric. The edges are abraded. The larger of the two sherds has traces of a concave neck and shoulder. The fabric at the shoulder averages 8mm thick but thins to 6mm at the top of the neck. The neck is decorated with traces of two diagonal lines of twisted cord impressions. The cord has been loosely wrapped but seems to have been of a hard material.

Bronze Age

Sherd Group 8
3 sherds, 5g, fill (104), ditch 111, fabric 2
Abraded sherds in a hard fabric, dark brown in colour. The largest sherd has converging lines of round toothed-comb impressions suggesting a chevron motif. The raised nature of the sherd at the point of the chevron suggests either a shoulder or the base of a collar and the sherd may well come from a small Collared Urn or even Food Vessel. No sherds preserve both surfaces.

Sherd Group 9
3 sherds, 18g, fill (104), ditch 111, fabric 2
Abraded sherds with brown or dark brown outer surface and black inner surface and core. The fabric averages 9mm thick. The largest sherd has groups of three parallel fine striations. These may be intentional and decorative or possibly the result of finishing. Possibly Bronze Age.

Sherd Group 10
1 sherds, 1g, fill (104), ditch 111, fabric 2
Abraded possible rim sherd in a slightly sandy-textured but grog-filled fabric. If a rim, it is simple and rounded, but it may also possibly be a 'false rim' resulting from coil building. Possibly Bronze Age.

Sherd Group 11
3+ sherds, 49g, fill (204), ditch 211, fabric 2
Three abraded but conjoining sherds with grey-brown interior, black interior and core. The fabric averages 11mm thick. A slight but distinct shoulder runs across the largest sherd. Possibly the lower neck and shoulder of an undecorated tripartite Collared Urn. The fabric is in keeping with a Collared Urn.

Undiagnostic material

Sherd Group 12
2 sherds, 1g, fill (306), ditch 311, fabric 2
Brown surfaces and a black core. Undecorated. The fabric averages 6mm thick. Possibly Beaker but the sherds are too small and lacking in diagnostic features to be certain.

Sherd Group 13
2 sherds, 6g, fill (313), ditch 320, fabric 2
Two conjoining sherds that seem to come from the concave neck of a vessel. The outer surface is brown, the inner surface and core are dark grey. The fabric averages 10mm thick. Possibly Early Bronze Age based on fabric.

Sherd Group 14
1 sherd, 1g, fill (309), ditch 311, fabric 2
Small sherd 5mm thick. Undecorated. Possibly Beaker based on fabric.

Fig 15: Neolithic and Bronze Age pottery, Sherd Groups 1–3 and 5–8

Sherd Group 15
1 sherd, 3g, fill (317), ditch 320, fabric 2
Small abraded sherd with grey-brown surfaces and grey core. Undecorated. Possibly Late Neolithic or Bronze Age based on fabric.

Sherd counts marked + indicate that there are small crumbs in addition to discrete sherds.
Sherds from Groups 1–3 and 5–8 are illustrated in Figure 15.

Discussion

This small fragmentary assemblage represents deposits that have accumulated over about two millennia. The Early Neolithic assemblage comprises at least four vessels based on rim sherds; the body sherds in identical fabric may belong to any of the rims. The vessels do not appear to have the graceful forms of early classic Carinated Bowls such as that from Padholme Road, Fengate, Cambridgeshire (Pryor 1974), but rather the thickened rims, upright forms and narrow necks suggest Plain

Bowls or Modified Carinated Bowls; current in the south of England from *c.*3855–3730 cal BC (68% confidence) to *c.*3555–3210 cal BC (68% confidence) (Whittle *et al* 2011, 762). Undecorated thickened rims are, however, also present within classic Mildenhall assemblages now seen to start *c.*3730–3665 cal BC (68% confidence) and end *c.*3450–3355 cal BC (68% confidence), therefore having considerable overlap with Modified Carinated Bowls (Healey, in Hills and Lucy 2013).

Grendon Quarry, Site C, Northamptonshire, has produced a comparable assemblage, although the ceramics from Grendon tend to be more open (Gibson and McCormick 1985). There are also, however, some thickened rims including some externally lipped forms similar to Sherd Groups 1–3 in the present assemblage. The dates from Grendon used oak charcoal and may suffer from the old wood effect; however, the main date range of *c.*3800–3400BC is consistent with the ceramic types identified here. An outlying date in the first quarter of the third millennium BC is clearly too young.

The rim forms of Sherd Groups 1–3 are also locally paralleled amongst the undecorated element of the Mildenhall assemblage from both the Etton and Briar Hill causewayed enclosures where some of the narrow necks, noted in the present assemblage, may also be found (Pryor 1998: Bamford 1985). These vessels share the shell-filled fabric of the present assemblage, although in the case of Briar Hill, many of the inclusions had leached out leaving a pitted corky fabric.

The ceramics identified here as Middle Neolithic may actually also belong to the Mildenhall style since the rim forms of Sherd Groups 5–6 can be matched in both Mildenhall and Impressed (Peterborough) ware assemblages. However, the body sherd of Sherd Group 5 is certainly Impressed ware and given the association of the body sherd and the rim, which is admittedly more abraded, the two may be from the same vessel. If, however, the tentative identification of small pits on the rim of Sherd Group 5 is correct, then this sherd may be ascribed to a different vessel, as this has better parallels in the Mildenhall tradition than in Impressed ware assemblages. A rim sherd from Etton, for example, has three rows of such impressions on the top of the rim, but the rim profile lacks the internal definition of the present vessel (Pryor 1998, fig 199, M394). Given the irregularity of profiles common in hand-built pottery there need not be too much emphasis put on this observation.

The body sherd of Sherd Group 5 with its well-defined and closely spaced fingertip impressions can be paralleled amongst the earliest finds of Impressed ware from the type site at Peterborough (Wyman Abbott and Smith 1910).

The whipped cord impressions in the neck of Sherd Group 7 make the identification of this sherd as Impressed ware less dubious. Once again local parallels may be found at Etton (Pryor 1998, 198, E3; PR1 and 5) on vessels identified as Ebbsfleet (E) and probably Mortlake (PR) sub-styles within the Impressed ware tradition. A similar neck sherd from Barholm with loose whipped cord diagonal lines may also date to the Mortlake phase of the Impressed ware tradition (Simpson 1993, fig 1245).

In the case of Sherd Group 8, the use of a point-toothed comb has been noted by Longworth (1984, 8) on Collared urns and is a recognised definitive trait of the Secondary Series, South-Eastern style (*ibid*, 35). Unfortunately, too little of Sherd Group 8 survives to permit meaningful comparison but it appears that the decoration was towards the base of a sharply angled neck or collar, judging by the curvature of the sherd, and is arranged in a triangular motif. Longworth illustrates a small vessel with a sharply defined collar from Wellingborough, Northamptonshire (1984, Pl131b), although on this vessel the combed lines are mainly in vertical rows with horizontal borders. Two Collared urns from pit deposits at Newark Road, Fengate, Cambridgeshire are also decorated with circular-toothed comb impressions (Pryor 1980, 99). One of these (Sherd 26) has multiple chevron motif, as is envisaged for the present vessel while the other (Sherd 27), found more or less complete, is decorated with a conjoined lozenge motif. Both the Newark Road vessels are late in the Collared Urn sequence, defined by Longworth (1984) or Burgess (1986) as dating to the first or second quarters of the 2nd millennium BC. The other sherds identified as Collared Urn sherds would also fit this date range. However, in the absence of formal and decorative elements the identifications were made on the basis of fabric alone and this can be unreliable when dealing with Neolithic and Bronze Age ceramics.

Faunal remains
by Philip L Armitage

A small assemblage of animal bones was recovered from the ditch fills of the two long barrows. Both hand-collected bone and those from the residues of sieved samples were submitted for analysis.

The hand-collected bone from the combined deposits yielded 34 elements that are identified to species and anatomy; representing five mammalian species: cattle, aurochs (wild ox), sheep, pig and red deer (Table 4). Although the bulk of the sieved material comprises highly fragmented, unidentifiable bone the samples yielded bone elements of cattle, sheep/goat and micro-faunal specimens comprising a small wild bird tarsometatarsus. No bones of fish, amphibian or reptile are present.

Table 4: Summary counts of the identified animal bone elements/fragments

Period/species	auroch	cattle	sheep/ goat	pig	red deer	wild bird	Total
Neolithic long barrow ditch fills	1	23	3	5	1	1	34

Table 5: Comparison of wild and domestic cattle from other British prehistoric sites

Site	Period	Distal width of Humerus Bd (mm)
Brumut Hills, Flore Northants	Neolithic	93.6mm, one auroch specimen
Durrington Walls, Wilts (Harcourt 1971)	Neolithic	65–87mm, 66 domestic specimens 90–102mm, 3 aurochs specimens
Charterhouse Warren Farm, Mendip (Everton 1975)	Bronze Age	106mm, one male auroch specimen
Runnymede Bridge, Surrey (Done 1980)	Late Bronze Age	50–72mm, 9 domestic specimens

Identification of the aurochs humerus from fill (315) of ditch 320 is based on its large size, which falls within the range documented for aurochs from other comparative prehistoric sites (Table 5). No positive identifications of goat were made and all elements with diagnostic features were from sheep. The complete tarsometatarsal bone (GL=19.4mm) of a small wild bird from fill (312) of ditch 311 is not identified to species.

Preservation and modification of the bone

The bones from the long barrows are generally in poor to fair condition, with many exhibiting the effects of leaching, erosion, abrasion and breakage owing to brittleness. Some have root etchings and others are slightly iron stained.

There is limited evidence for the butchery of long bones where individual elements have been fractured to allow the marrow to be extracted (Table 6).

Table 6: Evidence of butchery

Neolithic long barrow ditch	
Fill (308)	1 cattle long bone shaft/
ditch 311	spiral fractured
Fill (308)	1 sheep/goat long bone shaft/
ditch 311	spiral fractured
Fill (317)	3 cattle long bone shafts/
ditch 320	spiral fractured

Observations of the species/bone elements identified

Aurochs

A wild ox is represented by the distal part of a left humerus (distal epiphysis fused) recovered from fill (315) of ditch 320. Bd distal width=93.6mm; BT greatest width of the trochlea=87.2mm.

Domestic cattle

In addition to the bones documented there is a cattle jawbone from fill (308) of ditch 311 that exhibits a series of shallow, V-shaped cutting marks on the upper edge of the ramus above the mental foramen. The nature of this modification is unclear. There is also a small piece of cattle long bone shaft from fill (317) of ditch 320 that is 27.1mm long by 23.9mm wide by 3.1mm thick, with a sharp, straight edge that suggests it had been fashioned as a scraper or knife.

Table 7: Anatomical distributions of the cattle

Body part/period	Number
mandible	3
upper cheek teeth	2
lower cheek teeth	5
rib	1
humerus	2
radius	1
metatarsus	1
phalanx II	1
long bone shaft frag.	7
Totals	**23**

Sheep

In appearance the sheep from the long barrow deposits were clearly small sized, gracile-limbed animals, probably resembling modern Soay sheep. This observation is illustrated with reference to an astragalus from fill (316) of ditch 320, which has a greatest length of 26.4mm; comparable to the mean value (26.6mm) documented for male and castrate Soay sheep (Clutton-Brock *et al* 1990, 53).

Table 8: Anatomical distributions of sheep/goats

Body part/period	Number
astragalus	1
metatarsus	1
long bone shaft frag.	1
Totals	**3**

Pigs

The proximal width (Bp=30.8mm) of a pig radius from fill (309) of ditch 311 falls within the size range for domestic pigs (Bp 24–32mm) documented by Clason (1967, 63) and may be compared against the data for the Neolithic pigs from Durrington Walls, Wiltshire, range 24.3–37.1mm, mean 29.4mm, n=190 (Albarella and Payne 2005).

Table 9: Anatomical distributions of pigs

Body part/period	Number
maxilla	1
mandible	1
lower cheek teeth	2
radius	1
Totals	**5**

Red deer

An eroded/abraded section of antler came from fill (306) of ditch 311. Comparing this with a modern 4th head antler indicates that it is probably from the upper part of an antler beam, above the trez tine, of a similar aged animal. Without the pedicle it is not possible to establish whether this antler came from a hunted animal or was collected as a naturally shed antler. Both ends of the section are broken and it is not possible to say how it had been removed from the beam but it seems it had been bored through lengthwise, perhaps for use as a tool handle.

Summary

Although it would be unwise to draw too many conclusions from such a small assemblage, it seems the faunal remains are indicative of the disposal of waste from local slaughtering, butchering and consumption of the cattle, sheep and pigs. Numerically and in the meat contribution to the local diet, cattle fulfilled a predominate role, with sheep and pigs of only minor importance.

The presence of at least one aurochs would support a Neolithic or Bronze Age time frame, before the aurochs became extinct in Britain (Legge 2010, 34).

Seeds and plant remains
by Val Fryer

Samples were retrieved from the long barrow ditches and were assessed for the presence or absence of plant macrofossils (Table 10). All plant remains were charred.

Sparse barley and wheat grains were noted along with cereal grains which were too poorly preserved for close identification. Chaff was absent within the assemblages. Preservation was moderately good, although some grains were severely puffed and distorted and some seeds were very fragmentary. Seeds of common segetal weeds/grassland herbs were notable by their absence. Highly comminuted charcoal/charred wood fragments were present throughout the samples.

Other remains were scarce. The fragments of black porous material were all possible residues of the combustion of organic remains at very high temperatures. Fragments of coal were also recorded, and are almost certainly intrusive from steam ploughing.

Although specific sieving for molluscan remains was not undertaken, shells of terrestrial and marsh/freshwater snails were noted within all the samples. Most shells were bleached, abraded and fragmentary, and it was unclear whether any were contemporary with the excavated features, or whether they were introduced via post-depositional bioturbation.

Conclusions

The four assemblages from the Neolithic ditch fills are very small and sparse, which is, perhaps, not surprising given their context. Cereals and charcoal fragments are recorded, but it is likely that all were accidental inclusions within the ditch fills. The mollusc assemblages appear to indicate that whilst the long barrow was probably situated within an area of open, short-turfed grassland, the ditches were intermittently shaded or overgrown, with accumulations of damp leaf litter at their bases. However, it is thought most likely that these latter conditions prevailed long after the long barrow was constructed.

As none of the assemblages contain a sufficient density of material for quantification (ie. 100+ specimens), no further analysis was undertaken.

Geoarchaeology
by Graham Spurr

A geoarchaeological site visit was undertaken to assess the nature and potential of the deposits within the long barrow ditches. The trench sections were examined and their characteristics recorded.

The ditch on the north side of the southern long barrow was selected as representative of the site as a whole (Fig 9, S4). This ditch was *c.*1.20m deep and revealed the following sedimentary sequence (from the base upward):

Unit A, fill (310): *c.*300mm compact 10YR5/6 yellowish-brown almost horizontal limestone fragments, clast supported, with occasional snails, occasional fragments of pottery and rare flint pebbles and carbonaceous material. Bone was also present (seen in other sections), as was a rare fragment of antler.

Unit B, fills (309–305): *c.*850mm firm, 2.5YR3/4 dark reddish-brown, clayey silt with moderately frequent (although lessening with height) heavily weathered fragments of limestone and rare flint pebbles, poorly sorted.

Unit C, fills (304–301): *c.*600mm firm, 2.5YR3/4 dark reddish-brown, clayey silt with rare, heavily weathered fragments of limestone and flint pebbles, moderately well sorted.

Interpretation

Unit A, fill (310), lay at the base of the ditch on the north side of the southern long barrow and consisted of fragmented limestone cut from the bedrock. The fragments of limestone were almost horizontal but exhibited a slight tilt upward to the south. The limestone fragments were presumably used to create the burial mound but, being unstable, had later slipped into the ditch.

Unit B, fills (308–306), were defined by the dark reddish-brown nature of the clayey silt. The colour derived from

Table 10: Plant macrofossils and other remains

Sample	**1**	**2**	**3**	**4**
Fill	**312**	**120**	**109**	**317**
Ditch	**311**	**122**	**111**	**320**
Cereals				
Barley, *Hordeum* sp. (grains)	x	–	–	–
Wheat, *Triticum* sp. (grains)	x	–	x	–
Cereal indet. (grains)	x	–	–	–
Herbs				
None	–	–	–	–
Other plant macrofossils				
Charcoal <2mm	xxx	x	x	xxxx
Charcoal >2mm	x	x	x	xxx
Charcoal >5mm	x	–	–	xx
Charred root/stem	x	–	–	–
Indeterminate seeds	–	–	–	x
Other remains				
Black porous 'cokey' material	x	x	x	–
Small coal fragments	–	–	x	–
Mollusc shells				
Woodland/shade loving species				
Carychium sp.	x	–	–	x
Discus rotundatus	x	x	x	x
Oxychilus sp.	–	x	–	–
Punctum pygmaeum	–	x	–	–
Vitrea sp.	x	–	x	–
Zonitidae indet.	x	–	–	–
Open country species				
Vallonia sp.	xx	x	–	–
V. costata	x	x	–	x
V. pulchella	xcf	–	–	–
Vertigo pygmaea	x	x	x	x
Catholic species				
Cochlicopa sp.	x	–	–	–
Nesovitrea hammonis	x	–	–	–
Trichia hispida group	x	x	x	–
Marsh/freshwater slum species				
Lymnaea sp.	x	–	–	–
Sample volume (litres)	**40**	**40**	**40**	**40**
Volume of flot (litres)	**<0.1**	**<0.1**	**<0.1**	**<0.1**
% flot sorted	**100%**	**100%**	**100%**	**100%**

x=1–10 specimens, xx=11–50 specimens, xxx=51–100 specimens, xxxx=100+ specimens
fg=fragment, cf=compare, Neo=Neolithic , LIA=Late Iron Age

the iron rich geology (and therefore sediments) of the locality, oxidising over time. These ditch fills comprised finer particles although the poorly sorted nature of the limestone fragments tends to indicate that further collapse of the mound lessened over time. It is possible that the ditch was being maintained and cleaned out periodically, although the burial mound by this stage was probably more stable and vegetated. The limestone fragments were probably heavily weathered through exposure to the elements but also suffered in the context of the water-logged, impermeable conditions of the ditch. The paucity of cultural or environmental material in these contexts makes closer analysis and a detailed understanding of their accumulation much more difficult to interpret.

Unit C is much the same as unit B, although seemingly disturbed toward the top by medieval and modern ploughing together with bioturbation. As with unit B, this material was largely devoid of artefacts and environmental indicators.

Considerations for future research

The long barrow ditches offer considerable opportunity in terms of artefactual and palaeoenvironmental research material, particularly within the initial fills of the ditches. As a consequence, it was advised that an environmental sampling strategy should accompany any further excavation to include bulk sampling to examine spatially and chronological differences along the ditches, together with mollusc samples, and to accompany soil micro-morphological analysis at selected locations across the site.

Radiocarbon analysis

Selection of material for dating

Scientific dating was needed to corroborate artefactual dating and to provide a clearer indication of the duration over which the deposits accumulated, and to compare the date of the long barrow ditches with the boundary ditch extending away from them to the south (Fig 5). The particular aim was to establish dates at the beginning and end of the deposition sequence. Radiocarbon dating was chosen as a widely comparable technique used at other published sites in the region.

Five samples were chosen from the long barrows for radiocarbon dating and two were selected from the undated ditch that extended to the south. The limited amount of material available for radiocarbon analysis constrained the choice of deposits for dating. Charcoal was supplemented with animal bone where no charred material was available, or where there was a high risk of charred material being residual or intrusive. None of the charcoal has been examined by species as it is highly comminuted and abraded. The best preserved pieces of animal bone were selected for analysis although they are generally in poor to fair condition. Those particularly brittle, leached or abraded specimens, and also those with root etchings were avoided. The work was carried out by Beta Analytic, Miami, Florida, USA. All of the samples returned dates that are considered to be reliable (Table 11).

Flore North

Fill (109) of ditch 111 lay on the north side of the long barrow during the earlier part of its collapse, and was associated with a substantial assemblage of 120+ sherds (508g) of Early Neolithic pottery. Fill (116) of ditch 122 came from the south side of the long barrow, representing a period where the degradation of the mound was still in progress, but had begun to slow down. A radiocarbon date from an animal bone in this deposit produced an Early Neolithic date (Table 11).

Flore South

Fill (312) of ditch 311 lay on the north side of the long barrow and was an episode of deposition after the initial deterioration of the mound had already begin, but before it had reached an advanced state. Charcoal from this deposit was radiocarbon dated and produced an Early Neolithic date (Table 11). Deposits above this level, fill (308), contained eight sherds (22g) of Middle Neolithic pottery. Fill (317) of ditch 320 lay on the south side of the long barrow and represents an episode of deposition that immediately post-dates stabilisation of the collapsed material from the mound. This is, intriguingly, associated with 27+ body sherds (83g) from the Early Neolithic and two sherds (13g) of Middle Neolithic pottery. A radiocarbon date of charcoal in this deposit produced an Early to Middle Neolithic date (Table 11). The latest secure deposit that could be dated was fill (313), close to the end of the ditch's lifespan before it was fully silted up. Animal bone from this deposit was radiocarbon dated to the Middle Bronze Age (Table 11).

Ditch extending to the south

As a product of careful sampling during mitigation for the portion of ditch 1207 that was lost to the road scheme, samples were retrieved from the top and bottom of the ditch fill in each of the three hand-excavated sections. Charcoal and animal bone from the basal fill, (91), was selected for dating purposes. Worked flint was also recovered from the ditch and sherds of pottery with a broadly prehistoric date.

Radiocarbon determinations

The radiocarbon determinations, arranged in chronological order (Table 11), show that the charcoal in lower fill (312) of ditch 311 on the south side of the southern long barrow dates to the Early Neolithic (3810–3700 cal BC, 81.3% confidence, 4990±30BP, Beta 505221), and was incorporated into the ditch fill along with butchered sheep/goat and cattle bone at a time when the degradation of the limestone was already in progress.

Charcoal from a later fill (317) in ditch 320 on the north side of the same long barrow dates to the Early/Middle Neolithic transition (3380–3320 cal BC, 52.0% confidence, 4580±30BP, Beta 505222) by which time much of the limestone had settled into the ditch.

The process of deposition continued with the gradual in-wash of silty clay, the last of which filled the top of the ditch and incorporated a fragment of animal bone from fill (313) at around the Middle to Late Bronze Age transition (1280–1080 cal BC, 94.8% confidence, 2970±30BP, Beta 505220).

The radiocarbon dates show that the degradation of the southern long barrow was a process that took considerable time, *c.*400 years for the limestone to stabilise as it settled into the ditch. After that, the silting up of the surviving earthwork took close to *c.*1600 years before it ceased to be visible at the surface by around the end of the Middle Bronze Age.

Dates for the northern long barrow were from similar deposits, although limited by the material that was available. Animal bone from fill (109) in ditch 111 on the north side of the long barrow produced a date later in the Early Neolithic (3520–3370 cal BC, 95% confidence, 4660±30BP, Beta 505218). Another fragment from the south side of the long barrow, in fill (116) of ditch 122, produced a closely comparable date of 3530–3400 cal BC (77.9% confidence, 4640±30BP, Beta 505219). Fill (109) was comparable in the sequence of the northern long barrow to fill (312) in its southern counterpart. Similarly, fill (116) was selected for comparison with fill (317).

These dates indicate that the northern long barrow was a later addition to the funerary site, but was subject to rapid degradation perhaps within as little as a century.

Ditch 1207 was aligned on the western end of the later of the two long barrows and extended to the south.

Whether the ditch continued to the north of the former tumuli is not known, but it would seem to have respected them as landscape features. Both charcoal and animal bone was recovered from its fill (91) during mitigation work and this has been dated to the Middle Bronze Age. The charcoal returned a date of 1420–1260 cal BC (95% confidence, 3070±30BP, Beta 505224) and the animal bone produced a closely comparable date (1430–1280 cal BC, 95% confidence, 3100±30BP, Beta 505225). They suggest that the boundary was added at a time after the long barrow ditches were largely infilled.

Discussion

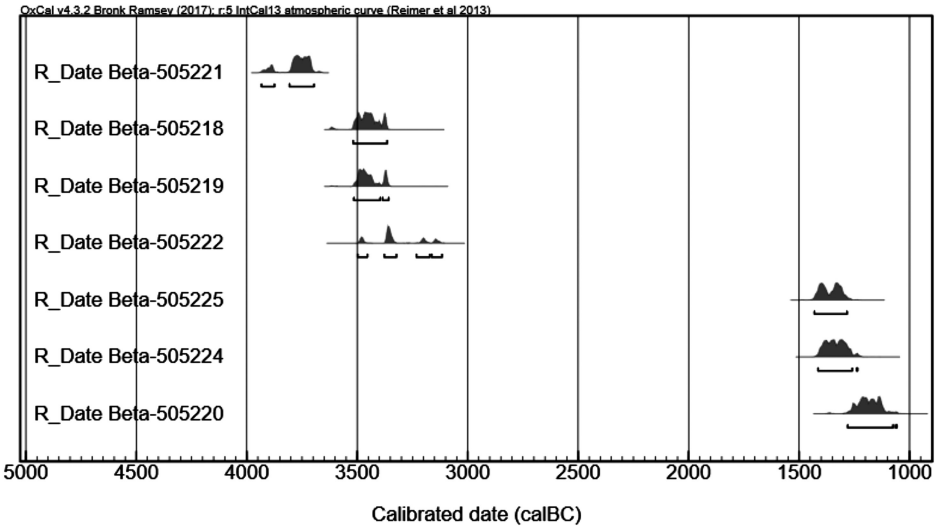
The preservation of the Neolithic long barrows

The road corridor was shifted to the south, avoiding direct impact upon the buried remains of the monument, and leaving the archaeological site outside the boundary of the development.

Further geophysical survey of this area to the south indicated that the likelihood of encountering additional features was fairly low; a single ditch was identified

Table 11: The radiocarbon determinations

Laboratory No.	Context	Sample Details	d13C	Conventional Radiocarbon Age BP	Cal BC *68% confidence* 95% confidence
Beta-505221	Fill (312)	Charcoal	–24.8	4990±30BP	*3790–3710 (68.2%)*
S long barrow	ditch 311				**3810–3700 (81.3%)**
					3930–3880 (14.1%)
Beta-505218	Fill (109)	Tooth	–21.9	4660±30BP	*3510–3430 (59.7%)*
N long barrow	ditch 111				**3520–3370 (95.4%)**
Beta-505219	Fill (116)	Animal bone	–22.3	4640±30BP	*3500–3440 (57.7%)*
N long barrow	ditch 122				*3380–3370 (10.5%)*
					3530–3400 (77.9%)
					3390–3360 (17.5%)
Beta-505222	Fill (317)	Charcoal	–25.1	4580±30BP	*3370–3340 (49.5%)*
S long barrow	ditch 320				**3500–3460 (15.4%)**
					3380–3320 (52.0%)
					3230–3170 (15.5%)
					3160–3120 (12.5%)
Beta-505225	Fill (91)	Animal bone	–21.9	3100±30BP	*1420–1380 (32.7%)*
Site A ditch	ditch 1207				*1350–1300 (35.5%)*
					1430–1280 (95.4%)
Beta-505224	Fill (91)	Charcoal	–25.2	3070±30BP	*1390–1330 (41.2%)*
Site A ditch	ditch 1207				*1320–1290 (27.0%)*
					1420–1260 (94.7%)
Beta-505220	Fill (313)	Animal bone	–21.5	2970±30BP	*1230–1130 (68.2%)*
S long barrow	ditch320				**1280–1080 (94.8%)**



Laboratory: Beta Analytic, Miami, Florida, USA
Plot OxCal v.4.3.2, probabilities <10% omitted from table

continuing across the road corridor to the south of the long barrows, at their west end. Trial trenches corroborated this impression, locating the ditch but no further features. The ditch was the subject of targeted detailed excavation to determine its prehistoric origin and was found to be Middle Bronze Age in date based upon radiocarbon analysis. Trial trench excavations demonstrated that the long barrows were both badly damaged by ploughing and that nothing now remains of the stone mounds, but that their surviving ditches were substantial. All of the ditches contained artefactual and ecofactual remains of significant interest, which contribute to both regional and national research agendas for the Neolithic period. Selected radiocarbon dating was undertaken to corroborate dates from charred material with that of the pottery and this showed that the two long barrows, whilst in close proximity were not necessarily of contemporary origin or use.

The Brumut Hills: two Neolithic long barrows in context

Deposition of limestone in the long barrow ditches occurred either because the mounds were unconsolidated, allowing some stone to tumble from the sides with relative ease, or were the result of collapsed loose stone. A steep-sided mound could have suffered a large-scale slippage or may even have been slighted at the end of the monument's period of use. It is likely that the later deposits were laid down much more slowly as grasses and herbaceous plants colonised the mound. Soils began to form above the tumbled stone that were periodically washed into the ditch. Changes to the nature of the soil may also be attributed to changing environmental conditions in the vicinity. As time progressed the larger stones had already settled and were anchored below the soil, and a mat of surface vegetation prevented further slippage. Some larger deposits of material may be the result of deliberate partial levelling, particularly later in the deposit sequence. Although the frequency was very low, the occurrence of charred seeds including cereals alongside the large pottery assemblage (for this period), seems to fall immediately after the major limestone deposition, both through collapse or levelling, and before plant colonisation (See Fryer and Gibson, above).

The broad distribution of megalithic long mounds and passage tombs within England is reflected by the geological availability of suitable stone. Long barrows are more commonly found in Cornwall, Devon, Herefordshire, Wiltshire, Derbyshire and across the Cotswolds, with fewer examples scattered elsewhere. The broad category of megalithic Chamber Tomb, defined by English Heritage, covers a wide range of different forms, many of which differ by regional character (EH 2011). The Brumut Hills barrows are best reflected by the Cotswold-Severn type monuments; long trapezoidal mounds with a distinctive entrance at the wider end, and with the mound containing one or more passages with occasional side chambers. However, it is likely evidence of internal passages and chambers at Flore have been ploughed away. The Brumut Hills are also similar in size to typical examples of the type such as Windmill Tump, Rodmarton, Gloucestershire (O'Neil and Grinsell 1960), which is 57m long by 27m wide and stands 3m high.

Both Windmill Tump and Belas Knap in Gloucestershire are examples of long barrows, each with a wide dry stone wall reveted entrance façade at the front (widest) that splays either side of the entrance, forming horns that wrap around at the sides. The west end of the northern Flore long barrow may have been very similar and it is suggested that the area defined by the arms of the façade represents an important focus for ceremonial activity, raising the importance, significance and sensitivity of any surviving archaeological deposits within their vicinity (EH 2011, 3). Other long barrows of this type, such as Waylands Smithy, Oxfordshire, had a straight dry-stone wall façade without the horns (Whittle 1991). The Brumut Hills did not necessarily have to be identical and the southern long barrow entrance, probably at the east end, did not splay outwards like its neighbour.

At Windmill Tump, Belas Knap and Hazleton North (also Gloucestershire), these long barrow façades flanked a false passage entrance (O'Neil and Grinsell 1960). The real entrances to the chambers within the long barrow were accessed from the sides of the mound at intervals along its length. Given the loss of the mounds, it is unlikely that evidence survives that could help determine if this was also the case at Flore. However, the large deposits of limestone within the flanking quarry ditches are similar to the example that was fully excavated at Hazleton North (Saville 1990). Here a stone revetment enclosed the whole of the barrow mound, and not just the façade as at Windmill Tump and Belas Knap. At Hazleton North topsoil from the surface of the flanking quarry ditches was mounded in two lines at the base of the long barrow mound and substantial quarried stones were cast between and over them to form the majority of the mound construction. This could be added to if the long barrow required extension. It is likely that the Brumut Hills were built using the same kind of method, although loss of the mounds to ploughing means that this cannot be substantiated, the extent and distribution of collapsed mound material extended around the whole of the monument and at least part of this could have been stone once forming revetments to steep-sided mounds.

Radiocarbon dates from Hazleton North indicated that the first bones were entombed immediately prior to 3650 cal BC and for a short period until roughly 3620 cal BC; at Waylands Smithy the mound was raised over an earlier monument, 3430 cal BC; whilst at West Kennet in Wiltshire the chamber burials were entombed *c.*3670–3635 cal BC and the tomb was closed 10–30 years later. In all cases the burial period for the tombs was within the span of one generation, although the overall period of their use as landscape monuments stretches thousands of years. The funerary activity tends to fall in the middle to latter part of the fourth millennium BC (EH 2011, 4). Their period of use is broadly contemporary with the occupation of causewayed enclosures like those known at Briar Hill (Bamford 1985), Dallington Grange, Northampton (RCHME 1985, fig 2; NCCAU 1993; Walford 2014) and Southwick (RCHME 1975, plate 1). Such sites are generally accepted as places to gather. There are, however, no known causewayed enclosures near Flore, but given their

distribution across the county one might yet be found in the upper reaches of the River Nene.

At the other end of the Nene Valley from Flore, a complex of Neolithic monuments was excavated at Raunds and Stanwick, which comprised a long mound, two turf mounds and an earthen long barrow (Harding and Healy 2007, 73–83). The long mound at West Cotton, which was 90–135m long by 13–18m wide and aligned east–west, was dated to 3940–3780 cal BC. Initially, it had been constructed of turf and topsoil stacked in regular bays set out with stakes. At the east end was a possible south-facing chamber as well as a possible forecourt and façade. Subsequently, additional clay was quarried from nearby and the façade was covered over. By comparison the turf mounds dated to 3750–3620 cal BC and were much smaller in size, 22–27m long by 20–30m wide, aligned north-east to south-west. It is estimated that they stood about 1.0m (9 turves) high. The earthen long barrow was dated to 3800–3640 cal BC and comprised a turf and gravel mound 50m long and 0.6m high, aligned north-east to south-west, with possible timber revetment and a façade of larger timbers to the north-east, and a stone mortuary structure, similar to a cist, at the south-west end.

The principal view to date is that the long barrows at Flore belong to a Neolithic regional and cultural tradition that has greater similarity with south-west Britain and is in contrast to the inclusion of a differing culture unique to the Middle and Lower Nene Valley comprising oval barrows (Chapman 2004, 31 & 2009). Other potential, but unconfirmed, long barrows in Northamptonshire are nearby at Stowe Nine Churches (HER806) and on the high ground north of Harpole (Coyne 2016, trench 47). These are also in the Northamptonshire Wold, but their character differs in plan and the cropmarks suggest that they may be south-westerly examples of oval barrows. An oval enclosure was excavated at Tansor Crossroads (Chapman 1997) in the Lower Nene Valley, south-west of Peterborough. A central pit was Neolithic, dated to 3635–3365 cal BC, and there was reuse of the monument in the Early Bronze Age, 2030–1885 cal BC, with the creation of a round barrow over the existing mortuary enclosure.

Whilst the earliest dates from the oval barrows are within the same Neolithic time frame as the Flore long barrows, the form of an oval enclosure with a mound raised within it, such as those at Aldwincle, Grendon and Tansor (Chapman 2004, fig 3.4), is distinctly different to that of a long barrow. The presence of oval barrows and long barrows in close proximity would suggest that these kinds of monument were not culturally exclusive to each other, but their absence outside of the Nene Valley is notable. While the burial practise belongs to the same tradition, there are unique character differences. This is also an aspect of the monument complex found at Raunds and Stanwick, where the variety of forms is probably inclusive of factors other than culture that influenced which type was used (Harding and Healy 2007).

The distance from the Brumut Hills to the monument at Stowe Nine Churches is 4.5km, as the crow flies, and to Harpole it is 7km. Chapman's observation that the Neolithic oval barrows were spaced fairly evenly along the Lower and Middle Nene Valley at 10.5–12.5km intervals is less apparent in the river's upper course (Chapman 1997, fig 1; 2004, 32). However, the concept of a funerary catchment area may be valid, as once the valley reaches the rolling hills of the Northamptonshire Wold the landscape becomes less consistent and conceptual boundaries attached to community or territory, which are reliant upon physical features to define them, are by their topographic nature set more closely together.

Of interest to those who study the alignment of monuments will be the differing aspects of the Brumut Hills long barrows, which appear to have their façades facing in opposite directions; Flore North eastwards and Flore South westwards (Figs 4–5). The long barrow at Stanwick faced eastwards; but this is far from consistent amongst the cited Cotwold-Severn examples; Windmill Tump lies north-east to south-west with a north-easterly façade, Belas Knap lies north–south with a northern façade, Hazleton North lies north-east to south-west with a south-west façade and Wayland Smithy is slightly north-west to south-east with a south-east façade. What may be more significant is the presence of the horns on the later northern long barrow at Flore and the potential significance of the forecourt at its western end, when compared to the absence of horns at the east end of the earlier southern long barrow.

The prehistoric flint scatter

The trial trench excavations appeared to indicate that the prehistoric flint scatter (HER912), was focused upon the site of the long barrows. The distribution of worked flint recovered from the trial trenches dropped off rapidly in frequency as the distance from the long barrows increased. Subsequent fieldwalking has shown a broad overall distribution, with concentrations of worked flint across the whole area including both the long barrows and the field to the west. However, the original HER information appears to be correct in that a particular group within the overall concentration is located at the brow of the hill, in the field to the west of the long barrows, which survives outside the impact of the road scheme. The flint assemblage from within the long barrows especially from its earliest infills produced a moderate sized assemblage dating to the Late Mesolithic to Early Neolithic (See Wolframm-Murray, above).

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