HIGHWAYS AGENCY

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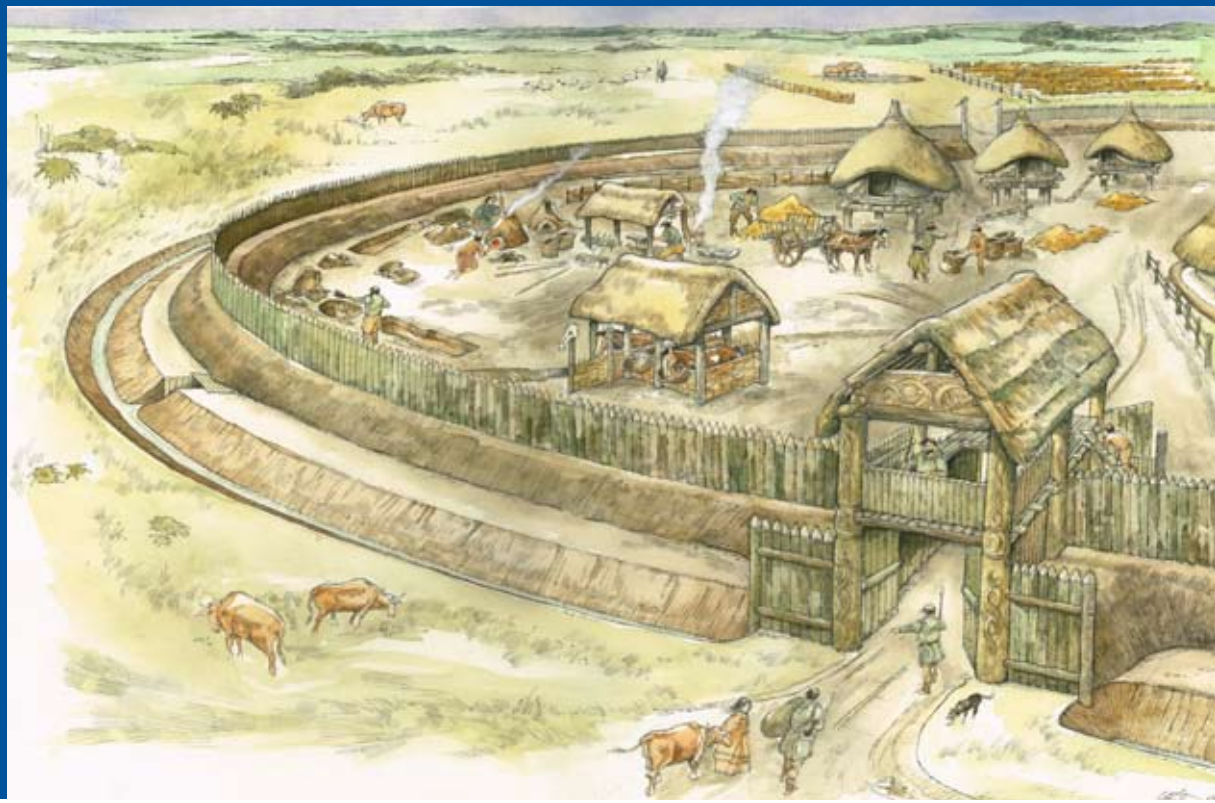
Archaeological Discoveries on the M25
Junctions 16 to 23

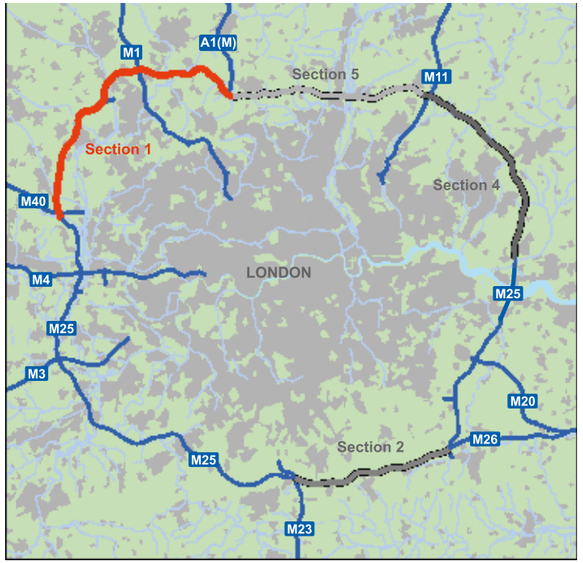


An executive agency of the Department for Transport

M25 Improvements, Junctions 16-23

Plans to create ring roads around London first appeared over 100 years ago, but developed piecemeal. The North and South Circular roads were early incarnations of this idea, but were overtaken by the expansion of Greater London. Much of the route followed by the M25, particularly on the south, was first proposed as far back as 1937, but official recognition of an M25 orbital route only came in 1975. Begun in 1971, most of the M25 was built between 1975 and 1986. Since then, the increase in traffic has led to the introduction of variable speed limits to aid the management of flow, but traffic volume has continued to rise.

M1-M25 junction during original construction of the M25



The Highways Agency commissioned a major upgrade of the M25 in 2008, and Skanska Balfour Beatty Joint Venture was appointed to carry out the work, which will run until at least 2014. This has involved the widening of some sections, the strengthening or replacing of a number of bridges, and the improvement of many of the junctions. The drawing shows the sections involved, and highlights in red the length covered by Section 1.

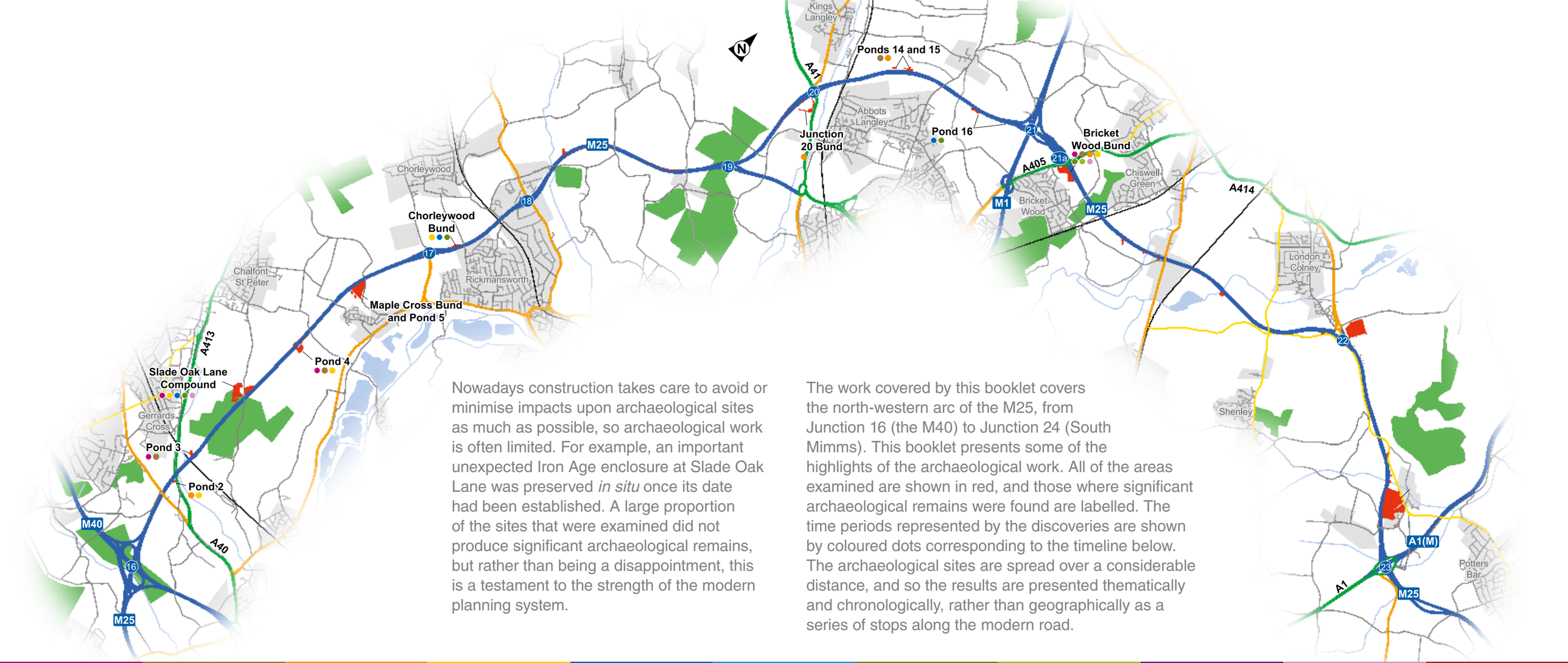
As well as additional lanes along the route, these road improvements involve much other work that is not on the road itself. For example, extra screening using soil bunds has been provided at various places, and drainage improvements have necessitated the digging of new ponds. Temporary construction compounds were also required. All of these have affected land adjacent to the M25, and so a programme of archaeological monitoring and (where necessary) excavation has been carried out by Oxford Archaeology working for Skanska Balfour Beatty Joint Venture.

Improvements at South Mimms

It was only towards the end of the original period of construction of the M25 that archaeologists were routinely involved on road schemes. As a result not all archaeological sites were recorded, and information on what lay beneath the M25 is patchy. The current upgrade therefore provided an important opportunity to examine areas immediately adjacent.

Between Junctions 16 and 17, for example, part of a medieval enclosure had been lost without record, but the new work allowed us to recover the larger part of this site (see Slade Oak Lane for details).

Solesbridge Lane to Sarratt Road widening



Nowadays construction takes care to avoid or minimise impacts upon archaeological sites as much as possible, so archaeological work is often limited. For example, an important unexpected Iron Age enclosure at Slade Oak Lane was preserved *in situ* once its date had been established. A large proportion of the sites that were examined did not produce significant archaeological remains, but rather than being a disappointment, this is a testament to the strength of the modern planning system.

The work covered by this booklet covers the north-western arc of the M25, from Junction 16 (the M40) to Junction 24 (South Mimms). This booklet presents some of the highlights of the archaeological work. All of the areas examined are shown in red, and those where significant archaeological remains were found are labelled. The time periods represented by the discoveries are shown by coloured dots corresponding to the timeline below. The archaeological sites are spread over a considerable distance, and so the results are presented thematically and chronologically, rather than geographically as a series of stops along the modern road.

Hunter-gatherers	First Farmers	Metal Users	Field systems	Hillforts	Coinage	Roads/forts	Towns	English invaders	Manors/castles/ villages	Tudors/Stuarts, Reformation
MESOLITHIC	NEOLITHIC	EARLY BRONZE AGE	MIDDLE-LATE BRONZE AGE	EARLY-MIDDLE IRON AGE	LATE IRON AGE	EARLY ROMAN	LATER ROMAN	SAXON	MEDIEVAL	POST-MEDIEVAL
9000-4000 BC	4000-2400 BC	2400-1600 BC	1600-800 BC	800-50BC	50 BC-AD 43	AD 43-120	AD 120-410	AD 410-1066	AD 1066-1500	AD 1500-1800

Top to bottom: Mesolithic microlith, blade and oblique scraper

Hunter-gatherers and first farmers

We did not find any large concentrations of struck flint, but scatters of flint flakes and tools indicate the presence of Mesolithic hunter-gatherers and of the succeeding first Neolithic farmers. Struck flints from Pond 3 were probably made by someone from a larger hunter-gatherer camp found previously a few hundred metres to the south, where animals were butchered.

A second scatter came from Slade Oak Lane, where a Mesolithic axe had been found during the construction of the M25, and a third from Pond 4 further north. Yet another scatter was found in one corner of the Bricket Wood Bund site, and was only part of a larger spread found during the construction of the M25.

Neither the Mesolithic hunter-gatherers nor the Neolithic farmers lived in permanent settlements as we do today, but roamed a large territory, moving seasonally between sites to harvest plant and animal resources. Early Neolithic farmers brought domesticated cattle, sheep and pigs to Britain, but on most sites cattle predominated, and these were woodland browsers, as were the pigs. Cultivated fields were generally small in size and number, and crops provided only a small part of the diet, which also included milk and meat from livestock and from hunting, and gathered nuts and wild fruits.

The small scatters of flints that we find represent some of the varied activities they carried out across the landscape: making or repairing flint tools or whittling wood while waiting for game, losing arrowheads or spearheads in hunting, butchering animals once killed for carrying back to camp, cutting down trees or harvesting wild plants, and so on.

Flint scraper

The first metal users

Felling established woodland with stone tools is very laborious, and it is likely that clearance took place more opportunistically, taking advantages of gaps made by trees blown over in high winds, and then chopping up the trees and grazing the ground to keep the clearings open. Clearance of woodland gradually increased towards the end of the Neolithic period (2900-2500) and in the early Bronze Age (2500-1600 BC). A group of tree-throw holes from Pond 14 contained struck flints and charcoal dating to these periods, and these are probably evidence of this activity.

Early Bronze Age pits at Pond 2 and Bricket Wood Bund contained parts of two Beaker pots. This is the decorated red-fired pottery used by the first metal-users, and the red colour of much of the pottery may have been intended to mimic the reddish-bronze of copper. The pit at Pond 2 is particularly important, as it is radiocarbon-dated to between 2490 and 2290 BC, which is the very earliest part of the metal age. It is therefore possible that the two fragmentary vessels are also amongst the earliest Beaker pots found in Britain. The pit from Bricket Wood Bund has not been radiocarbon-dated.

Sherds of Beaker pottery from Pond 2 alongside complete examples of vessels with similar decoration (reproduced from Clarke, 1970)

The Middle Bronze Age farming revolution

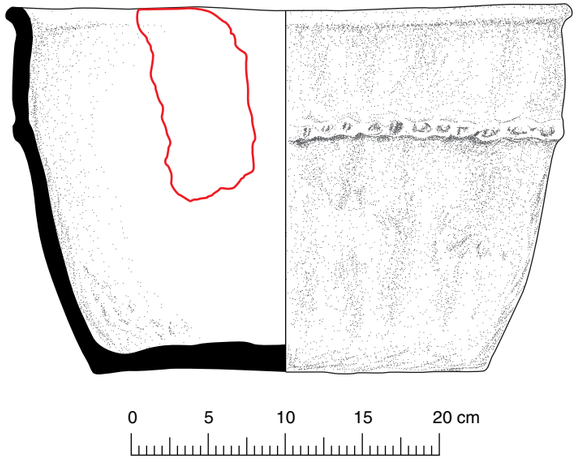
Groups of pits at Slade Oak Lane and at Bricket Wood Bund suggest domestic activity of the Middle Bronze Age (1600-1200 BC). One pit at Slade Oak Lane contained the smashed remains of a very large storage vessel, and another contained abundant charred barley grains, one of which was radiocarbon-dated to 1420-1270 BC. Such vessels and caches indicate larger communities and a more settled way of life.

A large hollow lay next to another pit; similar hollows elsewhere were used for cereal processing. Waterholes are first dug at this time, and there were two probable examples at Bricket Wood Bund. Pollen from one of these shows that the environment was grazed grassland, with some stands of trees and shrubs, especially hazel and lime.

Excavation of a smashed storage vessel at Slade Oak Lane

No post-bult houses were found, but short gullies forming 3 sides of a rectangle may indicate a building.

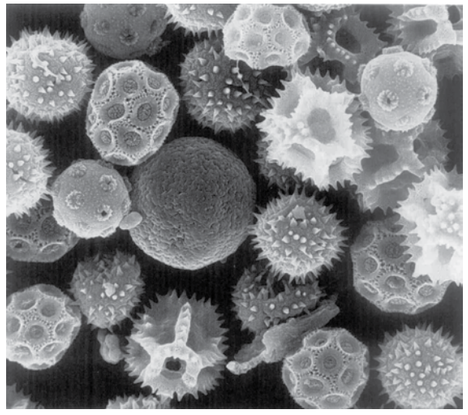
Possible reconstruction of the Bronze Age urn



Charred cereal grains

A group of ten pits containing large quantities of charcoal and then burnt stones at Pond 4 may indicate that charcoal-burning was carried out at this site. Four of the pits had the remains of an upright burnt stake in the centre, suggesting that these were not just casual bonfires, and may indicate careful stacking of timber. There were no finds from any of them, suggesting that this was not a settlement site, but the similarity of all of the pits suggests some specific activity.

Three of the pits were radiocarbon-dated and gave dates of 1630-1460, 1500-1380 and 1410-1270 BC. The dates suggest that the site was visited over a long period of time, and although the dates overlap at their ends, they most likely indicate separate visits.

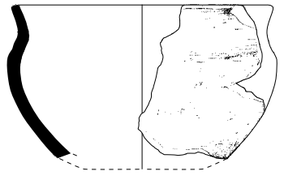


Magnified pollen grains. A number of different species can be identified. ©Tom Huckerby

Middle Bronze Age waterhole at Bricket Wood Bund

Spreads of charcoal and burnt flint, 'burnt mounds', are often found in the Bronze Age, and a wide variety of interpretations have been offered. The presence of burnt stones has suggested that the fires were to heat stones for cooking, perhaps to put into water, but it is also possible that the stones were there to help keep the wood covered, and that the aim was to make charcoal. Charcoal is particularly important to provide a constant heat in metalworking, although no traces of this were found on the site.

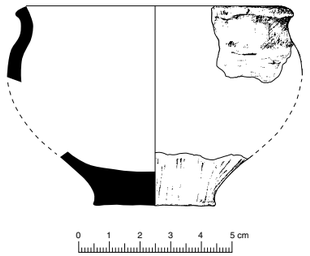
The initial construction of the M25 had revealed an isolated Bronze Age cremation was found about 400m north of Pond 2. At this time burials were rarely made under barrow mounds, and appear in a much wider variety of locations, sometimes close to waterholes, land boundaries or settlements.



Handmade vessels, one burnished (polished with a smooth tool such as a pebble)

Middle Iron Age at Slade Oak Lane

Stripping revealed parts of several enclosures here. The largest, an oval of which only the south-east half lay within the excavation, had a substantial ditch (see photo) and an entrance on the north-east side.



Section across enclosure ditch

Above: burnished pottery sherd. Right: handmade vessel sherd

Although 3m wide, the surviving ditch was not very deep, but had probably been significantly deeper before the site was ploughed. There were few features in the area just inside the ditch, so this was probably covered by a bank made from the excavated spoil. Beyond the bank on the inside we found a number of irregular large hollows, which may have been quarry pits for extra spoil to heighten the bank. When topped by a palisade, it would have looked quite impressive (reconstruction overleaf).

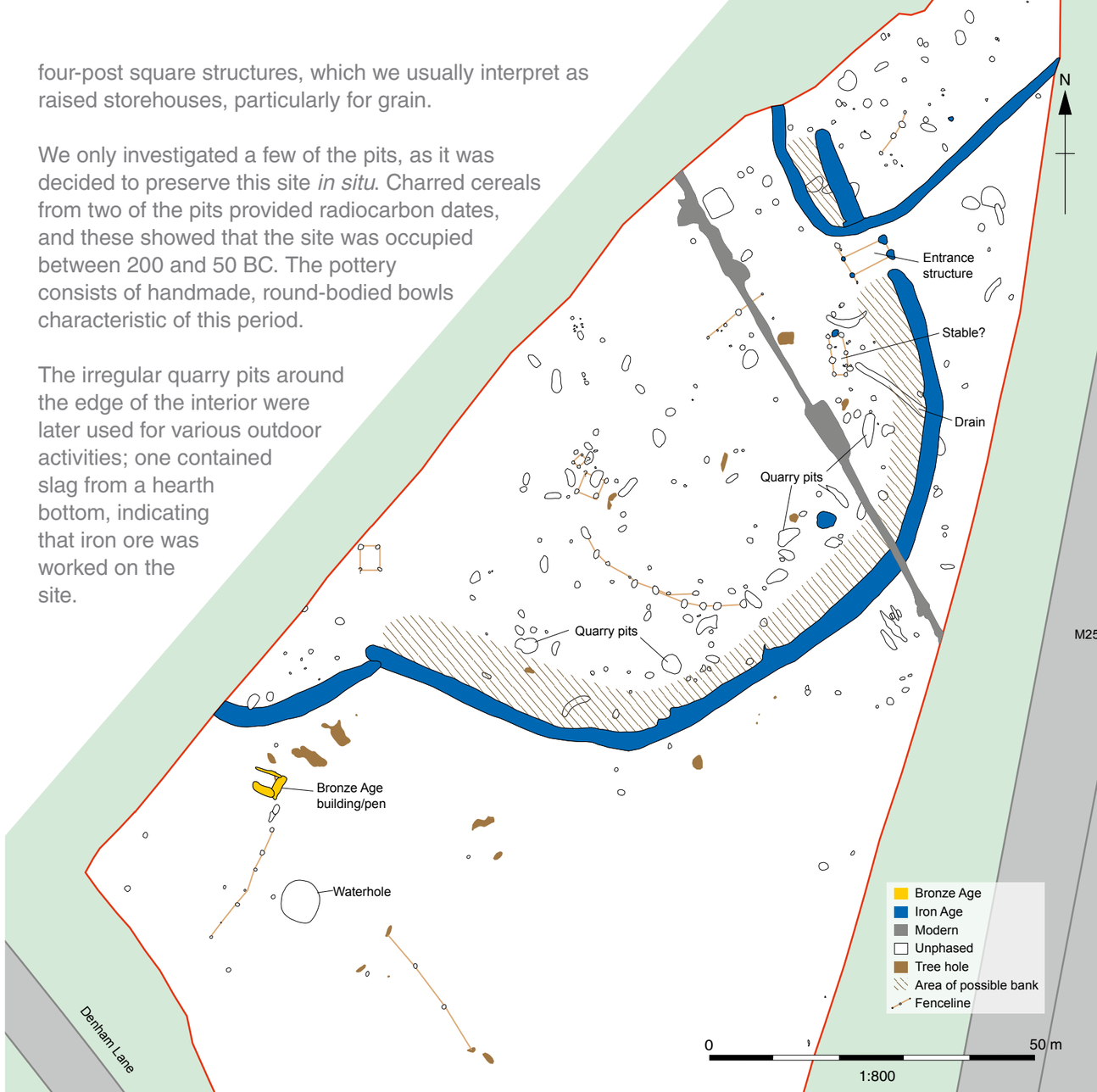
At the entrance, two massive postholes and a row of smaller, but still very substantial, postholes behind, suggest a monumental gateway. We have interpreted these postholes as belonging to a gatehouse with a platform or guardhouse above the gate. Massive pairs of posts are however also known at the entrances of sites without effective defences, so the posts could also have been for show.

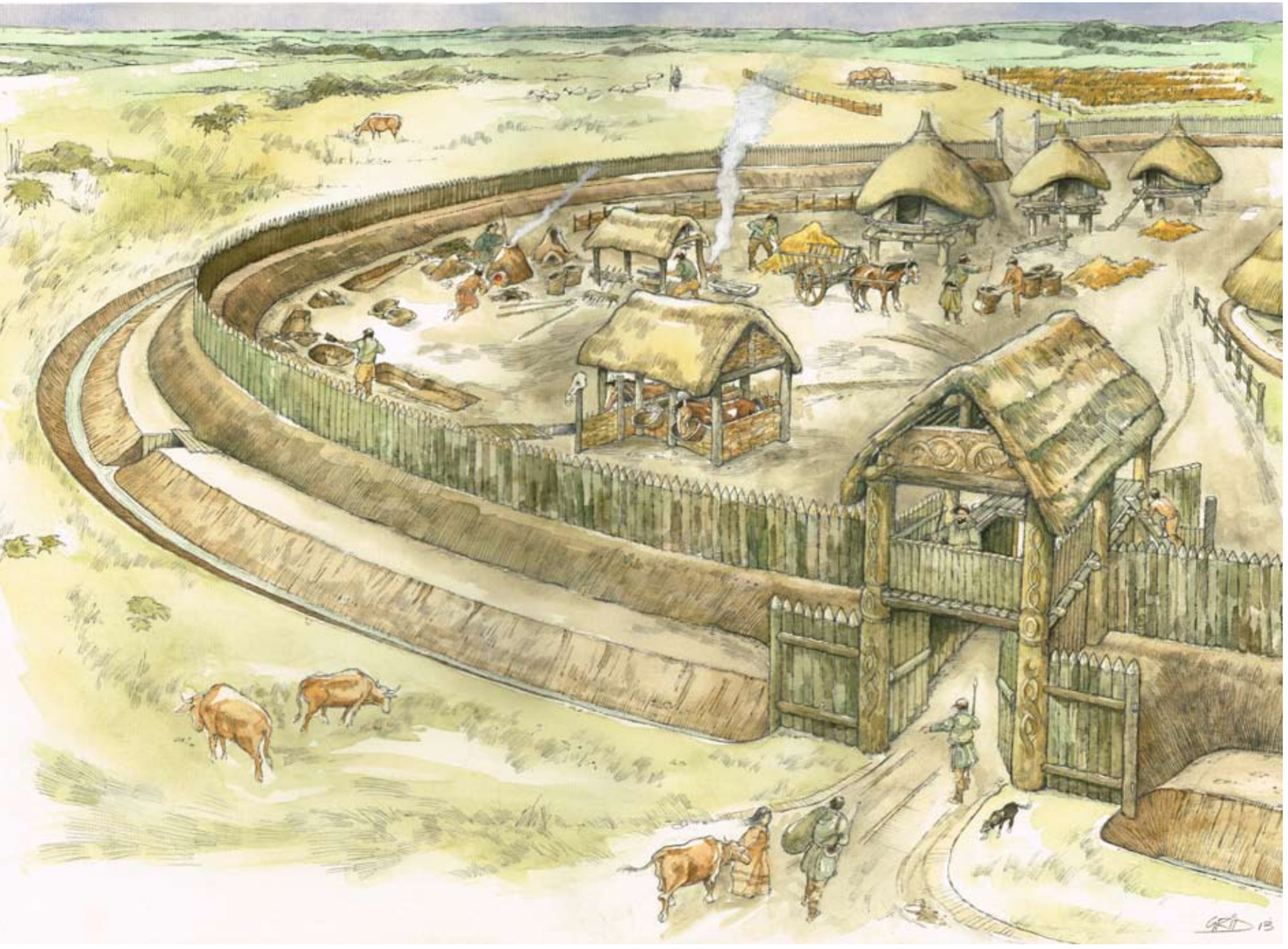
Ploughing had probably obliterated the shallower features inside, leaving only a partial plan of what once existed, but despite this, numerous pits, gullies and postholes survived. Just inside and south of the entrance, we found a possible rectangular post-building, with a shallow gully running from it into the enclosure ditch. The gully was probably a drain, and the building might have been a stable or byre.

Houses are usually circular, but none could be identified from surviving postholes, although short curving gullies may indicate that they once existed. Some of the postholes form four-post square structures, which we usually interpret as raised storehouses, particularly for grain.

We only investigated a few of the pits, as it was decided to preserve this site *in situ*. Charred cereals from two of the pits provided radiocarbon dates, and these showed that the site was occupied between 200 and 50 BC. The pottery consists of handmade, round-bodied bowls characteristic of this period.

The irregular quarry pits around the edge of the interior were later used for various outdoor activities; one contained slag from a hearth bottom, indicating that iron ore was worked on the site.





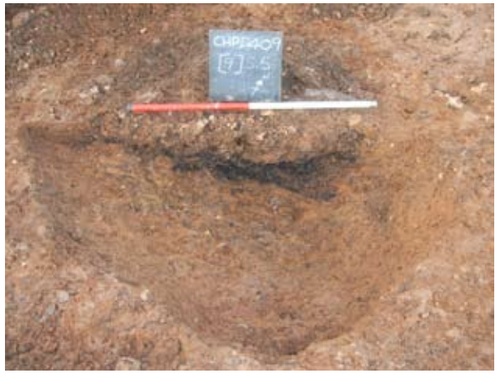
Iron-working sites in this part of the country are still rare, and the source of the ironstone is not clear.

The plan shows that smaller pits and postholes were concentrated in groups, perhaps suggesting the organisation of different activities within the enclosure into separate zones. Some of the postholes form fence lines, supporting this idea. Four of the pits had clay linings and were filled with burnt stones and charcoal, suggesting that they had been cooking pits using heated stones to boil water.

Outside the enclosures there was a fence line to the south, and a large feature adjacent may have been a waterhole, as the nearest stream was 700m to the west. Otherwise features were few.

Stripping revealed another group of pits filled with burnt stones at Pond 16, this time of late Iron Age or early Roman date. These pits were not lined with clay, but one was scorched on the base, showing that the cooking or industrial process had taken place within the pit.

At Chorleywood Bund a substantial ditch appeared to mark the limit of a group of late Iron Age pits.



Pit with burnt stones and charcoal from Pond 4

Not enough was exposed to understand the character of this site, but it clearly continued after the Roman conquest, as one of a pair of adjacent postholes contained a coin of the emperor Vespasian minted in AD78-79.

Coins of this date are relatively rare, and this was in very fresh condition, so had been buried not long after it was minted.

Coin of the Emperor Vespasian

Technological change in Roman Britain

Pots uncovered during the excavation of one of the kilns

At Bricket Wood Bund we found two pottery kilns within an area of trackways and large fields. There was no natural stream course within the excavation area, so the potters had dug waterholes, one of which had preserved the wooden revetment used to prevent the gravel sides from collapsing. The site sits on gravel, so they presumably dug clay from the `till' a couple of hundred metres to the east.

The better preserved kiln under excavation, showing both floor supports and pots abandoned after its last use

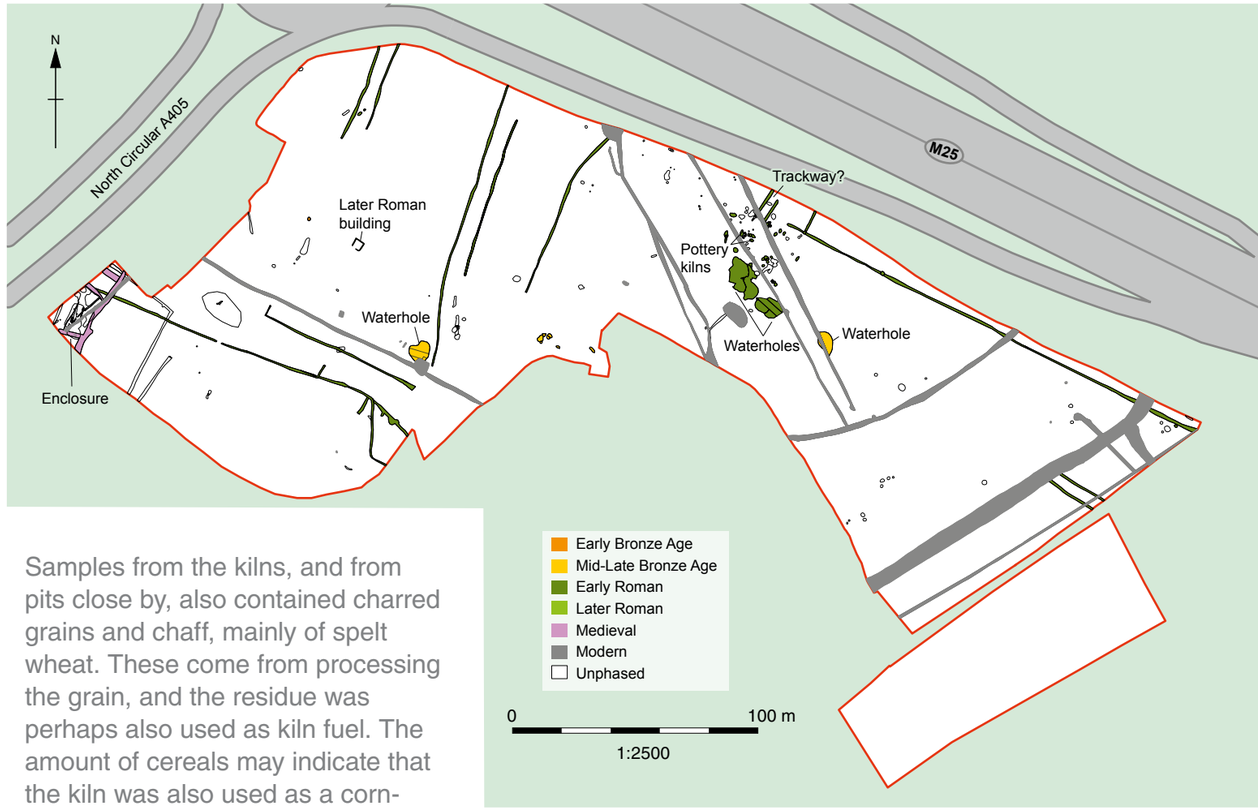
Wooden revetment around the side of a waterhole

The prime necessity for a kiln is a good supply of wood. Charred samples from the kilns contained much charcoal, principally of oak, but also with blackthorn/hawthorn and hazel. Waterlogged wood, seeds and pollen from the waterholes showed an open environment with patches of grassland scattered with dandelions, daisies , buttercups, mugwort and docks, and waste ground with nettles and knot grass, but also stands of hazel. The hazel and thorny scrub were probably both local, but oak too may have been brought from further afield.

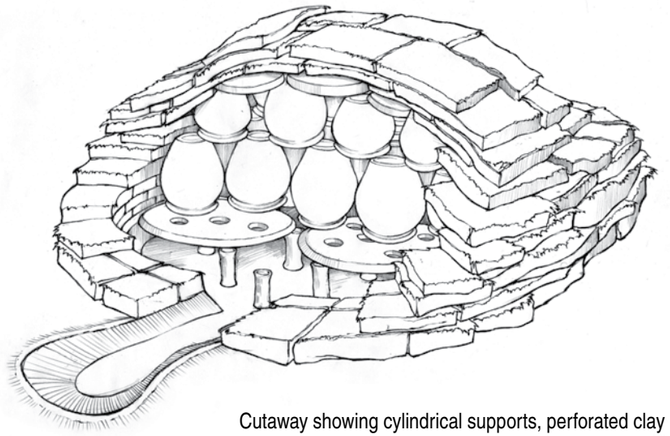
Samples from the kilns, and from pits close by, also contained charred grains and chaff, mainly of spelt wheat. These come from processing the grain, and the residue was perhaps also used as kiln fuel. The amount of cereals may indicate that the kiln was also used as a corn-drier, although if so, this was clearly not very successful. The grain was probably grown in the adjacent fields.

The field system at Bricket Wood is part of the late Iron Age and early Roman organisation of the landscape locally. The area around St Albans only became heavily populated at the very end of the Iron Age (after 50BC).

Everything at Bricket Wood Bund may have been early Roman, but the dating is not accurate enough to be sure.



Plan of the excavated area at Bricket Wood Bund



Cutaway showing cylindrical supports, perforated clay plates and pottery ready for firing inside the kiln

Kilns of this type were only in use for a short time around the beginning of the Roman period. At this stage, kilns were temporary structures, used only a few times when demand arose, rather than permanent fixtures for large-scale production served by an established road network. This explains the use of individual fired clay pedestals and perforated plates to support the pots, ie portable kiln furniture that could be removed and easily transported to the next temporary production site.

Rectangular clay floor supports found in the kiln

The pots include a wide variety of types: jars for storage, beakers for drink, dishes for food and flagons for serving wine. The clay is tempered with grog (fired clay), and most vessels are fired pink with a grey/ black core.

Fragments of perforated clay plates from the site

The better-preserved kiln had an ovoid firing chamber, lined with clay, with a stoke hole at the northern end. Patching, repair and remodelling show that the kiln was in use for some time. Within the firing chamber were a number of rectangular supports, some with enlarged circular ends. One of these was still upright.

These supported horizontal perforated oval clay ‘plates’ laid across the uprights to carry the load; such plates were found elsewhere on the site, but not in the kiln itself. The kiln superstructure was probably of turf, but was patched or topped off with clay, fragments of which survived.

Photograph of a modern reconstruction of a kiln of similar character and date to the Bricket Wood examples.

A temperature over 700˚C, necessary to achieve proper firing of the pots, can be generated fairly easily even in these relatively simple structures. © Paul Booth.

Artist’s impression of the kiln being fired

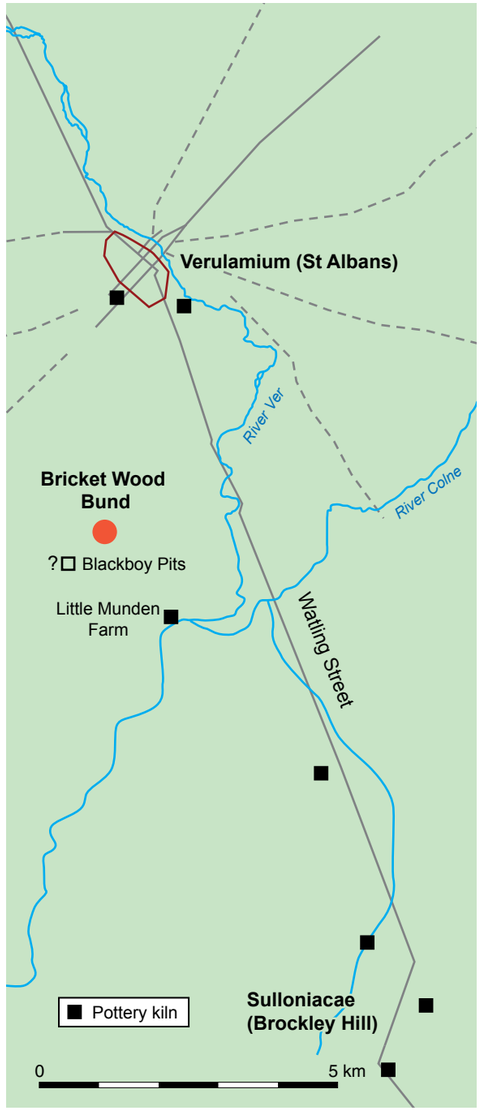
Drinking beaker, jar for storage and dish

Grog temper was preferred in the late Iron Age and very early Roman period, whereas by the later 1st century AD sand was used instead. The kilns at Bricket Wood therefore probably predate the growth of the fully Romanised pottery industry, although some of the pottery is thin-walled and very well-made, indicating that the potters were familiar with Continental traditions.

The Bricket Wood kilns are close to the late Iron Age oppidum (proto-town) at Verlamion, which became the Roman city of Verulamium (now St Albans) served by Watling Street, the new Roman road. The kilns at Bricket Wood were probably built to supply the growing population of the town.

There was another kiln close to Bricket Wood at Little Munden Farm, nearer to Watling Street. This was producing the sandy wares that became characteristic of the Verulamium industry. As the town grew in the later 1st and 2nd centuries AD a major pottery industry developed, which was centred at Brockley Hill some 15km to the south along Watling Street (now the A41/A4583). From there pots could be sent by road not only to Verulamium but also to London and other towns across Britain.

The Bricket Wood potters probably lived nearby, but we did not find any houses. We did recover a sharpening stone or hone, fragments of quernstone and a bronze hairpin. The hairpin is interesting evidence that women were present. Where we have names stamped on Roman pots, these suggest that most Roman potters were men, but there are few stamps of pots made in Britain, and we do not know whether this was always the case here, or whether potting was sometimes more of a family affair.



Pottery kilns in the Verulamium area

Later in the Roman period a small square structure was built south-west of the main kiln area, whose timber foundations survived as a beamslot. The gap on the south side probably marked the entrance. This has been radiocarbon-dated to 130-330 AD.

Occasionally we find isolated shrines of square or rectangular shape on the fringes of Roman settlements, but there were no finds to support this interpretation here. It is just as likely that this was an agricultural building, perhaps for animals.

Sometimes excavations disprove a previous theory. Archaeologists had suggested a Roman road running north-east across the Bricket Wood area, but no trace of this was found. If such a road existed, it must lie further west, under the A405 at Junction 21A.

No trace of Saxon activity was found anywhere along this length of the M25 during the improvements.

Bronze hairpin

Medieval rural settlements

At Slade Oak Lane stripping uncovered three sides of a medieval rectangular enclosure, the fourth having been destroyed without record during the original construction of the M25. Gullies cut by the enclosure ditch on the north may belong with an arc of irregular pits on the west and south, perhaps dug for material for a bank. Alternatively, the enclosure was perhaps originally roughly square, with an entrance on the north that was later blocked, perhaps when the enclosure ditch was extended eastwards. The arc of pits may then have been for material to heighten the bank.

Pot set into the floor of one of the buildings

There were traces of two buildings inside. Neither of the buildings had a clear plan, but there were scattered postholes in both, and one had a patchy sand and gravel floor into which a pot had been sunk upright.

This sort of evidence suggests buildings with slightly sunken floors, otherwise traces of the walls should have survived. There was little stone, so the walls were presumably made either of cob (earth, straw and dung), or of wattle and daub built on wooden beams lying on the ground, either of which would eventually completely rot away. There was an area of quarrying adjacent, perhaps the source for materials to build the walls, but nothing else in the vicinity, so this appears to have been an isolated farmstead. Charred cereals show that bread wheat was being grown.

Pots set into the ground occur on a variety of medieval sites, but their purpose varied. This example lacked both the base and the rim; the latter was probably lost through ploughing, but the lack of a base indicates that it was not intended to hold water, and was instead perhaps an internal sink used for draining liquids, or even a flowerpot for herbs.

Plan of the medieval enclosure at Slade Oak Lane

Outside the enclosure to the north we found a large area of quarrying, perhaps for building materials. Just outside the north-west corner of the enclosure a large undated sub-circular feature was probably a pond or waterhole for the settlement.

The pottery indicates that it was occupied from the 12th to the 14th centuries. Amongst the pottery was the rim and spout of a jug or pitcher decorated with a design of flowers, used to serve ale or water. These highly decorated jugs were made in the mid-13th century, from about AD1225-1275. The most expensive jugs would have been made of metal, but this was an example of the best-quality pottery available at the time, and suggests that the inhabitants of this farm were relatively well-to-do.

Glazed pitcher with applied clay decoration in the form of flowers

At this time most people lived in villages, but due to a mild climate the population was growing, and many peasants created new farmsteads by assarting (making clearings in woodland). A pattern of such isolated farms is characteristic of this area in the medieval and post-medieval period.

Long Cross silver penny

The excavations at Bricket Wood Bund caught the very edge of a medieval settlement enclosed by ditches, one of which contained a long cross penny of Henry III dated 1247-1272.

Other gullies ran between the ditches, suggesting that drainage was difficult in this low-lying area. The ditches were backfilled with demolition material from a nearby building with a tiled roof. Roman tiles were also common, perhaps suggesting that these had been reused in the medieval structure. A large spread of domestic and industrial waste covered the ditches, suggesting that this area was later used as a midden.

Acknowledgements

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The archaeological fieldwork was carried out by Oxford Archaeology. The dedication and professionalism of all the archaeologists who worked as part of the site teams is gratefully acknowledged. Specific thanks are extended to Project Managers Steve Lawrence and David Score for running the fieldwork on site.

We would like to thank Skanska for facilitating the archaeological work. Special thanks are due to Gary Rogerson for his role in co-ordinating the archaeological work with the construction programme, ably assisted by Sharon Mungovan and Dan Evans

The archaeological work was monitored by Tom Wilson and Andrew Holmes for Atkins, advised by Buckinghamshire and Hertfordshire County Councils and the St Albans District Archaeologist. From St Albans Museum we would like to thank Simon West for his time and advice offered at the Bricket Wood Bund excavation.

Archaeological research on the discoveries is still in progress, and we would also like to thank all of the specialists who have contributed information to this report. We are particularly grateful to Edward Biddulph, OA post-excavation manager of the analysis for this project.

Tim Allen wrote the text, Magda Wachnik photographed and drew the finds, and Mark Gridley drew the reconstructed scenes. Hannah Kennedy drew the maps and assembled the booklet.

The Archaeology of the M25 Section 1 scheme is designed and published by Oxford Archaeology.

Finding out more

The final results of the archaeological work on the M25 Section 1 will be published in Hertfordshire Archaeology adn History, and Records of Buckinghamshire..

For information about current excavations and research by Oxford Archaeology, visit:

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