

The Silchester Environs Project



The Roman Tilery and Pottery Industry at Little London, Pamber 2017

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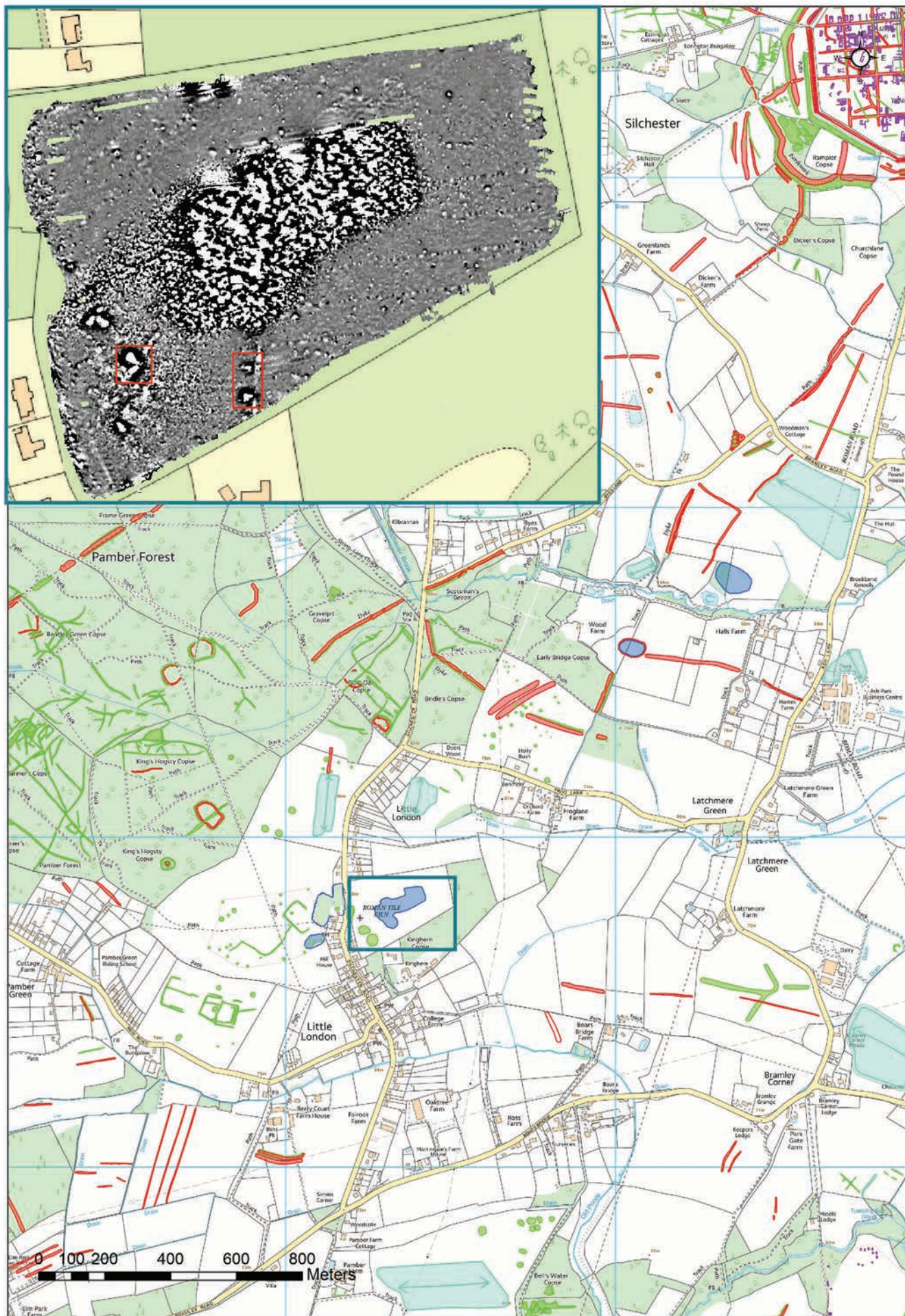


Fig. 1 Magnetometry survey of the field with site and trench locations

Introduction

Discoveries of Roman brick and tile in the field opposite The Plough Inn, Little London prompted excavations by Lt. Col. Karslake in 1925 which produced Roman brick and tile including one stamped with the name and titles of the Emperor Nero (AD 54-68), but no evidence of an associated kiln or kilns. Other than occasional field walking no further investigation of the field took place until 2015 when the geophysics team at Historic England undertook extensive Ground Penetrating Radar and Caesium Magnetometer surveys on behalf of the project. The magnetometry in particular revealed several hotspots of high magnetism, potentially indicative of kilns, as well as other features including disturbance in the middle of the field corresponding with an area of recent quarrying subsequently used for landfill.

Excavation in 2017 sought to evaluate the geophysical anomalies in two areas in the southern half of the field, amounting to a total of 850m², in order to establish whether or not a Roman tiliary existed there and, if it did, to characterise and date its production. In particular, could the link with the Emperor Nero be confirmed? Prior to the excavation there was no evidence of the production of Roman pottery from Little London.

The Brick Kiln (Trench 1)

Trench 1 was located above one of the clearest signals from the magnetometry survey, showing a pair of structures grouped close together with a potential linear feature running from this area towards the modern quarry pit to the north. A trench measuring 20m by 20m was opened with the removal by machine of the modern topsoil and a probable post-Medieval ploughsoil onto a clear archaeological horizon which, despite having been scored by plough-scars, already showed elements of the structures hinted at in the geophysics. Roman brick and tile were found in all the excavated features.

Late Iron Age Trackway

Two parallel ditches running north-east/south-west and approximately 10m apart are probably the earliest features within Trench 1. The most visible of the two [1024] ran for approximately 25m diagonally across the trench; it was generally V-shaped in profile with a flat base and measured 2.65m in width and 1.2m in depth. Tucked in the south-east corner of the trench was a small portion of a corresponding parallel ditch [1086] which was similar in size and form to [1024]. The upper deposits, probably slumps into the remnant hollow of the ditch [1086], may give a general indication of the appearance of the area surrounding the kilns during their use. A concentrated dark deposit of burning and

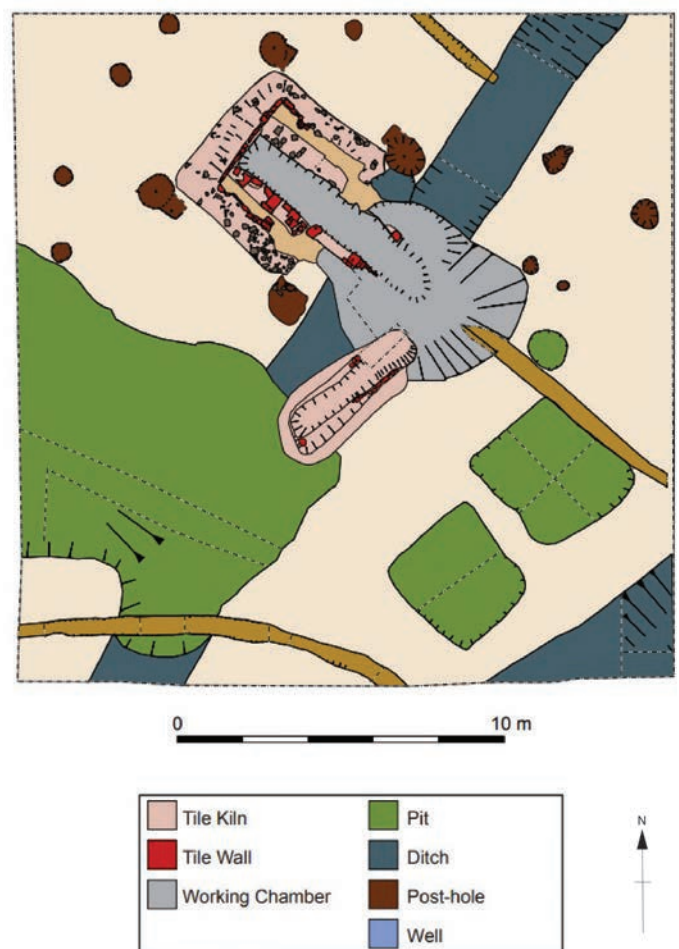


Fig. 2 Trench 1

charcoal (1041) probably represented the dirty ground surface, thick with waste material from the kiln firing. Atop this was a substantial layer of crushed and degraded brick and tile, perhaps discarded wasters or a demolition deposit resulting from the destruction or modification of one of the kilns.

Interpreted as boundary ditches flanking a trackway, the absence of obvious post-Conquest finds within the lower fills of both of these ditches hints at a pre-Roman date for their construction. The positioning of the kilns in relation to the western ditch seems deliberate with the firing chamber sunk into the remnant outer bank and the hollow of the ditch used for the stokehole and the second smaller kiln. Further analysis of the geophysics image shows that other potential kilns on the other side of the trackway are similarly positioned to exploit the surviving earthwork; a pattern seen more clearly within Trench 2.



Fig. 3 Ditch [1024]



Fig.4 The trackway pre-excitation



Fig.5 Ditch [1086] showing potential ground surface (1041)

Kiln 1 - Phase 1

The brick-built structure of the main kiln measured 4.8m by 7.2m metres and was comprised of a roughly-rectangular firing chamber oriented north-west/south-east with a narrower 2m long stokehole extending from the south-east side. The firing chamber was cut 2.05m deep below the base of the ploughsoil although it may have been slightly shallower initially. Each of the side walls was faced with thin, well-made bricks laid in uneven courses, probably as facing of a brick rubble core. The back wall was 1.2m thick whereas the two side walls each measured around 0.8m in width. Emerging from the south-west side inside the structure were three short stubs of stacked bricks keyed into the main wall. These were the remnants of internal cross-walls that would have supported the surface on which the unfired bricks and tiles were placed. Where the stokehole met the entrance to the firing chamber a curved stacked of four tiles, or voussoirs, on the south-west side probably formed the springer of an arched flue. It is likely that the cross-walls were similarly arched to allow the hot gases to circulate the full length of the firing chamber.



Fig.6 The firing chamber of kiln 1

To the southeast of the flue-arch was a large open working area [1126]. This was sub-square in plan, measuring approximately 4m by 4m and sloping up from the flue-arch to around 0.8m below the ploughsoil. It was sat within the hollow of the early ditch and appeared to serve - in their latest phases at least - both the main, larger kiln and the smaller example to the south-west. The majority of the lower deposits within the working area were rich in burnt material as a result of the regular raking-out of the stokehole. Running out from the working area on the same general alignment was a narrow, square-cut gully [1096], 0.47m wide, 0.45m deep and extending south-east for 6.8m before reaching the eastern edge of the

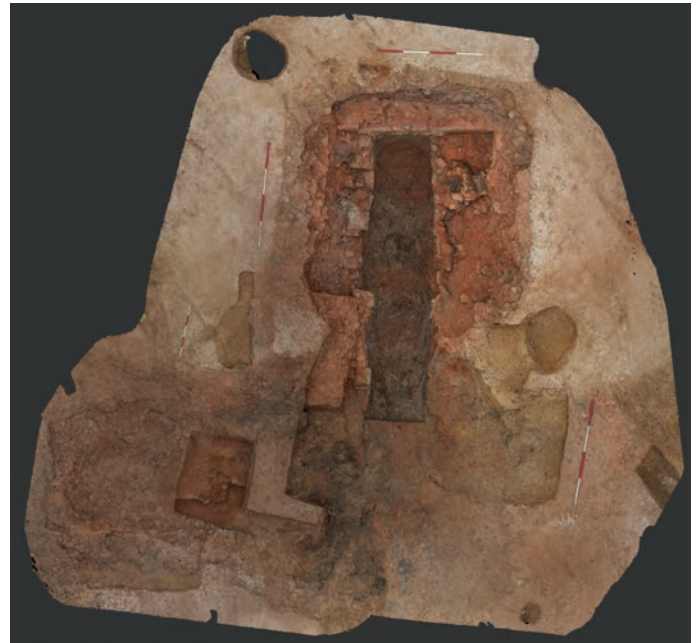


Fig. 7 Photogrammetry model of both kilns

trench. This straight-sided feature may have been dug as a drain, taking advantage of the natural slope down to the east.

Surrounding the kiln were a number of post holes and other features aligned and associated with the structure. At each of the four corners of the firing chamber, just outside the rubble packing of the walls, was a substantial post hole. Although varying in depth between 0.15m and 0.6m, each was over 0.6m in diameter and one example had clear evidence of a central post-pipe, approximately 0.48m in diameter. In each case, the circular post hole had a shallow, square-shaped step protruding out in alignment with the side wall of the kiln. Although little can be inferred about the roofing of the structure it seems almost certain that these postholes would have provided its support.

To the northeast, a short stretch of clay beam aligned with the wall of the firing chamber suggests an auxiliary structure next to the kiln. Measuring 2.6m long, 0.42m wide and 0.2m deep, and 3.5m from the kiln, the beam-slot may have supported some kind of lean-to shed which shared the north-east wall of the kiln. After being formed and moulded, bricks and tiles would have been left to dry for a number of days before being fired. Storing these undercover and close to the firing chamber may have utilised the residual heat from the kiln to aid this process. Likewise, firing the kiln would have required immense amounts of wood which would probably have been collected during the winter months. Storage structures would have allowed for the seasoning of the wood and, if built close to the kiln, could similarly have assisted drying.

In the north-west corner of the trench was a line of three smaller post holes aligned with the back wall of the kiln. As with the previous example, these may have supported some kind of satellite building or a fenceline. A fourth post hole slightly further south as well as two more examples to the east suggests that this alignment may have turned ninety degrees to enclose the kiln. If the kiln was only used seasonally, a surrounding fence or barrier might have proved useful for keeping out livestock or wildlife between times.



Fig.8 Remains of cross-walls within the firing chamber and the later modification

Kiln 1 - Phase 2

A second phase of kiln use involved the reduction in width of the firing chamber. Although badly preserved, the surviving brick courses indicate a similar structure to that of the original with three brick arches supporting the floor of the firing chamber. Brick rubble was used to fill the gap between the primary and secondary structure. Evidence of the use of the kiln was indicated by the depth (0.75m) to which the base of the firing chamber was worn or cut below the lowest course of the secondary brick lining. With this modification, the firing chamber almost became an extension of the stokehole, being approximately the same width (1.4m), while continuing 3.15m to the original back wall of the kiln. Much of the structural

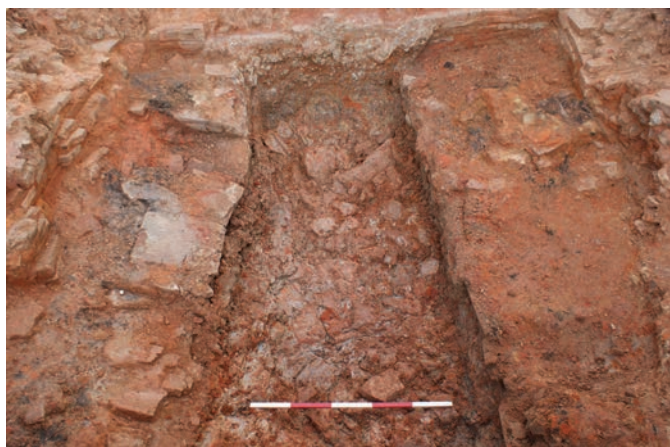


Fig.9 Smaller firing chamber of phase 2 with vitrified back wall

integrity of this second phase was seen to have been retained by the part-vitrification of the walls caused by the intense heat. This was particularly apparent at the back of the firing chamber where the entire wall had melded together into a green, glassy surface. This modification of the kiln would have resulted in the firing of smaller loads of brick. Whether this was a reflection of falling demand or of the difficulty of maintaining effective temperatures when firing the kiln in its original state is unclear.

Other than the CBM and the find of a Nero-stamped tile from the fill of the kiln, there is no independent evidence of its original construction and subsequent modification. Samples have been taken for archaeomagnetic dating by the University of Bradford.

Kiln 2 – Structure 1154

As predicted from the geophysics scan, a much smaller second kiln was located central to the trench. Measuring 4.5m in length, 2.26m in width and up to 0.8m in depth, the kiln was set within a foundation cut dug into the early ditch [1024] following the same alignment and probably exploiting the residual hollow. The structure itself was poorly constructed with walls up to 0.4m thick made of packed rubble with only a very small amount of brick facing surviving on the south-east side. The kiln was uniform in shape along its length with no obvious differentiation between the firing chamber and the stokehole. The internal space measured only 2.9m in length by 0.8m in width. Its shape and construction method were very similar to the secondary phase of the larger kiln and, considering they both shared the same working area, it seems likely that they were contemporary.



Fig. 10 Kiln 2

Quarry pit [1048]

Two large circular hollows in the west and south of the field suggested the presence of quarrying associated with tile and brick production. The northernmost of these two potential extraction pits measured approximately 35m by 27m and filled much of the west side of the Trench 1. A slot placed through the 9.5m by 8.5m arc revealed it to be gradually sloping east to west to a base approximately 1.05m deep. From the surface, the fills of the pit could be seen to be hugely varied and difficult to follow but upon excavation a clearer picture of the sequence was established. The proximity of this pit to the kilns suggests that they were contemporary. Subsequently, once enough clay had been removed it would have made the perfect place to dump waste material and thus, as expected, the lower fills within the pit were almost entirely comprised of kiln rake-out and wasters.



Fig. 11 Quarry pit [1048]

Southern palisaded enclosure [1012]

Towards the south of Trench 1 was the shallow arc of a deep, straight-sided trench [1012] which contained evidence of charred posts set to form a continuous palisade 0.5m wide and 0.67m deep. It ran for approximately 15m and, if extrapolated as a complete circle, would have had a diameter of roughly 35-45m. The palisade trench cut through both the upper fills of the quarry pit and trackway ditch [1024] so is relatively late in the sequence. The purpose of the palisaded enclosure, perhaps to protect buildings housing the workforce, could not be established; only further excavation will help clarify its function.



Fig. 12 Charred stake within palisade trench [1012]

Square pits [1106] and [1107]

Two large square clay deposits in the south east corner of the trench initially suggested the presence of a number of small clay-floored buildings. These deposits measured, respectively, 3.65m by 3.75m and 3.55m by 3.2m and upon investigation were revealed to be up to 0.7m thick. Their purpose is unknown but they may have served as puddling pits, used for mixing the raw clay with water to achieve the right consistency but also to remove impurities and/or to add temper.



Fig. 12 Pit [1107]

The Pottery Kilns and Ditch (Trench 2)

Trench 2 was located approximately 50m to the east of Trench 1 and measured 15m by 30m. The trench was designed to include two strong magnetometry signals, potentially indicative of kilns, and a linear anomaly running northwards towards the large, modern quarry pit. Below the topsoil, the older ploughsoil had mixed with a gradually-formed deposit of colluvial hill-wash making the underlying horizon of natural geology difficult to determine. Obvious concentrations of brick and tile were apparent at the location of both potential kiln structures but the edges of other features were difficult to determine.



Fig. 13 Trench 2 from the north

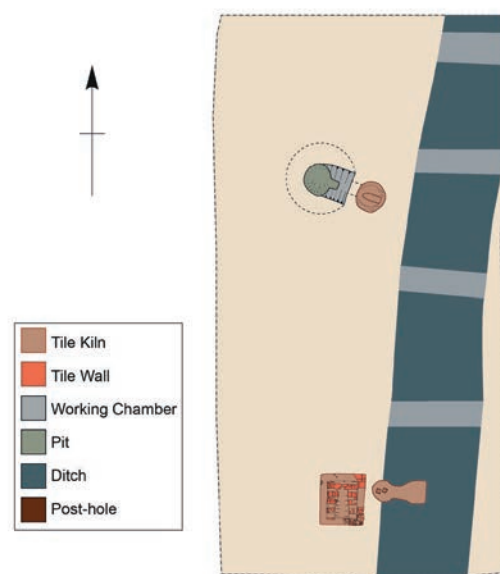


Fig. 14 Trench 2

Northern Pottery kiln 2040

Identified from the surface as a clear, scorched, red circle, Kiln 2040 measured 1.66m in diameter and was 0.88m deep at its lowest point. The combustion chamber of the kiln was not lined, but cut directly into the natural clay with a narrow stokehole on its western side. Through firing, the outer edges of the combustion chamber had baked solid thus stabilising the integrity of the kiln and the stokehole. Built into the chamber was a central pedestal emerging from the eastern side and running for 0.98m towards the stokehole. Constructed of seven courses of mixed box-tile and brick, the pedestal measured 0.42m high and 0.24m wide and had been similarly scorched in situ under intense heat. Around the edge of the circular chamber ran a small shelf approximately 0.22m wide into which had been moulded a number of small recesses that probably held horizontal supports, which, as solid clay bars or spokes, would originally have been laid radially across to the central plinth to form the floor of the kiln and allow the hot air to

circulate freely below. However, it seems in the latest use of the kiln these supports had been replaced with reused tegulae, a number of which remained fixed to the top of the plinth, with the broken remains of several more lying at the base of the chamber mixed with a thin layer of pottery wasters. This deposit contained a high proportion of light-coloured flagon pieces suggesting that these were the predominant ceramic type produced.



Fig. 15 Kiln 2040

A slot was dug above the stokehole revealing a sizeable working area on the western side of the kiln. Although not excavated to its full extent, a 3.5m by 3m area sloped downwards towards a narrower shaft over 1.1m in depth and incompletely excavated. The bowl-shaped nature of the wider working area suggests it may have been set into an already existent hollow such as a clay-extraction pit, but the deeper shaft was probably a well. Amongst the lower fills of kiln rake-out were more concentrations of broken flagon as well as a number of pieces of mortaria; one almost complete rim bore a clear maker's stamp.



Fig. 16 Working area of pottery kiln 2040

Ditch

Upon opening Trench 2, a linear feature running north to south along the eastern edge of the trench appeared less obvious than had been indicated on the geophysics scan. Any edges of a cut were extremely diffuse and only a scattering of CBM in the upper deposit indicated any kind of feature, perhaps a shallow pathway. Four slots were placed along the length of this faint impression revealing a surprisingly substantial boundary ditch averaging over 4.5m wide at ground level and 1.4m deep. Generally V-shaped in profile with a narrow, flat bottom, the ditch contained few finds near the base suggesting that it was constructed before either pottery or tile-making activity began in earnest to the west. While it was difficult to determine from the profile of the ditch silts on which side stood the associated bank, the proximity of the kilns to the ditch suggests that they were located to respect it, and that, either the bank had already been removed before their construction, or it lay on the opposite, eastern side beyond the edge of the trench. This then begs the question as to what lies behind and to the east of the bank and the ditch whose profile is reminiscent of military defences.



Fig. 17 Slot dug through the large ditch

The northernmost slot through the ditch revealed an extremely rich assemblage of pottery with sherds numbering in the many hundreds. The upper deposits of this slot contained large amounts of flagon wasters, charcoal rake-out and potential debris of the fired clay coverings of the firing chamber of kiln 2040. In amongst this industrial waste were also numerous pieces of imported and higher-status ceramic, including samian ware, suggesting nearby occupation.

Southern kiln sequence – Structures 2031 and 2052

Two kilns were found towards the southern end of the trench. The earlier of the two (2031) was almost square in plan and constructed of well-made, coursed bricks and reused tegulae roof tiles. The outer walls were up to 0.4m thick and in total the structure was 2.38m by 2.74m and built 1.2m deep into the natural clay. Around one third of the stokehole arch survived on the southern wall and four pairs of internal cross-walls appeared to have also formed arches to support the floor over the firing chamber. Within a shallow hollow dug into the base of the kiln was a deposit of charcoal and ash mixed with a scattering of broken



Fig. 18 Kiln 2031 showing flue arch

ceramics, once again dominated by flagons and other pale-fired wares. As the kiln fell into disrepair or was demolished, the chamber almost entirely filled with the remains of the collapsed walls and superstructure.

A smaller, circular kiln 2052 was then built slightly to the east, close to the edge of the north-south ditch, initially oriented with the stokehole running out towards the now-defunct square kiln structure (2031). Sitting above the collapsed remains of the latter was a thick layer of rake-out material mixed with a spread of broken ceramics. It appeared that, after clearing away some of the looser rubble, the builders of the new kiln had utilised the derelict firing chamber as a working area, deliberately using the difference in height to aid construction. The new kiln was later remodelled and realigned with the stokehole switched 180 degrees to face out towards the ditch. Charcoal deposits running from within the stokehole could be seen dipping



Fig. 19 Kiln 2052 with internal pilae

sharply into the ditch suggesting that the structure had been purposefully constructed in this location to exploit the downward slope.

The kiln itself was circular in shape, measuring 1.18m in diameter and 0.38m in depth, with the stokehole running out 1.4m to the east. A foundation cut for the kiln had been dug and then lined with a rudimentary clay render approximately 0.1m thick. In the centre were two stacks of bricks, not dissimilar to the pilae found within an underfloor hypocaust system and presumably used in a similar fashion as the pedestal in pottery kiln 2040 to support the floor of the combustion chamber. Each stack comprised a series of bessales measuring 0.2m square and 0.05m thick, fixed together with a clay-based mortar. Ceramic remains at the base of the kiln were also rich in flagon sherds, but a number of unusual, thin, curved tiles found within the fill of the kiln may represent the remains of supports to create a domed covering of the kiln, rather than further waste material.

The Products of the Brick Kiln

During the excavation in excess of 4.5 tonnes of ceramic building materials were recorded, for the most part from Trench 1. The CBM assemblage contained a wide range of forms, including typical Roman roofing material in the form of tegulae and imbrices and a range of brick forms. The bricks, all measuring greater than 30mm in thickness, included bessalis, lydion, and pedalis forms. Many of the bricks featured shallow mammatae, lumps of clay added to the surface to separate the bricks during firing allowing for circulation of air in the kiln.



Fig. 20 An example of a CBM delivery for recording

Within the assemblage is a collection of CBM used in the construction of hypocausts. This includes a range of relief-patterned box-flue tiles, where the surface has been scored for plastering using a carved wooden roller. There are three patterns represented, three diamond-and-lattice designs (die numbers 38, 39 and 68), along with examples of die 54, a geometric-and-leaf design that has previously not been recorded in the Silchester CBM corpus.



Fig. 21 Examples of relief-patterned flue tiles keyed with dies 38, 39 and 68 (L-R)

There are also a number of examples of less common forms of CBM forms. Two tiles stamped with the title of the Emperor Nero (NER·CL·CAE·AVG·GER - Nero Claudius Caesar Augustus Germanicus) were recorded, along with another tile bearing a circular impression of the same dimension as the stamps, albeit without



Fig. 22 Example of a Nero-stamped tile recovered from Trench 1 (1069)

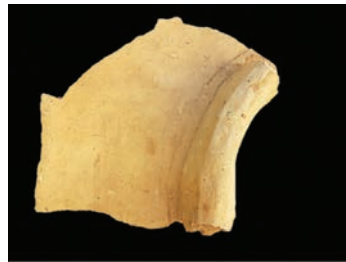
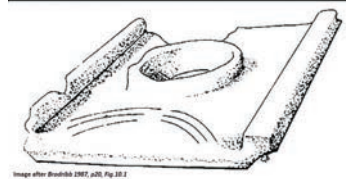


Fig. 23 Fragment of a tegula with central vent recovered from Trench 1 (1009)



any visible lettering. The clearest example recovered features a partial stamp incorporating a ligatured ER in the GER representing Germanicus.

There are two examples of unusual tegula forms which incorporate a hole or vent in the centre of the tegula bed, surrounded by a rim. These are understood to have functioned as roofing vents and are also known to have been re-used as drains, with examples found in Ostia (Italy).

The corpus of roofing material includes two fragments of antefix. These decorative plates were fixed to the end of the imbrices at the eaves of the roof. One was part of the surrounding plate of the antefix, whilst the other featured the lower portion of a face. They have been described as apotropaic devices, perhaps depicting Mercury or a local deity.



Fig. 24 A fragment of an antefix recovered from Trench 1 (1046)



Fig. 25 Examples of a brick with multiple sheep footprints.

Amongst the assemblage are a number of examples of brick and tile with impressions of animal footprints, including both domestic and wild species, for example, cat, dog, sheep, and deer. These footprints are made when the tiles were laid out to dry before firing.

Initial examination of the material shows there to be range of fabrics of different composition represented

in the material, a reflection of the different clay geologies in surrounding area. The fabrics of the material will be analysed further during post-excavation using a number of methods including thin section petrography. The range of fabrics will then be compared with the existing ceramic building material assemblages from Silchester.

Preliminary Conclusions

Our excavations have confirmed beyond doubt that a Roman tilery or brickworks was located at Little London and that it was the source of the bricks stamped with the Emperor Nero's name and titles (AD 54-68) and, by implication, part of his imperial estate. There is evidence of earlier, late Iron Age occupation in the form of the trackway ditches in Trench 1 and the probable well in Trench 2. In addition we have found that pottery was also produced at Little London, in smaller kilns adjacent to the brick kilns. The forms of pottery produced include 'white ware' flagons and mortaria, their shapes typical of the pre-Flavian (pre-AD 70s) period and closely comparable with the vessels made in the military workshops adjacent to the Claudian fortress at Longthorpe, near Peterborough, Cambridgeshire. Production at Little London appears to have been short-lived as we have no evidence yet to suggest that it continued into the Flavian period or beyond.

Planned research on the types of CBM and pottery produced, along with the chemical and petrological characterisation of their fabrics, will facilitate the investigation of the connections to be made with the material found from within Silchester itself and the examples of distinctive products such as the box-flue tiles, roller-stamped with identical dies to those found at Little London, which have been recovered from more distant locations.

Much of the brickworks, including the workshops and drying sheds and a probable second brick kiln, remain to be explored at Little London. Moreover, the discovery of the military-like ditch parallel with the eastern edge of Trench 2 raises the question of what it was enclosing further to the east. Similarly the extent of the palisaded enclosure close to the southern edge of Trench 1 and the nature of what it contained remain to be investigated. The concentration of pottery at the north end of the ditch in Trench 2 suggests the possibility of occupation and a further pottery kiln or kilns close by.



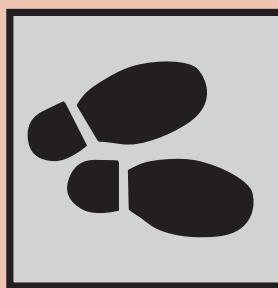
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