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Polar Technology, Eynsham, Oxfordshire

Archaeological Excavation Report

By Andrew Simmonds

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Contents

List of Figures

Summary

Excavation at the edge of a dense cropmark complex south of Eynsham uncovered features spanning from the Neolithic to the medieval period. The cropmarks probably represent a monument complex that developed around the adjacent Eynsham causewayed enclosure, and the three earliest pits, associated with Decorated Bowl pottery (*c* 3770–3245 BC), may have been contemporary with the construction and use of the enclosure. Eight middle Neolithic pits associated with Peterborough Ware (mid-4th millennium to early 3rd millennium BC) were excavated. One contained the burial of an adult female, accompanied by an oyster shell pendant and a whelk shell, both exotic items this far from the coast. The burial produced a radiocarbon date of 3340–3030 cal BC.

Three pits dating from the earliest Iron Age, one possibly a waterhole, represent rare evidence for settlement of this period, and Anglo-Saxon occupation was represented by a sunken-featured building. Roman activity was restricted to pits that were probably dug for gravel extraction, and medieval evidence comprised further such pits and field boundaries and plough furrows.

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The project was managed for Oxford Archaeology by Gerry Thacker. The fieldwork was directed by Mariusz Gorniak, with a fieldwork team comprising Sophie Bojadziev, Poppy Bowes, John Carne, Edyta Cehak, Luciano Cicu, Charlotte Cox, Alexander Findlay, Ben Slader, Jana Smirinova, Andrew Smith and Edward Tolley. Survey and digitising were carried out by Matt Bradley, Conan Parsons and Ben Brown. Thanks are also extended to the teams of OA staff that cleaned and packaged the finds under the supervision of Leigh Allen, processed the environmental remains under the supervision of Rebecca Nicholson, and prepared the archive under the supervision of Nicky Scott.

1 INTRODUCTION

1.1 Background

1.1.1 Oxford Archaeology (OA) were commissioned by Polar Technology Management Group Ltd (initially through Ikon Construction Ltd) to undertake an archaeological excavation in advance of construction of an industrial unit with associated access road and car parking at Oasis Business Park, Eynsham, Oxfordshire (NGR SP 42761 08768; Fig. 1).

1.1.2 The development area was situated partly within a scheduled monument (List entry no. 1006333: 'Sites discovered by aerial photography, near Foxley Farm') described in the listing as a 'large and important concentration of cropmarks, mostly comprising Bronze Age ring ditches and barrows, and Iron Age/Roman enclosures and settlement sites'. Following geophysical survey and trial-trench evaluation of the entire development area, the part that lay within the scheduled monument was excluded from the development and consequently the subsequent excavation comprised only the non-scheduled part of the site (Fig. 1).

1.1.3 The excavation comprised an area of open excavation encompassing 0.58ha and an adjacent strip, map and sample excavation of 1.07ha (Fig. 2) and was undertaken between 30 April and 6 July 2018. Two watching briefs were also maintained during the digging of geological test pits.

1.1.4 The work was undertaken as a condition of planning permission (planning ref.: 16/02369/FUL and 17/01114/FUL). A brief was set by Hugh Coddington, the Oxfordshire County Council Archaeologist, detailing the Local Authority's requirements for work necessary to discharge the planning condition (OCC 2017), and OA produced a written scheme of investigation (WSI: OA 2018). All work was undertaken in accordance with local and national planning policies and Chartered Institute of Archaeologists guidance (CIfA 2014).

1.2 Location, topography and geology

1.2.1 The development area was situated to the south of Eynsham, at the western edge of Oasis Business Park, adjacent to the B4449 (Fig. 1). It lay 1km north-west of a northern loop in the River Thames by means of which the river circumvents the limestone outcrop of Wytham Hill before turning south to pass through Oxford. The northern boundary was marked by the Chil Brook, one of a number of minor watercourses that drain this flat agricultural landscape and flow eastward into the Thames, the confluence in this instance lying a short distance downstream of Eynsham Lock. Prior to excavation the site consisted of agricultural land, the northern part of which was crossed by a former railway line, which had been tarmacked and used as a car park.

1.2.2 The site was situated at *c* 66m above Ordnance Datum (aOD) on the Summertown-Radley gravel terrace of the Thames, a short distance off the alluviated part of the floodplain which lies at *c* 60m aOD (BGS n.d.).

1.3 Archaeological and historical background

1.3.1 The site lay at the eastern edge of a dense complex of cropmarks that comprise a scheduled monument (Historic England List Entry no. 1006333: 'Sites discovered by aerial photography, near Foxley Farm'). The cropmarks were first observed by Major G W G Allen in 1933 (Crawford 1933) and were plotted from aerial photographs by the Royal Commission on the Historical Monuments of England in 1993. The features present an extensive complex of multiple phases of archaeological remains extending from the Neolithic to the Roman period, although the most immediately apparent element is a barrow cemetery.

1.3.2 The scheduled monument encompasses the south-western part of the development area, as well as three large adjoining arable fields alongside the B4449 and two detached areas further south-west. However, the remains clearly extend beyond the limits of the scheduled area, since 18 Beaker period burials and an early Bronze Age cremation burial interred in a collared urn were excavated in a gravel pit near Foxley Farm between 1930 and 1938 (Leeds 1938) and a more recent watching brief during remodelling of a lake recorded possible Neolithic timber buildings, a Grooved Ware pit and part of a ring ditch of presumed Bronze Age date (OA 2001). The complex also includes a Roman settlement, from which the cropmarks indicate a ditched trackway extending across the southern part of the development area.

1.3.3 Not included within the scheduled area, but also of note, is a causewayed enclosure in the opposite field on the south side of the road (Harding and Lee 1987, no. 147; Oswald *et al*. 2001, 154). The monument is known only from cropmark evidence and has not been investigated by excavation.

1.3.4 It is likely that during the medieval period the site lay within open agricultural fields, as historic maps demonstrate was the case into more recent times, and traces of ridge and furrow were identified by the geophysical survey. Eynsham railway station, on the Witney branch line, was built adjacent to the east of the site in 1861 and the track crossed the northern part of the development area. The line was closed to passenger traffic in 1962 and ceased operation in 1970; the site of the former station is now occupied by Oasis Business Park, the expansion of which occasioned the excavation, and until recently the part of the line that crossed the site was used as a car park.

Geophysical survey and trial-trench evaluation

1.3.5 A detailed magnetometry survey was undertaken of the part of the development area south of the former railway line, including the area within the boundary of the Scheduled Monument (Stratascan 2015). The survey located features shown in the aerial photograph plot and also a number of previously unidentified anomalies. The survey identified a ditched trackway that leads from the centre of the prehistoric complex and a series of possible enclosure ditches as well as several discrete features that were interpreted as possible pits. The northern portion of the site was too overgrown to be surveyed but parts of an irregular enclosure ditch are shown on aerial photographs.

1.3.6 An archaeological trial-trench evaluation of the site was undertaken in 2016 (OA 2016). The evaluation comprised 20 trenches targeted on geophysical anomalies and

cropmark features, and also to test potential blank areas. Within the scheduled area, Trench 14 exposed an early Neolithic pit, and the ditches of a Roman trackway were excavated in Trenches 20, 22 and 23. Other ditches present were of probable Roman and post-medieval date, although very little datable material was recovered. Several undated ditches were identified within the unscheduled northern and central parts of the site, as well as a possible sunken-featured building.

Watching briefs

1.3.7 Two archaeological watching briefs were carried out during the digging of geotechnical test pits associated with the construction of the new buildings and have been reported separately. During January 2017, three test pits situated along the route of the former railway line were monitored but uncovered no archaeological deposits, the underlying geology having been truncated by the construction of both the railway line and the current 20th-century buildings (OA 2017a). In July of the same year three test pits were dug within the area of the excavation for the purpose of water infiltration testing and uncovered a single undated pit (OA 2017b).

1.4 Aims and objectives

1.4.1 The general aims of the excavation, as stated in the WSI, were to determine and understand the nature, function and character of the archaeological remains within their cultural and environmental setting.

Specific aims and objectives

1.4.2 The specific aims and objectives of the excavation were:

i. To determine or confirm the general nature of any remains present.

ii. To determine or confirm the approximate date or date range of any remains, by means of artefactual or other evidence.

iii. To establish the extent of the Neolithic activity.

iv. To establish the extent of the Roman and Anglo-Saxon remains on the site and the longevity of activity.

v. To determine or confirm the approximate date or date range of any other remains, by means of artefactual or other evidence.

vi. To examine the potential of the site to produce environmental data.

vii. To place the revealed archaeological remains within the wider landscape with reference to the Solent-Thames Research Framework for the Historic Environment.

viii. To generate an accessible and useable archive which will allow future research of the evidence to be undertaken if appropriate.

ix. To disseminate the results of the work in a format and manner proportionate to the significance of the findings.

1.5 Fieldwork methodology

1.5.1 Following the evaluation, the area within the scheduled monument was excluded from the development. The excavation encompassed most of the unscheduled part of the development area south of the former railway line and comprised a 0.58ha area of full excavation, centred on the location of the sunken-featured building and surrounding trenches, with a 1.07ha area of strip, map and sample excavation to the east and south, the two merging into a single continuous area (Fig. 3).

1.5.2 The overburden, comprising topsoil and subsoil, was removed using a mechanical excavator with a toothless bucket working under archaeological supervision. The exposed features were digitally mapped using a combination of EDM and GPS and hand-excavation and recording then followed as detailed in the OA Fieldwork Manual (Wilkinson 1992). Up to 10% of each linear feature was excavated and discrete pits and postholes were generally half-sectioned, although a smaller sample was sometimes excavated in the case of features interpreted as tree-throw holes. Half-sectioning of pit 289 resulted in the discovery of the lower part of the legs of a human burial that lay predominantly within the un-excavated part of the feature, as a result of which the feature was fully excavated. The burial was excavated under the terms of Ministry of Justice licence 18-0127.

1.5.3 The excavation was undertaken in accordance with the Chartered Institute for Archaeologists' (2014a) *Standard and guidance for archaeological excavation*, local and national planning policies, and the WSI.

2 STRATIGRAPHY

2.1 Introduction

2.1.1 The most striking aspect of the site was the large number of discrete features, amounting to a total of 182 distributed across the excavation area (Fig. 4). Some 88 of these were interpreted on excavation as tree-throw holes, none of which could be assigned a phase, the only artefactual material from any of these features being a Neolithic bladelet. A further six were geological in origin and in four instances it was uncertain whether the feature was manmade or natural. The definite and possible natural features have been omitted from the site plans to aid clarity. Phasing of the definite pits was hampered by the paucity of dating evidence and the generally similar character of the features, the vast majority of which were small circular pits that did not exceed 1.2m in diameter and were less than 0.4m deep. Consequently, 50 pits remained undated and only 36 pits could be assigned a definite phase.

2.2 Early Neolithic

2.2.1 The only certain early Neolithic feature from the excavation stage was pit 200, although pit 70 may have been contemporary and a pit of this date (1407) was recorded during the evaluation in the area that was subsequently excluded from the excavation.

2.2.2 Pit 200 was a steep-sided feature with a concave base, 0.96m in diameter and 0.52m deep (Fig. 5). The gravelly lower fill (201) contained nine refitting sherds (51g) from a Decorated Bowl, as well as five pieces of undiagnostic worked flint and a fragment from a pig scapula. A soil sample yielded a small quantity of charcoal and charred plant remains, including a few cereal grains. The upper fill (202) lacked artefactual material.

2.2.3 Pit 70 was attributed to this phase on the basis of one of the two flints from its fill, a complex or cubic bladelet core of a form that is extremely common in the early Neolithic. The pit was oval, measuring 0.98 x 0.46m, and was only 0.14m deep.

2.2.4 Pit 1407 contained 75 lithic artefacts, including five microdenticulates of probable early Neolithic date and three pieces of worked quartzite, and 40 sherds (186g) from two Decorated Bowl vessels. The pit, which had a concave profile, also contained fragments of animal bone, some of which had been burnt. The single fill (1408) was a dark reddish-brown sandy silt containing occasional gravels. An environmental sample contained numerous hazelnut shells, charcoal fragments and two badly degraded fragments of cereal grain.

2.3 Middle Neolithic

2.3.1 Sherds of Peterborough Ware were recovered from eight pits, although the date of pit 163 was uncertain as it also contained some early Iron Age sherds. Five of the pits were concentrated in the north-western part of the excavation area, but pit 47 lay to the east, pit 163 to the south and pit 212 in the central area. They were typically circular in shape, around 1m in diameter and none more than 0.41m deep. Most produced small assemblages of pottery, animal bone and flint, but pit 289 was notable for the

deposition of a human burial. Two crumbs of pottery in ditch 421 are likely to be residual and do not provide a date for the ditch, which was otherwise lacking in finds.

2.3.2 Pit 47 was the only pit that contained pottery not of the Mortlake substyle, its 17 sherds (40g) from at least four vessels including a rim of probable Fengate style. The pit, which lay in a rather isolated location, measured 0.82 x 0.77m and 0.24m deep and a soil sample from its only fill (48) also contained a few charred cereal grains and a large pea, which is unlikely to be Neolithic and was presumably intrusive (Druce, below).

2.3.3 Pit 163 had quite a wide, shallow profile and measured 1.5 x 1.2m and 0.3m deep. A primary fill (165) had accumulated around the base of the sides and was overlain by a main fill (164) that contained a few sherds from three Peterborough Ware vessels and a smaller quantity of early Iron Age sherds, as well as three flint flakes and two scrapers. A soil sample from this fill contained a few charred cereal grains and part of another (intrusive) pea.

2.3.4 Pit 212 produced only six very small fragments of pottery. The pit had a wide, shallow profile, 1.12 by 1.05m and 0.22m deep. The upper of its two fills (213) was notably dark in colour and contained the pottery, as well as 19 pieces of flint, a few teeth and bone fragments from pigs, and fired clay from oven or hearth structures. No charred plant remains were present in a soil sample from this fill, but fragments of hazelnut shell were present.

2.3.5 Pit 289 (Fig. 6) was no larger than the other pits, measuring 1.16 x 0.9m and 0.31m deep, but was oval rather than circular, with a flatter base than was typical, and was distinguished by the burial of an adult probable female (325). A sample from a left maxillary molar returned a radiocarbon date range of 3340–3030 cal BC (SUERC-98305; Table 16). It cut a shallow tree-throw hole (328). The individual had been placed on the base of the pit in a crouched position, or perhaps kneeling, face-down against the northern side of the pit with the head to the north-west. An oyster shell (SF 3) that had been pierced, probably for suspension as a pendant, may have been worn or deliberately placed by the mourners, and a whelk shell (SF 4) was also associated with the skeleton. The pit had been backfilled with a sequence of deposits that were distinctly different to the homogeneous fills that characterized the other pits. The lower fill (291), which was sufficient to cover the burial, filled less than half the depth of the pit and contained three small sherds from two vessels. It was overlain by a gravel layer (327) that mostly lay on the east side of the pit, and a mixed deposit of gravel and soil (326), with a final fill (290) that contained most of the artefactual material from the feature, comprising sherds from the body and rim of a shell-tempered vessel, a microdenticulate and flint flake, a fragmented cattle scapula and rib sections. A soil sample contained very little charred material and no identifiable crop species. After the pit was infilled, a small pit or posthole (387) 0.17m deep was cut into the upper part of its fill. The feature had a dark fill with flecks of charcoal, but no artefactual material.

2.3.6 Pit 317 measured 1.1m in diameter, with moderately steep sides and a slightly concave base at a depth of 0.34m. The gravelly lower fill (318) contained nine sherds (72g) of

pottery and three cattle bones and was overlain by an almost stone-free upper fill (319).

2.3.7 Pit 337 had near-vertical sides that were notably steeper than the other pits, and a slightly concave base, and measured 1.0m in diameter and 0.3m deep. The fill (338) was almost devoid of gravel but included a few larger stones, 77g of extremely fragmented pottery. A soil sample produced a few fragments of cattle and pig bones but very little charred material and no identifiable crop species.

2.3.8 Pit 371 was the shallowest of the features, with a depth of only 0.11m, and produced only 32g of pottery.

2.3.9 Pit 418 (Fig. 7) was the deepest feature, at 0.41m, and produced the largest assemblage of pottery from this phase. The pit measured 1.36 x 1.18m and had slightly irregular, quite steep sides. The basal fill (433) contained part of a vessel and two heat-affected stones that may have been used as pot-boilers, and a soil sample contained a few unidentifiable fragments of animal bone, as well as a small quantity of charred plant remains that included cereal grains. A localized deposit of redeposited natural gravel (432) against the south-west edge of the pit was overlain by the upper fill (419) that was fairly stone-free and contained six small sherds from a second vessel and a sheep-sized long bone shaft, as well as a medieval sherd that is likely to be intrusive. The pit contained five flints, including two blades and a microdenticulate.

2.4 Earliest Iron Age

2.4.1 The early Iron Age was represented by large pit 466 at the northern edge of the site and small pits 8 and 12, which were situated close together near the south-western corner of the excavation. Pit 163 (above) contained both early Iron Age and middle Neolithic pottery and its date was uncertain.

2.4.2 Pit 12 was only 0.08m deep, but pit 8 (Fig. 8) was a little more substantial, with a diameter of more than 1m and a depth of 0.38m, and contained the largest pottery assemblage from this period, comprising 113 sherds (636g) from 14 different vessels, as well as small quantities of animal bone and flint. This was the only Iron Age feature to produce a moderate assemblage of charred plant material, including cereal grains and charcoal fragments that were mostly oak and blackthorn-type.

2.4.3 Pit 466 (Fig. 9) was only partly exposed at the northern edge of the excavation. It was 0.86m deep and the base appeared to step down to the deepest part, an arrangement common in waterholes. The soft, dark grey sandy clay of the lower fill (469) overlying the gravel primary fill (470) may represent a water-lain silt, but this was not certain, and there was no indication of any waterlogged preservation. A second gravel layer (467) separated deposit 469 from the upper fill (468). Fills 468 and 469 yielded a combined total of 128 sherds (424g) of pottery from nine vessels, as well as a small quantity of animal bone and flint, but soil samples from them contained almost no charred material.

2.5 Roman

2.5.1 The most significant Roman feature was a ditched trackway that was recorded during the evaluation stage, south of the excavation area (Fig. 10). It had been identified from

cropmark evidence, extending eastward from the scheduled complex and crossing the southern end of the development area, where it was excavated in Trenches 20, 22 and 23. The other Roman features were a disparate and widely scattered group, comprising a ditch, a group of intercutting pits and two discrete pits.

2.5.2 The trackway was 20m wide and was defined by a pair of flanking ditches, with no evidence for a metalled surface. The north ditch (2005/2305) was excavated in Trenches 20 and 23 and was more substantial than the south ditch, measuring 2.2–2.7m wide and 0.52–0.66m deep. The irregular profile, particularly the shape of the base in Trench 23, may indicate that it in fact represented more than one intercutting ditch. Two sherds of 1st to 2nd century pottery were recovered from the upper of its two fills in Trench 20. A ditch (2009) recorded towards the southern end of Trench 20, 6m south of the north trackway ditch, yielded a single sherd of Roman pottery and may represent another phase of the trackway. It had similar dimensions to the trackway ditch, measuring 2.3m wide and 0.29m deep, and an adjacent smaller ditch (2007), which was only 0.07m deep, shared the same orientation. However, neither of these ditches was evident as a cropmark and neither their date nor function are certain.

2.5.3 The south trackway ditch appeared as a single cropmark, but excavation demonstrated that it was in fact two intercutting ditches representing successive phases (2207 and 2209 in Trench 22 and 2304 and 2308 in Trench 23), although it was not possible to establish which was the earlier since the fills were identical. They were smaller than the north ditch, measuring 0.9–1.7m wide and 0.34–0.38m deep, and the only pottery was two small, abraded sherds from Trench 23 that could date to either the prehistoric or Anglo-Saxon periods.

2.5.4 At the northern end of the excavation area, ditch 471/474 was steep-sided and 0.36–0.46m deep and extended for *c* 15m from the baulk before terminating. Two small sherds of Roman pottery were recovered, as well as a tiny piece of Anglo-Saxon pottery that is probably intrusive.

2.5.5 A complex of eight intercutting pits, or possibly a single amorphous feature, was situated east of the ditch in the north-eastern part of the site (Fig. 11). The pits ranged from 0.12–0.39m in depth and contained a few sherds of pottery and a small quantity of animal bone. In the absence of evidence for deliberate deposition within them or for associated settlement activity, it is most likely that they represent small-scale and episodic gravel quarrying.

2.5.6 To the west of ditch 471/474 lay pit 488, a much larger feature than the intercutting pits, that measured 2.9 x 1.8m and 0.64m deep. A layer of redeposited gravel separated its two main fills, the upper of which (489) contained the only artefact from the feature, a coin of probable late 4th century date (SF 5). Despite its evident difference from the pit complex to the east, an interpretation as a gravel quarry nevertheless seems equally appropriate in this instance.

2.5.7 Pit 11, situated some 95m south of the other Roman features near the south-eastern limit of the excavation, was the deepest feature on the site, measuring 1.2m. It had an unusual main fill (15) comprising alternating thin lenses of sandy gravel and more

loamy material, and the upper fill (14) contained two small sherds of pottery and a small fragment of roof tile.

2.6 Early/middle Anglo-Saxon

2.6.1 The only feature attributed to this period was a sunken-featured building (298) near the western edge of the excavation area, which had been partly investigated during the evaluation (Figs 12 and 13). The structure was oriented NNW–SSE and comprised a sub-rectangular pit that measured 3.28 x 2.50m with a posthole located centrally at either end. The south-east posthole (383), which had been excavated during the evaluation, was 0.29m deep and the north-western posthole (299) was 0.44m deep, both extending considerably deeper than the 0.19m depth of the pit itself. The single fill contained an assemblage of domestic refuse that included more than 1.2kg of handmade early/middle Anglo-Saxon pottery, as well as a small assemblage of animal bone including cattle, horse and pig, two small unidentifiable iron objects (SFs 11 and 12), a cosmetic palette of Roman date (SF 2), two fragments of fired clay probably from a piece of oven furniture, and a small quantity of undiagnostic slag. Soil samples contained charred cereal grains, including bread wheat, and the largest charcoal assemblage from the site, much of which comprised blackthorn-type and hawthorn-type.

2.6.2 The building cut one or more tree-throw holes, from which was recovered a sherd of Anglo-Saxon pottery (310) that presumably derived from the building.

2.7 Medieval

2.7.1 A large number of furrows extended across the excavation area on a N–S alignment. The furrows measured up to 2.5m across and 0.25m deep, although in places they narrowed and petered out, and were typically 7–8m apart. Interventions were excavated across four furrows, one of which produced a single small sherd of 13th-century pottery. A sherd of similar date was recovered from an extremely shallow ditch (452/454) that extended alongside one of the furrows and may have been a contemporary boundary.

2.7.2 The other medieval features comprised a complex of intercutting pits in the north-western part of the site (Fig. 14) and a discrete pit (24) situated near the south-eastern limit. The pit complex comprised six features, ranging from 1.1–1.5m across and 0.28–0.68m deep, and cut Roman pit 488. Small quantities of 13th-century pottery and animal bone were recovered from their fills, as well as four sherds of Roman pottery that was presumably redeposited from the earlier pit.

2.7.3 Pit 24, situated near the south-eastern limit of the excavation, was only 0.3m deep. A small sherd of 13th-century pottery was the only artefactual material present.

2.8 Undated

2.8.1 In addition to the undated pits discussed above (2.1.1), the similar dimensions and curving form of ditches 251 and 22/30 may indicate that they were related and formed the north and west sides of an enclosure. Neither contained any artefactual material, but both were observed to be cut by medieval furrows, indicating an earlier date. Both ditches had V-shaped profiles up to 1.1m wide and 0.42m deep and they enclosed an

area measuring at least 75 x 30m, which probably continued to the south of the excavation area. Two ditches (1403 and 1405) were recorded in Evaluation Trench 14, either of which could represent a continuation of ditch 251, but no evidence was observed in the evaluation for the south side of the putative enclosure.

2.8.2 Two undated ditches (211 and 268) extended into the excavation area on parallel NNE–SSW alignments 25m apart.

3 ARTEFACTS

3.1 Prehistoric pottery *by Alex Davies*

3.1.1 Prehistoric pottery from three distinct periods were discovered at the site: early Neolithic (Decorated Bowl); middle Neolithic (Peterborough Ware); and earliest Iron Age.

Early Neolithic (Decorated Bowl)

3.1.2 Two pits produced early Neolithic material. Pit 200, fill 201, contained nine refitting sherds (51g) from a Decorated Bowl (Fig. 15, no. 1). The vessel is fine, with a wall thickness of 5mm, and has abundant, fine (usually <2mm), well-sorted shell inclusions. It has a shoulder and a heavy out-turned rim that is decorated with radial slashes. The rim diameter is *c* 240mm and 10% of the rim survives. The vessel finds parallels with material at the Abingdon causewayed enclosure (Avery 1982, fig. 15.16), where the fabric is also matched. While some may assign the vessel to the Abingdon style, it is likely that Decorated Bowls are a continuum without clear regional types (Whittle 1977, 85–94; Whittle *et al*. 2011, 762–3).

3.1.3 Pit 1407 was excavated during the evaluation, and sherds from two vessels were found in fill 1408. One of these is represented by four sherds (68g) and was undecorated with a concave neck and a rim that was inwardly rolled (Fig. 15, no. 2). The rim diameter is *c* 190mm and the wall thickness is 7mm. The fabric includes a moderate quantity of medium-grade, well-sorted quartzite and the external surface is smoothed. The second vessel comprises 36 sherds (118g). The rim is too small to measure and is slightly out-turned with slashes on the top. It has a wall thickness of 8mm. The fabric includes very common, moderately sorted coarse voids that are sometimes angular, suggesting a limestone origin.

3.1.4 The assemblage belongs to the Decorated Bowl group. This type of pottery is typically found at causewayed enclosures, although it is also found at other monument types and simpler pit deposits. Although very fragmentary, a sherd in a shell-rich fabric was found at the New Wintles Farm enclosure north of Eynsham (Kenward 1982, fig. 26.1). Small amounts of Decorated Bowl were found at monuments at Barrow Hills, Radley (Cleal 1999, 196–8). Only limited amounts of Decorated Bowl were found at Yarnton, and this was from pits (Hey *et al*. 2016, 351). The location on the periphery of a Neolithic and Bronze Age monument complex is no doubt significant in the deposition of the Decorated Bowl pottery at Polar Technology. Decorated Bowl ceramics began in south-central England in 3770–3670 cal BC (95% probability), probably in 3735–3685 cal BC (68% probability), and ended in 3335–3245 (95% probability), probably in 3325–3285 cal BC (68% probability; Whittle *et al*. 2011, 766).

Middle Neolithic (Peterborough Ware)

3.1.5 Some 161 sherds (843g) of Peterborough Ware were recovered from nine features representing a maximum of 19 vessels. Where enough of the vessel was surviving, all but one of the vessels appears to belong to the Mortlake style. The exception was a bevelled rim from pit 47 that was probably a sherd of Fengate Ware (Fig. 15, no. 3). It is possible that the sherd is early Bronze Age, although the flint fabric would be very

unusual for this date and sits more comfortably with the rest of the middle Neolithic assemblage.

Fabrics

3.1.6 Eight fabrics were identified (Table 1). The majority of the assemblage included shell in the fabric, with flint and grog present in minor quantities. The nearby Peterborough Ware assemblage at Yarnton is relatively large and provides a point of comparison (Hey *et al*. 2016). Fabrics at Yarnton were more varied with no single dominant inclusion, with quartzite, no temper, sand, flint, grog and shell occurring in approximate order of frequency (Hey *et al*. 2016, fig. 4.2). The clear dominance of shell at Polar Technology, not shared at Yarnton just *c* 4.5km to the north-east, suggests very localised practices in clay recipes, without consistent or long-term traditions. The dominance of shell across the prehistoric assemblage at the site suggests local production in all the periods, available from the nearby gravels and river channel edges.

Table 1: Middle Neolithic pottery fabrics

Fabric	Sherds	Weight (g)	Vessels	Fabric description
Sh2	3 2%	9 1%	2 11%	Shell. Medium grade, moderate frequency, well-sorted
Sh3	43 27%	97 12%	3 16%	Shell. Coarse, moderate frequency, well-sorted
Sh4	48 30%	318 38%	4 21%	Shell. Very coarse, abundant, poorly sorted
ShGr3	44 27%	293 35%	2 11%	Shell and grog. Coarse, moderate frequency, well-sorted
Shell total	**138 86%**	**717 86%**	**11 59%**	-
Gr2	2 1%	11 1%	2 11%	Grog. Medium grade
GrQt2	3 2%	32 4%	1 5%	Grog and quartzite. Medium grade
Fl2	1 1%	5 1%	1 5%	Flint. Medium grade
Fl3	4 3%	54 6%	3 16%	Flint. Coarse, moderate frequency, poorly sorted
None	13 8%	5 1%	1 5%	-
Total	**161**	**843**	**19**	-

Deposition

3.1.7 Middle Neolithic pottery was found in eight pits and a ditch (Table 2). The generally low average sherd weight (5.2g), the low percentage presence of any single vessel and that all but one of the vessels were either moderately or highly abraded suggests that the pottery was redeposited from middens or other primary contexts. A possible exception is the shell-tempered vessel in upper fill 290 of pit 289 (Fig. 15, no. 4). This was in a freshly broken state and may have been deposited in the grave shortly after it had been fragmented, although this interpretation is far from clear and only a small amount of the vessel was present. Some of the material might easily have been residual, and this is especially likely for the two tiny sherds in ditch 353.

Table 2: Middle Neolithic assemblage by context. Each row represents a vessel

Feature	Fill	Fabric	Abrasion	Sherds	Weight (g)	Decoration
Pit 47	48	Fl2	2	1	5	Diagonal lines of twisted cord below bevel rim. Fengate? (Fig. 15, no. 3)
		Gr2	2	1	6	
		None	2	13	24	
		Sh2	2	2	5	
Pit 163	164	Fl3	2	1	35	Lines of whipped cord
		Fl3	2	1	4	Line of amorphous impressions
		Fl3	3	2	15	
Pit 212	213	Sh3	3	6	7	Diagonal incised lines
Pit 289	290	Sh4	1	29	221	Chevron incisions on rim and body; internal cross-hatch (Fig. 15, no. 4)
		Gr2	3	1	5	
	291	Sh4	3	2	12	Probably whipped cord (very abraded)
		Sh2	2	1	4	Comb or cord (very abraded)
	326	Sh4	3	8	13	Impressed decorated (very abraded)
Pit 317	318	Sh4	2	9	72	Complex multi-directional cord on rim and inside; line of cord and diagonal incisions in cavetto and body (Fig. 15, no. 5)
Pit 337	338	Sh3	3	31	77	Fingernail impressions and probably whipped cord (very abraded)
Ditch 353	354	ShGr	3	2	2	Unknown impressions (very abraded)
Pit 371	372	GrQt2	2	3	32	Lines of fingernail; lines of whipped cord
Pit 418	419	Sh3	2	6	13	Lines of impressions on rim outer and on inside behind cavetto
	433	ShGr3	2	42	291	Whipped cord all over body; ?bird bone impressions on outer rim and on inner side beneath rim; stabs

Abrasion codes: 1 – fresh; 2 – moderately abraded; 3 – highly abraded

Discussion

3.1.8 The middle Neolithic pottery appears largely to have been redeposited from middens in a series of pits in a manner that is characteristic of the wider Neolithic pit deposition tradition. This is often interpreted as part of domestic occupation (Andersen-Whymark 2012, 195–6; Powell *et al.* 2010), although similar pits are also common to monument complexes (Morigi *et al.* 2011, 241–5). The site is on the periphery of a Neolithic and Bronze Age monument complex, and the ceremonial/ritualistic use of the site in this manner in the middle Neolithic is shown by the inhumation burial. The depositional practices at the site are suggestive of both domestic occupation with associated pit-digging and formal burial at an established monumental site.

3.1.9 Interim results of a project chronologically modelling Peterborough Ware radiocarbon dates shows that the tradition belongs to the mid-4th millennium to early 3rd millennium cal BC (Peter Marshall pers. comm.).

Earliest Iron Age

3.1.10 Five pits produced Iron Age pottery (Table 3), and the material from the two largest assemblages, pits 8 and 446, is best dated to the earliest Iron Age (*c* 800–600/550 cal BC). It is likely that all the Iron Age pottery belongs to the same period.

Pit 8

3.1.11 Some 113 sherds (636g) from 14 vessels were found in fill 9 of pit 8. The clearest form is a bipartite jar with slashes on the shoulder (Fig. 15, no. 6). A possible bipartite bowl that may have had traces of red coating and two shouldered jars were also found. One of these jars has fingertipping on the shoulder, the other appears to have an upright neck. An angular bowl with a flaring rim is present, and two vessels of unknown form are decorated with incised lines; one is lightly burnished. A further vessel has a shoulder angle. All the pots have shell temper, with two also containing grog. Four of the sherds (3.4%) are decorated, equating to 29% of the vessels.

Pit 466

3.1.12 Some 128 sherds (424g) from nine vessels were found in fills 468 and 469 of pit 466. Forms include a tripartite jar in a shell fabric (Fig. 15, no. 7) and two probable shouldered jars with upright necks. One is decorated with a line below the neck and a diagonal line on the shoulder and is in a shell fabric, the other is in a quartzite and sand fabric. Fabrics are more varied and included limestone and vegetal voids.

Other contexts

3.1.13 Five further vessels were found in pits 12 and 163 and Roman pit 91. No clear forms are present. Most of the sherds were in a shell fabric, with one vessel each including grog and quartz sand.

Fabrics

3.1.14 The primary and secondary inclusion types were recorded using the codes below. The number following the inclusion type indicates the grade, from 1 (very fine) to 4 (very coarse). This system generated ten unique Iron Age fabrics. These are summarised in Table 3.

Gr – Grog
Li – Limestone
Qs – Quartz sand
Qt – Quartzite
Sh – Shell
Ve – Voids from vegetal matter

Table 3: Iron Age pottery fabric quantification

	Sherds	*Weight (g)*	*Vessels*
Sh1	94 *37%*	112 *10%*	6 *21%*
Sh2	112 *48%*	783 *67%*	13 *46%*
ShGr1	3 *1%*	14 *1%*	2 *7%*
ShQs2	2 *1%*	20 *2%*	1 *4%*
Shell total	**211 *87%***	**929 80*%***	**22 *78%***
Gr2	1 *0.5%*	14 *1%*	1 *4%*
Li3	2 *1%*	47 *4%*	1 *4%*
LiQs2	11 *4%*	54 *5%*	1 *4%*
QtQs2	13 *5%*	107 *9%*	1 *4%*
Qs2	5 *2%*	13 *1%*	1 *4%*
Ve2	2 *1%*	8 *1%*	1 *4%*
Total	**214**	**961**	**23**

Discussion

3.1.15 Earliest Iron Age ceramics can be difficult to identify as there is much overlap with both the late Bronze Age and early Iron Age material. The presence of complex, often incised, decoration is the most distinctive element, often described as All Cannings Cross style (eg Booth 2011, 359; Edwards 2009a, 82; Hey *et al.* 2016, 450), but in the Upper Thames Valley this is no doubt a regional variety of the broader style centred on the Wiltshire chalklands. Such decoration is present in the upper reaches of the Thames Valley (eg Yarnton: Booth 2011, 359; Horcott Pit: Edwards 2009a, figs 26–7; Gravelly Guy: Duncan *et al*. 2004, fig. 7.3.31–4; Latton Lands: Edwards 2009b, 61–2; Horcott Quarry: Brown 2017, 280), but is not a major element among other assemblages (present in very minor quantities at Cotswold Community: Brown and Mullin 2010, 12; Gassons Road, Lechlade: Timby 1998; and Butler's Field: Barclay 1998, 24). Complex decoration becomes increasingly rare south-east of Oxford (Davies 2018, map 4.3). The Polar Technology assemblage is small with only limited indications of complex decoration.

3.1.16 Dating the assemblage on the basis of decoration is therefore ambiguous, but forms and fabric are informative. The clearest form was a biconical jar, and a possible biconical bowl was also present. This is among the most distinctive earliest Iron Age forms, all but absent from late Bronze Age and early Iron Age assemblages. Biconical earliest Iron Age forms are found in the upper reaches of the Thames Valley (eg Cotswold Community: Brown and Mullin 2010, fig. 1.4.27, 29; Horcott Pit: Edwards 2009a, fig. 27.P31; Yarnton Site 1: Hey *et al*. 2016, fig. 9.27.P91; Butler's Field: Barclay 1998, fig. 2.8.2; Gassons Road: Timby 1998, fig. A2.5) and have a major presence at the significant assemblages further down the valley (Knights Farm Pit 5: Bradley *et al*. 1980, fig. 34.21; 35.24v, 41u, 42u, 43u, 45v, 46v; Stanwell: O'Connell 1990, fig. 29. 36–7, 30.65–66, 32.92, 106; Home Farm, Laleham: Davies forthcoming; and Petters Sports Field: O'Connell 1986). The form is also characteristic of the earliest Iron Age outside the Thames Valley (eg Cunliffe 2005, fig. A:2.13-14; A:3.1, 3-7, 9-12, 14; A:4, 9, 10; A:5, 8, 11-12, 14; A:6, 1, 3, 5, 7). Other forms from Polar Technology are also consistent with an earliest Iron Age date.

3.1.17 The presence of grog, albeit in small amounts, is also indicative of the earliest Iron Age. Grog is usually found in minor quantities in earliest Iron Age assemblages in the

Thames Valley but is all but absent in the later part of the late Bronze Age and early Iron Age (Davies 2018, 283–4). Yarnton provides a good local example (pit 8127 and other features at Cresswell Field: Booth 2011, 354–8; Sites 1 and 5: Hey *et al*. 2016, 315, 449).

Catalogue of illustrated prehistoric pottery (Fig. 15)

1 Early Neolithic Decorated Bowl, fabric NEO Sh2. Ctx 201, pit 200.

2 Early Neolithic Plain Bowl, fabric NEO Qt2. Ctx 1408, pit 1407 (evaluation).

3 ?Middle Neolithic Fengate Ware, fabric NEO Fl2. Ctx 48, pit 47.

4 Middle Neolithic Mortlake Ware, fabric NEO Sh4. Ctx 290, pit 289.

5 Middle Neolithic Mortlake Ware, fabric NEO SH4. Ctx 318, pit 317.

6 Earliest Iron Age biconical jar, fabric IA Sh2. Ctx 9, pit 8.

7 Earliest Iron Age tripartite angular jar, fabric IA Sh2. Ctx 468, pit 466.

3.2 Worked flint *by Michael Donnelly*

Methodology

3.2.1 The artefacts were catalogued according to OA South's standard system of broad artefact/debitage type (Anderson-Whymark 2013; Bradley 1999), general condition noted, and dating attempted where possible. During the assessment additional information on condition (rolled, abraded, fresh and degree of cortication) and state of the artefact (burnt, broken, or visibly utilised) was also recorded. Retouched pieces were classified according to standard morphological descriptions (eg Bamford 1985, 72–7; Healy 1988, 48–9; Bradley 1999). Technological attribute analysis was initially undertaken and included the recording of butt and termination type (Inizan *et al*. 1999), flake type (Harding 1990), hammer mode (Onhuma and Bergman 1982) and the presence of platform edge abrasion.

The assemblage

3.2.2 The site yielded a lithic assemblage of 144 pieces as well as very minimal amounts of burnt unworked flint (Table 4). The majority of the flint was recovered from pits dated through pottery assemblages to the early and middle Neolithic periods and this date fits well with many of the flint assemblages, although most could have quite a broad date range from lithic technology alone. Later Neolithic tool forms were present in the topsoil, indicating that there may have been a quite dense background scatter or surface assemblage at one time associated with this pit-digging activity, all of which suggested a focus of activity in the Neolithic period including pit clusters, isolated pits and probable surface spreads or middens. The largest pit assemblage was identified during the evaluation phase where pit 1408 yielded 75 lithics including three pieces of worked quartzite. This area was not developed further but excavations to the north of this trench identified several smaller pit assemblages numbering around 4 to 19 lithics, all of which were flint, as well as one or two other features of similar age such as the middle Neolithic grave 289. Some of these pits lacked cores or tools and even if these more diagnostic elements were present they often took the form of tools with a much

broader probable date range, but overall most of the feature assemblage would fit within the early to middle Neolithic window indicated through examination of the pottery.

Table 4: Flint assemblage

Category type	Evaluation	Excavation	Total
Flake	48	36	84
Blade	3	5	8
Bladelet	2	2	4
Blade index	9.43% (5/53)	16.28% (7/43)	12.5% (12/96)
Irregular waste	7	4	11
Chips	1		1
Sieved chip 10–2mm	6	5	11
Core rejuvenation flakes	2		2
Core tablets	1		1
Crested blades	1		1
Core other blade/lets		1	1
Core multi-platform flakes	1		1
Scraper, end		1	1
Scraper, side and end		1	1
Arrowhead petit tranchet derivative	1		1
Arrowhead British oblique	1		1
Gunflint	1		1
End truncation	1		1
Piercer	2	1	3
Microdenticulate	5	3	8
Retouched flake	2		2
Total	85	59	144

Burnt unworked	5/7g	Na	5/7g
No. burnt (%)	17.65% (15/85)	8.47% (5/59)	13.89% (20/144)
No. broken (%)	43.04% (34/79)	37.04% (20/54)	40.60% (54/133)
No. cores/related debitage (%)	6.33% (5/79)	1.96% (1/54)	4.51% (6/133)
No. retouched (%)	16.45% (13/79)	11.11% (6/54)	14.28% (19/133)

Provenance

3.2.3 Table 5 shows the context types in which flints were recovered. As can be seen, most of the flints came from pit deposits, accounting for 84.7% of the assemblage. Seventy-five of these came from the one pit but even omitting this one dominant feature would still have resulted in a pit-dominated assemblage (68.1%, 47/69). Most of the remainder came from various feature fills, including a very small figure for ditches as well as around 6% from topsoil/subsoil horizons examined during the evaluation phase, which included both later Neolithic arrowhead forms that were the only truly diagnostic pieces recovered from this site.

Table 5: Flint assemblage by context type

Category type	Total	Percentage
Pits	122	84.72
Ditches	6	4.17
Grave	2	1.39
SFB	2	1.39
Tree-throw hole	2	1.39
Misc features	1	0.69
Topsoil	8	5.55
Subsoil	1	0.69
Total	144	

Raw material and condition

3.2.4 Flint accounted for 141 of 144 lithics recovered, or 97.9% of the assemblage, and was supplemented by three pieces of worked quartzite, all of which appeared to come from the same larger item or nodule and were found in pit 1407. Two of the three pieces clearly displayed signs of being struck, such as bulbs of percussion and clear ventral and dorsal surfaces, while the third was more irregular in form but almost certainly from the same larger piece of source material. Worked quartzite is rare but can occur in limited numbers in any assemblage; however, this material is very probably missed during processing as it can be difficult to identify against a background volume of natural pieces of the same material and is often only found where that material would be seen as exotic.

3.2.5 The flint displayed a range of cortical states, indicating that the material was from numerous sources including on or near the chalk as well as secondary gravel deposits. Cortex types included chalk, abraded thin chalk typical of North Downs flint, rolled, weathered, rolled and thermal.

3.2.6 The flints were evenly split between fresh (42.0%) or lightly edge-damaged (40.2%) pieces, with a considerable portion displaying moderate edge damage (16.1%) and a very few in worse condition (1.8%), both of which were the arrowhead forms recovered from the topsoil. Material from pit fills was in the best condition (fresh 48.4%, light 41.9%, moderate 9.7%), followed by that from other feature fills (fresh 18.2%, light 36.4%, moderate 45.5%). The topsoil/subsoil material was in the worst condition (light 25%, moderate 50%, heavy 25%). Pit 1407 contained material that was much fresher than the remaining pits but none of these assemblages were large enough for individual analysis.

3.2.7 Overall, the pit assemblages are likely to be *in situ*, possibly after a period of weathering in surface spreads or middens, while the other feature fills contained a mix of *in situ* and residual material.

Key assemblages (Table 6)

3.2.8 The largest assemblage by far was recovered from pit 1407, which yielded 75 lithics or just over half the total assemblage (52.9%). This contained numerous tool forms (14.9%) that included five microdenticulates (Fig. 16, nos 1–3) often associated with plant/cereal processing, two simple retouched flakes, two piercers (Fig. 16, no. 4) and

an end truncation. Five cores or related forms, mostly rejuvenation or preparation crests and tablets (Fig. 16, no. 5) but with one multi-platform flake core were recovered (this does not include a sixth piece that had been converted into a microdenticulate). Flakes were far more common than blade forms, with a blade index of just 4.4%, but three of the five microdenticulates were formed on blades, making up 30% of all tools, showing that elsewhere on or off site, blade production was more prominent. This assemblage was very probably early Neolithic in date, and the pit lacked any fine knapping waste, something that clearly indicates a selective assemblage for burial, very probably recovered after a period of tool production and/or use on site with the unselected elements entering into the background scatter.

3.2.9 Pit 200 was also of early Neolithic date and contained an assemblage of just five pieces, all of which were blanks, including one narrow bladelet. As such the flint is undiagnostic but would easily be accommodated by the date of the pottery. One other pit is worth mentioning as a potentially early example: pit 70 contained two flints in lightly edge-damaged condition, one of which was a form of complex or cubic bladelet core very often seen as being typical of early Neolithic assemblages. These cores are also found in earlier and slightly later assemblages but are extremely common in the early Neolithic.

3.2.10 Pits 212 and 418 were dated to the middle Neolithic and pit 163 to either the middle Neolithic or earliest Iron Age based on pottery assemblages. Pit 212 contained the next largest assemblage, at 19 pieces. However, it did not contain any tools or cores, with just flakes and irregular waste, and must remain undated by flint technology. However, the shift between this and the earlier pits towards a total flake-based assemblage is of note. The flakes included several soft-hammer struck examples but lacked complex platform types such as dihedral and faceted forms that typify later Neolithic assemblages. As such they appear to be a good fit for a middle Neolithic date.

3.2.11 Pits 163 and 418 contained just six and five flints respectively. Pit 418 included two blades and a blade tool in its six pieces. The blade tool was a well-made microdenticulate with two cutting edges on a relatively long blank (Fig. 16, no. 6). The assemblage was more typically early Neolithic in character but could also have been found in a middle Neolithic context, where plant processing was commonly practiced and where blade blanks were sought for the production of microdenticulates. Pit 163 had a very selective assemblage that comprised three flakes and two scrapers, with three of the five pieces displaying faceted platforms. Both scrapers were well-made examples fashioned into oval forms on regular flakes. One was an end scraper (Fig. 16, no. 7) while the other was a side-and-end example (Fig. 16, no. 8), and both had faceted platforms. This small assemblage would be more typical of later Neolithic assemblages but could fit the proposed date suggested by the pottery. This further highlights the probability that this group of pits was formed over a considerable length of time during the Neolithic period, probably as intermittent visits to a preferred location or persistent place.

3.2.12 Grave pit 289 was also dated to the middle Neolithic and yielded two flints. These comprised a microdenticulate (Fig. 16, no. 9) on a concave edged flake and an inner flake with a complex dihedral platform. Both flints could represent grave goods

although it may be more likely that these were simply present in the soil matrix at that time and were reinterred into the grave as backfill.

3.2.13 The two later arrowhead forms are of note. They represent the only fully diagnostic elements in the assemblage and at least one is dated to the middle Neolithic specifically. This was a petit tranchet derivative arrowhead form found in the topsoil alongside a narrow bladelet. The other arrowhead was a British oblique form (Fig. 16, no. 10) usually dated to the later Neolithic rather than specifically the middle or late periods (Green 1980) and is a slightly irregular and probably utilitarian form rather than one of the very elaborate examples often associated with ritual sites.

3.2.14 Tree-throw hole 351 contained a narrow bladelet in fresh condition and may be another contemporary element of the Neolithic landscape. Deposition into tree-throw holes was a common Neolithic practice and the condition of the piece suggests it was buried soon after being struck.

Table 6: Flint assemblages from selected features

Category type	Early Neolithic pit 1408	Early Neolithic pit 200	Middle Neolithic pit 212	Middle Neolithic pit 418	Middle Neolithic/earliest Iron Age pit 163
Flint	94.53% (69/73)	100%	100%	100%	100%
Quartzite	5.47% (3/73)				
Flake	43	4	11	2	3
Blade	1			3	
Bladelet	1	1			
Blade index	4.44% (2/45)	20% (1/5)	0% (0/11)	60% (3/5)	0% (0/3
Irregular waste	7		3		
Sieved chip 10-2mm	6		5		
Core rejuvenation flakes	2				
Core tablets	1				
Crested blades	1				
Core multi-platform flakes	1				
Scraper end					1
Scraper side & end					1
End truncation	1				
Piercer	2				
Microdenticulate	5			1	
Retouched flake	2				
Total	73	5	19	6	5

Burnt unworked	5/7g	Na	Na	Na	Na
No. burnt (%)	19.18% (14/73)	20% (1/5)	5.26% (1/19)	16.67% (1/6)	20% (1/5)
No. broken (%)	43.28% (29/67)	40% (2/5)	42.86% (6/14)	33.33% (2/6)	40% (2/5)
No. cores/related debitage (%)	7.46% (5/67)	0% (0/5)	0% (0/14)	0% (0/6)	0% (0/5)
No. retouched (%)	14.92% (10/67)	0% (0/5)	0% (0/14)	16.67% (1/6)	40% (2/5)

Discussion

3.2.15 The flints indicate a low level of use and deposition of flintwork into pits and other features during the Neolithic period. The pits date to at least two parts of that period and while there are several features belonging to both the early and middle Neolithic, there is no firm evidence that those groups were contemporary in date or that the pits

formed clusters. It would appear more likely that a small group or groups visited here at intermittent intervals to use various tools and to cut pits and bury various material possessions. These tool forms included examples associated with a range of activities including arrowheads for hunting/warfare, piercers for working hides and particularly microdenticulates for processing plant remains, which appeared to be the main focus of activity here. This could suggest that the site represented a small area of arable production close to an area or areas favoured for hunting.

Catalogue of illustrated prehistoric flint (Fig. 16)

1 Early Neolithic microdenticulated blade. Ctx 1408, pit 1407.

2 Early Neolithic dual microdenticulated flake. Ctx 1408, pit 1407.

3 Early Neolithic dual microdenticulated blade, Ctx 1408, pit 1407.

4 Early Neolithic piercer on a flake. Ctx 1408, pit 1407.

5 Early Neolithic core tablet. Ctx 1408, pit 1407.

6 Middle Neolithic microdenticulated blade. Ctx 433, pit 418.

7 Middle Neolithic end scraper on a side trimming flake. Ctx 164, pit 163.

8 Middle Neolithic side-and-end scraper on an inner flake. Ctx 164, pit 163.

9 Middle Neolithic microdenticulated flake. Ctx 290, grave 289.

10 Middle Neolithic British oblique arrowhead. Ctx 1300, topsoil.

3.3 Roman pottery *by Kate Brady*

3.3.1 Some 18 sherds of Roman pottery, weighing 56g, were recovered from the excavation (Table 7). The assemblage was recorded following guidelines set out in *A standard for pottery studies in archaeology* (PCRG, SGRP, MPRG 2016).

3.3.2 Each context group was sorted into wares, which were assigned codes taken from Oxford Archaeology's guidelines for recording Roman pottery (Booth 2016).

3.3.3 There were no rim sherds and so no sherds were recorded by form. Much of the pottery was heavily abraded and the mean sherd weight of 3.1g is very low and reflects this high level of abrasion, suggesting several episodes of redeposition. Much of the pottery was recovered from features of later date and were therefore residual.

3.3.4 Almost all the sherds could only be broadly dated to the Roman period and were body sherds in greyware and, less commonly, oxidised ware of probable local origin, most likely originating from the Oxford industry. Only a single sherd was dated more closely: this was a body sherd in grog-tempered fabric E80, and dates to the late Iron Age to early Roman period.

Table 7: Roman pottery assemblage

Feature	Fill	Count	Weight (g)	Notes	Date
Ditch 471	473	1	3	E80 body	LIA-ER
Ditch 474	476	1	3	R10 body	Rom
Pit 11	14	2	13	R20 body	Rom
Pit 61	62	1	1	R20 body	Rom
Pit 89	90	1	12	Footring base frag R30	Rom
Pit 87	88	1	4	R30 body	Rom
Pit 97	98	5	3	Unid crumbs	Rom
Pit 97	98	1	1	O20 body	Rom
Pit 481	483	1	4	O20 body	Rom
Pit 481	483	2	8	R20 body	Rom
Pit 497	498	1	2	R30 body	Rom
SFB 298	302	1	2	R30 body	Rom
Total		18	56		

3.4 Anglo-Saxon and medieval pottery *by Paul Blinkhorn*

3.4.1 The pottery assemblage from the excavation stage of this project comprised 111 sherds with a total weight of 1331g. It mostly consisted of early/middle Anglo-Saxon (5th- to 9th-century) material, nearly all of which came from the backfill of a single sunken-featured building, along with a small assemblage of later, medieval (11th–13th/14th century) wares.

Early/middle Anglo-Saxon

3.4.2 The following fabric types were noted:

F1: Oolitic. Moderate to dense oolitic limestone fragments up to 2mm. Very similar to Oxfordshire fabric OXAC, but hand-built forms. 46 sherds, 873g.

F2: Granitic. Sparse angular rock fragments up to 2mm, many free fine quartz and mica grains < 0.5mm. 26 sherds, 248g.

F3: Organic. Sparse to moderate organic voids up to 5mm. 2 sherds, 9g.

F4: Fine sand. Moderate to dense fine quartz < 0.2mm. 15 sherds, 96g.

F5: Ferrous sand. Moderate to dense iron-rich sand up to 1mm, most 0.5mm or less. 3 sherds, 24g.

3.4.3 The range of fabric types is typical of sites of the period in the region (eg Blinkhorn 2003), with the preponderance of Oolitic wares suggesting most of the material is of fairly local manufacture.

Chronology

3.4.4 None of the early/middle Anglo-Saxon pottery was decorated in any way. The dating of such material is mainly reliant on the presence of decorated sherds. These are usually of 5th–6th century date, with 7th century and later pottery being almost entirely plain (Myres 1977, 1). However, it cannot be said with certainty that an

assemblage which produces only plain sherds is of 7th century date. Usually, decorated hand-built pottery comprises just 5% or less of domestic assemblages of 5th–6th century date, as was the case at Mucking, Essex (Hamerow 1993, 51). Thus, with small assemblages such as this, all the undecorated pottery can only be given a broad early/middle Anglo-Saxon date.

The pottery

3.4.5 Most the pottery of this period (90 sherds, 1242g) came from the sunken-featured building (SFB) 298, which was excavated in four quadrants (contexts 302, 308, 336 and 346: Table 8), with the only other early/middle Anglo-Saxon material being a single sherd from a tree-throw hole beneath the SFB (context 310: Table 8) and two small residual sherds in context 500 (Table 9). As can be seen, the bulk of the early/middle Anglo-Saxon pottery (*c* 70%) is in the oolitic fabric F1. This is included a partially reconstructed vessel from context 336, a full profile of a small, rounded jar that was *c* 30% complete and typical of the early/middle Anglo-Saxon hand-built tradition (Fig. 17, no. 1). It cannot be dated other than to within the broad period. Fragments from very similar sherds in the same fabric occurred in all the other quadrants of the SFB, including a fairly large rim sherd with a very similar form, but none cross-fitted, so they cannot be said with certainty to be from the same vessel.

3.4.6 The assemblage from context 302 includes a body sherd with multiple holes which were all made pre-firing (Fig. 17, no. 2). It is very likely to be from a vessel which was pierced all over the body. Such pots have been noted at a number of other sites of the period, such as Sutton Courtenay, Bourton-on-the-Water and Shakenoak (West 1985, 137), and have been described in the past as 'wool-comb warmers', ie they were used to facilitate the heating of the iron wool combs used for combing raw fleeces prior to spinning (Jones 1975). However, given that they often show no signs of having been heated, it seems likely they had other uses such as strainers, possibly in association with cheese-making, or as 'fire-pots' for transporting hot embers for fire-starting.

3.4.7 It seems most likely, given the incomplete nature of the vessels in this assemblage, that the pottery was brought in from a domestic midden or similar with material used to backfill the SFB hollow after the building was dismantled rather than being vessels that were used in it during its lifespan. This is usually the case with assemblages from these features.

3.4.8 Sunken-featured building 298 was partly excavated during the evaluation excavations, where it was recorded as feature 910. That phase produced six sherds of pottery weighing 45g, five of which (32g) were in the oolitic fabric F1, and the other in sandy fabric F5.

Table 8: Pottery occurrence in SFB 298

Context	Fabric										Date
	F1		F2		F3		F4		F5		
	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	
302	7	51					9	67	1	2	E/M Saxon
308	13	163	11	51	1	5	1	4			E/M Saxon
310	1	8									E/M Saxon
336	17	589	6	144	1	4	4	20	2	22	E/M Saxon
346	8	62	7	46			1	5			E/M Saxon
Total	45	865	24	241	2	9	15	96	3	24	

Catalogue of illustrated Anglo-Saxon pottery (Fig. 17)

1 Partially reconstructed jar. Uniform black fabric, outer surface dark brown below the shoulder. Fabric F1. Ctx 336, SFB 298.

2 Body sherd with multiple pre-firing holes. Orange-red fabric with grey outer surface. Fabric F4. Ctx 302, SFB 298.

Late Anglo-Saxon and medieval

3.4.9 The late Anglo-Saxon and medieval material was recorded using the conventions of the Oxfordshire County type-series (Mellor 1994), as follows:

OXAC: Cotswold-type ware, AD 975–1350. 8 sherds, 40g.

OXAM: Brill/Boarstall ware, AD 1200–1600. 9 sherds, 45g.

OXB: Late Saxon Oxford shelly ware, late 8th–early 11th century. 1 sherd, 1g,

OXY: Medieval Oxford ware, AD 1075–1350. 1 sherd, 5g.

3.4.10 The pottery occurrence by number and weight of sherds per fabric type per context is shown in Table 9. Each date should be regarded as a *terminus post quem*. The range of fabric types is very typical of sites in the region (eg Blinkhorn 2003). All the medieval sherds were from unglazed jars in fabric OXAC or glazed jugs in fabrics OXY or OXAM. This is typical of sites in the region. The single small sherd of middle–late Anglo-Saxon OXB is in poor condition and the identification is tentative. It is entirely possible it is residual.

3.4.11 All the context assemblages consisted of six sherds or fewer, with most just producing one or two. All the pottery is the product of secondary deposition, and it is entirely likely that some of it is residual. The sherds from contexts 419 and 477 are intrusive.

Table 9: Pottery occurrence in other features

Feature	Context	Fabric										Date
		F2		OXB		OXAC		OXY		OXAM		
		No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	No.	Wt (g)	
Pit 24	25									1	5	13thC
Furrow 71	72									1	5	13thC
Eval trench	306									1	3	13thC
Pit 418	419									1	3	13thC
Ditch 452	453									1	13	13thC
Ditch 474	477			1	1							M/L Saxon
Pit 479	480									1	1	13thC
Pit 481	483					3	16	1	5	1	6	13thC
Pit 494	495					1	2			2	9	13thC
Pit 499	500	2	7			4	22					11thC
Total		2	7	1	1	8	40	1	5	9	45	

3.5 Metal and glass objects *by Anni Byard*

3.5.1 A total of 20 small finds were recovered from seven contexts (Table 10). These comprise one shard of glass, one copper alloy coin, one natural fragment and 17 iron objects. Objects were quantified by type count and weight by context and recorded on a spreadsheet.

Table 10: Small finds by context

Context	SF no.	Material	Count	Weight (g)	Object	Date
29		Glass	1	0.1	Mirror	Modern
46		Fe	5	32	Nail	Modern
46		Fe	3	4.4	Fittings/sheet	Modern
57		Fe	5	26.7	Nail	Modern
57		Fe	2	100	Pegs/fittings	Modern
336	12	Fe	1	3.7	Query	Query
346	11	Fe	1	0.4	Nail	Query
468		Natural	1	1.8	Natural	n/a
489	5	Cu alloy	1	1.1	Coin	Late 4th C

3.5.2 A single shard of thin, clear glass with a foil backing represents the remains of a mirror of modern (post-1800) date. It was recovered from a possible prehistoric tree-throw hole and is therefore likely to be intrusive.

3.5.3 A collection of iron nails, including a machine-cut nails, thin sheet metal and other pegs/fittings fragments, were recovered from the fills of modern postholes. The thin sheet fragments from context 46 are likely to be from the same object and one section may be a small clasp element with rivet; however, its condition negates further interpretation. The iron objects are all modern in date.

3.5.4 Small finds SF 11 and 12 were recovered from the same fill of the sunken-floored building. Their condition negates meaningful identification; however, SF 11 may be the remains of a nail or hobnail.

3.5.5 A single copper alloy coin (SF 5) was recovered from the fill of pit 488. The coin is probably a late 4th century nummus, possibly a SECVRITAS REIPVBLICAE issue from the House of Valentinian, but it is very worn and this identification is not certain.

3.6 Stone objects *by Ruth Shaffrey*

3.6.1 Two quartzite tools were recovered from early Neolithic pit fill 1408 during the evaluation. The largest example is slightly facetted down its long edges and heavily worn and facetted on one end (Fig. 18, no. 1). The smaller stone is a pebble that has seen some use as a hammerstone (Fig. 18, no. 2). The larger stone has been used as a rubber but as the wear is on the end, rather than the faces, it is more likely it was used for processing plants, nuts or seeds than grain.

3.6.2 A corner fragment of finely smoothed stone with very deeply chamfered edges was found in sunken-featured building 298 (346, Fig. 18, no. 3). It is made from a very finely micaceous dark brown siltstone, of assumed local provenance, although the stone type is not very distinctive. Although it could be a fragment of furniture inlay or wall veneer (Pritchard 1986), the lithology seems insufficiently decorative for this purpose, and it is therefore considered here to be a fragment of ointment palette primarily used for the mixing of cosmetics or for use in medical practices. In addition, chamfered edges are typical of ointment palettes (Reniere *et al*. 2018, 288) rather than the sometimes-bevelled edges of wall veneer.

3.6.3 Palettes are rarely found in Anglo-Saxon contexts but where they are, they are probably residual, either having been retained as heirlooms or being scavenged finds (Wells 2012, 60). It is therefore likely that this example is Roman in date, that it originated at a nearby Roman settlement and that it was possibly curated before finally being broken and discarded during the Anglo-Saxon period.

3.6.4 There is no comprehensive gazetteer of Romano-British mixing palettes, but a survey conducted for this report found that they occur on a range of site types, primarily on villas and in towns, forts, and nucleated settlements. A small number of examples have been found on rural sites and farms, but in the Oxfordshire region mixing palettes have only been found on the villa sites of Combe East End (Speake 2012, 48) and Wilcote (Hands 1998, 77, where it was interpreted as furniture inlay), and from a late Roman ditch at Oxford University's training excavation at Dorchester-on-Thames allotments, although the example from there does not retain any original edges (pers. obs.).

3.6.5 The use of a presumed locally sourced stone is generally in keeping with our understanding of ointment palettes. None of the Oxfordshire examples are of 'exotic' marble, and only 15 of the *c* 100 found in the rapid survey for this report were of continental marbles. A similar prevalence of provincial production was observed in a study of ointment palettes from northern Gallia Belgica and Germania Inferior (Reniere *et al*. 2018, 297). Despite the local source for the palette, they are rare as an object type, and this can be considered a 'high-status' find representing very specific practices.

Catalogue of worked stone

1 **Palette** (Fig. 18, no. 1). Pale brown finely micaceous siltstone. Corner fragment of palette with very deeply chamfered edges. All faces are finely smoothed. Measures >62 x >39 x 8mm thick. Weighs 43g. Ctx 346, SFB 298. SF 2.

2 **Rubber** (Fig. 18, no. 2). Quartzite cobble with slight facets along the long edges and with a distinctly facetted end caused by rubbing. Measures 111 x 67 x 56mm. Wt 595g. Ctx 1408, pit 1407 (evaluation). Early Neolithic.

3 **Small hammerstone** (not illustrated). Quartzite. Rounded pebble with some percussion damage at one end. No other use-wear. Measures 56 x 41 x 37mm. Wt 123g. Ctx 1408, pit 1407 (evaluation). Early Neolithic.

3.7 Fired clay and ceramic building material *by Cynthia Poole*

Introduction

3.7.1 A total of 42 fragments of fired clay weighing 167g and 10 fragments of ceramic building material (CBM) weighing 126g were recovered. The material consisted of small, fragmentary, poorly preserved pieces with a very low mean fragment weight of 4g for the fired clay and 13g for the CBM. Most of the assemblage was found in pits varying in date from Neolithic to 19th century. The fired clay is not intrinsically dateable and is reliant on other dateable artefacts for its phasing. The CBM was medieval–post-medieval, but often not closely dateable.

3.7.2 The assemblage has been fully recorded on an Excel spreadsheet in accordance with guidelines set out by the Archaeological Ceramic Building Materials Group (ACBMG 2007). Fabrics were characterised on macroscopic features and with the aid of x20 hand lens or binocular microscope at x25.

Neolithic

3.7.3 Fired clay (11 fragments, 35g) was recovered from a sieved sample from fill 213 of middle Neolithic pit 212, and during the evaluation stage a single fragment (5g) came from a sample from fill 1408 of early Neolithic pit 1407. The fragments were small, 10–33mm in size, and no more than 15mm thick. They were made in a sandy clay fabric fired red and orange-brown. Fragments from 213 each had a fairly smooth flat moulded surface, whilst the fragment from 1408 had a slightly rougher surface. This material probably derives from oven or hearth structures and the association with other burnt debris supports the conclusion that these fragments represent lining material dislodged from such structures, when being raked out.

Iron Age

3.7.4 Early Iron Age pit 8 produced three fragments (38g) of fired clay recovered by hand excavation and from a sieved sample. The fragments from the sieved sample were made in red fine sandy clay with cream laminations and containing a moderate density of medium quartz sand. They were lightly fired less than 30mm in size and irregular, possibly with a rough surface with chaff impressions on one piece. A 5mm diameter hole through this is probably a post-depositional worm hole. These are probably fragments dislodged while raking out an oven or hearth. The hand-collected fragment

was made in a light brown clay containing a low-density scatter of quartz sand and occasional shell/limestone grits up to 6mm. This piece took the form of an oval cake with lentoid cross section measuring 42 x 63mm in size and 19mm thick. The outer surface is very irregular with numerous finger depressions/grooves from pressing the clay into place. The back surface is a convex bonding surface with undulations reflecting the irregularities of the underlying surface. This piece probably results from repair to oven wall lining.

Anglo-Saxon

3.7.5 Also from the evaluation, two fragments of fired clay were recovered from SFB 298 fill 908, made in a sandy clay containing a high density of uniform medium-coarse rounded quartz sand and fired red and black. This has two flat very smooth, moulded surfaces and appears to derive from a thin flat slab or plate 16mm thick. One side is fired red and oxidised from the surface to the centre and the other side is fired black and has remnants of black burnt residue. The function of this item is unclear, but it is probably a portable object rather than structural, related to the use of an oven or hearth. It may be a fragment of Roman disc or plate possibly reused in the Saxon period.

Ceramic building material

3.7.6 Ceramic building material included fragments of flat roof and ridge tile made in shell and limestone tempered fabrics similar to Oxford medieval fabrics IB and VIIB and later medieval fabric IVA/B. One roof tile in a fine sandy fabric is of 16th–18th century date and a couple of broken brick fragments in red-orange sandy fabrics are also broadly of this date.

3.8 Slag by *Leigh Allen*

3.8.1 A total of 118g of undiagnostic slag was recovered from the sunken-featured building. The fragments lack any distinctive surface morphology, and so it is not possible to identify the precise process that produced them.

4 ENVIRONMENTAL AND OSTEOLOGICAL EVIDENCE AND RADIOCARBON DATING

4.1 Human skeletal remains *by Louise Loe*

Introduction and methodology

4.1.1 The human bone comprised one adult inhumation (skeleton 325) from earth-cut pit 289. The skeleton was analysed and recorded in accordance with published guidelines (Mitchell and Brickley 2017). Preservation was recorded with reference to completeness (scored as <25%, 26–50%, 51–75% or 76–100%), degree of fragmentation (scored as low, <25% fragmented; medium, 25–75% fragmented; or high, >75% fragmented) and degree of surface erosion (after McKinley 2004, 16).

4.1.2 The sex of the skeleton was estimated based on observations of the sexually dimorphic traits of the skull (Buikstra and Ubelaker 1994). Sexually dimorphic traits of the pelvis are normally deemed most reliable but none of these areas had survived. The methods commonly used for adult age estimation, namely those using dental attrition (Brothwell 1981; Miles 1962), the auricular surface (Lovejoy *et al*. 1985) or pubic symphysis (Brooks and Suchey 1990), were not available because these areas of the skeleton had not survived.

4.1.3 Metrical and non-metrical analyses were not possible due to the poor preservation of the skeleton. All bones were examined for evidence of pathology and trauma.

Results

4.1.4 Skeleton 325 was 50–75% complete and comprised remains of the skull, fragments of vertebrae and ribs and upper and lower limbs. No foot bones survived, and the limb bones were missing their joint surfaces.

4.1.5 The surfaces of the bones were relatively uneroded, consistent with grade 2 of McKinley's system for scoring post-mortem surface erosion (2004, 16). They were highly fragmentary. Considering completeness, surface erosion and fragmentation together, the preservation of the skeleton was judged to be fair overall.

4.1.6 The skull had a mixture of male and female features. The supraorbital ridges were strongly male, while the orbit margin and posterior zygomatic arch were strongly female. In addition, evidence of gonial flaring and the nuchal crest were judged to be possibly male and the frontal bone, mastoid processes, anterior mandible and mandibular ramus angle were possibly female. Overall, the skeleton was recorded as possibly female. This is supported by the gracile appearance of the skeleton overall.

4.1.7 The bones had completed growth, consistent with those of an adult. However, other indicators of age were missing or were not sufficiently preserved, so a more precise age could not be estimated.

4.1.8 The dentition was represented by a total of 13 teeth and 10 tooth sockets from the mandible and 15 teeth and tooth sockets from the maxilla out of a possible total number of 32 teeth and sockets. Medium and slight deposits of calculus, mineralised dental plaque (colloquially known as tartar) were observed throughout most of the dentition (17 teeth). Three teeth had carious lesions, a destruction of enamel, dentine

and cement resulting from acid produced by bacteria in dental plaque leading to cavity formation in the tooth crown or root surface (Hillson 1996, 269). Caries may be caused by the consumption of carbohydrates which stick to the teeth and allow the proliferation of bacteria around and between the teeth. The disease has been reported in around 1.1% of Neolithic skeletons from Britain, rising to 15.1% in the Bronze Age (Roberts and Cox 2003, 84). In addition, eight tooth sockets had periodontitis, or inflammation of the bone around the tooth sockets, caused by chronic inflammation of the tissues of the mouth, specifically the gums, periodontal ligaments and alveolar bone of the jaws. Lastly, one tooth socket, for the first mandibular premolar tooth, had a periapical cavity, a lesion which may have been the result of an abscess, granuloma or cyst. An abscess is the favoured interpretation here on account of the lesion's size (Dias and Tayles 1997).

4.1.9 Heavy, uneven, attrition was present, most notably on the occlusal surfaces of the central upper incisors and the right mandibular first and second molars. Missing teeth and/or tooth crowns meant that the full pattern of dental wear could not be appreciated, but on the left side of the dentition the occlusal surfaces sloped buccal (cheek) to lingual (tongue) and the buccal surface of the right canine crown was highly polished and worn. The crown was chipped and the area had worn into a facet. On the right side of the dentition, the occlusal surface wear had caused the surfaces of the first and second molars to form a bowl shape.

4.1.10 Several lesions of skeletal pathology were observed. Osteophyte (new bone) was present on the left temporal bone, on the joint surface for the mandibular condyle. Osteoarthritis, a disease that affects synovial joints, can cause this lesion, but the disease may only be diagnosed in skeletons if there is eburnation (polished bone) or at least two of either: osteophytosis, porosity and/or bony contour change (Rogers and Waldron 1995). In the present case there were no other changes on the joint surface. However, the other side of the joint, the mandibular condyle, was missing, so diagnosis is inconclusive. There appeared to be no disease on the right tempero-mandibular joint, although fragmentation and incomplete preservation of the bone hindered observation here.

4.1.11 Confirmed osteoarthritis was identified in the cervical and thoracic spines. The disease involved the articular facets of the third cervical vertebra and one unidentified thoracic vertebra and was manifested as osteophyte, bony contour change, eburnation and possibly, joint porosity.

4.1.12 Lastly, non-specific bone inflammation, in the form of slight increased vascularity, was present on the endocranial surface of the skull. The lesion was located just behind the left orbit.

Discussion

4.1.13 The burial, that of an adult possible female, is among several examples of isolated or small groups of articulated middle Neolithic furnished and unfurnished inhumations that have been found in central southern Britain. Of these, the most local to the present site is Lynch Hill Corner, near Stanton Harcourt, where a young adult female was found in a double ring ditched barrow with a belt slider and polished flint knife (Grimes 1960). Other local examples are Mount Farm, Berinsfield, where an early to

middle Neolithic SE–NW orientated burial of a male (30+ years) was found in an oval barrow ditch (Lambrick 2010). The individual was lying in a flexed position on his left side with a flint blade and knife (ibid.). Also, at Gatehampton Farm, Goring, a tightly crouched juvenile (dated to 3095–2890 cal BC) was excavated from a large curvilinear ditch, possibly a causewayed enclosure (Allen 1995).

4.1.14 Osteological analysis of the Eynsham skeleton has found it to be quite well preserved, being 50–75% complete with relatively uneroded bone surfaces. However, the bones were highly fragmentary and this has limited some observations, such as sex and age estimation and metrical and non-metrical analyses. In particular, no indicators survived which would have allowed an age range to be estimated and sex estimation has had to reply on features of the skull only. An accuracy of about 80% has been claimed for estimating the sex of skeletons using the adult cranium alone, increasing to 90% if the mandible is included (Mays and Cox 2000, 119).

4.1.15 Evidence for disease included osteoarthritis, osteophytosis and non-specific bone inflammation on the skull. These types and range of conditions are not unusual for a skeleton of this date, nor indeed archaeological skeletons more generally (Roberts and Cox 2003). For example, osteoarthritis has been observed on the contemporary male adult skeleton from Mount Farm, Berinsfield (Lambrick 2010), and disarticulated female skeleton (Burial B) from the linear mortuary structure at Radley Barrows (Barclay and Bradley 1999). The vertebral osteoarthritis in the Eynsham skeleton is most likely to have been the result of normal age-related changes in the spine. Conditions ranging from relatively mild venous drainage problems to systemic infection could have the caused bone inflammation on the skull, but it is not possible to specify which.

4.1.16 Several types of dental disease (calculus, periodontal disease and caries) were observed, indicating poor oral health overall. However, perhaps the most striking observation about the dentition (and indeed the skeleton more generally) was the extreme wear on the teeth. This presented a very distinctive pattern, suggesting that in life considerable pressure had been placed on the jaw and teeth, which were being used repeatedly in a particular way, over a long period of time. This was further reflected in the left tempero-mandibular joint (the hinge joint of the jaw) by the presence of new bone, referring to altered biomechanics in the joint. In addition, and more generally, the skull had marked muscle attachment sites, consistent with the powerful use of the jaw.

4.1.17 These changes may have been caused by a coarse, abrasive diet/a diet containing seeds and gravel, and/or food preparation techniques. For example, the higher rate and unique pattern of dental attrition seen in an earlier Natufian hunter-gatherer population (10,500–8300 BC) from the southern Levant may have been partly due to the greater consumption of fibrous plants and the introduction of large quantities of stone-dust into food by the use of pestles and mortars (Eshed *et al*. 2006). Similar circumstances could explain the heavy wear in the present skeleton. However, this perhaps does not entirely explain the pattern of the wear, which lacks the regularity and patterning that is seen in normal age-related wear encountered in archaeological populations spanning the Neolithic to medieval periods in relation to chewing food (for example, see Brothwell 1981, 72). It is therefore likely that the observed changes

had been caused by non-masticatory activities or extra-masticatory wear, that is, using the teeth as a tool, or 'third hand'. This is further supported by evidence in the skeleton for dental disease (periapical lesions and chipping) and temporo-mandibular changes, which are all associated with extra-masticatory wear (Molnar 2011).

4.1.18 Suspected third hand use or extreme wear has been noted elsewhere in the region. For example, At Radley Barrow Hills, Burial B from the linear mortuary enclosure was found to have 'extremely severe and uneven' dental attrition (Barclay and Bradley 1999, 29–31). Further, more generally, Smith and Brickley (2009, 127) have remarked that extensive wear involving teeth at the front of the mouth is common among Neolithic assemblages (for example, Ascott under Wychwood, Oxfordshire and Ty Isaf, North Wales) and may relate to domestic and craft activities.

4.1.19 It is not possible to specify what type of extra-masticatory activity had caused the changes in the dentition of skeleton 325. They may have been caused by many different activities, or combination of activities. Basket-working, stripping branches, softening sinews, cutting of pieces of meat, hide preparation and leather-working are some of those that have been suggested for similar examples in the published literature (Molnar 2011, 687). The precise activity (or activities) that caused the distinctive wear and associated changes in skeleton 325 may never be known, but regardless, this example provides a fascinating and rare insight into behavioural patterns and cultural practices in the archaeological record for the middle Neolithic.

4.2 Animal bone *by Ian Smith*

Introduction

4.2.1 Animal bone was recovered by hand, and through the sieving of bulk soil samples to 2mm, from 57 contexts spanning the early and middle Neolithic, early Iron Age, Roman, early/middle Anglo Saxon, medieval and modern periods. There is a total weight of 3090g and the total number of fragments is 667.

Methods

4.2.2 Animal bone was recorded to taxon, skeletal element and zone using the author's comparative skeletal collection and reference texts. Zones were based on Serjeantson (1996) and were recorded for the horn core, occipital, atlas, axis, scapula, humerus, radius, ulna, pelvis, femur, tibia, calcaneus, astragalus, metapodial, and first and second phalanges. Mandibular zones were recorded following Worley (2017) and loose mandibular teeth (dp4/P4 to M3 or fourth deciduous premolar/permanent fourth premolar to third mandibular molar) were counted. A count (NISP) was made of refitted parts (a refitting femur fractured into three counts as one) and of the Total Number of Fragments (TNF) (the three femur fragments count as three). The latter two counts correspond to two main methods employed for the calculation of NISP (numbers of identified specimens) by analysts (O'Connor 2000, 55). Some tooth wear stages were recorded following Payne (1973; 1987) for sheep and Grant (1982) for cattle and pigs and form part of the modest digital archive. An immature sheep mandible was differentiated from goat following Payne (1985).

Results

Numbers of specimens by period

4.2.3 The amount of identifiable bone from the early Neolithic, Roman and medieval periods is, in each case, too small to draw any conclusions with regard to species frequencies or body part representation (Tables 11 and 12).

Table 11: The hand-collected faunal remains by period, species, anatomical element, and side; SFB=sunken-featured building

Hand-collected NISP and TNF	Pit fill	Pit fill	SFB	SFB	Total NISP	Total TNF
Period/context (feature)/species/element/side	NISP	TNF	NISP	TNF		
Early Neolithic	**1**	**1**			**1**	**1**
201 (200)	**1**	**1**			**1**	**1**
Pig (*Sus scrofa dom*)	1	1			1	1
Scapula	**1**	**1**			**1**	**1**
Right	1	1			1	1
Middle Neolithic	**13**	**20**			**13**	**20**
290 (289)	**1**	**7**			**1**	**7**
Cattle (*Bos taurus*)	1	7			1	7
Scapula	**1**	**7**			**1**	**7**
Left	1	7			1	7
318 (317)	**3**	**4**			**3**	**4**
Cattle (*Bos taurus*)	3	4			3	4
Humerus	**1**	**2**			**1**	**2**
Left	1	2			1	2
Metacarpal	**1**	**1**			**1**	**1**
Right	1	1			1	1
Radius	**1**	**1**			**1**	**1**
Left	1	1			1	1
338 (337)	**9**	**9**			**9**	**9**
Cattle (*Bos taurus*)	3	3			3	3
1st phalanx	**1**	**1**			**1**	**1**
Undetermined	1	1			1	1
Astragalus	**1**	**1**			**1**	**1**
Left	1	1			1	1
Tibia	**1**	**1**			**1**	**1**
Right	1	1			1	1
Pig (*Sus scrofa dom*)	6	6			6	6
Calcaneus	**1**	**1**			**1**	**1**
Left	1	1			1	1
Femur	**1**	**1**			**1**	**1**
Right	1	1			1	1
Mandibular dp4	**2**	**2**			**2**	**2**
Left	1	1			1	1
Right	1	1			1	1
Radius	**1**	**1**			**1**	**1**
Left	1	1			1	1

Hand-collected NISP and TNF	Pit fill	Pit fill	SFB	SFB	Total NISP	Total TNF
Period/context (feature)/species/element/side	NISP	TNF	NISP	TNF		
Tibia	**1**	**1**			**1**	**1**
Right	1	1			1	1
Early Iron Age	**10**	**38**			**10**	**38**
9 (8)	**7**	**7**			**7**	**7**
Ovicaprid (*Ovis Capra*)	2	2			2	2
Mandibular	**1**	**1**			**1**	**1**
Left	1	1			1	1
Scapula	**1**	**1**			**1**	**1**
Undetermined	1	1			1	1
Sheep (*Ovis aries*)	5	5			5	5
Metacarpal	**1**	**1**			**1**	**1**
Left	1	1			1	1
Mandible dp3-M2	**1**	**1**			**1**	**1**
Left	1	1			1	1
Radius	**2**	**2**			**2**	**2**
Right	2	2			2	2
Ulna	**1**	**1**			**1**	**1**
Right	1	1			1	1
468 (466)	**2**	**19**			**2**	**19**
Horse (*Equus* sp.)	1	16			1	16
Mandible P2-M3	**1**	**16**			**1**	**16**
Left	1	16			1	16
Pig (*Sus scrofa dom*)	1	3			1	3
Scapula	**1**	**3**			**1**	**3**
Right	1	3			1	3
469 (466)	**1**	**12**			**1**	**12**
Cattle (*Bos taurus*)	1	12			1	12
Mandible M1-M2	**1**	**12**			**1**	**12**
Right	1	12			1	12
Roman	**1**	**1**			**1**	**1**
92 (91)	**1**	**1**			**1**	**1**
Cattle (*Bos taurus*)	1	1			1	1
Scapula	**1**	**1**			**1**	**1**
Left	1	1			1	1
Early/middle Anglo-Saxon			**9**	**33**	**9**	**33**
302 (298)			**2**	**2**	**2**	**2**
Cattle (*Bos taurus*)			2	2	2	2
Mandibular M1			**1**	**1**	**1**	**1**
Right			1	1	1	1
Ulna			**1**	**1**	**1**	**1**
Left			1	1	1	1
308 (298)			**4**	**18**	**4**	**18**
Cattle (*Bos taurus*)			2	14	2	14

Hand-collected NISP and TNF	Pit fill	Pit fill	SFB	SFB	Total NISP	Total TNF
Period/context (feature)/species/element/side	NISP	TNF	NISP	TNF		
1st phalanx			**1**	**1**	**1**	**1**
Undetermined			1	1	1	1
Metatarsal			**1**	**13**	**1**	**13**
Left			1	13	1	13
Horse (*Equus* sp.)			1	3	1	3
Astragalus			**1**	**3**	**1**	**3**
Left			1	3	1	3
Large mammal (cf *Bos*/*Equus*)			1	1	1	1
Humerus			**1**	**1**	**1**	**1**
Left			1	1	1	1
346 (298)			**3**	**13**	**3**	**13**
Cattle (*Bos taurus*)			1	11	1	11
Humerus			**1**	**11**	**1**	**11**
Left			1	11	1	11
Pig (*Sus scrofa dom*)			2	2	2	2
Humerus			**1**	**1**	**1**	**1**
Left			1	1	1	1
Pelvis			**1**	**1**	**1**	**1**
Right			1	1	1	1
Medieval	**3**	**8**			**3**	**8**
482 (481)	**1**	**2**			**1**	**2**
Ovicaprid (*Ovis/Capra)*	1	2			1	2
Metacarpal	**1**	**2**			**1**	**2**
Undetermined	1	2			1	2
495 (494)	**1**	**2**			**1**	**2**
Pig *(Sus scrofa dom*)	1	2			1	2
Ulna	**1**	**2**			**1**	**2**
Right	1	2			1	2
498 (497)	**1**	**4**			**1**	**4**
Cattle (*Bos taurus*)	1	4			1	4
Mandibular	**1**	**4**			**1**	**4**
Left	1	4			1	4
Undated	**7**	**19**			**7**	**19**
277 (276)	**2**	**2**			**2**	**2**
Cattle (*Bos taurus*)	1	1			1	1
1st phal	**1**	**1**			**1**	**1**
Undetermined	1	1			1	1
Ovicaprid (*Ovis/Capra*)	1	1			1	1
Mandibular M1/2	**1**	**1**			**1**	**1**
Left	1	1			1	1
283 (282)	**1**	**12**			**1**	**12**
Cattle (*Bos taurus*)	1	12			1	12
Atlas	**1**	**12**			**1**	**12**

Hand-collected NISP and TNF	Pit fill	Pit fill	SFB	SFB	Total NISP	Total TNF
Period/context (feature)/species/element/side	NISP	TNF	NISP	TNF		
Right	1	12			1	12
409 (408)	**4**	**5**			**4**	**5**
Cattle (*Bos taurus*)	4	5			4	5
Astragalus	**1**	**1**			**1**	**1**
Right	1	1			1	1
Humerus	**1**	**1**			**1**	**1**
Right	1	1			1	1
Metacarpal	**1**	**2**			**1**	**2**
Left	1	2			1	2
Metatarsal	**1**	**1**			**1**	**1**
Left	1	1			1	1
Total	**35**	**87**	**9**	**33**	**44**	**120**

Table 12: The sieved faunal remains by period, species, anatomical element, and side; (Anglo-Saxon dated 336 relates to the sunken-featured building, all other sieved contexts are pit fills).

Sieved NISP	Fraction	
Period/Context/Species/Element/Side	>10mm	Total
Early Neolithic	**1**	**1**
201	**1**	**1**
Medium-sized mammal	1	1
Scapula	**1**	**1**
Right	1	1
Middle Neolithic	**3**	**3**
213	**2**	**2**
Pig *(Sus scrofa dom*)	2	2
1st phalanx	**1**	**1**
Undetermined	1	1
Mandibular M1	**1**	**1**
Left	1	1
338	**1**	**1**
Pig *(Sus scrofa dom*)	1	1
Mandibular	**1**	**1**
Undetermined	1	1
Early Iron Age	**1**	**1**
9	**1**	**1**
Ovicaprid (*Ovis/Capra*)	1	1
Mandibular M3	**1**	**1**
Left	1	1
Early/middle Anglo-Saxon	**1**	**1**
336	**1**	**1**
Cattle (*Bos taurus*)	1	1

Sieved NISP	Fraction	
Period/Context/Species/Element/Side	>10mm	Total
1st phalanx	**1**	**1**
Undetermined	1	1
Total	**6**	**6**

Middle Neolithic

4.2.4 The middle Neolithic animal bone originates from a series of pit fills and comprises the remains of cattle and pig (Table 11). Not all contexts produced bones with countable zones and where this is the case these contexts are omitted from Tables 11 and 12. There are major meat bearing parts of cattle present (scapula, humerus, radius, tibia) but no cattle cranial or mandibular parts. The pig anatomical parts present in sample 6 from fill 213 of pit 212 include three maxillary teeth (not indicated in Table 12), which indicates the presence of pig crania as well as mandibles. No articulated remains (associated bone groups) were recovered.

4.2.5 A fragmented cattle scapula, with most of the glenoid end intact, came from pit 289 (fill 290) and some rib sections of probable cattle, all affected by root etching, came from the same deposit.

Early Iron Age

4.1.9 Teeth of cattle, sheep, pig, and horse are present and a proportion of the appendicular parts are reduced to fragments. One sheep radius from pit 8 fill 9 bears clear signs of carnivore (probable dog) gnawing and has been reduced to a cylinder. Another radius and its associated ulna have survived largely intact, although they, in common with the majority of specimens from the context, are affected by a considerable degree of root etching (*sensu* Baker and Brothwell 1980, 194–5) which has adversely affected the condition of the bone surfaces. From the upper fill (468) of pit 466 there are the remains of a horse mandible comprising six loose cheek teeth from a single mandibular row, with much associated fragmented mandibular bone.

Early/middle Anglo-Saxon

4.2.6 A small quantity of bone was recovered from sunken-featured building 298. Cattle, horse and pig bones are present within this phase group (Table 11). The burnt bone includes a partially blackened (and root-etched) astragalus of an equid, probably horse (*Equus* sp.) and a small part of the distal end of a humerus (of either cattle or horse). Other parts in this deposit grouping are root-etched but not burnt and the material spans a range of states of preservation.

Discussion

Middle Neolithic

4.2.7 Although the sample from the middle Neolithic is small (and thus any conclusions must be tentative) it may be that some primary butchery took place elsewhere, with the cattle maxillary and mandibular parts disposed of at that stage, and that the material

deposited into the pits relate to disposal of domestic food waste. Continuing this speculation, pig teeth were recovered both by sampling and hand collection and their presence could perhaps relate to a difference with regard to butchery practices between cattle and pigs. It is possible that more entire pig carcasses might have been brought into the domestic sphere.

4.2.8 The bone from this phase exhibits a range of surface bone texture states and a proportion of the bone is poorly preserved and affected by root etching. This range of preservation states may variously relate to the substrate type, water table levels and soil pH values. It is also possible that the animal bone might have followed the same taphonomic path as is suggested for the pottery (Davies, above) in that it may first have been disposed of in middens (and potentially subject to other taphonomic biases) prior to deposition in these pits.

Early Iron Age

4.2.9 While it can be stated that cattle, sheep, pig and horse remains are present, it is difficult to speculate further given the sample size. The faunal remains from each period bear evidence for the effects of taphonomic processes which may have biased any original reflection of cultural practices. Among the small sample of early Iron Age material, the high frequency of teeth and of highly fragmented parts suggests the possibility that the range of recovered bones has been mediated since deposition.

Early/middle Anglo-Saxon

4.2.10 The origins of the bones from the sunken-featured building are of interest. Potentially there are food (cattle) and non-food species (horse) represented here (*sensu* Serjeantson 2000, 183), although horses were sometimes eaten on special occasions amongst Germanic peoples prior to the influence of Christianity and in the early Anglo-Saxon period (Simoons 1994, 183–8). Whether the small number of burnt cattle and horse bones from this context were burnt within the building is not clear. It appears to be most likely that the pottery was brought in from a domestic midden or similar with material used to backfill the SFB hollow after the building was dismantled rather than being vessels that were used in it during its lifespan (Blinkhorn, above). It is plausible that all the backfill material, including the bone, originates from the same process and thus, originating from a midden, does not have a single origin. This appears a reasonable hypothesis to account for the possibly mixed nature of the bones.

4.3 Archaeobotanical remains *by Denise Druce*

Introduction

4.3.1 Eighteen bulk samples taken during the excavations of the site were processed and assessed for the presence of archaeobotanical remains, primarily charred plant remains and charcoal. Fourteen of the samples comprised the fills of pits assigned to the early and middle Neolithic, early Iron Age, Roman and medieval periods. Five of the samples came from the sunken-featured building. A further sample, from early Neolithic pit 1407, which had been rapidly assessed during the evaluation of the site, was also selected for further analysis. Any samples considered important for providing further information on crop husbandry and/or fuel use were subjected to further rapid

analysis, the results of which being incorporated here. To comply with accepted professional guidelines (English Heritage 2011) 40-litre samples, or 100% of a fill if less than this, were taken.

Methodology

4.3.2 Sample processing followed standard procedures whereby the flots were caught in a 250µm-aperture sieve and air-dried. The residues of the floated samples were washed through 4mm, 2mm and 500µm-aperture meshes and also air-dried. Dried flots and residues were scanned using a stereo-microscope and any plant material, including fruits, seeds, charcoal and wood fragments, was recorded. Other remains, such as bone, insects, small artefacts, ceramic building material (cbm), industrial/metal waste, and coal/heat-affected vesicular material (havm) were also noted. The presence of modern roots, earthworm eggs and modern seeds was also noted to ascertain the likelihood of any contamination. Charred plant remains were either counted or, along with other types of remains, quantified on a scale of + to ++++ where + is rare (one to five items); ++ is frequent (6 to 50 items); +++ is common (51 to 100 items); and ++++ is abundant (greater than 100 items). The assessment results were recorded on a *pro forma*, which will be kept with the site archive. Given the potential significance of any charred remains coming from the Neolithic pits, five were fully sorted whereby any plant remains were extracted and identified. The fill (9) from Iron Age pit 8 was also fully analysed to provide comparative data.

4.3.3 Wood and charcoal fragments over 2mm in size were provisionally quantified and scanned to assess preservation and wood diversity. Following this, four samples were selected for full analysis whereby fragments were initially sorted into groups based on the features visible in transverse section using a Leica MZ6 binocular microscope at up to x40 magnification. Representative fragments of each group were then fractured to reveal both radial and tangential sections, which were examined under a Meiji incident-light microscope at up to x400 magnification. Identification and classification were made with reference to Hather (2000) and modern reference material.

Results

4.3.4 The results of the archaeobotanical study, combining both the assessment and analysis data, are presented in Tables 13 and 14. Preservation was through charring, much of the uncharred organic material represented by modern roots, seeds and insect fragments. Other material consistently recorded in samples included rare to frequent coal fragments, which likely derives from modern soil debris.

Charred plant remains

4.3.5 A rapid assessment of the samples suggested that most of the features contained rare to common charred plant remains. Several of the early prehistoric features, including early Neolithic pits 1407 and 200, contained rare to frequent charred cereal grains. The most common cereal type was wheat (*Triticum* sp.), including a plump variety consistent with free-threshing wheat, bread wheat-type (*Triticum aestivum*-type). In addition, a single barley (*Hordeum vulgare*) grain was recorded in early Neolithic pit 200 and a single oat (*Avena* sp.) was recorded in possible middle Neolithic pit 163. Although examples of barley and wheat are commonly recovered from Neolithic

features in the region (Hey *et al*. 2016, Worley *et al*. 2019), the status of free-threshing wheat is still unclear as many dated grains have proven to be intrusive (Pelling *et al*. 2015; Worley *et al*. 2019). Indeed, oat, along with the large pea (Fabaceae) resembling possible cultivated pea (*Pisum sativum*) present in middle Neolithic pit 47, for which no confirmed Neolithic evidence exists for southern Britain (Worley *et al*. 2019), suggests a component of the fill may represent intrusive material from later agricultural activity, perhaps from the Iron Age onwards. Indeed, some element of contamination is supported by the recovery of what is considered intrusive Iron Age pottery from middle Neolithic pit 163.

4.3.6 Rare to frequent bread wheat-type grains and oats were also recovered from the early Iron Age, Anglo-Saxon and medieval features. Given the evidence for ploughing, which may have caused considerable mixing of deposits, it is difficult to know for certain whether the cereal grains are *in situ*. Similar problems are evident from other sites in the region, the issue of contamination being particularly pronounced from middle and late Neolithic features (ibid.).

4.3.7 Comminuted bone, including calcined/burnt fragments, was commonly recorded in the Neolithic, Roman, Anglo-Saxon and medieval features, which accords with the animal bone evidence from the site (Smith, above). However, given the evidence from the pottery and animal bone for Neolithic middening at the site it is possible much of the bone recovered from later features could be residual. Animal bone is commonly recorded in Neolithic pits from the region and, along with charred cereals and fruits, often form a 'domestic' package (Hey *et al*. 2016; Worley *et al*. 2019). Debate continues however, as to whether these remains are purposefully deposited in pits as some form of 'totemic' practice or represents casually disposed waste (Hey *et al*. 2016).

4.3.8 Charred hazelnut shell fragments, often ubiquitous in early prehistoric assemblages (Greig 1991; Mulville and Robinson 2016) appear to be more prevalent in the Neolithic features, which does suggest some element of integrity with the assemblages. In addition, early Neolithic pit 1407 contained a single blackthorn/sloe stone, which is consistent with the common blackthorn-type charcoal fragments, also recovered from this feature (see below).

Table 13: Archaeobotanical remains from early prehistoric features

Sample no.	Context no.	Feature no.	Feature type	Notes	Volume processed (l)	Flot vol (ml)	Crops	Hazelnut shell fragments	Other seeds/fruits	<2mm charcoal	>2mm charcoal	Bone fragments	Pot fragments
1400	1408	1407	Early Neolithic pit	Abundant modern roots. Artefact-rich. Contained 4 sherds of one vessel, fired clay, and animal bone		300	10 Indet cereals 1 *Triticum* sp 1 cf *Triticum aestivum*-type	+++	1 *Prunus spinosa* stone 1 indet fruit fragment	++++	+++ incl *Prunus* sp. and *Quercus**	+++ incl calcined	++
5	201	200	Early Neolithic pit	Contained 9 refitting sherds of pot		<5	1 *Hordeum vulgare* 1 *Triticum* sp.			++	+	++++ incl burnt	
3	48	47	Middle Neolithic pit			5	1 cf *Triticum* sp. 1 cf *Triticum aestivum*-type 1 indet cereal	+	1 large Fabaceae-cf *Pisum sativum*	+++			+
4	164	163	Middle Neolithic/earliest Iron Age pit	Contained early IA pottery		20	1 cf *Triticum aestivum* type 1 cf *Avena* sp. 2 indet cereals	+	+ half a large Fabaceae	++++	+++ incl *Quercus* and Maloideae*	+++	+
6	213	212	Middle Neolithic pit	Contained fired clay probably from hearth/oven		20		+++		++++	++	++ incl calcined	
7	290	289	Middle Neolithic grave	Artefact-rich. Contained frequent animal bone.		30	+ Indet cereal fragments	+		+++	+++ Mixed incl *Quercus* and diffuse		+

Sample no.	Context no.	Feature no.	Feature type	Notes	Volume processed (l)	Flot vol (ml)	Crops	Hazelnut shell fragments	Other seeds/fruits	<2mm charcoal	>2mm charcoal	Bone fragments	Pot fragments
											porous wood charcoal		
17	338	337	Middle Neolithic pit	Contained common animal bone, and pot		10	+ Indet cereals	++	+ cf Lamium sp.	+++	++	+++ incl calcined	
18	419	418	Middle Neolithic pit, upper fill			15		+++		+++	+	++	
19	433	418	Middle Neolithic pit, basal fill	Artefact-rich. Contained animal bone.		20	2 cf *Triticum aestivum*-type	++++		+++	+	+ incl burnt	+

Remains are quantified on a scale of + to ++++ where + is rare (one to five items); 2 is frequent (6 to 50 items); 3 is common (51 to 100 items); and 4 is abundant (greater than 100 items). * = subjected to full charcoal analysis (Table 15).

Table 14: Archaeobotanical remains from later prehistoric, Roman, and medieval features

Sample no.	Context no.	Feature no.	Feature type	Notes	Volume processed (l)	Flot Vol (ml)	Crops	Hazelnut shell fragments	Other seeds/fruits	<2mm charcoal	>2mm charcoal	Bone fragments
1	9	8	Earliest Iron Age pit	Contained fired clay and frequent animal bone		20	1 *Hordeum vulgare* 1 cf *Triticum aestivum* type 1 *Avena* sp. 8 indet cereals	+		++++	+++ *Quercus* with rare Maloideae and *Alnus/Corylus* *	+
2	13	12	Earliest Iron Age pit			<5				++		
23	468	466	Earliest Iron Age pit	Abundant modern roots. Contained common animal bone		30				+		
24	469	466	Earliest Iron Age pit	Abundant modern roots. Contained frequent animal bone		25			+ *Galium aparine*	+	+	
20	489	488	Roman pit			10	+ Indet cereal fragments			+		+++ incl calcined
8	300	298	Posthole, early–middle Anglo-Saxon SFB			10				+++	+	
9	302	298	Early–middle Anglo-Saxon SFB	Abundant modern roots. Contained abundant domestic refuse incl pot and animal bone		50				++++	+++ incl *Quercus*, Maloideae, and *Prunus* sp.	

Sample no.	Context no.	Feature no.	Feature type	Notes	Volume processed (l)	Flot Vol (ml)	Crops	Hazelnut shell fragments	Other seeds/fruits	<2mm charcoal	>2mm charcoal	Bone fragments
10/11/12	308/346/336	298	Early–middle Anglo-Saxon SFB	Contained frequent animal bone		190	+ cf *Triticum aestivum*-type, *Avena* sp., indet cereal fragments			++++	++++ incl *Quercus*, Maloideae, and *Prunus* sp.*	++ incl calcined/ burnt
21	495	494	Medieval quarry pit	Contained rare bone		15	++ cf *Triticum aestivum*-type, indet cereal frgaments	+		+++	+	+++ incl calcined
22	487	486	Medieval quarry pit			10	++ cf *Triticum aestivum*-type, *Hordeum vulgare*	+		+++	+	++++ incl calcined

Remains are either actual counts or are quantified on a scale of + to ++++ where + is rare (one to five items); 2 is frequent (6 to 50 items); 3 is common (51 to 100 items); and 4 is abundant (greater than 100 items). * = charcoal taken to full analysis (Table 15)

Charcoal

4.3.9 Charcoal fragments, including larger fragments suitable for species identification, were recovered from several of the samples, and the preliminary assessment suggested mixed assemblages of oak (*Quercus* sp.), blackthorn-type and/or hawthorn-type (Maloideae) made up most of the material, including the fill of Anglo-Saxon sunken-featured building 298. Further analysis was carried out on at least one. Further analysis of the charcoal was also carried out on the fills from two of the Neolithic pits and the Iron Age pit to provide comparative data.

4.3.10 The taxonomic level of identification varied according to fragment size, state of preservation, and/or observed genera/family. Anatomically similar blackthorn-type (*Prunus* sp.) species were not separated. In addition, hawthorn-type (Maloideae), cannot be separated on anatomical grounds. Other characteristics, such wood maturity, and evidence for possible green wood such as radial cracking, were also noted (Dufraisse *et al*. 2017; Théry-Parisot 2012).

4.3.11 Analysis of the charcoal from the four selected features confirms that the assemblages from their fills comprise similar mixed assemblages dominated by oak and blackthorn-type charcoal (Table 15). Although, given the small data set, it is difficult to tell if these values represent 'real' trends in fuel use, oak does appear to be less prominent in the Anglo-Saxon structure. A shift to the use of oak sapwood from young trees or branch wood, as opposed to oak heartwood evident during the prehistoric period, may indicate a reduction in the availability of mature oak woodland. However, again, this is very tentative given the small data set.

4.3.12 Although the sample from the sunken-featured building failed to produce hazel (*Corylus avellana*) charcoal, it did contain rare fragments of field maple (*Acer campestre*), ash (*Fraxinus excelsior*) and common buckthorn (*Rhamnus carthartica*). Given these taxa all commonly grow as scrub or in hedgerows (Stace 2010), their presence may indicate a much more open or managed landscape. The diversity of the assemblage from this building, together with a dominance of small twig fragments, often representing possible green wood, suggests the material is likely to derive from randomly collected material from woodland floors for fuel, rather than representing structural material.

Table 15: Charcoal identification results from selected samples

Context no.		**1408**	**164**	**9**	**336**
Sample no.		**1400**	**4**	**1**	**12**
Feature		**Early Neolithic pit 1407**	**Middle Neolithic/earliest Iron Age pit 163**	**Earliest Iron Age pit 8**	**Anglo-Saxon SFB 298**
Flot size (ml)		**300**	**20**	**20**	**80**
% of >2mm flot analysed		**100**	**100**	**100**	**25**
% of >4mm flot analysed		**100**	**-**	**-**	**100**
Acer campestre	Field maple				2
Corylus avellana	Hazel	4		2	
Fraxinus excelsior	Ash				3
Maloideae	Hawthorn-type		4	4	28r

Context no.		1408	164	9	336
Sample no.		1400	4	1	12
Feature		Early Neolithic pit 1407	Middle Neolithic/earliest Iron Age pit 163	Earliest Iron Age pit 8	Anglo-Saxon SFB 298
Maloideae/*Prunus* sp.	Hawthorn/blackthorn-type	6			
Prunus sp.	Blackthorn-type	24	7	13r	67rg
Quercus sp.	oak	21h	13h	22h	18s
Rhamnus cathartica	Common buckthorn				3r
Indeterminate		7r		1r	31r
	No. of fragments analysed	62	24	42	152

Numbers given are actual counts. s = sap wood present, r = round wood present, g = from possible green wood, h = heart wood present.

Discussion

4.3.13 Although relatively few charred plant remains other than charred hazelnut shell fragments were recovered from the site, the data has provided further evidence for cereal cultivation in the area during its earliest period. As with many other Neolithic pit sites, sparse cereal remains were recovered alongside wild, collected foods (primarily hazelnuts). Although no cereal grains have been directly dated, the association of the remains of Decorated Bowl ceramics in pits 1407 and 200 indicates a possible date of between 3770–3670 cal BC and 3335–3245 cal BC. The Yarnton project recorded cereals, including an emmer/spelt grain (*Triticum dicoccum*/*spelta*) dated to 3890–3690 cal BC (OxA-14447: 4957±34 BP), and the probable charred remains of barley or mixed cereal bread, dated to 3620–3350 cal BC (OxA-6412: 4675±70 BP; NZA-8679: 4627±57 BP). In addition to bread, cereals, either as whole grains or pulverised, would have been used in a variety of ways (Mulville and Robinson 2016).

4.3.14 The archaeobotanical evidence from Yarnton suggests cereal cultivation, albeit on a reduced scale, continued into the middle and late Neolithic periods. As with other sites of this period, an increase in the reliance on wild, collected foodstuff may reflect a marked decline in cereal cultivation during these later periods (Stevens and Fuller 2012; Mulville and Robinson 2016). A continuity in crop husbandry practices may have occurred at Polar Technology; however, issues with possible re-working and contamination make this difficult to establish.

4.3.15 The charcoal evidence from Polar Technology indicates the utilisation of primarily oak and hawthorn/blackthorn-type wood fuel during the prehistoric periods. Although records are missing for the intermediate periods, the evidence suggests that a reliance of oak and hawthorn/blackthorn-type wood fuel took place during the Anglo-Saxon period; however, the recovery of several scrubby/hedgerow taxa provides tentative evidence for a more open, possibly managed landscape.

4.4 Marine shell *by Rebecca Nicholson*

4.4.1 Two marine shells were recovered from middle Neolithic burial 289, although their precise relationship with the body is unknown.

4.4.2 SF 3 is a small left valve from a European flat oyster (*Ostrea edulis* L.) measuring *c* 47mm wide and 46mm long (after Winder 2011) and weighing 7g (Fig. 19). The valve has a sub-rectangular perforation measuring 3.6 x 3.2mm below the hinge, with smooth edges internally. This is likely to have been made using an awl or small chisel and, potentially, may have been used to hang the shell, perhaps as a pendant. Perforated oyster shells are a fairly common find in Roman and medieval shell assemblages and interpretations vary depending on perforation type, context and abundance, but as a Neolithic example this is very unusual. A late Neolithic oyster shell pendant (in four fragments) was recovered from a grave at a cemetery site in Petersberg, Germany, and is now in the British Museum (Orlinska with Brzeziński 2001).

4.4.3 SF 4 is an almost complete whelk (*Buccinum undatum* L.), 49.1mm in height and weighing 4g, with a roughly circular hole in the body of the shell. In this case there is no evidence of drilling or deliberate perforation and it is more likely either to be damage inflicted during harvesting or post deposition.

4.4.4 Both shells must have originally been collected from the seashore, if not from shellfish that were harvested for food. The European flat oyster used to be common around the English coastline in estuarine and shallow coastal water with hard substrata of mud, muddy gravel or rocks. Whelks are found in low intertidal to deeper coastal waters around the UK, typically in waters between 15m and 30m deep but sometimes down to 1200m (Valentinsson *et al*. 1999; Campbell and Russell 2014).

4.4.5 Whelks are rarely found on archaeological sites away from the coast, but a large, perforated whelk from the Neolithic period was found at Windmill Hill (Smith 1965, 135) while other perforated shells have been found in Neolithic barrows in the vicinity of Avebury (Burl 2002, 131). Closer to the coast, a range of shellfish have been recovered from Neolithic contexts, including Neolithic pits at Ridgeway Hill, Weymouth, that contained Peterborough Ware and flint (Hayden 2014).

4.5 Radiocarbon dating *by Andrew Simmonds*

4.5.1 A sample from the right femur of skeleton 325 was submitted to 14Chrono Centre, University of Belfast, but dating was unsuccessful due to lack of collagen. A tooth was subsequently submitted to the Scottish Universities Environmental Research Centre AMS facility, Glasgow, and returned a middle Neolithic date range consistent with the associated pottery (Table 16).

Table 16: Radiocarbon dating

Lab ID	Context	Feature	Element	$\Delta^{13}C$ (0/00)	Radiocarbon age (BP)	Calibrated date (95.4% probability)
SUERC-98305	325	289	Left maxillary M3	-21.3	4478 ± 27	3340–3030 cal BC

5 DISCUSSION

5.1.1 The site did not contain any substantial concentration of features, but nevertheless uncovered activity spanning a period from the early Neolithic to the medieval period. This is consistent with the evidence from cropmarks in the surrounding area, which includes settlements and funerary and ceremonial monuments that indicate that the locale was occupied or visited frequently over a very long period of time. The site was certainly never the central focus of activity in the area but provides evidence for activity on the periphery of the more substantial foci represented by the scheduled area immediately to the west and the causewayed enclosure to the south. Much of the evidence from the excavation comprised small individual pits or small complexes of such features, which were very similar across periods and commonly contained only limited artefactual assemblages, making dating difficult. Many of these pits were most likely dug to win gravel and demonstrate the importance of small-scale extraction over a long period of time on this part of the gravel terrace. Indeed, they represented the only feature type from the Roman and medieval periods other than field boundaries and plough furrows.

5.2 The Neolithic pits and the monument complex

The chronology of activity at the complex

5.2.1 The proximity of the Eynsham causewayed enclosure on the south side of the B4449 and the ring ditches within the scheduled cropmark complex in the fields to the west of the site indicate that the area is likely to have been visited frequently over a long period of time for communal celebrations of a ceremonial or funerary nature, and it is in this context that we should understand the 11 Neolithic pits which constitute the only features datable to this period at Polar Technology. The earliest pits comprised three features that were attributed to the early Neolithic, perhaps indicating contemporaneity with the construction and use of the causewayed enclosure that typologically represents the earliest element of the cropmark complex. Two of the three pits produced Decorated Bowl pottery dating from *c* 3770–3670 to 3335–3245 BC (Whittle *et al*. 2011, 762–3), and this is also the characteristic ceramic recovered from causewayed enclosures; indeed, the vessel from pit 200 is similar to material from the causewayed enclosure at Abingdon (Avery 1982). In the absence of excavation of the Eynsham enclosure its precise date is uncertain, but recent redating of the Abingdon enclosure using Bayesian modelling concluded that it was constructed in 3660–3630 cal BC or 3580–3570 cal BC or 3560–3535 cal BC, probably in the 3640s/3630s cal BC or 3540s cal BC (Healy 2011 *et al*., 418).

5.2.2 The eight Peterborough Ware pits represent the first excavated evidence for activity at the complex during the middle Neolithic period, the date range of the pottery being supported by the radiocarbon date of 3340–3030 cal BC for burial 325. This fills in a significant lacuna in the sequence and suggests that activity, of whatever type and scale, may have occurred throughout the Neolithic period. The chronology of the other elements of the monument complex is very uncertain, since the only part that had been excavated evidence prior to the work at Polar Technology came from the 1930s excavations and the 2001 watching brief at Foxley Farm, and dating evidence from the latter was limited due to the small number of features that were sampled by

excavation. The only late Neolithic feature currently known is a single pit that contained several sherds of Grooved Ware, although the excavator argued that a number of unexcavated pits close by may have been of similar date (OA 2001, 10–11). Several other structures were attributed to the Neolithic period more broadly, although only rectangular posthole structure 106 had associated pottery (OA 2001, 6) and the other features produced no dating evidence and were assigned a Neolithic date only on the basis of their proximity to the better-dated features and the similarity of their fills (ibid., 10). Of more certain date were the 18 Beaker period burials and early Bronze Age cremation burial interred in a collared urn that were excavated during the 1930s (Leeds 1938), which are likely to date from sometime after *c* 2460–2330 cal BC (Parker Pearson *et al*. 2019, 426). A similar date range can probably be ascribed to the ring ditches that form the most obvious element of the cropmark complex, although the excavated evidence is limited to the arc of a ditch that extended into the area of the Foxley Farm watching brief, the only datable material from which was a group of Roman sherds from the upper fill (OA 2001, 11).

5.2.3 Taken together, the cropmarks and the limited excavated evidence from Polar Technology and Foxley Farm suggest that the complex experienced two major episodes of construction, evidenced by the building of the enclosure during the 4th millennium and the ring ditches sometime after the mid-3rd millennium, with less intense activity during the intervening centuries represented by the pits at Polar Technology and the structures at Foxley Farm. This is strikingly similar to the sequence at Abingdon, where the causewayed enclosure was similarly associated with a late Neolithic/Bronze Age barrow cemetery and the intervening centuries of the middle and late Neolithic period witnessed a sequence comprising an oval barrow with a complex and perhaps long developmental history, a number of other burials including flat graves, and pits associated with Peterborough Ware and Grooved Ware pottery. At both sites the enclosure could be interpreted as a 'founder monument', the presence of which attracted the subsequent activity (Garwood 1999b, 301). The precise length of the interval between each causewayed enclosure and the associated barrow cemetery is ill defined, as is the character of activity during this period; this activity could indicate a continued veneration of the monument, but the small number of features involved could equally be interpreted as representing no more than a few episodic visits to the locale spread over a long period of time. It is evident from the subsequent development of the complex that the original enclosure survived as a visible feature in the landscape, and it may be significant in this respect that pollen and molluscan evidence from Abingdon suggests that, once cleared for construction of the enclosure, the area remained open throughout the Neolithic period, suggesting that even after use of the enclosure ended the site was not simply abandoned and allowed to return to nature.

The character of activity at Polar Technology

5.2.4 Some inferences can be made about the activity at Polar Technology from the character and contents of the pits. Groups of pits like those at Polar Technology are the most common category of Neolithic feature found in the Upper Thames Valley (Hey 2011, 241), and they are also found at causewayed enclosures, where they appear no different from examples elsewhere (Oswald *et al*. 2001, 126).

Understanding the significance of such pits, however, has proved to be far from straightforward. When first identified, they were interpreted as the rubbish pits and storage pits belonging to settlements whose remains had otherwise been ploughed away (Holgate 1988, 31–3), but as the unusual character of the fills of some of these features became apparent, containing exotic artefacts or objects that appeared to have been deposited in a deliberately structured manner, it was realised that they were rather more complex than had initially been appreciated. The pits commonly appear to have been dug specifically to receive the material that was deposited in them, which in turn seems to have been deliberately selected for deposition, and the whole process appears to have more to do with symbolic than with practical concerns (Lamdin-Whymark 2008; Thomas 1999, 64–74). The most obvious exotic items in the pits at Polar Technology were the shells accompanying burial 325 in pit 289 (discussed below), and the best candidate for such structured deposition was the large assemblage from pit 1407, which included tools and flakes but lacked any fine knapping waste, indicating deliberate selection of the pieces for burial. The flints from this pit were particularly rich in tools and cores, and the group of five microdenticulates may have been deliberately selected to reference the plant-processing activities in which they would have been used.

5.2.5 It is commonly found that the mixed and fragmentary character of the objects recovered from such pits suggests that the material was sourced from a secondary location such as a midden (Hey 2011, 244), and this description would certainly be consistent with the pits at Polar Technology; the ceramic vessels were represented only by fragments, with five of the ten pits that contained pottery containing mixed sherds from more than one vessel, the flint assemblages comprised unrelated pieces with no refits, and the animal bone consisted of small fragments with three out of six instances including a mixture of burnt and unburnt pieces. Although charred remains were present, this comprised flecks distributed throughout the soil matrix rather than discrete deposits and was most likely incorporated incidentally. The charcoal was predominantly oak and hawthorn/blackthorn-type, presumably collected locally and providing some indication of the composition of the local woodland, although, as at Abingdon, the site itself may have been kept free of tree cover. Also included were hazelnut shells from pits 212 and 1407, representing a ubiquitous food source of the period. Substantial tree cover at this date may also be indicated by the many tree-throw holes that were exposed across the site; these features could not be assigned a definite date, but it may be significant that the only artefact recovered from the 88 tree-throw holes that were excavated was a Neolithic bladelet, and construction of the enclosure is likely to have entailed clearance of any existing trees, as has been indicated for the Abingdon enclosure by pollen and molluscan evidence (Robinson 1999, 270).

5.2.6 The pits need not represent more than intermittent visits over a long period of time, although they may have been associated with farming of the surrounding area, as small quantities of cereal grains were identified in seven of the nine pits that were sampled for charred plant remains. Interpretation of this material is not straightforward, however, since the assemblages were very small and some level of contamination with later material is indicated by charred grains of free-threshing

wheat recovered from four pits, one of which additionally produced a single specimen of oat and another a possible pea – all crops that were not cultivated at this early date. Nevertheless, the presence of arable plots in the vicinity of the causewayed enclosure would be consistent with the environmental evidence from Abingdon, which also indicated that the local landscape included a larger component of open grassland (Robinson 1999, 271). Indirect evidence for similar cultivation at Polar Technology was provided by the eight microdenticulates that formed the largest tool type in the flint assemblage. The microdenticulates from pit 1407 may have been contemporary with the use of the causewayed enclosure, and an example from pit 289 may have been deliberately placed with burial 325, although accidental inclusion is also possible. If cultivation was occurring, however, it need not imply permanent settlement and may only reflect small-scale horticulture plots. The evidence for grassland at the Abingdon enclosure suggests that livestock were grazed around the monument, but little can be concluded from the evidence at Polar Technology, which was limited to a few cattle bones from early Neolithic pit 200 and cattle and pig bones from middle Neolithic pits 290, 318 and 337; two bones from neonatal pig in pit 337 may be evidence that the animals were reared at the site. The three flint piercers would have been used in working hides, whether from livestock or obtained by hunting, the other activity that is evidenced by the flint assemblage.

5.2.7 The evidence from Polar Technology contrasts with the Neolithic features at the south-western end of the cropmark complex, at Foxley Farm, where pits were less in evidence (although many features were not excavated) but instead the Neolithic features were predominantly represented by postholes interpreted as two timber structures (OA 2001, 10–11). The limited excavation that was possible was targeted on a small number of postholes, and the only Neolithic pottery recovered from them was two small crumbs, possibly of Peterborough Ware (ibid., 8) from one of the postholes of Structure 106, which was approximately rectangular in plan and measured 3.5m wide and at least 4.5m long, possibly extending beyond the southern edge of the excavation area. The second building was of very different form, comprising a sub-circle of postholes measuring *c* 13 x 8m (105) with a central arrangement of less certain form (23). Given the limited dating evidence it cannot be certain that these structures were in fact Neolithic in date, but if they were then they clearly represent very different activity to the remains at Polar Technology, the two areas perhaps comprising complementary use of separate parts of the local landscape.

Burial 325

5.2.8 The most unusual component of the pit group was burial 325 in pit 289. The remains of a probable female adult had been interred in a crouched position on the base of the pit, indicating that the feature was probably dug specifically for the burial. Burial practices during the Neolithic period were quite varied and complex, and it is evident that the small number of burials of the period discovered by archaeology represent only a small minority and that the remains of most of the population were disposed of according to funerary rites that did not involve permanent burial and have left little or no trace. Why these individuals, including burial 325, were singled out for different treatment is unknown but may relate to their role in life and represent an expression of the significance of individual identities that runs counter to hitherto commonly

accepted interpretations of Neolithic society as essentially egalitarian and of communal burials as an expression of a collective group identity.

5.2.9 The marine shells that accompanied the burial add to the small corpus of similar items from Neolithic contexts in the Upper Thames Valley, most of which are similarly derived from funerary monuments. They are not found in more mundane contexts and do not appear to represent consumption of shellfish, which would in any case have been problematic due to difficulties in preserving the meat. Rather, they appear to have been imported as jewellery, their rarity this far from the coast perhaps making them a prestigious acquisition serving as a visual demonstration of the wide contacts of the owner. The oyster shell was evidently pierced for suspension, and at 47 x 46mm is of a size that would be most appropriate as a pendant. It appears to be unique for the region, the only other oyster shell from a possible Neolithic context being from the ditch of the causewayed enclosure at Windmill Hill, but that example was not perforated and the excavator dismissed others higher up in the fill sequence as intrusive (Smith 1965, 135). The closest similar pendant is an example recovered from a late Neolithic grave at a cemetery site in Petersberg, Germany, and now in the British museum (Orlinska with Brzeziński 2001). Other marine shells in the region are of smaller size, like the whelk shell, and were probably used as beads in bracelets or necklaces rather than on their own as pendants. This was probably the function of perforated shells of periwinkle, cowrie and dog whelk at West Kennet long barrow (Piggott 1962, 51–3), and the function of two polished and perforated dog whelks in the Lambourn long barrow was indicated by their proximity to the wrists of an inhumation burial, presumably adorning a bracelet (Wymer 1965–6, 8). Another polished and perforated dog whelk shell was found at Nympsfield long barrow (Kennard 1938). Windmill Hill also produced a perforated whelk shell in addition to the oyster, and a remarkable deposit of 70 marine shells was recovered from Site XIV at the monument complex at Dorchester-on-Thames, placed on the base of this small ring ditch (Whittle *et al*. 1992, 166). The funerary context of the latter deposit is indicated by a cremation in the ditch's upper fill.

5.2.10 The status of the other objects from the burial pit, comprising pottery sherds, a microdenticulate, a flint flake and fragments of animal bone, is less certain. None of these was directly associated with the burial and it was not possible to be certain whether they were deposited deliberately as part of the funerary process or were incorporated into the fill incidentally. The lower fills were distinctly gravellier than the fills of the other pits, suggesting backfilling with the material excavated during the digging of the pit, but the uppermost fill (290), which contained most of the artefacts, had a composition more similar to the material filling the other pits. A different origin for this material was also suggested by the condition of the pottery – the few small sherds from the lower fills were severely abraded, as befits residual material, whereas the sherds from fill 290 were relatively fresh. There was no indication that the latter was complete when deposited, but it may nevertheless represent deliberate inclusion of part of a recently broken vessel.

5.2.11 Whilst interpretation of Neolithic mortuary practices in the region is typically dominated by evidence from large-scale communal monuments such as chambered tombs and earthen long barrows, burial 325 forms part of a tradition of individual

burial, sometimes accompanied by artefacts, that was practiced throughout the period. Garwood (2011, tables 15.1 and 15.2) was able to list more than 20 such burials from the Upper and Middle Thames Valley, with associated radiocarbon dates that ranged from *c* 3800 cal BC to the early 3rd millennium. The earlier examples would have been contemporary with burials in the communal funerary monuments, but the radiocarbon date of 3340–3030 cal BC for burial 325 places it in the later part of the tradition, after these monuments went out of use around 3400–3300 cal BC (ibid., 394). The date of the burial, and the items that were placed with the burial, suggest an association with a group of four middle and late Neolithic 'complex burials' from the Upper Thames Valley that are discussed by Garwood (2011, 395–8). The closest of these is located only 4km south of Polar Technology at Linch Hill, Stanton Harcourt (Grimes 1943–4, 34–44; Barclay 1995, 99), another is at Radley, close to the Abingdon causewayed enclosure (Bradley 1999), and the others at Mount Farm, Berinsfield (Lambrick 2010), and Wallingford (Moorey 1982). The burials are similar in comprising adult females (as well as an adult male in the double burial at Radley) accompanied by grave goods including lithic objects, and four of the five are associated with monument complexes; in addition to the situation of the Polar Technology and Radley burials within complexes that developed around causewayed enclosures, the Linch Hill burial forms part of the complex on the gravel terrace between the Rivers Thames and Windrush south of Stanton Harcourt, and the Mount Farm burial, although not strictly within a monument complex, lies on a slight rise between the three major complexes at Dorchester, Drayton St Leonard and Stadhampton. Perhaps significantly, the evidence for access to exchange networks beyond the local region provided by the marine shells at Polar Technology finds a parallel in jet belt sliders that accompanied the burial at Linch Hill and the male at Radley, which must have been imported from the Whitby area. The Polar Technology burial differs from these burials, however, in that was not situated within a barrow or ring ditch – the Linch Hill burial being within a circular double ring ditch and the others having more oval arrangements.

5.3 Earliest Iron Age settlement

5.3.1 The identification of a small number of pits dating from the earliest Iron Age represent a rare instance of activity from this elusive but highly significant period, when the introduction of the new metal was leading to the breakdown of social structures that were predicated on control of trade in tin and copper. Only three pits could be attributed to this period on the basis of the biconical forms and grog component in the fabric of the associated pottery, in addition to which a fourth pit (163) contained both middle Neolithic and earliest Iron Age pottery, and such insubstantial evidence is typical. At Yarnton, for example, similar All Cannings Cross pottery was recovered from four pits, whose scattered distribution was similar to that of the features at Polar Technology (Hey *et al*. 2011, 81–5). It is difficult to attribute a function to such a small group of features, but the possibility that pit 466 may have been a waterhole strengthens the argument for their representing domestic occupation; a function as a storage pit, as suggested for the pits at Yarnton (ibid., 81), is also possible and would still be consistent with settlement activity. The much greater scale of fieldwork at Yarnton enabled the excavator to conclude that settlement in this area centred on small individual households living in sites with single or paired structures surrounded

by small pits and postholes and a waterhole, situated in open grassland and with a subsistence economy focused on pastoralism with only very small quantities of cereals being grown (ibid., 70–1). The evidence for arable crops at Polar Technology was similarly limited, comprising only a single grain each of bread wheat, barley and oat from pit 8, which could easily be intrusive, but due to the small size of the animal bone assemblage, it is impossible to say more regarding the livestock than that it included the usual domesticated species of cattle, sheep, pig and horse.

5.4 Anglo-Saxon settlement

5.4.1 The single sunken-featured building is likely to be one element of a more extensive settlement that either extends beyond the limits of the excavation or has been otherwise destroyed by plough-truncation. Settlements of this period often extend over a considerable area with little evidence for sub-division or organisation, although this is a result of the frequent shifting of the location rather than indicating a sizeable settlement with a large population; some indication of the area the remains of such settlements can encompass is provided by the site at New Wintles Farm, just north of Eynsham, where sunken-featured buildings, four or five timber halls, four burials and sundry pits were scattered across an area of *c* 4.5ha in three adjacent fields, with cropmarks of further sunken-featured buildings in a fourth field (Clayton 1973; Hawkes 1986, 83–4; Hawkes and Gray 1969). Despite its extent, the settlement was interpreted by the excavator as 'no more than one or perhaps two farmsteads that had shifted over time (Hawkes 1986, 83–4). No certain further sunken-featured buildings at Polar Technology were identified in the geophysical survey or NMP cropmark plot, but since the excavated example was not recorded by these means this need not preclude their existence; the geophysical survey was significantly obscured by later furrows, while such relatively small pits could easily become lost within the density of prehistoric and Roman features that dominate the cropmark data. There are in fact a number of discrete cropmark features of approximately the right size within the north-eastern part of the scheduled monument, *c* 50–150m west of the excavation area, although in the absence of excavation their date is unknown and, as this excavation has demonstrated, people dug pits into this part of the gravel terrace for several thousand years.

5.4.2 As with the Iron Age features, evidence for the community's crops and livestock was very limited, and the material that happens to have been incorporated within the backfill of the sunken-featured building is unlikely to represent the entire range of animals and plants that were farmed here. Evidence from other sites on the Thames gravels suggests that pastoralism may have remained the more important part of farming strategies, with relatively limited arable production (Blair 1994, 20–2; Booth *et al*. 2007, 320), but all that can reliably be said of Polar Technology is that cattle, horse and pig were present as well as single grains of bread wheat and oat.

5.4.3 There was little evidence for the other craft and domestic activities that no doubt occupied the time of the community, although the recovery of a stone ointment palette of Roman origin is interesting, since it had presumably been scavenged from a Roman settlement somewhere in the vicinity. The fired clay disc or oven plate form is also probably Roman in form and most likely came from the same source. The palette

was originally intended for mixing cosmetics or medicines, but although there was no evidence for whatever use it was put it to before it was finally deposited in the sunken-featured building, the pilfering of such items provides an insight into the Anglo-Saxon community's relationship toward the abandoned Roman settlements within their landscape.

5.4.4 The proximity of the settlement at Polar Technology to Eynsham suggests that it may have been dependent in some way on the centre there, which, in contrast to such shifting family farmsteads, Blair (1994, 27) has characterised as being distinguished by 'centrality and long-term stability', possibly focused on a Bronze Age enclosure that was partly exposed during excavations at the site of the later abbey, within which several sunken-featured buildings were located (Hardy *et al*. 2003). The town made an early entry into history when it was one of four vills that the Anglo-Saxon Chronicle records as having been captured by the Anglo-Saxons in AD 571, along with Benson, Limbury (Bedfordshire) and Aylesbury (Buckinghamshire), and although this may be an 8th- or 9th-century interpolation it nevertheless reflects the importance that later generations believed the town to have had. This importance was presumably secular at first, but was transferred to the religious sphere when a minster was founded here, probably during the early 8th century when the excavated evidence indicates a change in the character of the occupation, with the instigation of large-scale outdoor cooking and high-status food remains deposited in a large pit followed by the instigation of a more formal spatial organisation of the site (Hardy *et al*. 2003). This coincides with a period when several important minsters were established in the Upper Thames Valley, including Bampton, Oxford and Abingdon (Blair 1994, 63). The minster at Eynsham appears to have been a particularly wealthy institution, as it has been identified as the *Iogneshomme* that was recorded in *c* 821 as having an estate of 300 hides (ibid.). Such a large landholding centred on Eynsham could hardly have not included the settlement at Polar Technology, and it is not beyond the bounds of possibility that reorganization of the estate consequent upon the establishment of the minster was responsible for the abandonment this and other sites in the vicinity, since there was no indication of occupation after this date here or at New Wintles Farm.

6 PUBLICATION AND ARCHIVING

6.1 Publication

6.1.1 The results of the excavation are described comprehensively in this excavation report, which will be submitted to Oxford County Council HER and disseminated online, being made available for download as a PDF through OA's online library (https://library.oxfordarchaeology.com).

6.1.2 A synthetic article will also be prepared for publication in the Oxfordshire county archaeological journal, *Oxoniensia*. This will include the salient elements of the project, including the more important data, and a full interpretation of the site, presenting its significance within its wider regional context.

6.2 Archiving, retention and disposal

6.2.1 On completion of the reporting stage of the project, the finds and documentation archive will be prepared for deposition in accordance with the methodology set out in the WSI (CgMs 2017) and current professional standards (Brown 2011; CIfA 2014b; OCC 2020). Subject to the agreement of the legal landowner, the site archive will be deposited with Oxfordshire County Museum Service under accession number OXCMS:2018.41.

6.2.2 The artefacts and human remains have the potential for future research purposes should be retained. Exceptions are the modern metal and glass objects, which could be discarded.

6.2.3 One small bag of animal bone from context 46 was judged modern in date on stratigraphic grounds and should be discarded. Some bone remains undated (contexts 277, 283 and 409) and may also be considered for discard. Bone from the phased contexts should be retained.

6.2.4 Any extracted and identified material from the environmental samples should be retained in the archive, together with any unsorted flots that have been assessed as containing interpretable material. Flots scored D for potential of both charred plant remains and charcoal could be discarded at the end of the project.

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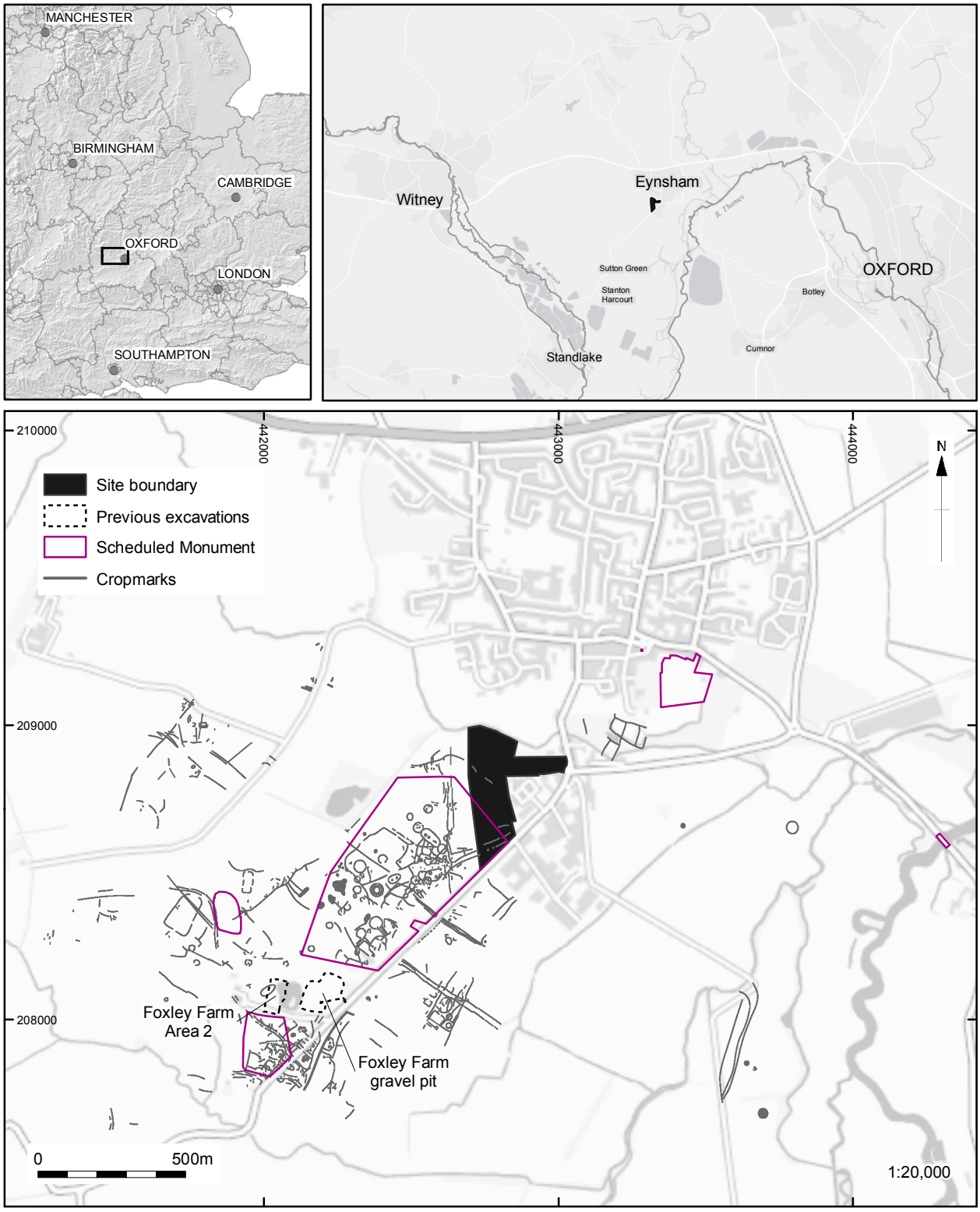


Figure 1: Site location

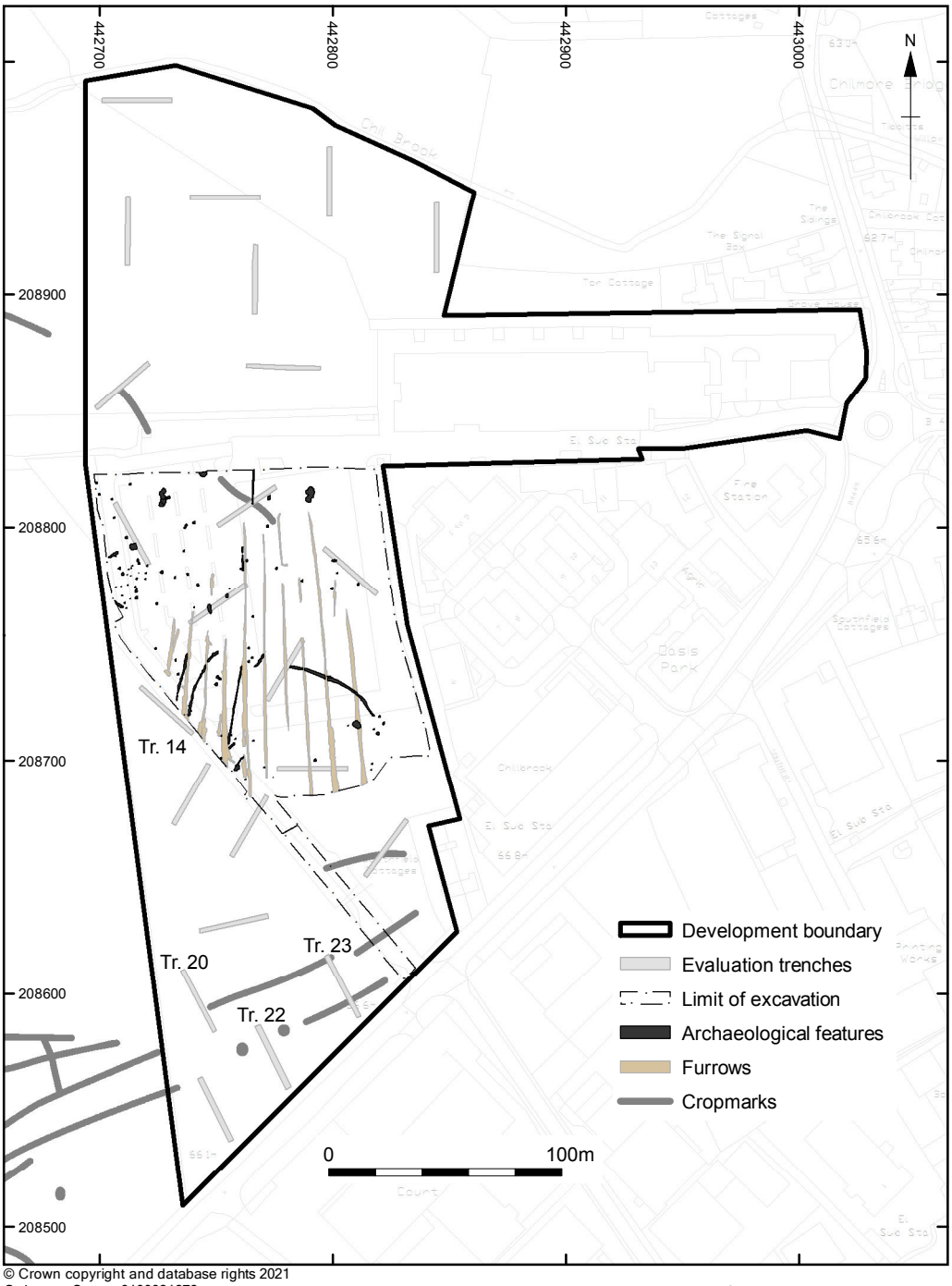


Figure 2: Plan of the investigations

Figure 3 : General view of site during excavation, view to south

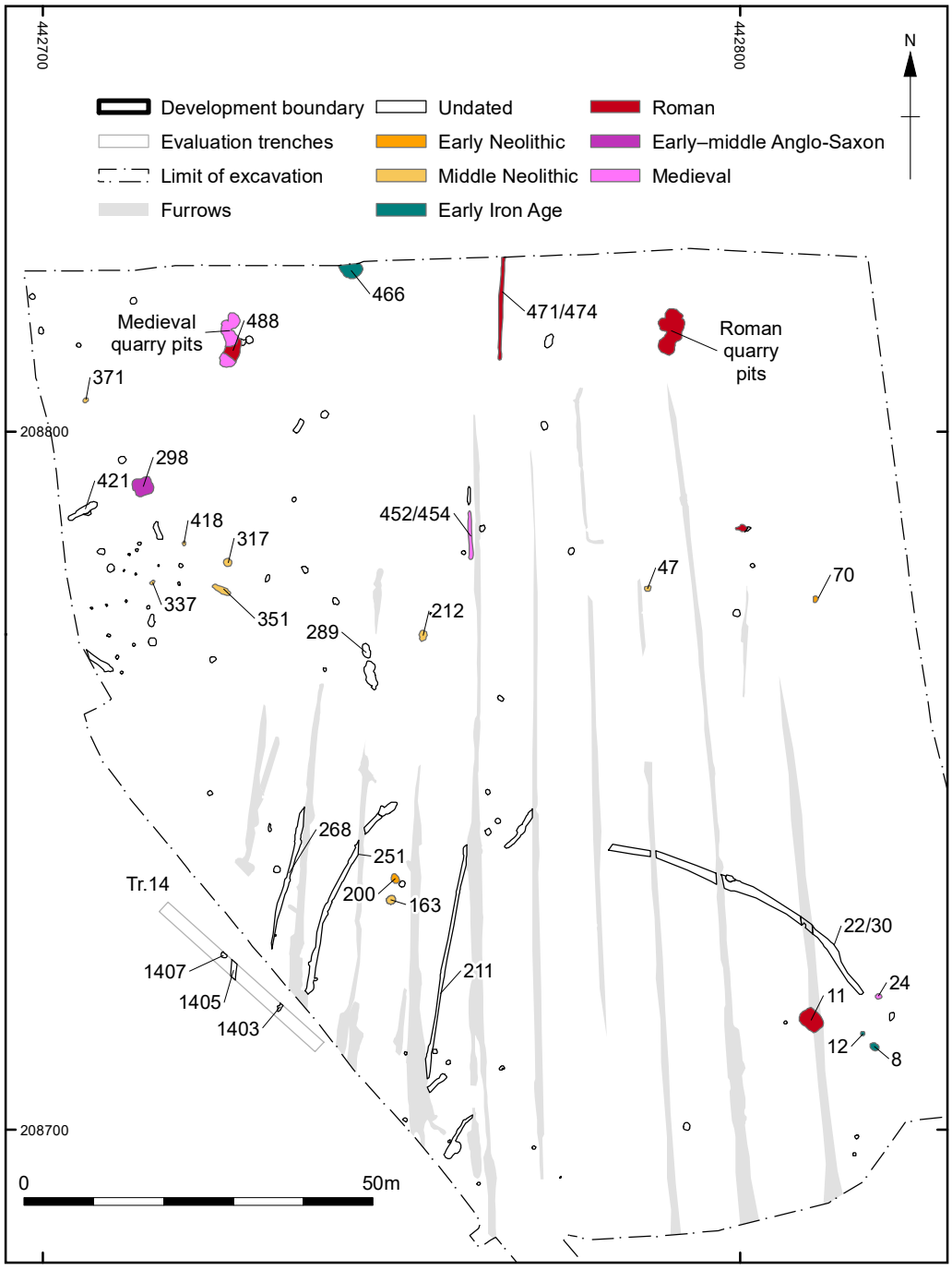
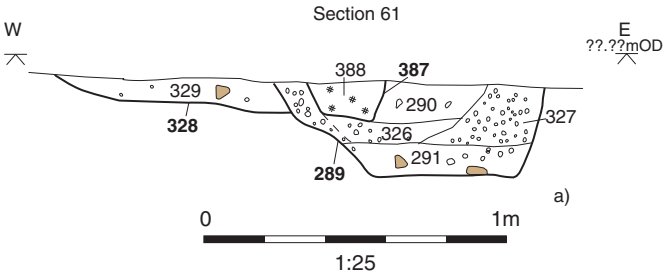


Figure 4: Phased plan of the excavation area

Figure 5: Early Neolithic pit 200, view to south-east, scale 1m



b)

c)

Figure 6: Middle Neolithic burial 289: a) section through the burial pit; b) burial pit 289 half-sectioned, view to north-west, scale 1m; c) burial 325, view to north, scale 1m

Figure 7: Middle Neolithic pit 418, view to west, scale 1m

Figure 8: Early Iron Age pit 8, view to north-east, scale 1m

Figure 9: Early Iron Age pit 466, view to north, scale 1m

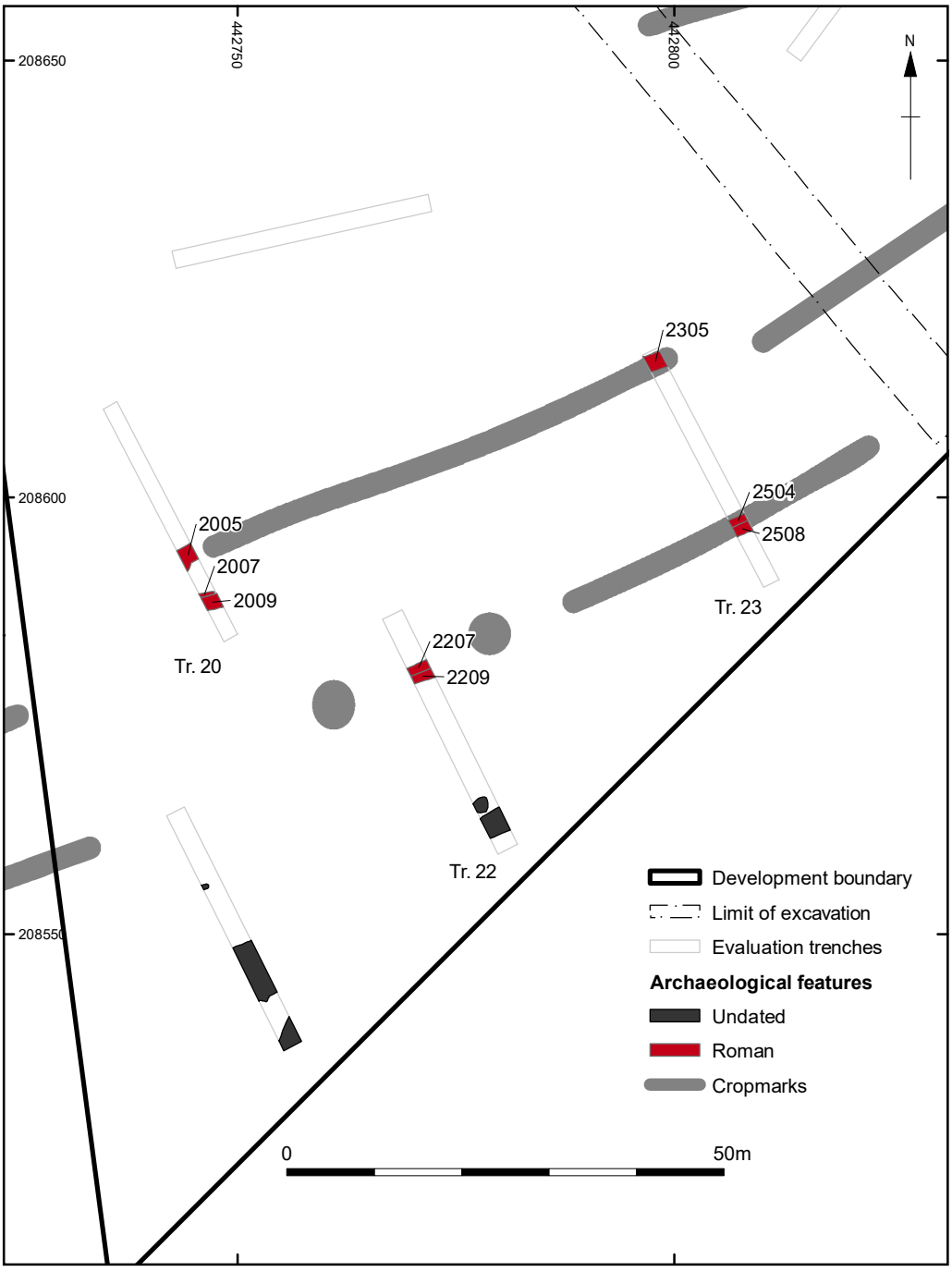


Figure 10: Trenches across the Roman trackway

Figure 11: Roman quarry pit complex, view to south-east scale 1m

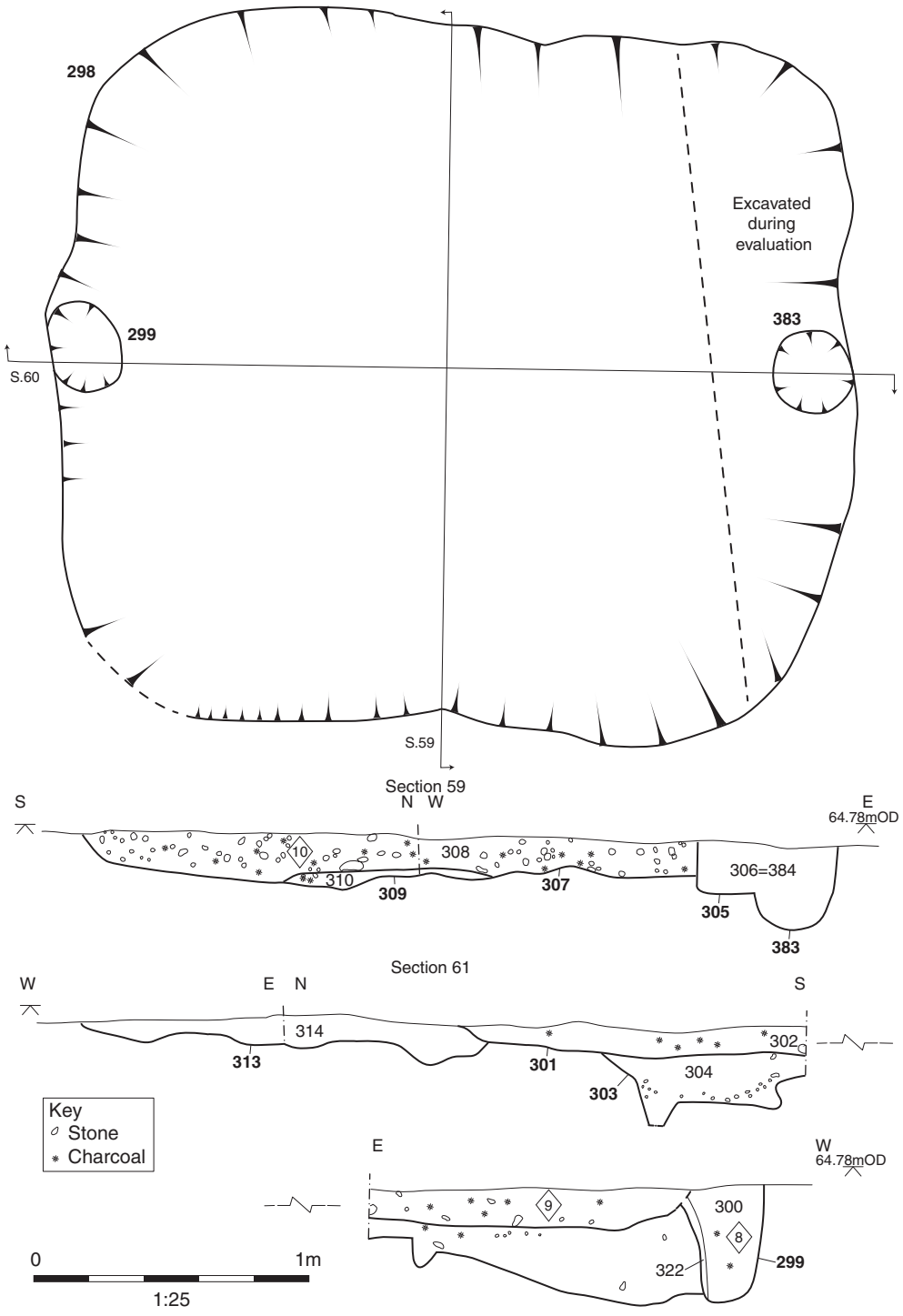


Figure 12: Early/middle Anglo-Saxon sunken-featured building 298: plan and sections

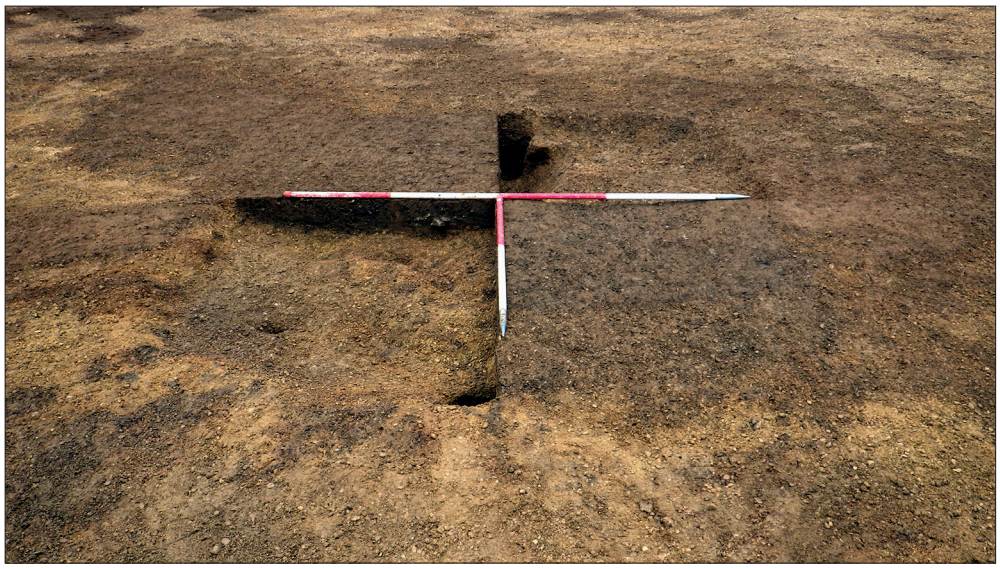


Figure 13: Early/middle Anglo-Saxon sunken-featured building 298, view to west, scales 1m and 2m

Figure 14: Medieval quarry pit complex, view to south, scale 2m

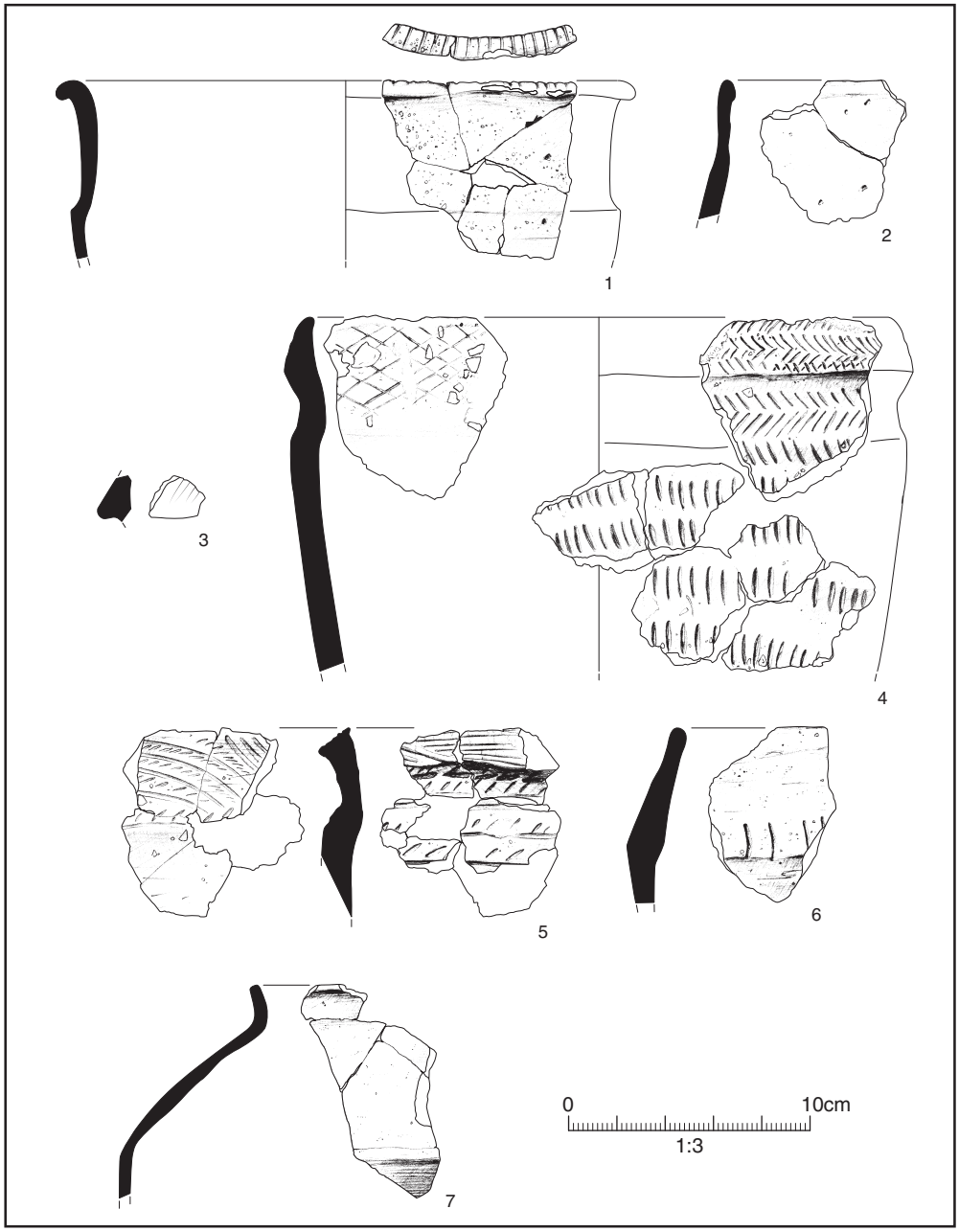


Figure 15: Prehistoric pottery

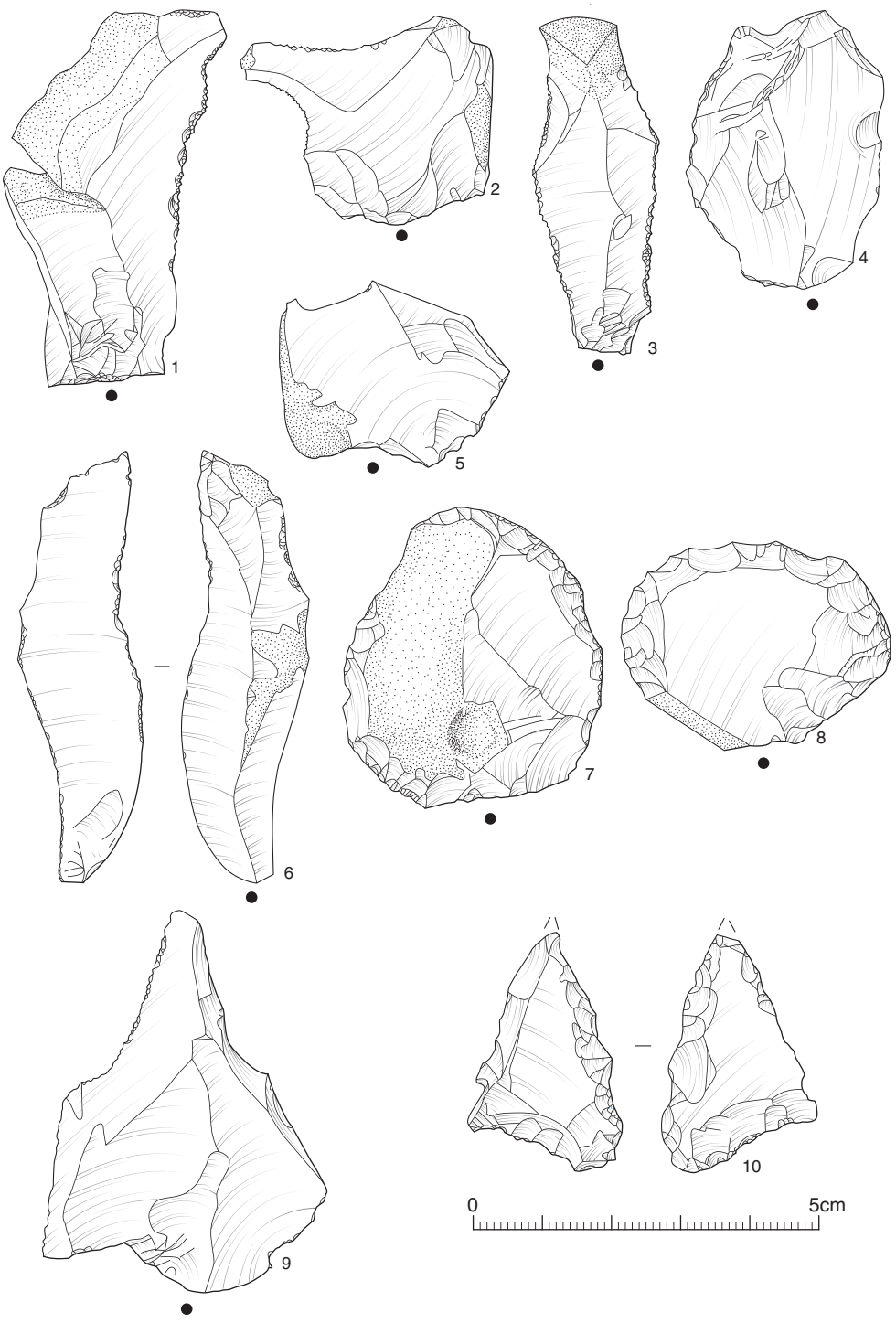


Figure 16:Worked flint

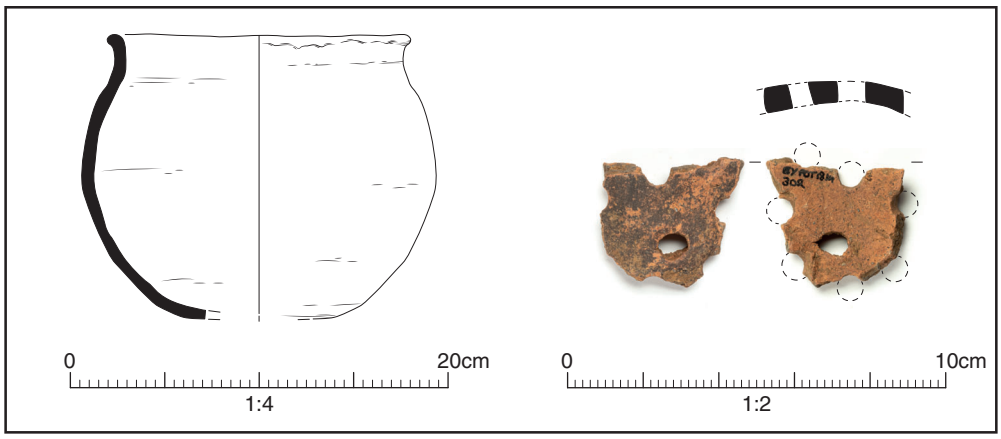


Figure 17: Anglo-Saxon pottery

Figure 18: Worked stone

Figure 19: Oyster shell pendant SF 4 from middle Neolithic pit 289

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