Archaeological Discoveries on the Junctions 27 to 30 M25
M25 improvements, 
Junctions 27-30

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.

In 2008 the Highways Agency commissioned a major upgrade of the M25, and Skanska Balfour Beatty Joint Venture was appointed to carry out the work. This is programmed to be completed in 2014. It 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 4.

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.

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.

The work covered by this booklet extends around the north-eastern arc of the M25 from Junction 27 (with the M11) to Junction 30 (with the A13). All of the areas examined are shown in red, and those where significant archaeological remains were found are labelled overleaf. The time periods represented by the discoveries are shown by coloured dots corresponding to the timeline.
Nowadays construction takes care to avoid or minimise impacts upon archaeological sites as much as possible, so the archaeological work is often limited. 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.

This booklet presents some of the highlights of the archaeological work. 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.
Palaeolithic

At Belhus Cutting, 3 km north of the present river Thames, the M25 cuts through an earlier channel of the river. Until about 500,000 years ago, the Thames used to run much further north than nowadays, across what is now Essex. In the Anglian Ice Age, soon after this, the glaciers reached as far south as Finchley in North London, and diverted the course of the river south towards its current course.

The Thames has continued to change course after each Ice Age, not due directly to glaciers but to the huge volume of meltwater released as each Ice Age came to an end. This water has carried vast quantities of gravel with it, carving new channels, cutting off meanders and choking them with gravel, as happened at Belhus.

The river has also cut down each time, removing part or all of the sediments filling the earlier ones. This has meant that tracing the course of each phase of the river is not straightforward, and dating these channels when exposed is all-important. The channel at Belhus is too old for radiocarbon dating, but the sediments are being dated by measuring the quantities of amino-acids in fossil shells. In living organisms all amino-acids are of type L, but after death they very slowly change to type D. By comparing the proportions of types L and D we can estimate how long ago they died. The channel here is 300,000 to 350,000 years old.

Local archaeologists found a variety of stone tools during the original construction of the M25 here, and another flint flake in the recent excavations, but these tools are long-lived types that cannot be closely dated. Most Palaeolithic sites north of Belhus were reached by glaciers in one or more Ice Ages, and so were buried and scoured by the ice or by the meltwaters. The flints from Belhus were not found where they had been dropped, but had been carried by the channel before coming to rest.
Modern archaeological excavations use a wide array of materials and analyses to help recreate the surroundings of these early humans. The focus of the recent investigations was therefore upon dark horizons of preserved organic remains, which contained wood, seeds and leaves, pollen, insects, molluscs, bones and ostracods (small seed-shrimps).

These have shown that the tools were deposited during a warm phase, when the climate was probably similar to, or slightly warmer, than that today.

This warm phase lasted for about 30,000 years, but geologically this was just a blip in the Ice Ages that occurred before and afterwards.
Post-glacial human activity

All of the remaining archaeology along the M25 belongs to the last 10,000 years, after the end of the most recent Ice Age, so the climate has been temperate throughout.

For much of this time the land has been forested, so that rivers were the easiest means of getting about, and as a result much activity occurred along rivers. The Thames was the main east-west artery, but the tributaries that drain into it from the north were also very important for the communities living around them. The River Roding, crossed by the M25, is one of these.

At Passingford Bridge, Early Neolithic people camped out on the floodplain next to the river, leaving a scatter of struck flints behind. This happened between 4000 and 3300 BC. Similar but smaller scatters of flint came from other sites.

Later visits to this site are shown by flints such as a fine barbed-and-tanged arrowhead dating from the early Bronze Age (2500 - 1600 BC), which suggests the hunting of animals drinking at the river.

Burial under barrows was common for the most important people in society at this time, but this type of burial had largely died out by the Middle Bronze Age (1600-1200 BC). At Passingford, however, it was then that a circular ring ditch was dug (radiocarbon date 1434-1299 BC). At this time the floodplain was dry, and had probably been cleared for grazing. There may have been a mound inside the ditch created from the spoil, but if so, ploughing had removed this long ago.

Top to bottom: Mesolithic blade, Neolithic arrowhead and micro-toothed tool from Passingford Bridge
Later Bronze Age at Passingford Bridge

Excavations have revealed a few other late ring ditches in the Thames Valley upriver of London, for example near to Eton. People often favoured riverside locations for burial, as these were visible and easily accessible to passers-by going up and downriver. These monuments probably also acted as territorial markers of ownership, and as foci for gatherings for the wider community.

In the Middle Bronze Age burials were usually cremations in cemeteries, sometimes within a ring ditch, sometimes unenclosed. Urns sometimes held the ashes, like one found at Pond 1812, but if there had been an unfield associated with the Passingford ring ditch, it too has been entirely ploughed away.

The surviving ring ditch here is very shallow, supporting the idea that ploughing here has been severe.

We found further isolated cremations (without urns) at Upminster Bund and at Pond 1791, both radiocarbon dated between 1270 and 1050 BC. The stripping of large areas often reveals such burials, but the significance of these places for burial is not clear. The cremations may mark where they died, though no trace of a pyre was found. Possibly these burials were placed alongside well-trodden (though unmarked) routes, where the dead would be remembered.

At Passingford Bridge, a mound of burnt flint and charcoal lay further east on the edge of the floodplain and gravel terrace. Such ‘burnt mounds’ are often later Bronze Age. Interpretations range from cooking areas to saunas (when associated with deep pits near rivers) or as a way of burning hollows in tree-trunks to make logboats.

The only other Bronze Age features were scattered postholes or small pits on the higher, gravel terrace. A similar small pit at Pond 1615, radiocarbon-dated to between 1200 and 970 BC, contained 55 sherds from a single pottery vessel. The pits probably had a variety of uses, but they certainly show that there were clearings in the woodland or open areas on the gravel terrace.

None of the Bronze Age sites had extensive systems of enclosures or fields, but at Pond 1824 two lines of elongated irregular pits almost at a right angle indicate boundaries. Interrupted boundaries are common in this period. They are usually interpreted as being dug to make a continuous bank from the excavated spoil, with each pit dug by a separate member of the community.

Possible reconstruction of the Bronze Age urn from recovered sherds

Excavation of a Bronze Age urn

A burnt mound feature ©Framework Archaeology
During the early or middle Iron Age, (800 BC to 50BC), two parallel rows of posts were erected on the low-lying floodplain, running north-eastwards up to and across the Bronze Age ring ditch. The dating evidence is sparse: a single potsherd, and two radiocarbon dates upon charcoal from the postholes, both giving ranges of 400-200 BC. The charcoal did not come from posts burnt in situ, and the potsherd was not large, so the dating is not very secure, but all three pieces of evidence give a consistent date.

We have chosen to interpret the rows as an avenue of posts focussed on the former ring ditch, and perhaps aligned on midsummer sunrise. Astronomical alignments for monuments are well-known earlier in prehistory, when stone circles and rows were built, but are not often associated with the Iron Age.

Excavation of an Iron Age timber causeway or river crossing at Fiskerton in East Anglia has however shown that phases of construction there can be linked to cycles of the moon, so structures may also have been linked to the sun. More timber alignments of Iron Age date are gradually being found through excavation.

Alternatively the rows could be viewed as a collection of square structures, of a type often found on later Bronze Age and Iron Age settlements. These four-post structures are usually interpreted as storehouses with raised floors, often used as granaries, but their location here would be unusual, away from the main settlement and on the floodplain, rather than up on the gravel terrace (see overleaf).

Such structures are also sometimes seen as platforms on which the dead could be exposed, as the stray human bones often found on settlements suggest that exposure of the dead (excarnation) to let the elements and birds deflesh the skeleton, was practised. The westernmost square had deeper postholes than the rest, and this is the best candidate for such a platform, but although this interpretation would fit the probable use of the ring ditch for burial, no human bones were found, so it has been interpreted as a viewing platform.
Late Iron Age and Roman

In the late Iron Age (50BC- AD50) a settlement grew up on the drier gravel terrace north of the earlier monuments. A collection of curving gullies surrounded roundhouses, whose doorpost-holes generally survived. Only in one case did we find the line of the wall, surviving as a curving trench; at this time houses often had walls of stakes, evidence of which rarely survives later ploughing.

One of the houses faced onto a series of joined enclosures, one rectangular, the others curvilinear. One enclosure surrounded a massive 4-post square structure; this is a much more plausible candidate for a raised storehouse or granary, and the whole complex probably incorporated the stock pens, granaries and hayricks belonging to the community. Three areas of quarrying, probably for wall-daub, lay to the south along the terrace edge.

West of the house enclosures was a series of fields or stock enclosures, which ran from the gravel terrace down onto the floodplain adjacent to the earlier ring ditch. About 100m further west a second group of ditches may represent further fields or perhaps a second farmstead.
The curving gullies here are too small to indicate houses, but the settlement may have lain just north of the site limit. Together all these elements comprise a small rural farmstead.

One of the gullies between the houses contained the broken remains of a bronze-working crucible, with splashes of metal slag still attached. In the Iron Age these were triangular, the angled corners providing pouring lips for the melted metal. Although the crucibles are fairly easy to manufacture, the casting of bronze objects was a skilled business, and itinerant bronze-smiths probably did this, rather than the inhabitants themselves.

Also among the finds was an iron spearhead. This may have been to protect against wild animals, as wolves were still present at this time. Weapons are rarely found on rural settlements in the Iron Age, so it is unclear whether every family would have had a weapon for use in warfare.

We do not find many metal objects on Iron Age settlements, probably because most were melted down when they broke and recycled. Smithing hammerscale from repairing iron objects was also common on the site.

The enclosures extending onto the floodplain may have been dug to pen animals grazing the rich floodplain grassland, but were more likely areas of floodplain enclosed to prevent animals getting in. These would have been used to cultivate hay meadow for winter fodder. This could either have been left to wither before gathering, a process known as ‘foggage’, or have been cut with a scythe at the end of autumn. The oldest scythes found in Britain only date from just before the Roman conquest, though examples are known on the Continent a couple of centuries earlier, so before this fodder was presumably left to rot.

A number of other possible four-post structures are scattered within the larger enclosures and fields, and these may have been used to store fodder out of reach of the animals, ready for them in the winter.

The floodplain enclosures also separated the occupation area from the ancient burial site, which may still have been visible as a low mound.

At the end of the Iron Age the farmers dug a long boundary along the floodplain edge, formally separating floodplain and gravel terrace. It cut across the earlier enclosures, but curved south-east across the floodplain once it had passed them, preserving the division between the settlement and the burial mound.

A pit found adjacent to the prehistoric ring ditch contained the cremation of an adult accompanied by 2 pots of late Iron Age or early Roman date. This was the only human burial found on the site, and suggests that the ring ditch continued to have special significance at this time.

In the Roman period the overall layout of the late Iron Age fields and enclosures was redefined, although the eastern settlement went out of use.

The system expanded westwards, first recutting and then abandoning the original western boundary. This included a trackway running north-west along the side of the new fields, and a succession of waterholes dug on the east side. In the process the boundary between terrace and floodplain moved a little further north, but the Roman ditch turned south onto the floodplain along the edge of the original late Iron Age enclosures.
North of the new floodplain boundary the Roman farmers created a new enclosure in between the two Iron Age settlements, while on the east edge of the former settlement they dug a series of waterholes or quarries, and yet another enclosure and more quarries further to the north-east.

The excavations here did not find any Roman houses, but a curving gully, probably surrounding a roundhouse, was found 400m to the west at Passingford Bridge. This is the direction in which the trackway is heading, and the Romano-British settlement may have lain between the two sites.

The Codham Hall Bund excavation revealed ditches of a late Iron Age enclosure that probably originally continued beneath the existing M25. The alignment of the ditches formed an acute angle, perhaps suggesting that one of their functions was to funnel livestock. Some of the undated, smaller ditches may be associated but others are more likely to have been medieval.

Occupation continued into the early Roman period, but ended before AD100, except for a complete but fragmented jar of 2nd-4th century date found in an isolated pit 100m further north. Whole pots are often buried with cremations, but there was no cremated bone here, so it is unclear why this pot was buried.
Roman settlement at Hobbs Hole

Hobbs Hole straddled the north and south sides of a valley along which a stream flowed, and consisted of another group of Roman enclosures. There was no settlement focus, which may indicate that these were mainly cultivated fields and paddocks for livestock.

The waterholes and quarries contained charred plant remains, consisting largely of spelt wheat grains and chaff, leftover from the winnowing and cleaning of the harvested grain. Animal bones show that cattle were the main species kept on the site, though sheep were also numerous, and horses and pigs less so. Interestingly, deer were also hunted, roe deer early in the Roman period, and red deer later on.

Nevertheless, we found cremations across the northern area, some within a small ditched enclosure, and one isolated cremation on the south.

Small enclosed cemeteries are common in the Romano-British countryside, often at some distance from the settlements to which they belonged, though usually linked by a trackway, which is not evident here. Isolated cremations are rarer, but may indicate a favourite place chosen by the deceased.

The south-east part of the site contained one of the clearest enclosures, sited over a dense cluster of small, shallow and often irregular features, possibly indicating a former copse.

Roman urns in situ

Roman cremation urns

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Early Saxon activity around Junction 29

In the later Roman period the main activity at the Hobbs Hole site was digging clay quarries, and Anglo-Saxon pottery came from the tops of some of these. Although broken up, there are a range of locally-made handmade and burnished vessels, typifying the change from the industrial-scale production of wheel-thrown, standardised Roman pottery. The only new Saxon feature was another quarry pit, showing the long-term exploitation of clay, presumably for buildings.

Saxon settlements often occur adjacent to Romano-British ones, but it is often difficult to establish whether these were Romano-British people reverting to handmade pottery once the Roman potteries stopped production, or new Anglo-Saxon settlers taking over abandoned farmsteads and making use of existing fields and enclosures. The Anglo-Saxons had handmade pottery, a tradition they brought with them from outside the Roman Empire.

Once the Roman administration and army left Britain, and raiding disrupted trade and industry, cities were abandoned, and local people adopted the customs of the new settlers, making natives and incomers archaeologically indistinguishable.

A group of pits at Codham Hall Bund were full of charcoal and fired clay, but not from burning in situ. The charcoal from one of these pits gave a radiocarbon date of 409-540 AD, ie early in the Saxon period. These suggest a small Saxon settlement, but again, who lived in it is unclear.

Middle-late Saxon and Medieval

No substantial settlements were found, but there was evidence of a variety of activities from all of these periods.

Excavations at Upminster Bund revealed irregular soilmarks in lines, which were probably created by the roots of trees in hedgerows. Charred wheat grains from these gave radiocarbon date ranges of 690 to 890 AD, indicating arable fields here in the Middle Saxon period (AD 650 -900).

At Pond 1683, excavation revealed several burnt pits filled with charcoal, one of which was dated to 1020-1160 AD. This suggests that charcoal-burning was being carried out here at the very end of the Saxon period, or soon after the Norman conquest. The pits may represent either successive visits, or larger-scale production for a single season. Charcoal-burning is usually remote from settlements, and no other evidence from this period was found here.

Pond 1812 contained a probable rectangular enclosure at the end of two parallel ditched boundaries, and the pottery shows that this belongs to the late Saxon period (AD 900-1066). Although the rural buildings of this time were often of wood, and built on shallow foundations, which might have been ploughed away, there were no pits or other features inside the enclosure, so this was probably not a homestead. Two of the ditches narrowed towards an entrance, perhaps suggesting that it was for stock management.

During the original construction of the M25, features and pottery of medieval date (AD1100-1300) were recovered just to the south (plan overleaf).
The late Saxon settlement to which this stock enclosure belonged may also have been here, or alternatively activity may have shifted south soon after the Norman conquest.

The stock enclosure may have belonged to the estates of North Ockendon Hall, a moated Manor in Church Lane, which also began life in the late Saxon period, but was bombed in World War II, and was demolished after the war.

A series of ditches and a pit dating to the 11th-13th centuries was found at Codham Hall Bund, but these lay on the edge of a modern quarry, which had removed all other evidence.

These features may have been associated with the Manor of Bereden on Bereden’s Lane, Cranham, now under the M25 to the north. Rescue excavations in advance of construction showed that the earliest buildings on site were 14th century, and were rebuilt in brick and extended in the 16th - 17th century. Further rebuilding and enlargement took place in 18th - 19th century before buildings became derelict. Bereden Manor was originally a free tenement of Cranham Hall. Some minor features and pottery of 13th century date were also recorded.

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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 4 scheme is designed and published by Oxford Archaeology.

Finding out more

The final results of the archaeological work on the M25 Section 4 will be published in Transactions of the Essex Society for Archaeology and History, and Quaternary Science.

For more about other finds in the area, see:


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

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