JOHN MOORE HERITAGE SERVICES

LAND BOUNDED BY THE CUT AND THE M4, UPPER BRAY ROAD, BRAY, MAIDENHEAD

(THE BRAY TRIANGLE)

NGR SU 904 790 (centred)

ARCHAEOLOGICAL RECORDING ACTION

On behalf of

Summerleaze Ltd

MAY 2015

REPORT FOR	Summerleaze Ltd 7 Summerleaze Road Maidenhead Berkshireshire SL6 8SP
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FIELDWORK	26th August 2009 – 13th June 2014
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Summary

John Moore Heritage Services carried out an archaeological recording action between 2009 and 2014 during topsoil and sub-soil stripping in preparation for sand and gravel extraction.

The entire site was excavated to the underlying river terrace gravels consisting of sand and flint. Rising from this was a series of gravel islands, noticeably elevated above the rest of the gravels, across the entire site. In places a remnant soil horizon was seen to cover these islands.

Between some of these island palaeo-channels were identified, for others an alluvial sequence of silt deposits surrounded the islands. The lowest layers of alluvium did not rise over the gravel islands but stopped at the "shore-lines".

The earliest features encountered represent a Late Mesolithic camp. Several hearths are recorded as well as two pits one containing a stacked collection of waterlogged oak branches. These were broken into similar lengths and presumably stored for use as firewood. Samples from this wood produced a C14 date of 4836-4710 calBC.

Another pit contained the debris of antler working; giving clear evidence for the use of the groove-and-splinter technique, and as such it represents a rare instance of such in-situ debitage that is of ***national importance*** *as it is* ***unique*** *for this date in southern Britain.*

Two other C14 dates were produced for the limited material associated with the alluvial build up in the area both broadly dated to the Middle Neolithic 3214-2928 calBC and 3365-3241 calBC.

Later features on the site included a circle of pits or tree holes, roughly 45m in diameter that is considered to represent a nemeton or sacred grove with outlying pit clusters and at least one small post-built structure associated with Late Neolithic and Early Bronze Age pottery and flint work. This feature *is also of high significance. If confirmed would provide a unique origin for this type of ritual activity as well as links from Neolithic and Bronze Age ritual practices to later Iron Age beliefs.*

1 INTRODUCTION

1.1 Site Location (Figure 1)

The extension to the sand and gravel extraction area is located east of Upper Bray Road (B3028), southwest of 'The Cut' and north of the M4 motorway. The site is centred on NGR SU 904 790. It covers an area of about 8.25 hectares and was formerly agricultural land. The area is level and lies at approximately 23m AOD. The underlying geology is river terrace gravels.

1.2 Planning Background

Planning permission (07/02542/FULL) was granted for the development with a condition attached to the permission for a programme of archaeological works to be carried out during the development. The work was carried out by John Moore Heritage Services to a Written Scheme of Investigation agreed with Berkshire Archaeology on behalf of the Royal Borough of Windsor and Maidenhead.

1.3 Archaeological Background

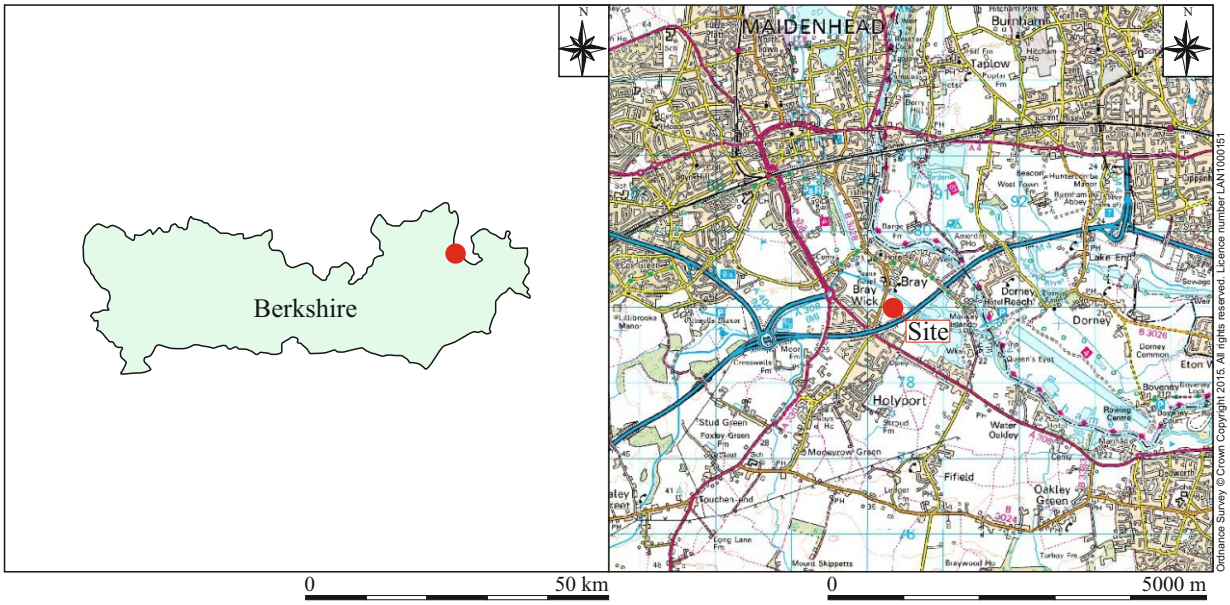
Although there are no known archaeological remains at the proposed development site, within the wider area a number of archaeological discoveries have been made. The information below has been obtained from the Archaeology and Cultural Heritage Chapter for the Environmental Statement (Waterman CPM 2007).

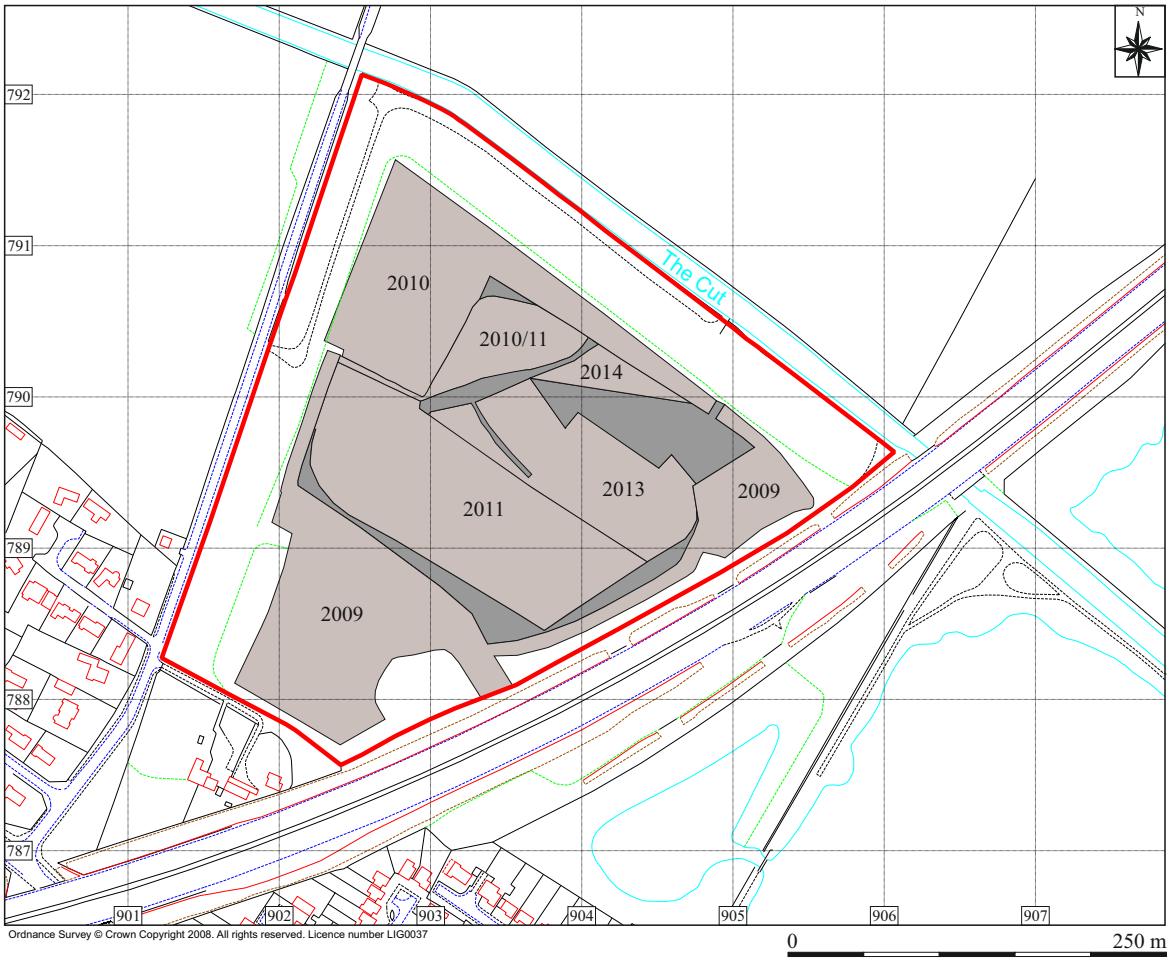
Early Prehistoric
A number of findspots of Palaeolithic, Mesolithic and Neolithic artefacts are recorded on the Windsor and Maidenhead Sites and Monuments Record (WMSMR). Palaeolithic tools have been found to the west of Bray Marina (WMSMR 167; NGR SU 9124784). This area produced mace-heads, flint scrapers and worked antler. They possibly derived from a silted river channel.

A Mesolithic axe had was recovered from the River Thames near Dorney Reach (WMSMR 7567; SU 915790), 750m to the east, while concentrations of Mesolithic flint artefacts have been recovered from the gravels between Oakley and Bray (WMSMR 132; SU 909789, WMSMR 171; SU917781, WMSMR 15440; SU 901789) and around Water Oakley (WMSMR 139; SU 921778), between 500m and 2km to the east of the site.

A concentration of Neolithic flints is recorded as having been recovered during a watching brief c. 100m to the west of the site (WMSMR 15440; SU 901789). Approximately 350m to the east of the proposed extraction site, at Weir Bank Stud Farm, Wessex Archaeology carried out a 2% sample evaluation of the site finding small scale Neolithic activity (WMSMR Event Ref. ERW19). Another Neolithic artefact scatter (WMSMR 6621; SU 915787) was found 1.1km to the east. A possible causewayed enclosure on the east side of the River Thames was found at Dorney Reach (WMSMR 2221; SU919790) while an inhumation burial was disturbed during gravel extraction just northwest of Water Oakley (WMSMR 166).

Later Prehistoric
At Weir Bank Stud Farm a Middle Bronze Age field system and later Bronze Age roundhouse and other associated features were recorded (WMSMR 132; SU 909789).





Key Site boundary | Monitored areas | Not monitored or partial monitored

Figure 1: Site location (with dates of excavation)

A cropmark of a curved double ditch, recorded approximately 700m to the east of the site, has been interpreted as of probable Bronze Age date (WMSMR 343; SU 914790) and is probably a ring ditch. Further cropmark ring ditches around Water Oakley are probably ploughed out burial mounds (WMSMR 138; SU 919777). There is a bibliographical reference to a hoard including a socketed axe head, a broken knife, a winged axe head and three unidentified lumps of metal, having been found approximately 750m to the southeast of the proposed extraction area (WMSMR 5092; SU 912785). Bronze Age spears, either chance losses or more likely as votive offerings have been recovered (WMSMR 7670; SU 924775) just over 1km to the southeast. Other Bronze Age finds have been made at Water Oakley suggesting ritual deposition in tributaries of the River Thames (WMSMR 7612; SU 910780).

Small-scale use of the site during the Iron Age/Romano-British period was found at Weir Bank Stud Farm (WMSMR 132, SU 909789). A cobbled surface made of burnt flint and associated domestic debris suggests Iron Age settlement in the area between Bray and Water Eaton (WMSMR 168, 169; SU 914784). These excavations along with those conducted during construction of the Eton College Rowing Lake, uncovered evidence of activity from the Mesolithic through to the Roman period in a landscape that contained a large number of channels of the Thames, which have since silted up (palaeochannels).

Roman

South of the River Thames considerable evidence of Roman activity between Bray and Water Oakley has been identified. A substantial building, possibly a villa, has been found north of Water Oakley (WMSMR 115; 918779). Human remains suggest that it might have been associated with a large 4th-5th century cemetery and the remains of a probable jetty, adjacent to a tributary of the River Thames, just to the west (WMSMR 171; SU 917781). A concentration of Roman artefacts, suggesting the presence of a substantial building nearby, was also recovered from gravel workings mid-way between Bray and Water Oakley (WMSMR 170, SU 915785).

Anglo-Saxon and Medieval

Early Saxon activity has been found identified on the south side of the Thames near Water Oakley; a worn road or yard surface associated with early Saxon pottery and a number of inhumation burials of similar date (WMSMR 187; SU917781).

2 AIMS OF THE INVESTIGATION

The aims of the investigation as laid out in the Written Scheme of Investigation were as follows:

The main objective was to make a record of any archaeological remains present. This included sufficient investigation and sampling of remains to determine the following:

- Define the depositional and background environment of the site.
- Clarify the extent and nature of any remains both within the site and within the context of the wider prehistoric and Roman landscape.
- Adequately date the remains through artefact dating or by carbon dating.
- Determine what activities are being carried out across the site. Are there occupation foci with satellite activities and associated field systems? If there is

occupation what is it size and is it possible to determine the population; a single family, extended family group or collection of families?
- Attempt to determine the status of any settlement.
- What activities are being carried out away from any settlement areas and why?
- Artefacts will be collected to ascertain the status of the site and to determine possible trade routes and for comparison with other contemporary regional sites
- The extent of any field system within the investigation area will be traced and any development of the system will be established
- Define the nature and extent of any prehistoric and Roman activity
- Define the site formation processes and the effects these may have had on the survival and integrity of prehistoric and later archaeological deposits.

The final aim of the work was be to make public the results through appropriate publication.

3 STRATEGY

3.1 Research Design

John Moore Heritage Services carried out the work to a Written Scheme of Investigation agreed with Berkshire Archaeology, on behalf of the Royal Borough of Windsor and Maidenhead.

The recording was carried out in accordance with the standards specified by the Institute for Archaeologists (2008) current at the time of work.

3.2 Methodology

During the early phases of work the different areas of topsoil stripping was monitored in the first instance. When it was "proven" that the topsoil had a very low potential to contain significant artefacts further motoring was carried out intermittently. In all cases the surface resulting from the topsoil stripping was inspected prior to further work. The area under the bund along the southwest boundary was only stripped of topsoil (Moore 2009).

Different levels of monitoring were carried out across the site during the stripping of subsoils. Initially the stripping for the area in the east corner for the conveyor and stockpile during Phase 1A was carried out with an archaeologist present until the potential was thought to be low. However during subsequent intermittent monitoring features were found and the rest of the excavation was continuously monitored (ibid.).

A large part of the Phase 1A extraction area in the southwest part of the site was first stripped of subsoils with an archaeologist present. This was reduced to intermittent monitoring for the rest of the stripping. The haul roads were continuously monitored during subsoil stripping.

This general approach was continued during Phase 1B, Phase 2 and Phase 3 (cf Winnett 2010, Gilbert 2011). Interim reports were produced to cover all of these phases of work.

Plate 1. Removal of alluvial clay in progress in October 2011

It was considered after Phase 3 that a continuous presence should be maintained during the watching brief for the topsoil as the northern portion of the site appeared to have more archaeological features present. This was also extended to continuously monitoring of the alluvial clay as this was extracted. This approach was justified by the results of the work in Phase 4 (cf. Gilbert 2013).

This methodology was continued for the remainder of the work, although JMHS were not always informed about some areas of soil stripping (see section 4.2)

Site procedures for the investigation and recording of potential archaeological deposits and features were defined in the *Written Scheme of Investigation*. Standard John Moore Heritage Services techniques were employed throughout, involving the completion of a written record for each deposit encountered, with scale plans and sections drawings compiled where appropriate.

4 RESULTS

4.1 Results

All features were assigned individual context numbers. Context numbers in () indicate feature fills or deposits of material.

4.1.1 Fluvial Deposits

The sand and flint gravel river terrace gravels were originally recorded on the site as context (08)=(27) in the first interim report (JMHS 2009), (104) in the second Interim report (JMHS 2010) and later recorded as (202) in the third interim report (JMHS 2011). These were located at a similar depth below present ground surface to the water table, and because of this were difficult to observe and record. Excavation through these fluvial deposits was observed in places and a sequence of banded layers recorded. The lowest consisted of relatively clean large gravel pebbles (202E), the extent of which was not fully seen. Above this was a layer of pale brown-grey clay (202D) roughly 0.1m thick. This layer was in turn overlaid by a 0.15m thick band of clean pea-sized gravel (202C). Above this was a band of pale grey sand and small gravel (202B) that varied between 0.1m – 0.2m thick. The uppermost deposit in this sequence was a band of brown-orange sand and gravel (202A) 0.2m thick. The general level of these deposits continued to gently slope upwards towards the north-west. Due to ground conditions and safety concerns it was not possible to monitor the layers for Palaeolithic remains, however the excavated piles of gravel were inspected for such material.

4.1.2 Islands and Palaeo-channels (Figure 2)

The entire site was excavated to the underlying river terrace gravels. Rising from this was a series of seven gravel islands or eyots, noticeably elevated above the rest of the gravels, across the entire site. In places a remnant soil horizon was seen to cover these islands. Between some of these islands palaeo-channels were identified, for others an alluvial sequence of silt deposits surrounding the islands were noted. The lowest layers of alluvium did not rise over the gravel islands but stopped at the “shore-lines” (see section 4.1.3).

A section of a large wide, but shallow, palaeo-channel (350) was identified on a rough north-west to south-east alignment. This channel appears to represent a former course of the Thames. It was filled with a succession of organic silts which contained infrequent driftwood overlain by coarser sandy silts and above this by silty-clays; suggesting a fast flowing channel. Slightly deep deposits of the lowest silts of the channel bed were seen in patches that were initially recorded by the archaeologist on site as individual features (50, 52, 54, 56 and 58), although none were excavated due to ground water inundation (Charlotte Haines *pers. comm*.). Such “patches” of organic rich lower palaeo-channel deposits were noted across the site; some such as feature 54 maybe associated with inundated or water tolerant trees or bushes.

A second narrower channel (19)=(322) was seen to the east of the main channel, also on a similar alignment and was recorded at over 200m in length. This appeared to have two smaller tributaries or channels circumnavigating the eyots, feeding into it. The first was a small shallow channel (235) that consisted of dark grey-black silt-clay 0.1m thick. This deposit was intermittent and irregular as if only the lowest layer had

survived and was also recorded as deposit (267). The alignment was roughly east to west. The second tributary (271) aligned roughly northwest to southeast and comprising dark grey-black silt-clay was seen to the northeast of the gravel island (269).

A possible island or the western bank (349) of the river was recorded to the southwest of the site. This was capped with a deposit of ginger clayey sand with 2% flint gravel (03).

Closest to the northeastern shore of channel (350) was a lenticular island of dark grey-brown sandy-clay and gravel (221) 190m long and over 0.25m thick in places was observed. This island was roughly aligned northeast to southwest. Several irregular hollows followed the outline of the island at the northern end along the southern edge; these appeared to represent natural tree holes presumably for water tolerant species. The island was capped by a thin intermitted deposit of dark brown-grey sandy clay (222) on average only 0.05m thick. It was not present across the entire island and appeared better preserved in natural hollows (224) and (226).

Towards the centre of the site was a large gravel island (228). It was over 160m long and continued to the north under the section of the site that was not monitored. It was at least 0.25m thick and capped with a dark grey sandy clay (229) approximately 0.1-0.15m thick

A deposit of pale grey sand and small gravel (351) similar to deposit (202B) within a shallow depression roughly 70m in length separated island (228) from another lenticular gravel island (268). It is though that this deposit represents the riverbed of another palaeo-channel.

A smaller lenticular gravel island (230) was seen to the west of the area, this was at least 50m in length and 12m wide. There was no evidence for a surviving land surface covering the island.

To the northeast of island (268) and separated by channel (322) was another island (330), this gravel island was at least 0.4 –0.5m thick and may be the same as island (269) to the southwest. Unfortunately a direct link could not be established as the area was stripped and excavated without archaeological monitoring. Island (269) was capped with a 0.1m thick deposit of dark grey silt-clay (270), this capping layer was not present over island (330), although as seen with island (221) such capping layers can be sporadic.

North of channel (271) was another gravel island (272) this was seen to extend to the south-west and form the bank of channel (322). The island was capped with a 0.1m thick deposit of dark grey silt-clay (273), similar to deposits (229) and (270) seen capping islands (228) and (269) respectively.

4.1.3 Overview of the alluvial sequence

A similar alluvial sequence was recorded across the site as a whole; although recorded as individual contexts during excavation the similarities of deposits show a relatively uniform pattern in the area.

Figure 2: Islands and Palaeo-channels - plan

The alluvial sequences surrounding these islands consisted at its lowest deposits of a 0.1m thick band of dark grey silt (07)=(26)=(201D), this was overlaid by a layer of pale-mid grey sandy-silt (06)=(25)=(63)=(201C) that was up to 0.3m thick towards the south-west of the area and gradually got thinner towards the northeast. Both of these alluvial layers did not rise over the gravel islands, stopping at the "shore-line".

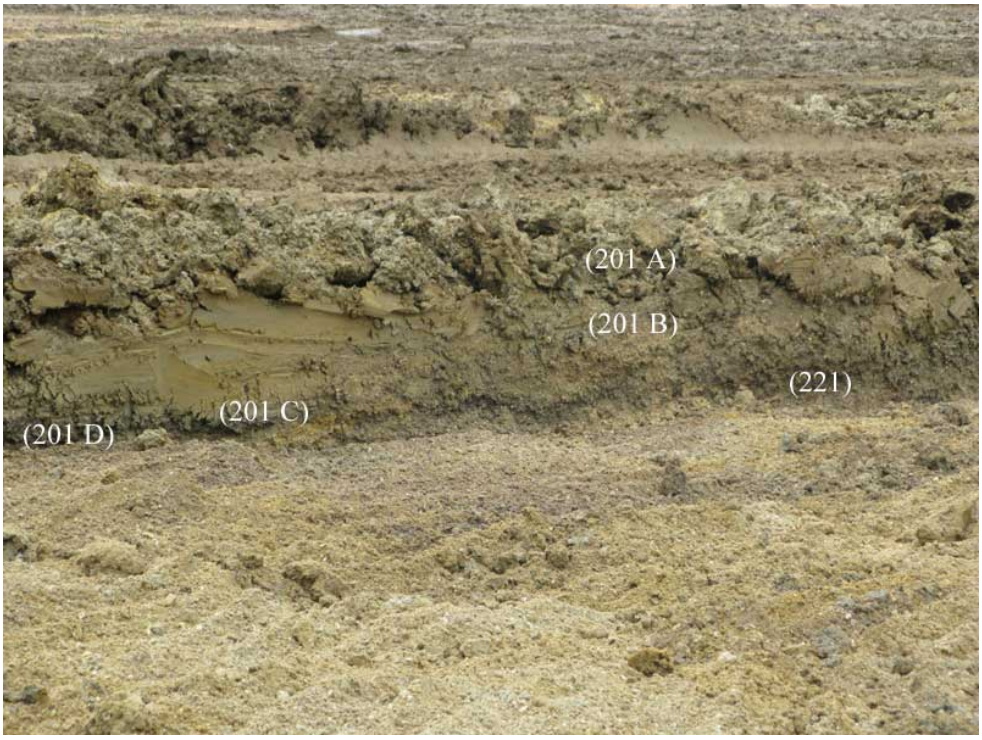


Plate 2. Section through the gravel island (221)

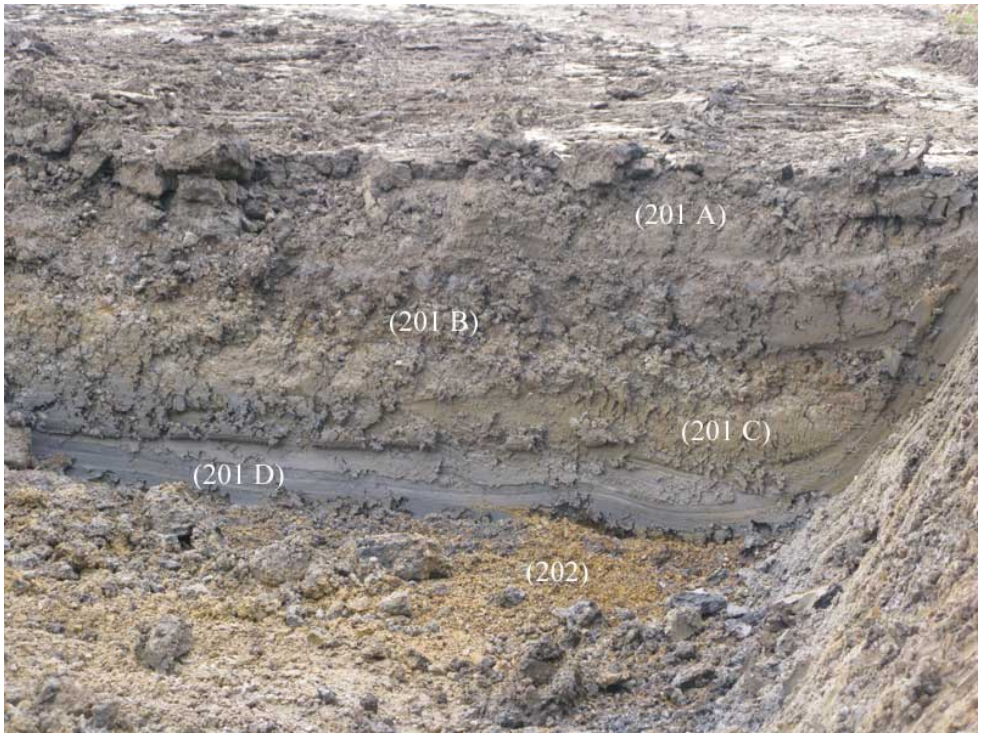


Plate 3. The alluvial sequence

Covering these deposits across the entire area was a 0.6m thick layer of mottled pale grey to orange-brown sandy-silt (05)=(24)=(64)=(201B) alluvium. It is likely that the

inundation of water that facilitated this build up of silt was also responsible for the erosion or washing away of the some of the island caps such as deposit (222) on island (221). Overlying deposit (201B) was a 0.6m-0.9m thick alluvial deposit (04)=(48)=(65)=(201A) comprising mid brown-grey silt-clay with 1% small stone and manganese mottling. To the northeast of the site this layer could be seen to consist of two individual layers (28) and above this (23), however the distinction was difficult to spot and was noticeable mainly from compaction of each layer (Charlotte Haines *pers. comm*.). This was localised and deposit (23) could easily be the result of later dumping of excavated material associated with "The Cut" that forms the northern boundary only a few metres away.

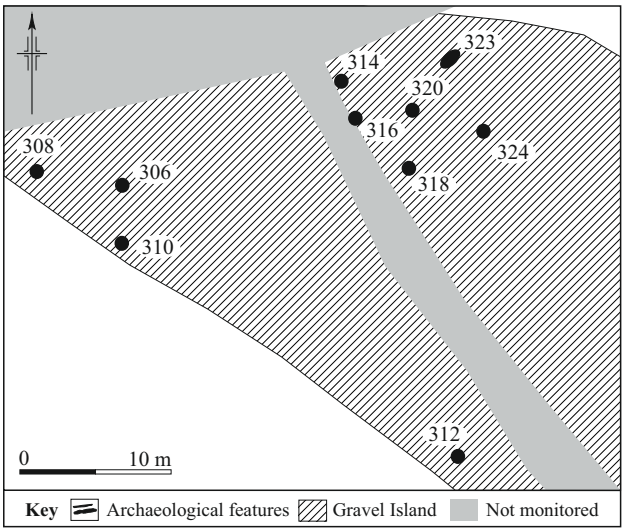
4.1.4 **Late Mesolithic camp** (Figure 3)

The gravel island (268) was at least 0.4 –0.5m thick with notable tree throw holes on its surface. Cut into the surface of this island were several shallow pits or scoops that appeared to have been fire-pits. All displayed scorching of the natural at the edges indicating burning *in situ*.

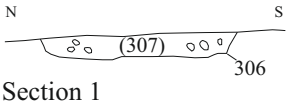
Context	Description	Dimensions	Fill
306	Sub-circular cut	c. 0.5m diameter	Black clay-silt with burnt flint (307) 0.04m thick
308	Sub-circular cut	c. 0.3m diameter	Black clay-silt with burnt flint (309) 0.04m thick
310	Sub-circular cut	c. 0.7m diameter	Black clay-silt with burnt flint (311) 0.05m thick
314	Sub-circular cut	c. 0.5m diameter	Black clay-silt with burnt flint (315) 0.05m thick
316	Sub-circular cut	c. 0.5m diameter	Black clay-silt with burnt flint (317) 0.07m thick
318	Sub-circular cut	c. 0.5m diameter	Black clay-silt with burnt flint (319) 0.1m thick
324	Sub-circular cut	c. 0.75m diameter	Black clay-silt with burnt flint (325) 0.2m thick

Close to pit 324, to the north, was a spread of burnt sand and fine charcoal (323). This measured roughly 2.5m by 1.5m in plan although it was irregular in shape. This could represent a disturbed fire-pit or perhaps the rake-out and discard of an earlier fire within pit 324.

Plate 4. Feature 306 before excavation



Close up plan of Mesolithic features



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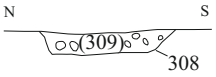

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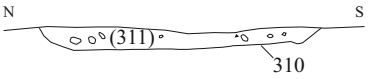

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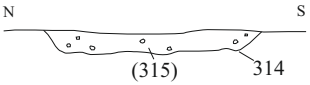

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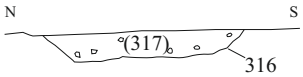

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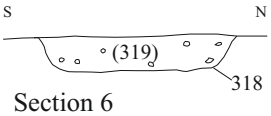

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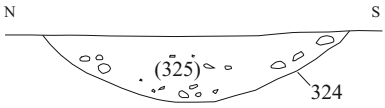
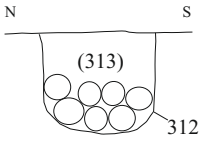


Section 7

Sections of Hearths or Fire-pits



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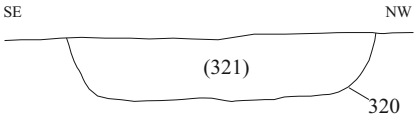


Section 9

Sections of Pits

Figure 3: Mesolithic features - plan and sections

Also close to pit 324 was a larger sub-rectangular pit 320 with rounded corners. This was not used as a fire pit containing only sparse quantities of charcoal and burnt flint. The fill did contain some large pebbles that had been subject to heat and deer antler that had signs of cutting and working. A sample of this antler was sent for radiocarbon analysis; unfortunately no date could be assigned (see section 5.4)

Context	Description	Dimensions	Fill
320	Sub-rectangular cut	c. 0.8m x 1m	Dark grey clay (321) 0.15m thick

The antler was worked using the groove-and-splinter technique most often associated with Mesolithic hunter-gatherers. Clark (1954) noted that the groove-and-splinter process at Star Carr allowed the creation of rectangular antler "blanks" that were subsequently worked into antler barbed points. One possible use of these points was as "harpoons" for fishing. The deposition of the worked antler so close to the palaeo-channel here may indicate that this was the intended purpose of the manufacture at this site.

Plate 5. Pit 320 during excavation

A second smaller sub-rectangular pit 312 was located to the southwest. Again this was not a fire-pit, the charcoal content was minimal and there was no burnt flint. This pit did contain a quantity of waterlogged wood (possibly broken branches or slightly larger sapling trucks). It is possible that these were laid out in the pit in some order, although it was difficult to be sure. A sample of this wood was sent for radiocarbon analysis producing a date of 4836-4710 calBC (95.4%).

Context	Description	Dimensions	Fill
312	Sub-rectangular cut	c. 0.3m x 0.7m	Dark grey silt-clay (313) 0.25m thick

Covering these features across island (268) was a 0.4m thick layer of mottled pale grey to orange-brown sandy-silt (201B) alluvium. It is likely that the later inundation

of water that facilitated this build up of silt was also responsible for the erosion or washing away of the island cap, as noted previously.

While these features could indicate a single event it is more likely that they represent a continued sporadic, perhaps seasonal, use of the area.

4.1.5 Early Neolithic (Figure 4)

The area shows an alluvial build up during the Early Neolithic, this is represented by deposit (201C). There was no clear soil stabilisation horizon between this and the deposit above, but this may have been removed during the inundation that created deposit (201B). A piece of Red Deer antler was recovered from this layer (201B) that was dated to 3365-3241 calBC (although mislabelled on site).

The only feature associated to this period was a pit 38 that was located close to the palaeo-channel 322. It was cut into the alluvial horizon (201C) and was sealed by deposit (201B). This pit 38 was only seen in section and measured 1.42m along one axis. It was a shallow bowl shape with a maximum depth of 0.11m (Fig. 4, S.10). The primary fill was a 0.02m thick layer of charcoal and burnt clay (39) over the whole base. The secondary fill was burnt clay (the clay structure had disintegrated) with the lower 0.03m an orange-brown colour and the upper 0.02m-0.07m pale orange-white (40). The tertiary fill (41) was a layer of charcoal and burnt clay 0.02m thick over the whole of the feature. The final fill was a layer of pale grey clay with 2% white flecking (un-identifiable inclusions). The fill sequence suggests at least two periods of burning (39 & 41). It is possible that fill (40) is the partial collapse of a clay superstructure with the collapsed material being levelled before a subsequent use of the feature (Moore 2009).

4.1.6 Middle Neolithic activity

The Middle Neolithic in the area is associated with a stabilised horizon within the alluvial sequence between the lower deposit (201B) and the upper deposit (201A). It is dated by a single radiocarbon date from a preserved timber post, which had been sealed by the upper alluvial deposit. A lot of trees had grown above the gravel islands from this level during this period with some of them accounting for the tree throw holes seen in the surface of the gravels below. It would indicate that much of the area was covered in woodland at this time.

Situated on what would have been the southerly bank of palaeo-channel (322), against the shore-line of island (268) was a posthole 326. This was set within Deposit (201B) and cut down into the underlying gravels.

Context	Description	Dimensions	Fill
326	Sub-circular cut	c. 0.2m diameter	Dark grey clay-silt (327) 0.25m thick

The waterlogged end of the oak post associated with this feature had been preserved, and had been noticeably shaped (see section 5.3.1). A sample of this post was sent for radiocarbon analysis giving a date of 3214-2928 calBC

A second solitary posthole 231 was recorded cut into the gravel on the northern shoreline of island (230). It was difficult to positively identify the layer that sealed this feature, but it appeared to be alluvial layer (201A).

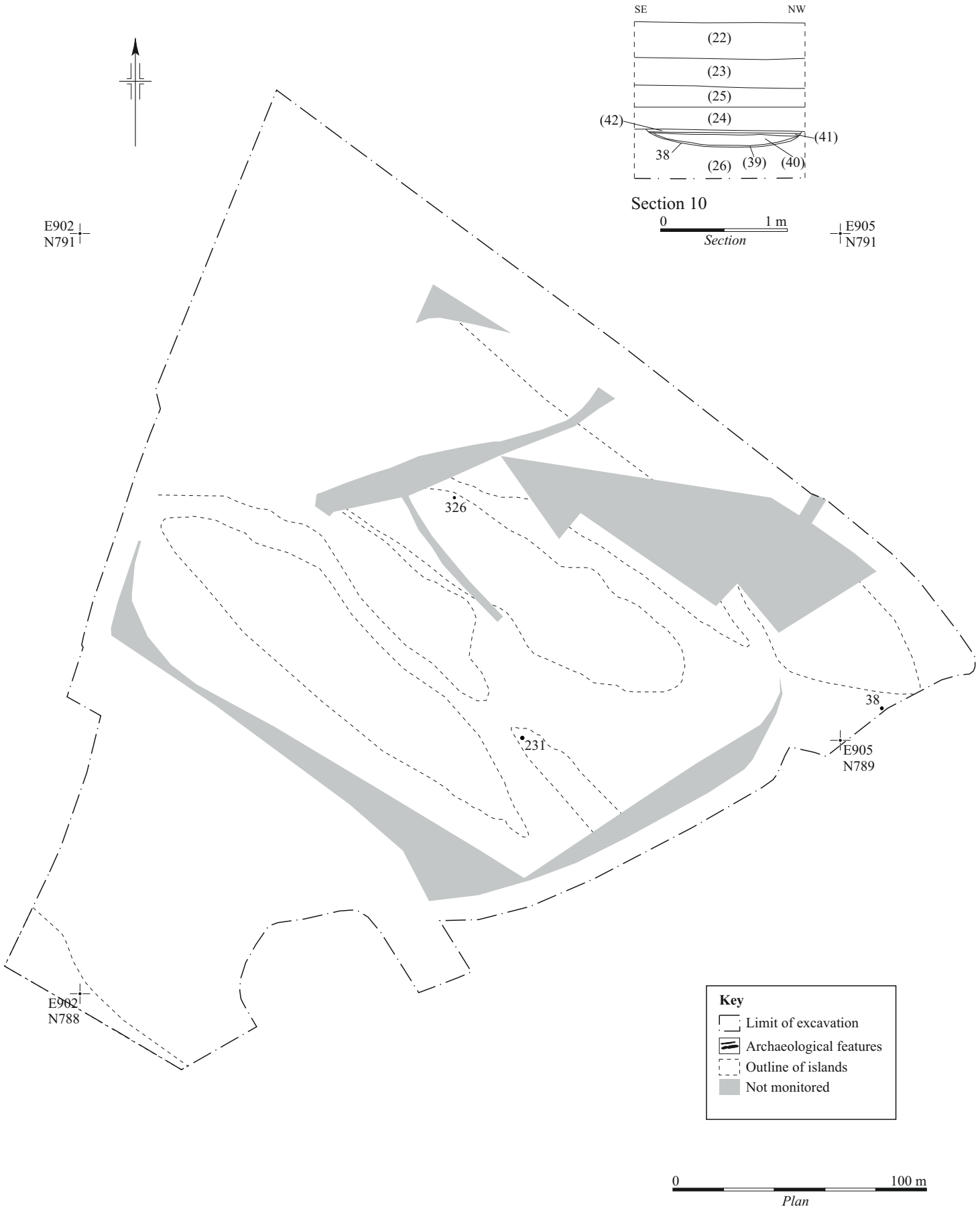


Figure 4: Early and middle Neolithic - plan and section

Context	Description	Dimensions	Fill
231	Sub-circular cut	c. 0.15m diameter	Dark grey clay-silt (232) 0.35m thick

The conical base suggesting a tapered post had been driven in (SU 90412 78885), although no organic material was preserved.

Both postholes are isolated features, but their position close to the banks of palaeo-channels may indicate that these channels were possibly still flowing or at least very wet at this time. These posts may represent markers or mooring points for small boats or canoes.

4.1.7 Later Neolithic and Bronze Age (Figure 5)

Following the Middle Neolithic was a period of inundation resulting in the formation of alluvial deposit (201A). This alluvial layer filled and sealed the earlier palaeo-channels, indicating that they were no longer active. The area then formed a stable soil horizon, a remnant of which survived as a thin layer of orange-brown-grey silt-clay (47) 0.02-0.04m thick to the northwest of the site.

Structure A

A possible four post lean-to structure (Structure A) was present. It consisted of two upright postholes 288 and 290 with two smaller postholes 292 and 294 behind at roughly 45^{o} to the rear (Fig. 6).

Context	Description	Dimensions	Fill
288	Circular cut	c. 0.25m diameter	Dark grey silt-clay (289) 0.24m thick
290	Circular cut	c. 0.25m diameter	Dark grey silt-clay (291) 0.2m thick
292	Circular cut	c. 0.2m diameter	Dark grey silt-clay (293) 0.2m thick
294	Circular cut	c. 0.2m diameter	Dark grey silt-clay (295) 0.2m thick

Associated with this structure appears to be two potential fire-pits 274 & 276, three other pits 278, 280 & 286 and a posthole 282. Pit 278 was associated with sherds of Peterborough Ware pottery (Fig. 6, S.22).

Context	Description	Dimensions	Fill
274	Sub-circular cut	c. 0.3m diameter	Dark grey-brown clay (275) with charcoal
276	Sub-circular cut	c. 0.4m diameter	Dark brown clay (265) with ash

Context	Description	Dimensions	Fill
278	Sub-rectangular cut	c.1.3m x 0.7m	Dark grey-brown clay (279) 0.3m thick
280	Sub-circular cut	c.0.5m diameter	Dark grey-brown clay (281)
286	Sub-rectangular cut	c. 1.2m x 0.8m	Dark grey-brown clay (287)

Context	Description	Dimensions	Fill
282	Sub-circular cut	c. 0.25m diameter	Dark grey clay (283)

Pits with burnt material

Cut into the surface of the uppermost alluvial deposit (201A) were twenty pits, some in small clusters, others isolated. These were all of a similar character, their fills all

contained large quantities of burnt flint and fine charcoal staining. There was no associated scorching of the surrounding deposits as one would expect if these represented fire-pits or hearths. Therefore one must conclude that the burning occurred elsewhere and the burnt residue was later dumped or deposited within these pits (Fig. 6, S.15-20, S.32 & S.47).

Context	Description	Dimensions	Fill
87	Sub-circular cut	c. 0.8m diameter	Dark grey silt-clay with burnt flint (86) 0.22m thick
107	Sub-circular cut	c. 1.1m diameter	Dark grey silt-clay with burnt flint (108) 0.1m+ thick
109	Sub-circular cut	c. 0.7m diameter	Dark grey silt-clay with burnt flint (110) 0.1m+ thick
111	Sub-circular cut	c. 0.3m diameter	Dark grey silt-clay with burnt flint (112) 0.1m+ thick
113	Sub-circular cut	c. 0.6m diameter	Dark grey silt-clay with burnt flint (114) 0.1m+ thick
236	Sub-circular cut	c. 0.8m diameter	Dark grey silt-clay with burnt flint (237) 0.3m thick
238	Sub-circular cut	c. 0.9m diameter	Dark grey silt-clay with burnt flint (239) 0.3m thick
240	Sub-circular cut	c. 1.1m diameter	Dark grey silt-clay with burnt flint (241) 0.1m+ thick
246	Sub-circular cut	c. 0.7m diameter	Dark grey silt-clay with burnt flint (247) 0.2m thick
250	Sub-circular cut	c. 0.3m diameter	Dark grey silt-clay with burnt flint (251) 0.1m thick
252	Sub-circular cut	c. 0.3m diameter	Dark grey silt-clay with burnt flint (253) 0.12m thick
254	Sub-circular cut	c. 0.5m diameter	Dark grey silt-clay with burnt flint (255) 0.1m thick
256	Sub-circular cut	c. 0.8m diameter	Dark grey silt-clay with burnt flint (257) 0.1m+ thick
262	Sub-circular cut	c. 0.6m diameter	Dark grey silt-clay with burnt flint (263) 0.1m+ thick
296	Sub-circular cut	c. 0.7m diameter	Dark grey silt-clay with burnt flint (297) 0.2m thick
298	Sub-circular cut	c. 0.6m diameter	Dark grey silt-clay with burnt flint (299) 0.2m thick
300	Sub-circular cut	c. 0.5m diameter	Dark grey silt-clay with burnt flint (301) 0.15m thick
302	Rectangular cut	c. 0.5m x 1m	Dark grey silt-clay with burnt flint (303) 0.1m+ thick
304	Sub-circular cut	c. 0.7m diameter	Dark grey silt-clay with burnt flint (305) 0.1m+ thick
328	Sub-circular cut	c. 0.3m diameter	Black clay-silt with burnt flint (329) 0.1m thick

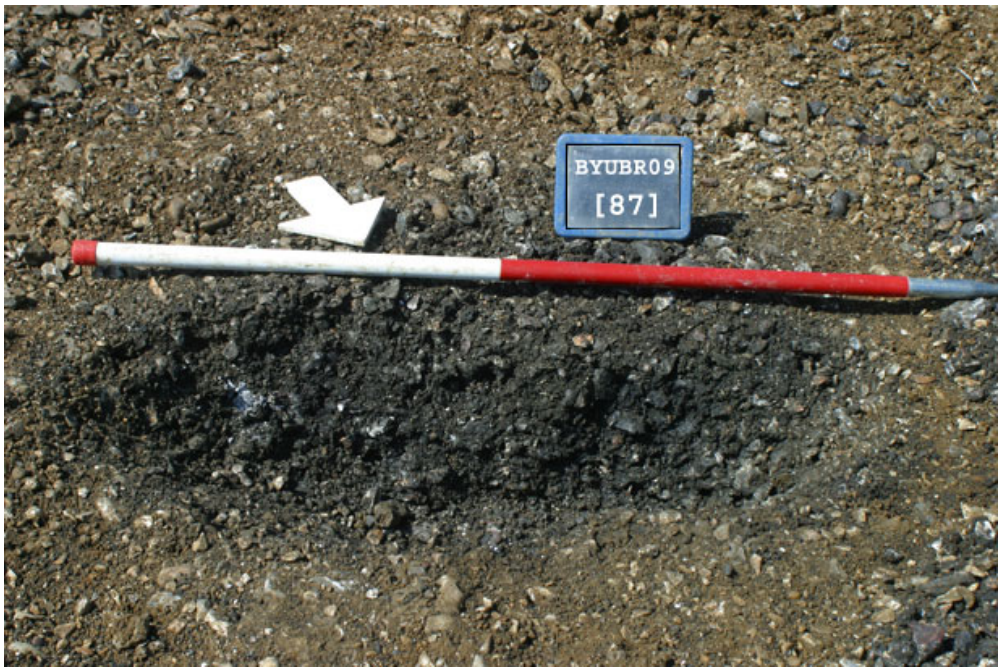


Plate 6. Pit 87 during excavation

The rectangular nature of pit 302 was difficult to ascertain, it is possible that in reality it is two inter-cutting sub-circular pits. Pits 236 and 238 were associated with a possible posthole (248) in close proximity, although this could simply be a small pit as the nature of the fill was similar to the other pits (Fig. 6, S.21).

Context	Description	Dimensions	Fill
248	Sub-circular cut	c. 0.2m diameter	Grey clay-silt with burnt flint (249) 0.1m thick

Dating evidence for these pits is sparse, although the fill of pit 300 did contain a sherd of lightly abraded Neolithic Mortlake pottery and pit 328 a barbed and tanged arrowhead. The arrowhead was in excellent condition and must be considered contemporary while the Mortlake sherd is likely to be residual.

A further three pits with similar fills were recorded in section to the northeast of the site. The cuts of these pits were described by the on-site archaeologist as difficult to identify, but they appear to have been cut into the surface of deposit (201A). No dating evidence was associated with them (Fig. 7, S.23, see Fig. 5 for location).

Context	Description	Dimensions	Fill
34	Sub-circular cut	c. 0.42m diameter	Dark grey silt-clay with burnt flint (35) 0.08m thick
43	Sub-circular cut	c. 0.52m diameter	Dark grey silt-clay with burnt flint (29) 0.04m thick
44	Sub-circular cut	c. 0.63m diameter	Dark grey silt-clay with burnt flint (31) 0.07m thick Pale grey clay (32) upper fill 0.3m thick

A later Roman pit in the same area appears to have truncated a fourth pit containing burnt material (see section 4.1.8). These pits clearly show that contemporary activity spreads north beyond the site boundary.

Possible Circular Structure

These eight pits or large postholes together with seven features originally thought to be tree holes appear to form a rough circular structure approximately 45m in diameter in the north of the site (Fig. 7, S.34-37).

Context	Description	Dimensions	Fill
203	Sub-circular cut	c. 0.9m diameter	Dark grey silt-clay with gravel (204) 0.07m thick
205	Sub-circular cut	c. 0.8m diameter	Dark grey silt-clay with burnt flint (206) 0.05m thick
207	Sub-circular cut	c. 1m diameter	Mid brown grey clay silt (208) 0.17m thick
209	Sub-circular cut	c. 0.9m diameter	Dark grey silt-clay with gravel (210) 0.07m thick
339	Sub-circular cut	c. 0.8m diameter	Dark grey-brown clay (340)
341	Sub-circular cut	c. 1m diameter	Dark grey-brown clay (342)
344	Sub-circular cut	c. 0.7m diameter	Brown-orange silt-clay (343) 0.1m thick
346	Sub-circular cut	c. 1 m diameter	Brown-orange silt-clay (345) 0.1m thick

The features thought to be treeholes were not recorded by the archaeologist on site (P. Riccoboni *pers. comm.*), but were assigned the following numbers during the post-excavation analysis 150, 152, 154, 156, 158, 160, 162 and 164.

Within this possible structure were several discrete features, that may have formed part of an internal structure or represent pits. These consisted of four identified pits or postholes and several feature initially thought to be tree holes.

Context	Description	Dimensions	Fill
211	Sub-circular cut	c. 0.28m diameter	Dark grey silt-clay with burnt flint (212) 0.07m thick
213	Sub-circular cut	c. 0.8m diameter	Dark grey silt-clay with gravel (214) 0.05m thick
215	Sub-circular cut	c. 0.67m diameter	Black- brown clay silt (216) 0.2m thick
217	Sub-circular cut	c. 0.55m diameter	Dark grey silt-clay with gravel (210) 0.1m thick

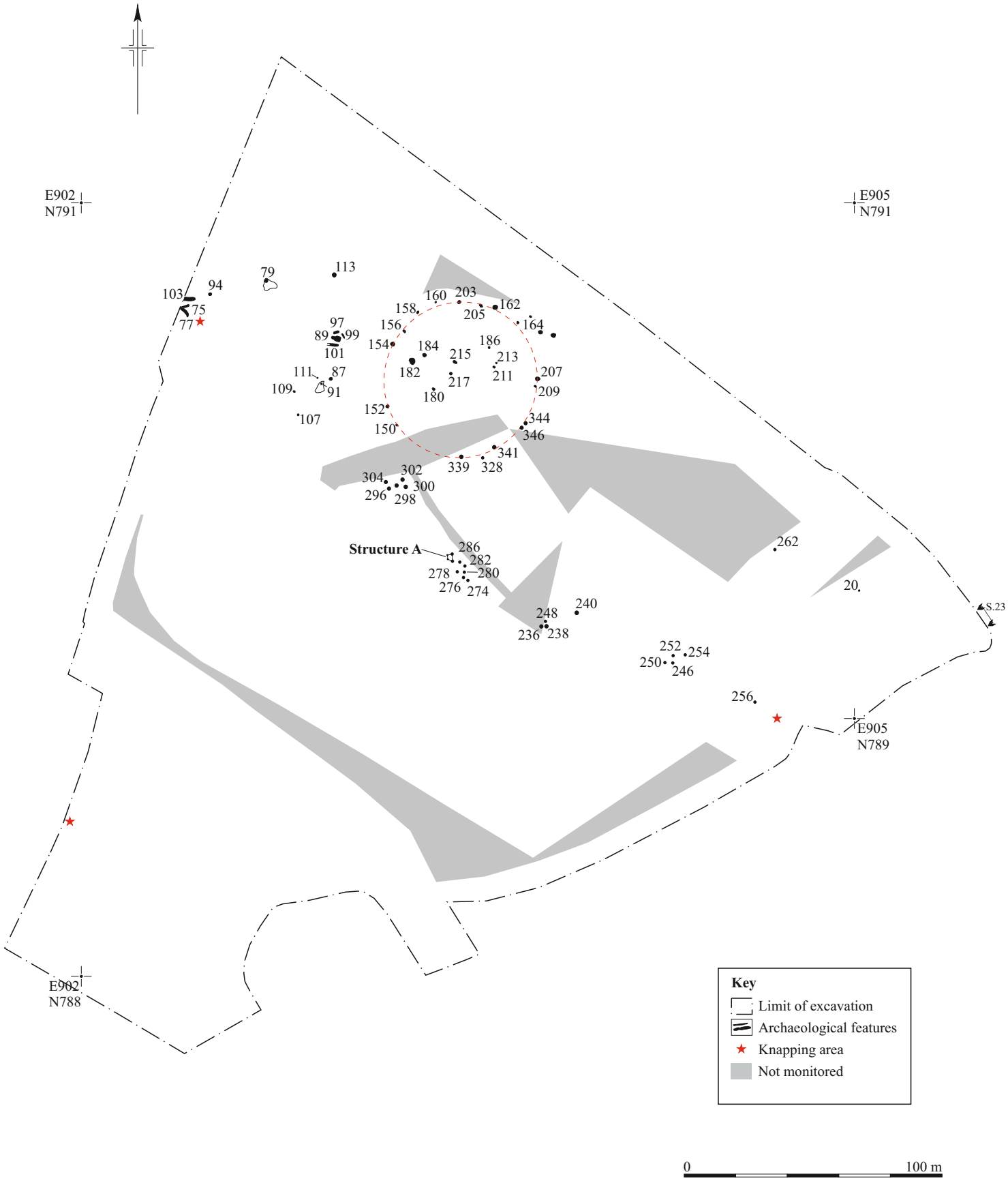


Figure 5: Late Neolithic and Bronze Age - plan

Again the features thought to be treeholes were not recorded by the archaeologist on site, but were assigned the following numbers during the post-excavation analysis 180, 182, 184 and 186.

Pits and Pit Clusters

To the north and west of the possible circular structure were a number of pit clusters as well as isolated pits. Some of these features appeared to be short linear cuts, but too short to be described as a ditch or gully, but possibly remnants of a structure.

The first cluster was situated at the western edge of the excavation area and indicated that the prehistoric features extend beyond the site edge to the west. The curving nature of the short linear features in this group may be indicative of structures. Although no finds were associated with the fills of the features worked flint was found in the topsoil directly above these features (Fig. 7, S.25-27).

Context	Description	Dimensions	Fill
75	Short linear cut	c. 0.4m wide	Dark grey silt-clay with gravel (74) 0.06m thick
77	Short linear cut	c. 0.45m wide	Dark grey silt-clay with gravel (76) 0.11m thick
94	Sub-circular cut	c. 1.1m diameter	Mid brown silt-clay with gravel (93) 0.36m thick
103	Short linear cut	c. 1.5m wide	Dark grey silt-clay with gravel (102) 0.36m thick

A second cluster was represented by three short linear features around a central pit 89. This pit was associated with Late Neolithic pottery (Fig. 7, S. 28-31).

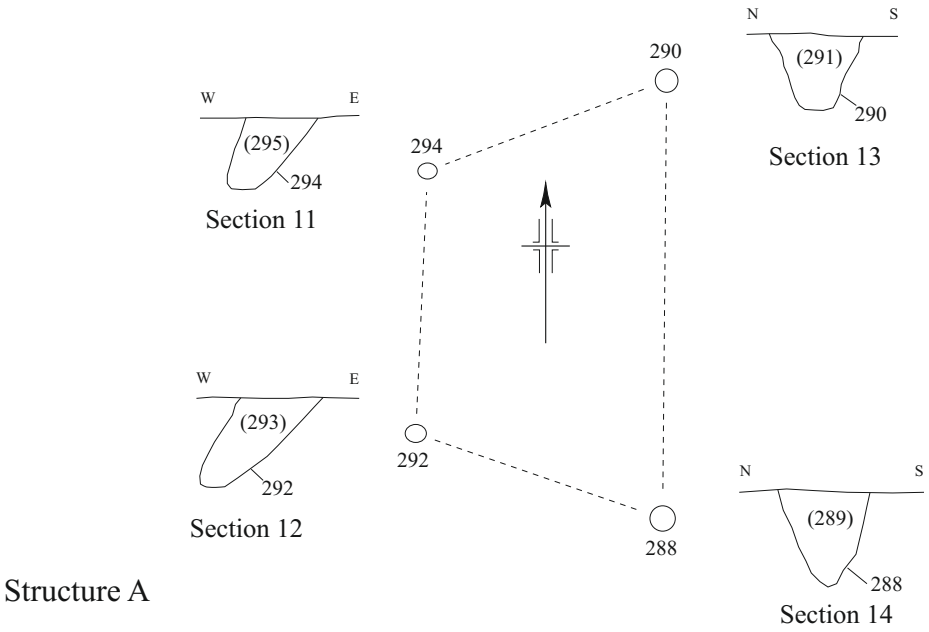
Context	Description	Dimensions	Fill
89	Sub-rectangular cut	c. 0.4m wide	Orange-brown silt (95) 0.16m+ thick below dark grey silt-clay with gravel (88) 0.09m thick
97	Short linear cut	2.1m long by 0.95m wide	Grey-brown silt-clay with burnt flint (96) 0.21m thick
99	Short linear cut	1.9m long by 0.65m wide	Grey-brown silt-clay with burnt flint (98) 0.16m thick
101	Short linear cut	2m long by 0.45m wide	Grey-brown silt-clay with burnt flint (100) 0.21m thick

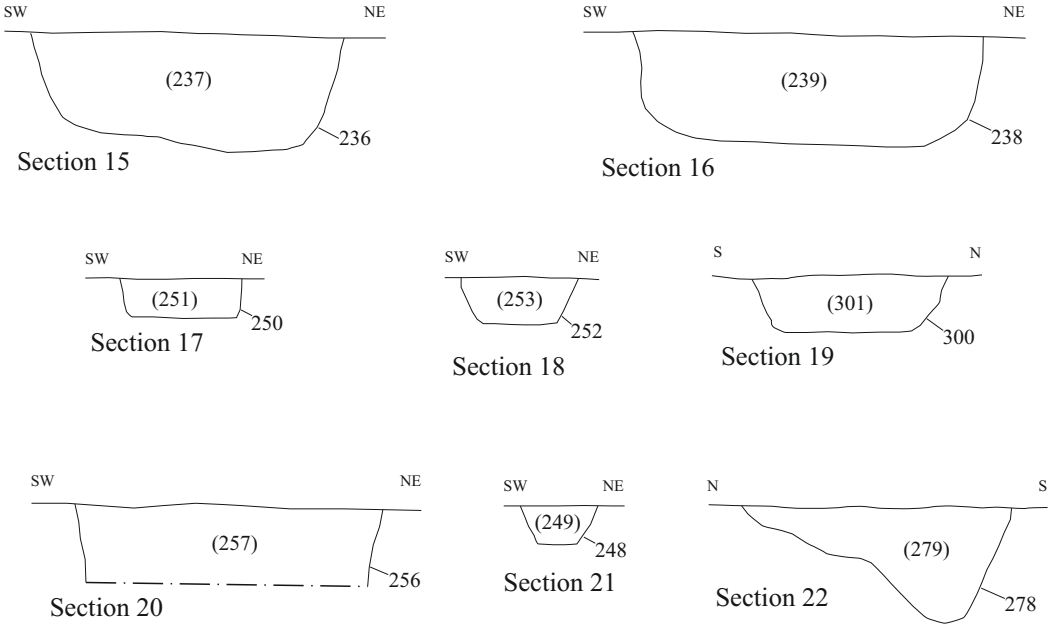
Two isolated pits lay in close proximity to these clusters. Both pits 79 and 91 were located in either a natural hollow or in an earlier tree throw-pit. Pit 91 may have been associated with pits 87, 107, 109 and 111 that contained burnt material (see above).

Context	Description	Dimensions	Fill
79	Sub-circular cut	c. 0.6m diameter	Mid brown silt-clay with charcoal (78) 0.28m thick
91	Sub-circular cut	c. 0.9m diameter	Mid brown silt-clay (90) 0.2m thick

A solitary pit 20 was recorded to the northeast of the site; this contained a small assemblage of animal bone associated with a sherd of early Bronze Age pottery (Fig. 7, S.42).

Context	Description	Dimensions	Fill
20	Sub-circular cut	c. 0.6m diameter	Red-brown silt-clay with charcoal (21) 0.15m thick





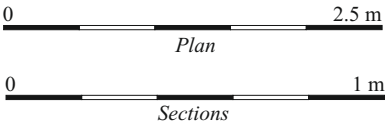
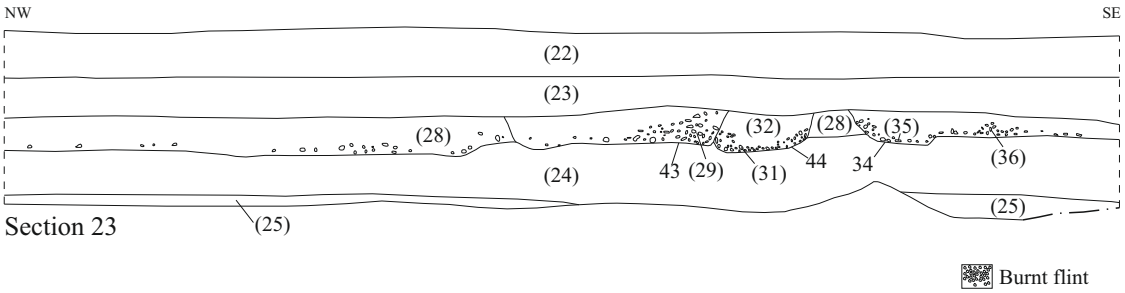
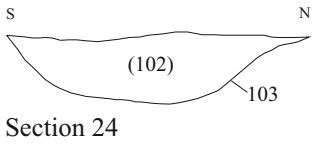
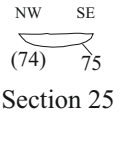
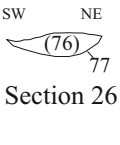


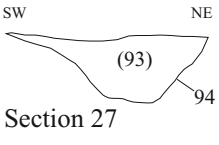
Figure 6: Late Neolithic and Bronze Age - Structure A and sections

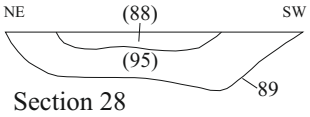


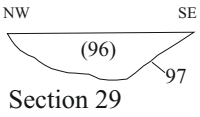


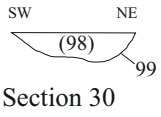


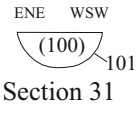


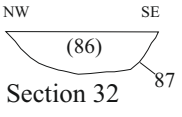


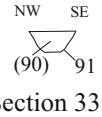


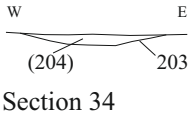


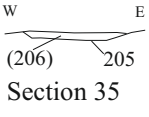


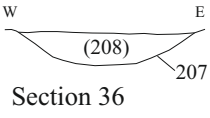


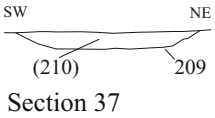


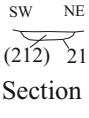


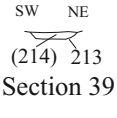


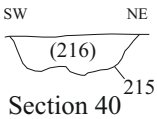


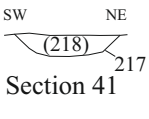


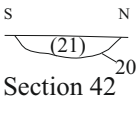












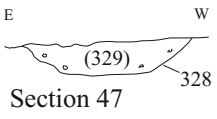


Figure 7: Late Neolithic and Bronze Age - sections

4.1.8 Iron Age and Roman activity

Activity of this date was sparse in the area and in the main located to the southwest of the area above the gravel island (349). The deposit of ginger clay-sand with 2% flint gravel (03) formed the capping of this island and marked the edge of a gravel island that extended to the west and northwest. Iron Age and Roman pottery, a fragment of Roman roof-tile (tegula) and a residual flint flake and a small quantity of burnt flint were found on the surface of this deposit. The tegula is noteworthy as it may indicate that a Roman building lies to the south beyond the edge of the site.

A Roman pit in the same area as three prehistoric pits appears to have truncated a fourth pit that contained containing burnt material (see section 4.1.7). A spread of burnt flint (36) was recorded, however the cut of this pit was described by the on-site archaeologist as difficult to identify, this was the same for the other pits in the area. The burnt material was associated with a single sherd of grog tempered ware (37) though to be early Roman in date, while the burnt flint is likely to be residual from the disturbed earlier pit.

4.1.9 Medieval and Post-medieval (Figures 8-9)

To the southwest of the site deposit (03) was overlain by a pale yellow-brown and pale blue-grey clay with 1% small stone and sparse manganese mottling (02). This contained a residual sherd of late Bronze Age pottery along with medieval and post-medieval tile and the occasional piece of burnt flint. To the northwest a lower ploughsoil (47) was noted, although this was not extensive and consisted of a mottled orange-brown silt-clay that contained a residual sherd of late Neolithic pottery. A similar sporadic deposit (66) was noted to the south of the site.

A spread of compact limestone with sand and gravel (92) was seen to lie on the surface of deposit (201A) close to the north-western edge of the site. This spread appears to be demolition material or the remnant of a surface associated with a small building that had previously been in this area. The building was not present on the 1:2,500 OS map of 1875, but was recorded on the second edition OS map of 1899. The 1:2.500 OS map of 1931 shows at least three small buildings and two small enclosed areas possibly yards in this area. The buildings were not depicted on the 1:2,500 OS map of 1973.

Close to the northern boundary of the site deposits of red-brown silt and clay alluvium (115) were noted. These were recorded as overlying the earlier alluvial layer (201A). The archaeologist conducting the monitoring described this layer (201A) as sloping down towards the north, ranging from 0.1m to 1.3m thick. Although recorded as a single context it is likely to represent a sequence of alluvial and river deposits associated with “The Cut” that lies to the north of the site, it may even represent an earlier course prior to canalisation.

Given the size and straight sides of pit 83 it is likely to be a recent geotechnical pit, the full extant was not recorded.

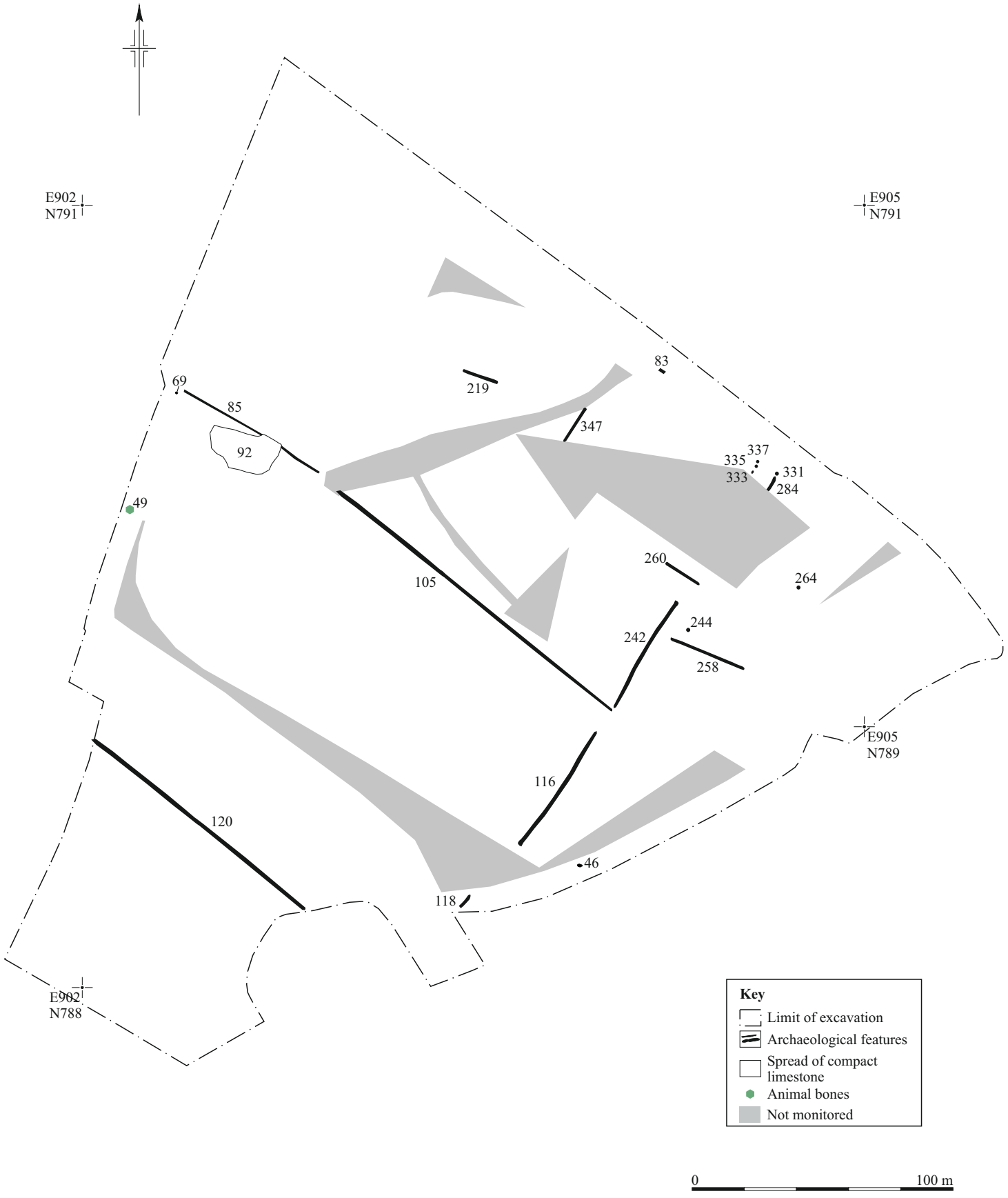
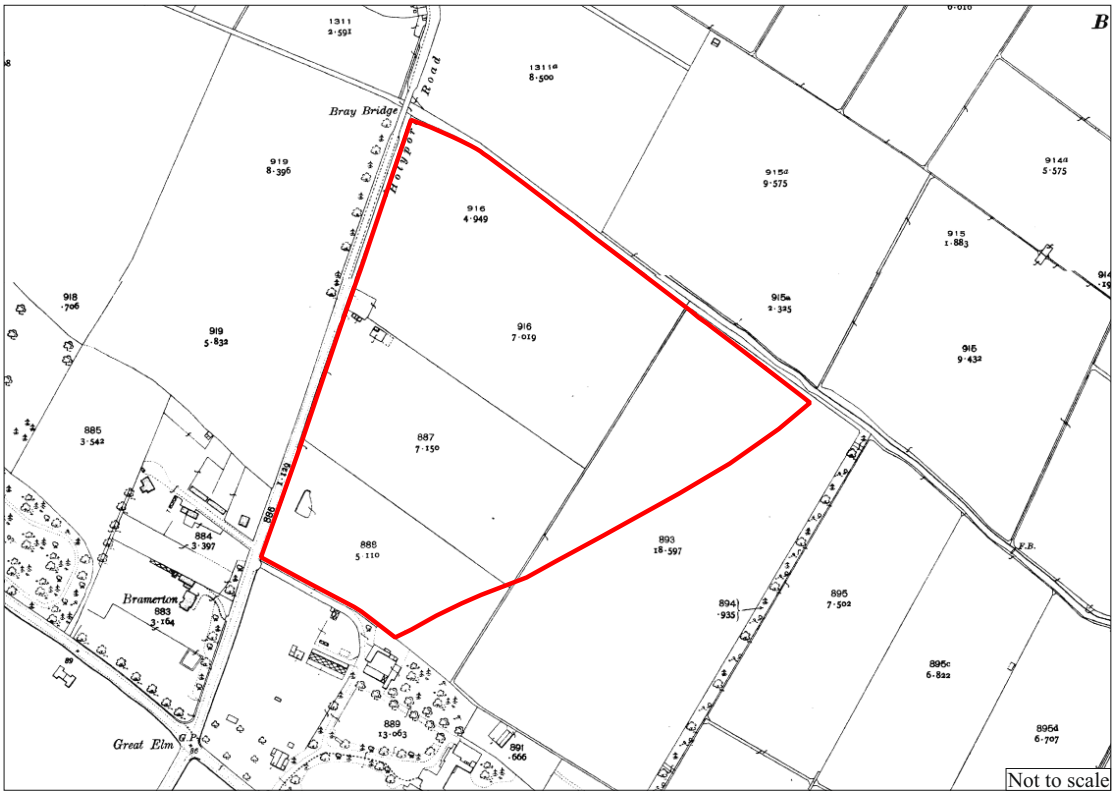
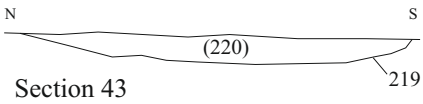


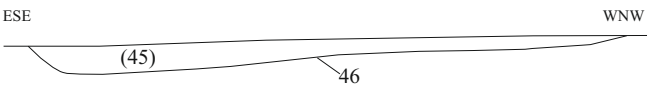
Figure 8: Post-medieval and undated features - plan



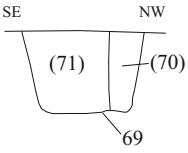
Detail of 1931 OS map



Section 43



Section 44



Section 45

Section

Figure 9: Detail of 1931 OS map and sections of Post-medieval and undated feastures

Context	Description	Dimensions	Fill
83	Rectangular cut	2.25m x 0.6m	Red-grey clay-silt with gravel (82) 0.16m + thick

Further modern pits were also recorded, which contained post 19th century finds.

Context	Description	Dimensions	Fill
244	Sub-rectangular cut	c.1.5m x 0.75m	Dark grey-brown clay (245) with brick fragments
264	Sub-circular cut	c. 1.1m diameter	Dark brown clay (265) with roots
331	Sub-circular cut	c.1m diameter	Dark grey-brown clay (332)
333	Sub-rectangular cut	c. 0.9m x 0.8m	Dark grey-brown clay (334)
335	Sub-circular cut	c.0.3m diameter	Dark grey-brown clay (336)
337	Sub-circular cut	c.0.4m diameter	Dark grey-brown clay (338) with brick fragments

Field boundaries

Three field boundaries seen on the early OS maps were recorded in the area. Two aligned northwest to southeast 85/105, 120 and one perpendicular to these that was recorded in four sections 116/118/242/284. All contained modern iron objects and brick fragments within their fills.

Context	Description	Dimensions	Fill
85	Linear cut	c.0.8m-1m wide	Mid brown clay (84) with brick fragments
105	Linear cut	c.0.8m-1m wide	Mid grey-brown clay (106) with brick fragments
116	Linear cut	c.1m wide	Dark grey-brown clay (117)
118	Linear cut	c.1m wide	Dark grey-brown clay (119)
120	Linear cut	c.1m wide	Dark grey-brown clay (121)
242	Linear cut	c.1m wide	Mid grey-brown clay (243) with brick fragments
284	Linear cut	c.1m wide	Dark grey-brown clay (285) with brick fragments

Four other hedge/ditch sections were also recorded that did not correspond to field boundaries noted on the OS maps. All displayed root disturbance and were on similar alignments to the hedges noted above. No finds were associated with these features. It is likely that these represent the earlier post-medieval field system (Fig. 9, S.43).

Context	Description	Dimensions	Fill
219	Linear cut	c.0.8m-1m wide	dark brown clay (220)
258	Linear cut	c.0.8m-1m wide	Mid grey-brown clay (259)
260	Linear cut	c.1m wide	Dark grey-brown clay (261)
347	Linear cut	c.1m wide	Dark grey-brown clay (348)

The uppermost deposit across the entire site was 0.2m thick ploughsoil (01)=(22)=(200) composed of mid-dark grey-brown clay silt with 1% stone. Sherds of 16th to 19th century pottery were noted from this layer.

4.1.10 Undated

A number of isolated features were recorded that produced no datable material from their fills and it was not possible to ascribe a date based on association.

To the northwest of the site a posthole was recorded cut into layer (201A), while it was in the vicinity of the farm buildings seen on the early OS maps it is unlikely to be

associated as it was sealed by a lower ploughsoil (47). The presence of a post-pipe (71) within the feature also points to an earlier date (Fig. 9, S.45).

Context	Description	Dimensions	Fill
69	Sub-circular cut	c. 0.29m diameter	Orange-brown silt-clay (70) 0.21m thick

An oval deposit of animal measuring 1.3m by 0.9m in plan was located 47m to the southwest of posthole 69. A cut for this bone deposit could not be identified, but it is unlikely, though not impossible, that the bones were part of a complete or semi-complete carcass that was inundated during the alluvial deposition (201A) prior to the Late Neolithic.

To the south of the site an isolated pit 46 was recorded cut into the top of the alluvial (201A). It was suggested that the dark fill (45) may have been associated with burning, although no scorching of the surrounding deposits were recorded and only two pieces of thermally fractured flint were present in the fill. This pit was much deeper than the heavily truncated prehistoric features recorded and may be of a more recent origin (Fig. 9, S.44).

Context	Description	Dimensions	Fill
46	Sub-oval cut	c. 1.9m by 1m	Dark grey-brown silt-clay (45) 08m thick

4.2 Reliability of Techniques and Results

The reliability is considered good. The archaeologist was allowed time and space to conduct the work generally during periods of relatively good weather. However, periods of heavy rain did make site conditions difficult. The extended nature of the watching brief was problematic due to the number of different archaeologists involved in the recording of the site. Differences in on-site methodologies were noticeable between different archaeologists. These archaeologists were not always informed that work was taking place and certain areas of the site were not monitored.

Plate 7. Work during poor weather in May 2012

5 FINDS

5.1 Pottery and Fired Clay

5.1.1 The Late Neolithic Pottery (*by Frances Raymond*)

A small group of Peterborough Ware sherds derived from at least three vessels came from cut 89 (26 sherds, weighing 90g.). All are very fragmented (1 to 3cm across) and vary in condition from fresh to moderately abraded. Evidence of form is so limited that it is only possible to attribute one sherd to a specific sub-style with any degree of confidence, while information about decoration is confined to decorative devices and motifs that do not allow for a reconstruction of design.

The group includes the top of an expanded rim from a Mortlake Ware bowl (weighing 3g.). This is embellished with two parallel lines of twisted cord impressions running around the vessel mouth on the rim top. The sherd has very dark grey surfaces (5YR3/1) and is made from a soft fabric tempered with sparse to moderate amounts of coarse burnt flint (up to 5mm.), which also contains sparse rounded grains of quartz sand (0.2 to 0.5mm.). This same ware was used for a wall fragment decorated with two partial parallel whipped cord impressions (weighing 4g.); and for seven split wall fragments (weighing 7g.). While it is possible that all nine sherds are from the same Mortlake Ware vessel, this is by no means certain.

These fragments are associated with two sherds (weighing 18g.) that are either from the carinated shoulder of a second Mortlake bowl or are from the lower part of a Fengate Ware collar; too little of the profile survives to allow for a resolution of this uncertainty. Both of the sherds are decorated with a herringbone motif composed of short twisted cord impression, have reddish brown to reddish grey exteriors (2.5YR4/4 and 5YR4/2) and are made from an identical ware. This is soft with moderate to common coarse and unevenly distributed burnt flint (up to 8mm.), which is accompanied by very common rounded quartz sand (0.2 to 0.5). Fourteen additional sherds (weighing 53g.) also in this fabric may be from the same vessel. Three are decorated: one with whipped cord maggots (weighing 15g.); and two (weighing 14g.) with partial and indistinct impressions that are probably whipped cord.

The third vessel is represented by a single plain wall fragment made from a soft medium grade ware. This is characterised by common evenly distributed burnt flint (up to 3mm.) and by common rounded to angular quartz sand (0.1 to 1mm.). Although there is no evidence of style or decoration the fabric is in keeping with the range of wares used for Peterborough vessels in the Lower Thames Valley.

Two sherds of Peterborough Ware, both lightly abraded wall fragments that provide no evidence of vessel style. Both are decorated: the one from ploughsoil (01) has four parallel lines of twisted cord impressions; the other from a buried soil horizon (47) is embellished with three parallel whipped cord rows. The sherds are too small to indicate the motifs, orientation or position of the decoration. The fragments are made from a similar soft ware with a laminar fracture, tempered with moderate quantities of coarse flint.

A few fragments of lightly abraded Neolithic pottery came from two pits; 7 sherds, weighing 19g. from pit 278, fill (279); and 1 sherd, weighing 3g. from pit 300 fill

(301). All are made from a fabric which is very similar to one of those used for the Mortlake bowl sherds from pit 18 (Raymond 2010). The ware is soft and friable and has been tempered with sparse quantities of coarse burnt flint (up to 5mm.). The fragments from deposit 279 are derived from a single thick walled vessel (walls of 14mm.). The only sherd with a surviving external surface is embellished with a fingernail impression. This and the fabric is consistent with Peterborough Ware, but with so little evidence of form or decoration there is also a possibility that they may be of early Neolithic origin.

5.1.2 Bronze Age Pottery (*by Frances Raymond & Paul Riccoboni*)

A lightly abraded early Bronze Age sherd from fill (21) of pit 20 represents 10% of the base and lower walls of a small urn (with a diameter of approximately 14 centimetres). There is no evidence for the profile of the vessel, which is made from a medium grade ware tempered with very common grog (up to 3mm.).

Two residual late Bronze Age sherds from deposits (01) and (02) are lightly to moderately abraded wall and base fragments made from a relatively hard sandy fabric, tempered with moderate quantities of medium grade burnt flint (up to 3mm.). A further two late Bronze Age sherds from the surface of deposit (201A) are also lightly to moderately abraded wall fragments made from a similar hard sandy fabric. The larger of the two displays a groove or slight carination.

5.1.3 Iron Age and Roman Pottery (*by Frances Raymond*)

The attribution of the moderately to heavily abraded Iron Age wall sherds from deposits (01) and (03) relies on the character of the wares, which are soft, coarse and sandy. The sherd from deposit (01) is low fired and unoxidised throughout, a characteristic most typical of the Middle Iron Age.

The five Roman sherds from deposits (03) and (37) are all heavily to moderately abraded wall fragments. The one from deposit (37) is in an oxidised sandy grog tempered ware typical of the early Roman period. The few from the surface of deposit (03) include one fragment of late Roman Oxfordshire red colour-coat, but are otherwise in greyware or an oxidised sandy fabric of indeterminate phasing.

Deposit	Position	Sherd No	Sherd Wt. (g.)	Date
01	SU90237890	1	4	Iron Age, probably middle Iron Age
03	SU90237877	2	8	One Roman; one late Roman
03	SU90187881	3	3	Iron Age
03	SU90107881	2	4	Roman
37	Not recorded	1	7	Early Roman
TOTALS		**9**	**26**	

5.1.4 Post-medieval Pottery (*by David Gilbert*)

Sherds of red sandy earthenware (**REW**), some with a brown glaze, were noted from the topsoil (01)=(200). Such 'country pottery' was first made in the 16th century, and in many areas continued in use until the 19th century. Sherds of blue transfer print (**BWPW**) were also recorded in this context. These were recorded utilizing the coding system and chronology of the Reading Waterfront type-series (Underwood 1997).

5.1.5 Title

A single fragment of Roman roof-tile (tegula) weighing 209g was recovered from the base context (02) on the surface of context (03). It is in a soft red sandy fabric, very abraded and is residual within its final deposit context. Fragments of Post-medieval ceramic roof tiles were noted from the topsoil (01) and lower plough soil (02).

5.1.6 Fired Clay (*by David Gilbert*)

Several fragments and pellets of low fired clay weighing 112g in total were recovered from sample <010> that was taken from the fill (319) of pit 318. The largest pellets were sub-spherical and weighed 7g. Each had been tempered with crush burnt flint and course sand. This material did not appear to be the remnant of a clay lining to the pit due in part to its rounded nature, nor fragmented sherds of heavily abraded pottery due to the context of deposition. Positive identification remains uncertain, but it is most likely given the early context that these represent idle moulding of the clay by people while sitting close to a fire and that they were never intended to be fired.

Plate 8. Fired clay pellets

5.2 Flint *(by David Gilbert)*

A total of sixty-two struck flints and one piece of struck chert were recovered during the watching brief. Following Andrevsky (1998, 104) dorsal cortex is divided into four categories; the term primary flake refers to those with cortex covering 100% of the dorsal face while secondary flakes have cortex on between 50% to 99% of the dorsal face. Tertiary flakes have cortex on 1% to 49% of the dorsal face while flakes with no dorsal cortex are referred to as uncorticated.

Topsoil Scatter

A sparse scatter of lithic material was seen across the entire site. The material came from the interface of the topsoil (200) and alluvial deposit (201A). Although it represents a sparse scatter not associated with any subsoil features, the spread does appear to respect the earlier gravel islands.

A total of seven struck flints were recovered above the gravel island (221) in the southern Area.

Artefact	L (mm)	W (mm)	B (mm)	Notes
Primary Flake	22	35	6	Slight later damage
Primary Flake	20	30	6	
Secondary Flake	31	19	5	
Secondary Flake	42	52	10	Slight later damage
Tertiary Flake	16	23	3	Damaged
Tertiary Flake	24	20	7	
Tertiary Flake	36	23	6	Good condition

A further thirteen struck flints were recovered from above gravel island (228).

Artefact	L (mm)	W (mm)	B (mm)	Notes
Primary Flake	28	20	5	
Primary Flake	21	20	5	
Secondary Flake	37	30	7	
Secondary Flake	21	21	3	Damaged
Tertiary Flake	31	18	3	
Tertiary Flake	28	18	4	
Tertiary Flake	28	15	5	Damaged
Tertiary Flake	46	26	2	
Uncorticated Flake	40	30	7	
Uncorticated Flake	34	22	3	
Blade	25	12	2	Distal end missing
Blade	35	11	3	Distal end missing
Scrapper	38	28	7	Side/end on primary flake

A total of eight struck flints were recovered above the gravel island (268).

Artefact	L (mm)	W (mm)	B (mm)	Notes
Primary Flake	22	27	6	
Primary Flake	33	24	7	Burnt
Primary Flake	44	38	11	
Tertiary Flake	17	21	5	Damaged
Tertiary Flake	24	23	6	Damaged
Tertiary Flake	32	20	6	
Uncorticated Flake	25	22	5	Distal end missing
Uncorticated Flake	20	13	5	

A single flint flake was recovered from above the gravel island (269).

Artefact	L (mm)	W (mm)	B (mm)	Notes
Tertiary Flake	53	50	9	Distal end missing

Two struck flints were recovered above the gravel island (272).

Artefact	L (mm)	W (mm)	B (mm)	Notes
Primary Flake	50	34	10	
Secondary Flake	29	37	7	

A further five struck flints were recovered as unstratified.

Artefact	L (mm)	W (mm)	B (mm)	Notes
Secondary Flake	24	20	4	
Blade	24	8	1	Broken
Secondary Flake	51	28	4	Damaged
Secondary Flake	31	17	4	Damage to proximal end
Secondary Flake	41	29	9	

All pieces were of chocolate brown flint, with a few starting to show signs of a pale grey patina forming. The majority displayed hard hammer techniques suggesting a late Neolithic-Early Bronze Age date. However, the presence of the two blades indicates a Late Mesolithic to early Neolithic element.

Possible Knapping Areas

Three discrete concentrations of artefacts were noted within the general sparse scatter across the site. The range of cores, core fragments and debitage associated with each is suggestive of knapping areas. The material was not associated with any features but came from the interface between the topsoil and alluvium.

Area 1 - SU 9047 7890

Artefact	L (mm)	W (mm)	B (mm)	Notes
Core Fragment (?)	33	19	12	Damaged, signs of flake removal, 16g
Primary Flake	20	15	5	Slight later damage
Secondary Flake	21	19	1	Slight later damage
Tertiary Flake	24	22	6	Slight later damage
Tertiary Flake	25	24	2	Slight later damage
Tertiary Flake	30	28	6	Damaged
Tertiary Flake	50	20	5	
Blade	28	8	1	Proximal end missing

Area 2 - SU 9019 7886

Artefact	L (mm)	W (mm)	B (mm)	Notes
Core Fragment (?)	58	30	12	Damaged, signs of flake removal, 30g
Core Fragment (?)	42	27	16	Damaged, signs of flake removal, 25g
Secondary Flake	18	25	4	
Secondary Flake	17	15	1	
Secondary Flake	20	18	2	Damaged
Secondary Flake	25	18	3	Proximal end missing
Secondary Flake	50	20	15	Slight later damage
Secondary Flake	35	36	7	Slight later damage
Tertiary Flake	24	18	2	Slight later damage
Tertiary Flake	33	21	2	Slight later damage
Notched Flake	40	14	4	Damaged
Blade	26	11	1	Broken

Area 3- SU 90246 79054

Artefact	L (mm)	W (mm)	B (mm)	Notes
Core	48	50	37	Good condition, 92g
Primary Flake	20	48	8	Good condition
Secondary Flake	38	22	5	Good condition
Tertiary Flake	21	21	2	Slight later damage
Tertiary Flake	12	6	1	Good condition

All pieces were of chocolate brown flint, displaying hard hammer techniques suggestive of a late Neolithic-Early Bronze Age date.

Features

Pit 278 yielded 2 struck flints and 2 thermally fractured flint pieces from its fill (279).

Artefact	L (mm)	W (mm)	B (mm)	Notes
Uncorticated Flake	46	35	5	Distal end missing
Secondary Flake	26	19	5	
Thermally Fractured	37	26	12	
Thermally Fractured	18	13	7	

The two pieces were chocolate brown to honey brown in colour. The hard hammer techniques displayed on this material would suggest a late Neolithic - Bronze Age date.

Several pits contained a mass of thermally fractured flint, three were selected and 10L bulk samples taken. Two features 211 and 215 contained burnt flint fragments. Sample <005> was taken from pit 211, fill (212) and 21 fragments were recovered (103g) two of which appear to be primary flakes. Sample <006> from feature 215 contained just two fragments (50g) of burnt flint noticeably larger than the smaller pieces within pit 211.

Two small spalls of pressure flaking debitage were recovered from Context (319) sample <010>.

Sample <013> was taken from context (329) this contained 364 pieces of thermally fractured flint weighing 1375g with most being very small in size. These pieces were examined for signs that they had been previously worked, this was not apparent. This material was not retained. This sample also contained a Green Low type Barbed and Tanged arrowhead, measuring 26 x 22 x 5mm. Such arrowheads are usually found in contexts with dates around 2300 – 2400 cal BC or later and generally associated with Beakers (cf. The Amesbury Archer).

Plate 9. Barbed and Tanged arrowhead from context (329)

5.3 Environmental Remains

5.3.1 Waterlogged wood (*by P.J. Austin*)

Three samples from context (313), the fill of a pit, and an additional sample <104> from a posthole (327) set against the side of a palaeochannel, were submitted for identification.

All four samples <101>, <102>, <103> and <104> were prepared and examined using standard procedures as described in Hather (2000). Each sample was composed of a single piece of waterlogged wood.

Each piece of wood in each of samples <101>, <102>, <103> and <104> was identified as *Quercus* sp. (oak). Each of the four oak fragments examined shared the same characteristics:

- All growth rings were very narrow, forming robust dense wood.

- Tyloses were frequently present in large vessels, indicating that the wood derived from mature (heart) wood.
- Each fragment derived from a larger piece of wood and may have been split radially.

These characteristics indicate that the wood had grown very slowly over a great many decades. The outer wood surface of each sample was soft and poorly preserved. Neither the innermost nor outermost wood (sapwood) was evident in any of the fragments. It was, therefore, impossible to determine accurately the original proportions (girth) of the timbers. However, the curvature of the growth rings suggested that each of the examined woods derived from substantial roundwood, either stem or branch-wood. Each piece of wood examined may have been radially split. However, it is not known if this occurred naturally or not. Oak is a strong resilient wood consistently and extensively used for structural purposes. All four samples examined here probably represent such use in the form of Oak stakes or small posts.

5.3.2 Worked Antler (*by Ben Elliott*)

Introduction and context of recovery
This will cover the traceological analysis of two pieces of worked antler from the site. The first piece analysed was recovered from a pit 320, which is sealed by a 0.5m-0.7m thick series of alluvial deposits. The second was recovered from the alluvial sequence itself. On the surface of these alluvial deposits were a series of Late Neolithic and Early Bronze Age pits – as such the antler was most likely deposited no later than the Late Neolithic.

Methods
The use of traceological analysis in the study of osseous tools from prehistoric contexts has been pioneered by the work of David (2003). Her method of analysis comprises of four major stages of recording for each piece of osseous material recovered from an archaeological site. These consist of a hand survey to record the maximum length, width, thickness and weight of the piece – as well as any anatomical measurements that it is possible to record. Secondly, a technical description of the piece is carried out, using the methodology outlined by Voruz (1984). This method of shorthand description allows the occurrence of markings, their character, their location and relationship to other markings and surfaces to be recorded quickly and consistently. Under Voruz's method, aspects of *debitage* are ascribed arbitrarily, with the narrow most end termed distal and the widest end termed proximal (Fig. 10), when a true anatomical determination cannot be achieved.

Thirdly, the pieces are photographed to give an impression of the overall character, but also to illustrate working marks where present through the manipulation of the source of raking light. The fourth stage of the methodology – drawing – is modified slightly from that used by David. In this study, only finished artefacts were drawn and annotated in the style outlined by David (1999: 468–72). This decision was taken based on the advances in digital photography technology that have taken place since David's original development of the methodology, which allow high quality images to be taken and disseminated with relative ease and which can illustrate the markings present on osseous material without the need to produce drawings.

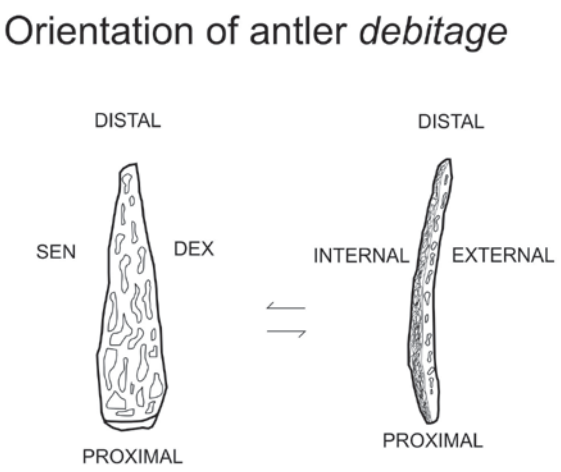


Figure 10: Orientation of antler debitage

From this recording process, several assertions can be made regarding the individual pieces of material. Firstly, the biological properties of the piece can be described. Through comparisons with reference material (both modern and archaeological), the species and element of origin can be determined. This is primarily based on the morphological form of the piece, the character of any intact compactor tissue and the consistency of spongy material. Events and processes which occur in the course of the biological history of the material are also possible to identify, based on an understanding of deer behaviour. For instance, the occurrence of polish on tine tips can be linked the fraying of antlers, when deer rub themselves against the ground or trees, and need not be directly linked to anthropological action.

Secondly, the taphonomic factors to which the piece has been subjected can also be discussed. Through an examination of the character of the material, the condition of the anatomical surfaces, instances of discolouration and the nature and orientation of striations and incisions, it can be possible to broadly identify processes such gnawing (by rodents or ungulates), demineralisation, exposure to weather or the action of water. This can also be greatly aided by the study of contextual information from the excavation archive – although in some cases this is not always possible.

Thirdly, once the biological and taphonomic processes have been identified and accounted for, the markings associated with specific working actions can be discussed. The form of these working marks can be related to specific techniques and actions (Fig. 11), based on comparisons to both archaeological and experimentally produced reference material. The relationship between these markings can also be studied to gain an understanding of the sequence in which these were carried out. In a similar way to the principals of stratigraphy that are used to establish sequential relationships between depositional events at a site level, working marks which overlie or "cut" other episodes of working or taphonomic processes can be said to occur later than the original actions. In this way a sequence of actions, or *châine operatoiré,* can be built up for each individual piece within the assemblage.

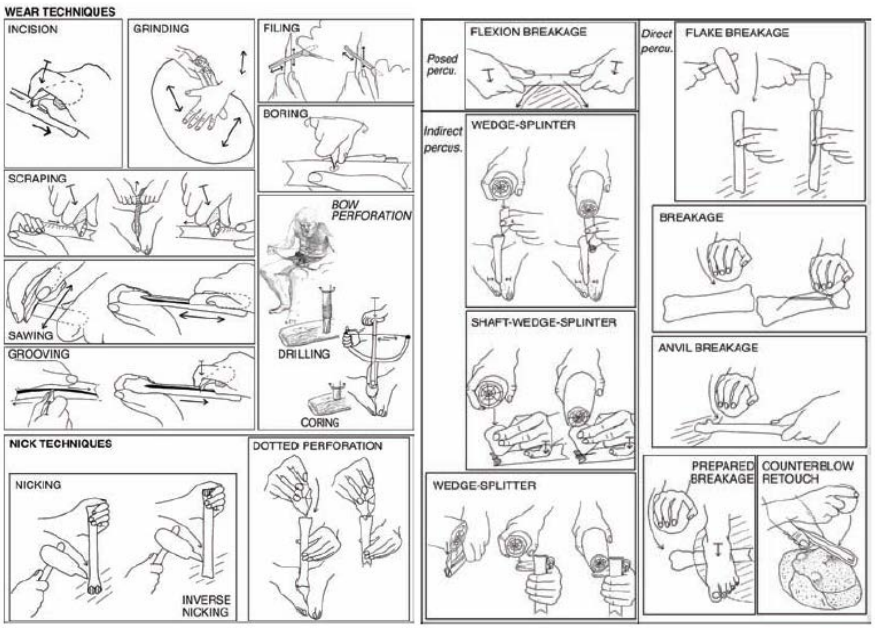


Figure 11: Mesolithic bone and antler working techniques (David 2007: 29)

Results

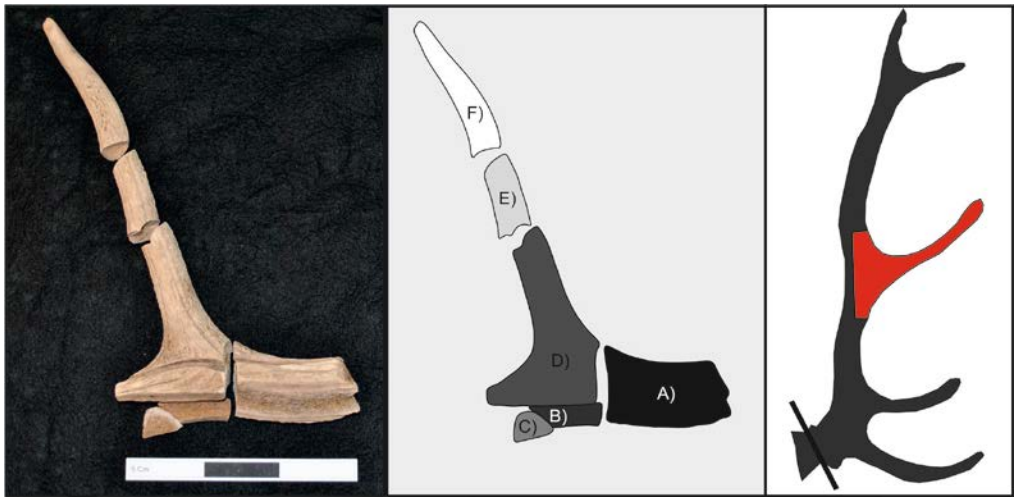


Figure 12: Labelled fragments of antler from BYUBR10

The first piece of antler analysed consists of a portion of beam and trez tine from a red deer antler. The species identification is supported by the morphology of the antler, with the cylindrical beam and long tines distinguishing this piece from that of elk or roe deer. The character of the intact portion of beam below the tine suggests that the piece originates from the trez tine region (Fig. 12), as the bez tine would feature a brow tine immediately below. The curvature of the trez tine suggests that the antler came from the left side of the skull. The lack of the basal portion prevents a discussion of whether the antler had been shed or unshed, and so it is impossible to ascertain whether the antler was originally acquired through hunting activities, or collection of the material which is naturally shed by red deer during the spring. The tine measures 257mm in length. Although precise aging of animals based on antler morphology is problematic, trez tines are typically seen to develop in a red deer's 3rd or 4th year, and remain prominent for the duration of their lives. As such, the animal from which the antler originated can be roughly estimated to have been 3 years or older. There are signs of minor damage and polish at the extreme tine tip, consistent

with the markings created through the animal's fraying behaviour – when antlers are rubbed against abrasive surfaces to remove the soft velvet tissue in the spring.

The piece is made up of 6 fragments, which have been labelled for the sake of this analysis (Fig. 12). These were found to refit (Fig. 13), and the clean character of the fracture surfaces indicates that fresh breaks have occurred relatively recently – in transit.

Figure 13: Fresh break at interface between fragments F and E

The good levels of preservation apparent on the piece allow a detailed discussion of the methods used to work the piece. These working marks are confined to A, B, C and D, and demonstrate the use of three distinct working techniques. The proximal termination of piece A is characterised by a series of short, linear markings in association with a faceting of the compactor tissue and a darker discolouration. This is consistent with the application of the nicking technique, which appears to have been applied around the circumference of the beam. Nicking involves the repeated striking of a piece of material, using either a flint blade or flake. These can be hafted or unhafted, and results in the removal of osseous material in the targeted area, and leaves a series of small impact marks. The association of the nicking marks with the termination of the A suggests that nicking has been used to facilitate a prepared break, and remove the mid-beam from the lower beam (Fig. 14)

Figure 14: Nicking marks on A around circumference of proximal termination

The second working technique apparent on the antler from this site is grooving. This involves the application of downward pressure through a flint tool, and then moving the tool forwards and backwards along a continuous axis, whilst maintaining that pressure. Three separate applications of the technique are apparent on the piece, across fragments A, B, C and D. The first of these extends across pieces A and D (Fig. 15). This consists of a smooth, cut facet set at 90^{o} to the angle of the external compactor surface. It extends 151.7mm along the DEX side of the internal aspect of the beam, and has a maximum depth of 7.8mm. The surface of this facet is polished, and features a series of fine striations and coloured bands extending along its length. It is mirrored by a similar facet 138.5mm in length and 10.1mm deep which extends across fragments A, B and C on the DEX side of the external aspect of the antler (Fig. 11). These facets are consistent with those created by grooving, each striation being created by small alterations in the angle of the flint tool used to work the antler, and colour banding being created by the friction and heat generated in repeated movement of a flint tool across the surface of the antler material.

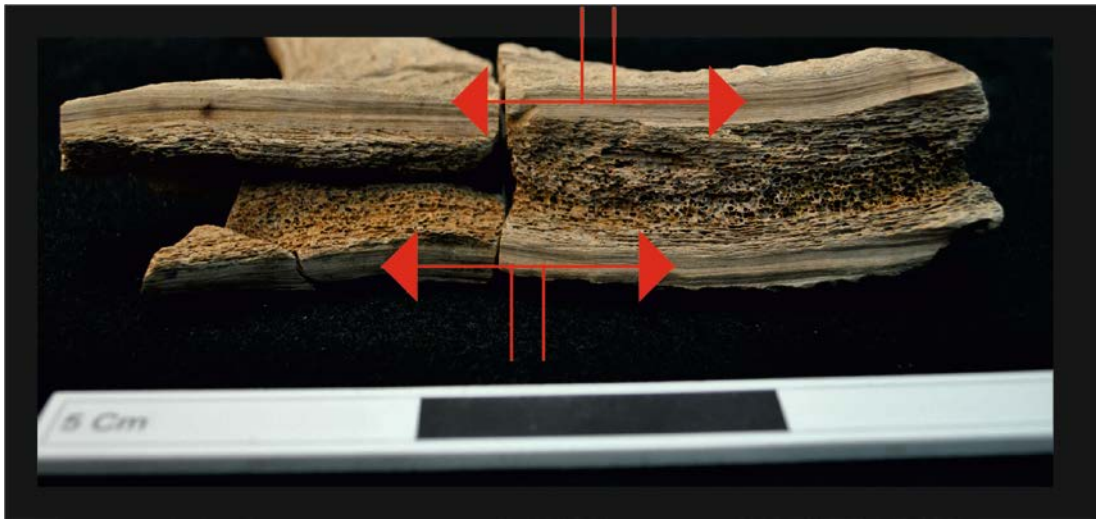


Figure 15: DEX side of antler, showing grooved facets along the internal and external edges

The intervening portion of antler has clearly been removed, and the presence of these parallel grooved facets strongly suggests that this has been achieved using the "groove-and-splinter" technique (Clark & Thompson 1953). This involves defining a strip of antler through the creation of parallel grooves, and then removing the intervening portion of antler to create a "splinter". This leaves *debitage* pieces in the form of antlers with removed portions and visibly grooved facets (Clark 1954).

A further episode of grooving is also apparent on the internal aspect of fragments A and D, at the trez tine junction. This is 149.3mm in length, and 6.2mm deep. At its widest point, the groove has a width of 7.2mm. This groove does not penetrate the outer compactor of the antler, although the interior facets of the groove feature similar linear striations and colour banding as is observed on the other two grooves. It appears to have been an attempt at the groove and splinter technique which has failed (Fig. 16).

Figure 16: Failed attempt at grooving on Fragment A

Fragment A also gives an insight into the sequential relationship between the grooving, nicking and prepared breakage actions that have been carried out on the piece. It can be clearly seen that the facet created by the nicking at the proximal termination of Fragment A cuts the worked facets of all three of grooves. This can be seen in the way that each grooved facet terminates abruptly at the proximal end – there is no grading in or gradual deepening of the grooves themselves (Fig. 17). This indicates that nicking occurred *after* the groove and splinter process, and then subsequently a prepared break was executed (Fig. 16).

Figure 17: Abrupt termination of grooved facets indicating that grooving proceeded nicking

The sequence shown in Figure 18 represents the *chaîne opératoire* of antler working at the site, prior to the deposition of antler within the pit. It should be noted that, based on the current state of the antler, it is impossible to determine with absolute confidence the sequential relationship between the successful and failed groove and splinter operations. However, as stated above it can be argued with confidence that both episodes were preceded by the nicking and prepared breakage of the lower beam.

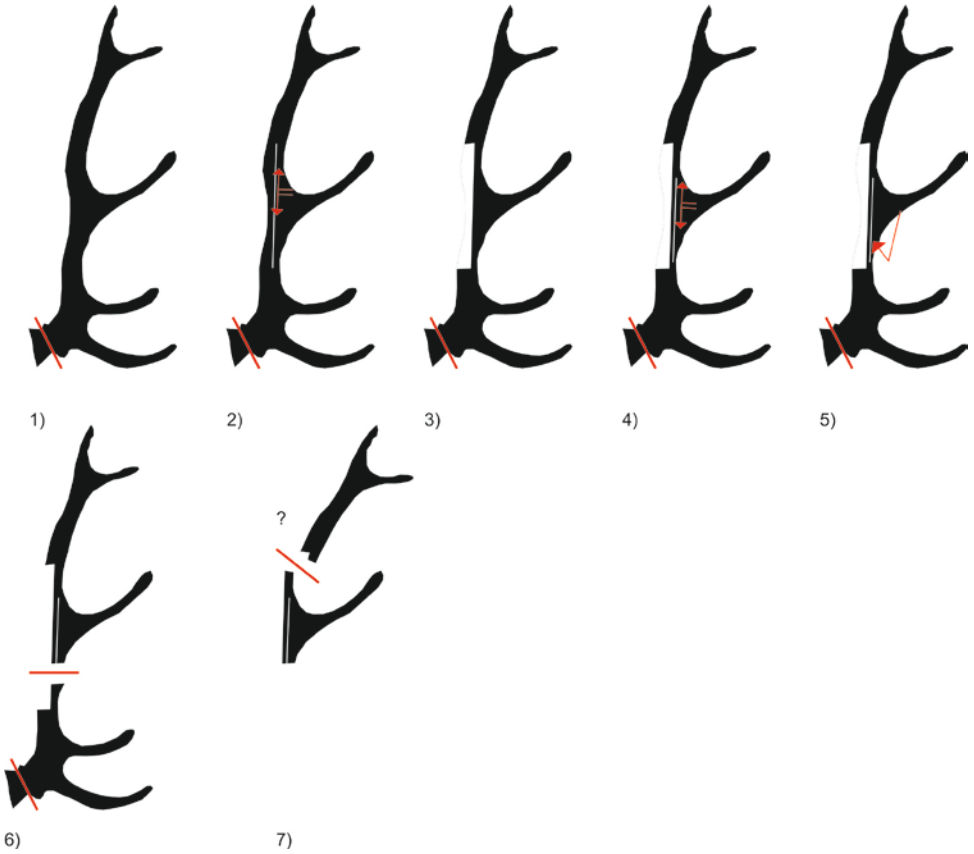


Figure 18: Working sequence for antler from BYUBR10

The second piece of red deer antler, labelled BYUBR09 2009.230 (26) was recovered (Figure 19). This consists of three fragments of antler, presumably recovered in close association and recorded as a single find. Two of these pieces refit, one of the pieces does not and can be treated as a separate find. Neither piece represents on first inspection a finished or part-formed artefact type, and as such can be classified as debitage or waste produced in the manufacture of other antler objects.

Figure 19

The preservation of the material is, as with the first antler sample, excellent. The structural integrity of the antler has been preserved with both spongy core and cortical

tissue intact and robust. Some fragmentation has occurred post-excavation, but can be refitted and does not detract from the data potential of the piece. The material would benefit from conservation in terms of long-term storage as antler can be prone to progressively dry out during curation, causing flaking of the outer anatomical surface and the loss of surface data. The humidity levels in which the material is stored also needs to be monitored and kept constant to avoid this occurring in the future.

The survival of exterior surface details allows for the potential of further analysis in terms of working marks - through traceological analysis (David 2003). There is the suggestion of taphonomic processes in a small cluster of light striations visible towards the distal end of the piece, which are consistent with rodent gnawing (Figure 20). The good condition of the antler (suggesting the survival of both the organic and mineral components of the material) also presents the opportunity for direct AMS radiocarbon dating

Figure 20: Rodent gnawing marks and impact mark

During the course of this assessment, a series of basic findings were reached. Firstly, the antler originates from the trez tine junction of a left-sided male red deer (Fig. 21). The piece itself is 128.2mm in length, 60.2mm wide and 38.2mm thick. The lower beam specifically has a width of 43.8mm and is 37.5mm thick.

This region of the antler can be established through the shape and angle of the remaining tine stump, which suggests the angle at which the tine would have extended when intact. Due to the lack of the lower portion of beam, it is impossible to ascertain whether this antler was shed or unshed. The only clear signs of working occur on the distal edge of the removed trez tine stump, which displays a notably flat and level surface and is consistent with sawing using a flint blade – possibly to facilitate a prepared break and removal of the trez tine.

Figure 21. Region of red deer antler represented and Shallow, discoloured impact marks on anatomical surface

Further marks are apparent on the anatomical surface of the antler and are consistent with chop marks – based on their shallow, disk-like profiles which suggest impact against a harder material (Figs. 20 and 21). Six of these marks can be identified, and their dark staining and localised polish suggests that they are not modern or fresh damage. Three of these marks appear to overlap in the same area – abutting the removed trez tine. Interestingly, these marks do not relate directly to the fragmented ends of the piece, and so may relate to either "miss-hits" during manufacture, or even damage sustained during use. A similar dark staining and polish noted on the sawn surface of the trez tine stump (Fig. 22) may also suggest that this area also shows signs of contact with other materials, and as such can be considered the artefact's "active part". This tentatively suggests that this is a piece of manufacturing waste that has subsequently been utilised for another task. The percussive nature of the chop marks on the anatomical surface may suggest as an ad-hoc soft hammer in flint knapping activities.

Figure 22. Area of discolouration and light polish on sawn surface of trez tine

Discussion

The worked antler from the site provides interesting fuel for discussion of Mesolithic and Neolithic antlerworking practices in Britain generally. Although much discussed, actual *in-situ* evidence for the groove-and-splinter process (in the form of the *debitage* itself) is restricted to a small number of Early Mesolithic sites in the Vale of Pickering. These consist of Star Carr (Clark 1954; Elliott & Milner 2010; Rowley-Conwy 1998), Seamer K and No Name Hill (Lane & Schadla-Hall Forthcoming).

Clark's discussion of the groove-and-splinter process at Star Carr demonstrates that the method allows the creation of rectangular antler "blanks", which can subsequently be worked into antler barbed points. These are distributed across the Eastern Britain, and span both the Late Glacial and Early Mesolithic in date (Tolan-Smith & Bonsall 1999). The grooved facets which attest the use of the groove-and-splinter technique are often obscured by the subsequent working required to shape the finished artefacts – making it notoriously difficult to ascertain the methods used to produce barbed points when only the finished artefacts are available. However, recent research (Elliott 2013) has identified a number of isolated barbed points (some of which have been directly radiocarbon dated to the Early Mesolithic) at the sites of Brandesburton, East Yorkshire and Wandsworth, London – all of which still display signs of groove-and-splinter being used in their manufacture.

The classic association between the groove-and-splinter technique and Late Glacial/Early Holocene hunter-gatherers has, however, been challenged in more recent years. Firstly, there is the case of antler *debitage* apparently showing signs of groove-and-splinter within Neolithic Long Barrows at Kingston-Deverrill, Wiltshire (Harding & Gingell 1986) – although it does remain possible that these artefacts were curated or recovered and included within barrow deposits as curios. Secondly, there is a piece of clearly grooved and splintered antler – an unworked splinter itself (Elliott 2013) – which was recovered from the River Thames at County Hall, London and has been directly dated to the Bronze Age (OxA-25513, 3834 ± 27 BP, 2458-2200 cal. BC.). This would seem to suggest that the groove-and-splinter technique either persisted to be used within Britain for a prolonged period, or that there were specific times when people in Britain re-adopted this method of working red deer antler. With this in mind, it becomes important to date the antler, as it could provide a rare source of evidence in identifying these periods of groove-and-splinter use within British Prehistory. Attempts to directly date the piece have failed, the stratigraphic context and associated material culture of the site clearly show it is earlier than the Late Neolithic.

Another interesting avenue of discussion concerns the flint tools required to carry out the working techniques documented on this antler. The original discussions of the groove-and-splinter technique (Clark & Thompson 1953) cite flint burins as the pre-requisite tool for the grooving of antler, using the high quantities of burins at Star Carr to support this. Despite this link between burins and antlerworking being adopted into functional classifications of Mesolithic lithic assemblages (Radley & Mellars 1964), this has been challenged by more recent experimental work which has shown that simple flint flakes can also be used to successfully carry out grooving actions (Elliott & Milner 2010). The apparently *in-situ* character of the antler, and the potential association of a lithic assemblage may allow further discussion of this issue – as noted above the lack of *in-situ* evidence for groove-and-splinter technology within Britain has prevented these discussions previously.

Of particular interest is the failed attempt at grooving apparent on fragments A and D. By measuring the maximum width of this groove, it is possible to gain a sense of the form of the tool that was used to create it. The working edge of this object must have been at least 7.2mm wide. This seems extremely broad for a burin. It has been suggested that a comparison between the widths of the flint flakes from the site may help to explore this issue further, unfortunately there is no associated lithic material.

Further to these issues, an interesting point can also be drawn on the decisions made by those who created the antler. In choosing to groove-and-splinter the region of the trez tine, a conscious decision appears to have been made in the management of the material. Another major artefact type known to have been made from antler during the Mesolithic is the "mattock" (Smith 1989) or, more accurately, axe (Elliott 2013). These are almost exclusively made from the trez tine region of red deer antlers (Smith 1989), and so by choosing to use this area for groove-and-splintering, this prevented the antler from being used to create an antler axe. Interestingly, there is no evidence for the co-existence of the antler barbed points associated with the groove-and-splinter technique and the axes made from the trez tine region of red deer antler – the former appears to precede the latter (Tolan-Smith & Bonsall 1999). As such, it could be possible that the decision to use the trez tine region for groove-and-splintering and not axe production is indicative of an earlier date for the antler and its associated pit. However, it should be noted that this distinction is based on a small sample of directly dated, unstratified artefacts – it may be that a later date for the deposition of this antler can help deconstruct this distinction.

Conclusion
The analysis of the worked antler has shown an intricate sequence of working actions which have a wider significance for understanding antler technology in the Mesolithic and Neolithic of Britain. There is clear evidence for the use of the groove-and-splinter technique at the site, and as such it represents a rare instance of an *in-situ* groove-and-splinter debitage assemblage. The uncertainty over the dating of the antler has a wider significance within our understanding of the persistence of the groove-and-splinter technique within Britain, as the body of evidence comes from Early Mesolithic contexts with the Vale of Pickering, North Yorkshire.

The in-situ nature of the antler also allows a rare opportunity to study antler-working within the boarder context of human activity at the site.

5.3.3 Other Environmental Remains

Ten environmental bulk samples were taken. The samples were processed for the recovery and assessment of charred plant remains and charcoal. The samples were also assessed for the presence of fish bones and/or cremated human bone.

Methodology

The sample was processed using standard methodology. Samples were processed indoors and were bucket floated into mesh with an aperture of 0.5mm, the residue was wet sieved following flotation into a 0.5mm mesh. Following air-drying the residue was sorted, weighed and discarded, though it was not fractionated prior to sorting. The floated material was fractionated to 5mm, 2mm and 0.5mm, then sorted and assessed using a Vickers Stereo Zoom Microscope.

No.	Context	Volume (L)	Flot. (ml)	Residue (g)	Comments
5	212	10	10	110g	
6	215	10	10	54g	
7	297	10	15	1400g	Residue dominated by burnt flint
8	307	10	20	380g	Frequent fine wood charcoal
9	311	10	20	450g	Frequent fine wood charcoal
10	319	10	20	1350g	Residue dominated by burnt flint
11	313	10	100	50g	Abundant water logged wood fragments (oak)
12	321	10	10	750g	
13	329	10	20	1500g	Residue dominated by burnt flint
14	345	10	10	85g	

No samples were seen to contain any traces of fish bone or burnt bone. The majority of the wood charcoal was fine and no species identification was possible.

5.4 AMS ^{14}C Measurements (*by N. Russell and E. Dunbar*)

Four samples were measured at the Scottish Universities Environmental Research Centre AMS Facility SUERC-44804 (GU29693). The calibrated age ranges are determined using the University of Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.1 (Bronk Ramsey 2009). Terrestrial samples are calibrated using the IntCal09 curve while marine samples are calibrated using the Marine09 curve.

<1> Antler (321) n/a
<2> Wood: Oak (327) 4439 ± 35 BP
<3> Antler (26?) 4539 ± 32 BP
<4> Wood: Oak (373) 5896 ± 31 BP

The above ^{14}C age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standards, background standards and the random machine error.

The stable isotope results on carbon and nitrogen indicated that the collagen preserved in the 10g antler sample <1> submitted was of poor quality and would not therefore provide reliable 14C results. If the environment is waterlogged it is probable that some collagen leaching could have occurred, especially if the environment is not pH neutral. If this is so, it is likely that another antler sample from the same context would be subject to the same burial conditions and may therefore produce similar results.

Calibrated dates for the wood sample <2> give a range of 3214-2928 calBC (95.4%) or 3272-3017 calBC (68.2%) and for wood sample <4> a range or 4836-4710 calBC (95.4%) or 4791-4725 calBC (68.2%). The calibrated dates for the antler <3> give a range of 3365-3241 calBC (95.4%) or 3361-3161 calBC (68.2%)

6 DISCUSSION

During the Mesolithic period the environs of the Thames and its tributaries were widely utilised by highly mobile hunters and gatherers taking advantage of the rich fishing and wild fowling; perhaps also hunting other animal along the river. At Eton

rowing lake traces of beaver dams or lodges have been found within an in-filled Mesolithic palaeochannel of the Thames (Allen et.al 2013).

Evidence of this transient Mesolithic occupation is provided by scatters of flint knapping debris recovered from along the riverside, and the excavations at Eton rowing lake have demonstrated that this tradition continued during the early Neolithic. Here there was also evidence of woodland clearance by burning, probably to provide pasture. The general impression is that during the early Neolithic the upper Thames in the Bray area was utilised by pastoralists, who camped here on a seasonal basis.

During this period it is clear that this stretch of the Thames had no fixed course, as at both Eton and Yarnton, (to the north) there is evidence of eyots (small islands) created by braided channels or meanders, which periodically silted up when the course of the river moved.

Such eyots and a stretch of a main channel were located during the work at Bray Triangle. This appears to represent a former course of the Thames. It was filled with a succession of organic silts which contained infrequent driftwood overlain by coarser sandy silts and above this by silty clays; suggesting a fast flowing channel. The sequence here is similar to that seen at Eton rowing lake and radiocarbon dates appear to match to overall deposition sequence (cf. Allen et.al 2013). OSL dating was not considered for deposits at Bray due to the results of such techniques at Eton rowing lake, where samples produced course results with 1000 year time spans (ibid.).

The earliest human activity is located on one eyot, where a cluster of seven hearths and two associated pits were recorded. The hearths were roughly circular scoops in the ground and ranged in size from 0.3m to 0.75m in diameter, filled with ash, charcoal and burnt flint; the surrounding ground showing signs of scorching. One pit contained a stacked collection of waterlogged oak branches. These were broken into similar length and presumably stored here for use as firewood and produced a C14 date of 4836-4710 calBC.

The other pit contained debris of antler working. This antler gave clear evidence for the use of the groove-and-splinter technique, and as such it represents a rare instance of such *in-situ* debitage. The groove-and-splinter process allows the creation of rectangular antler "blanks", which can subsequently be worked into antler barbed points, example of these are most famously noted from Starr Carr. Unfortunately C14 dating samples of this antler failed due to the waterlogged nature of the deposit and the soil samples of the pit fill that were sieved produced no evidence of flint working or other datable material. Such antler working was not present in the Mesolithic layers at Eton rowing lake (Allen et.al 2013) only evidence of the antler-beam mattock technique was present.

Although, the classic association between this technique and Late Glacial/Early Holocene hunter-gatherers has been challenged in more recent years the evidence for a later dating is extremely limited (see discussion in section 5.3.2). The late Mesolithic date from the associated wood stratigraphically on the same level means this worked antler is unique for Southern Britain at this date.

These features were covered by a thick alluvial layer. Although forming part of the flood plain the ground here appears to have stabilised and dried for a time during the Middle Neolithic. Evidence for activity was rare in the area during this stable period,

although this must in part be put down to the clay extraction methods and the difficulty of observing the layers in plan.

Two posts were recorded in the area at this period, set close to the earlier smaller palaeochannel, now disused but possibly still a wet area. One had preserved oak timber with a shaped end to facilitate ground penetration. A sample was sent for radiocarbon dating producing a calibrated two sigma date 3214-2928 calBC. A second date obtained from an isolated antler find recovered from within the alluvial sequence produced a relatively contemporary date of 3365-3241 calBC and may indicate that the alleviation occurred within a two hundred year span during the Middle Neolithic.

Episodes of poor climatic conditions around 3200 BC are evident in Britain (Malone 2001, 165). This date appears to match the relative dating of the upper alluvial bands. Environmental research has shown that during the Neolithic some lowland areas of Britain were affected by glacial melt-water caused sea levels to rise and the drowning some lowland areas (Malone 2001, 30). Research on the Cambridgeshire Fenlands demonstrates that this melt-water also affected inland areas, and one is left to speculate that this climate change may also have affected the Thames valley in this area.

Dating for the uppermost layer of the alluvial build up (201 A) comes from the fill of several excavated pits from which sherds of Mortlake style pottery have been recovered. This type of pottery was in use by the end of the third millennium BC (Gibson & Woods 1990), however it has been suggested that the Mortlake/Fengate ware substyles developed in the period 3350-2800 cal BC (Barclay 2007; Gibson and Kinnes 1997). This pottery coupled with the C14 date of the preserved post may point to a rather rapid alluvial build-up in the area.

The areas of the now silted up channels probably remained wet for some time. Flint scatters, albeit sparse, recovered from the surface of the upper alluvial deposit respect the underlying gravel islands, as do the pits and other features.

Several pits were recorded cut into the upper alluvial (201A) surface; these contained what appeared to be the remnant of a hearth or fire-pit, however there were no signs of *in-situ* scorching of the surrounding deposits. The recovery of the undamaged barbed and tanged arrowhead from one of these pits 328 clearly demonstrates that the material placed into these pits was not simply the residue of a hearth. Although charcoal and burnt flint were present burnt bone appears to be absent from the pit fills, certainly none was present within samples taken for environmental analysis. This would rule out their identification as cremation burials.

A lot of features were very shallow and this is mirrored at sites at Eton rowing lake and those associated with work during the Maidenhead/Windsor flood alleviation scheme. Area 16 at the Eton rowing lake site had at least one spread of burnt flint dated to the late Neolithic, the published sections showing a shallow cut c. 1.5m wide (Allen et.al 2013).

Several other features were present in the area, including what appears to be a circular structure or feature. It would appear possible that this circular feature consists of pits rather than postholes, certainly no remnant post-pipes were seen within the fill of the features. Some in retrospect being recorded as possible tree holes throws.

The area is also noted for several tree throw holes, and unfortunately some excavators had difficulty identifying between these and pits. This is a matter that can be compounded if a tree has later taken root in an earlier archaeological feature.

Although many features had been truncated by later ploughing there was no evidence for a ditch enclosing the putative circle. One suggestion is that this circle represents a sacred grove rather than a more formal monument such as a henge or enclosure: perhaps a proto-nemeton or living circle as opposed to the dead posts of some other monuments. The dead tree was used at Seahenge as a central theme although here it is thought to be related to the dead as an excarnation structure or mortuary enclosure. It is possible that a living tree circle would represent a place of the living. Romano-Celtic Jupiter columns symbolise a tree in this very manner as part of the dualistic myth concerning the conflict between life and death (Green 1983).

The building of Neolithic monuments has much to do with the appropriation of the natural world (Bradley 1993), some even incorporating natural features providing contrasts and an inter-relationship between the landscape and monument (Barnatt 1998). Trends evident in the Neolithic continued into the Bronze Age (Darvill 1987), although as this period progressed there were changes away from monuments with a later apparent lack of ritual sites (Cunliffe, 2005; Yeates 2008).

Sacred groves are not well documented in the archaeological record, later groves are hinted at by relic place names. Yeates (2008) points out that there is a real lack of understanding of how these features can be recognised archaeologically. Unfortunately tree holes are almost always seen as natural occurrences and areas of excavation often limited so that overall layouts of features cannot be fully appreciated.

Later Iron Age nemeton are possibly associated with hoard deposits (Cunliffe, 2005, 570). Exterior to the circle there are clusters of pits, all with a similar date to each other. There were also two hollow areas that contained contemporary activity 81 and 91.

The origin of sacred groves or nemetons is not fully understood, but may have originated in Britain (Yeates 2008). Tacitus records the Semnoni tribe gathering in a holy wood or sacred grove and Caesar describes the druids as a cult that originated in Britain. Cunliffe (2005) points out that the religious beliefs are now entirely beyond reconstruction, however it is possible that origin of the nemeton lies earlier in the Bronze Age. This would benefit from a more focused study.

There are clusters of small pits and one structure that appeared to be a lean to, with two large font posts and two behind set at angles towards them. (Structure A). This rather ephemeral structure may point towards infrequent or seasonal use of the area, with the main area of activity towards the Eton College Rowing Lake area.

Interestingly the pits containing burnt flint and charcoal appear to span a considerable time period. Some like 278 are associated with Mortlake pottery, but at least one of the pits can be dated to around 2300 – 2400 calBC by the presence of the Barbed and Tanged arrowhead (339).

The focus of this activity is to the north east of the site, and one is left to speculate if the area of the earlier palaeo-channel to the south was still relatively wet and if the main river channel had itself moved to the north.

Notably absent from the Bray site was any evidence for the Middle and Late Bronze Age that was seen at Eton rowing lake (cf. Allen & Welsh 1996; 1997).

Much of the area has seen heavy ploughing with noticeable scarring of the upper alluvial surface. This plough may have severally truncated the recorded features and may have completely removed more ephemeral ones.

7 CONCLUSION

The work at Bray produced evidence for activity throughout the prehistoric that fitted into and extended the pattern that can be seen within the region.

The Mesolithic camp in itself is important although contemporary activity is known in the region along the Thames valley. The most important discovery at Bray was the Late Mesolithic groove-and-splinter technique antler working debitage that appears to be unique in Southern Britain at this date. This find is of national importance and a report of its finding requires publication in an academic journal.

The possible sacred grove or nemeton is also of high significance. If confirmed would provide a unique origin for this type of ritual activity as well as links from Neolithic and Bronze Age ritual practices to later Iron Age beliefs.

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