

BRICKKILN WOOD, OFFLEY, HERTFORDSHIRE ANALYTICAL EARTHWORK SURVEY AND LANDSCAPE CONTEXT

Rebecca Pullen and David McOmish



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OFFLEY
HERTFORDSHIRE**

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AND LANDSCAPE CONTEXT**

Rebecca Pullen and David McOmish

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SUMMARY

Between March and April 2010, English Heritage's Archaeological Survey and Investigation team (Cambridge), undertook a detailed analytical earthwork survey within Brickkiln Wood, near Cockernhoe, North Hertfordshire. The work was undertaken to advance wider understanding of the development and vulnerability of the historic environment in this area.

The site formerly supported Cockernhoe Brickworks, a local clay extraction and brickmaking enterprise in the 19th century; associated clay pits can be seen surviving well on both sides of Brick Kiln Lane. In 2007, archaeological fieldwork across surrounding land identified that clay extraction may also have been taking place here during the Romano-British period. Investigation by English Heritage revealed that the woodland preserves a complex multi-period landscape. The early elements, tentatively allocated to the Late Iron Age/Romano-British period, include a large sub-rectangular enclosure, a small complex consisting of a rectangular platform and sunken features, along with possible shallow extraction hollows. Surviving traces of cultivation ridges and furlong boundaries were also recorded. Overlying this is a complex of woodland banks and boundaries, many of which form part of the current woodland management scheme, and are interrupted by 19th-century clay pits at the north-east end of the site.

CONTRIBUTORS

The survey and photography were undertaken by David McOmish and Rebecca Pullen of English Heritage's Archaeological Survey and Investigation Team, Cambridge. Rebecca Pullen prepared the report text; the illustrations were drawn by Rebecca Pullen, David McOmish, Derwin Gregory, and Magnus Alexander. David McOmish and Wayne Cocroft commented on the text. Philip Sinton of English Heritage's Imaging, Survey and Graphics Team, prepared the final survey drawing.

ACKNOWLEDGEMENTS

English Heritage would like to thank Stewart Bryant and Isobel Thompson of Hertfordshire County Council's Historic Environment team for providing support and information throughout the project. Thanks also go to Ren Hudspith of the Manshead Archaeological Society for kindly supplying fieldwork results.

ARCHIVE LOCATION

The archive consists of two field survey plans; these have been deposited with the NMRC, Swindon. The digital archive is held on the English Heritage server, Cambridge.

DATE OF SURVEY

The survey was undertaken between 15 March and 13 April 2010; an initial draft plan of the earthworks was then checked in the field 19 April 2010.

Cover image: Possible Romano-British clay extraction hollow overlain by later outgrown coppice boundary (foreground), looking north-east. Photograph: Rebecca Pullen, © English Heritage 2010

CONTACT DETAILS

English Heritage, Brooklands, 24 Brooklands Avenue, Cambridge, CB2 8BU
Rebecca Pullen; 01223 582773; rebecca.pullen@english-heritage.org.uk

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INTRODUCTION

Location

Brickkiln Wood is located at the southern end of the Parish of Offley, in North Hertfordshire, and lies 4km north-east of the centre of Luton, some 250m from the present eastern periphery of the town and the county boundary between Hertfordshire and Bedfordshire. The wood is situated at NGR TL 13056 23231, between the nearby villages of Cockernhoe to the west and Tea Green to the east; it overlooks the eastern suburbs of Luton and Luton airport to the south-west (Figure 1). Brick Kiln Lane winds its way roughly north-west from Tea Green to Cockernhoe, bisecting the woodland to create two distinct portions, the larger of which lies to the south-west of the road.

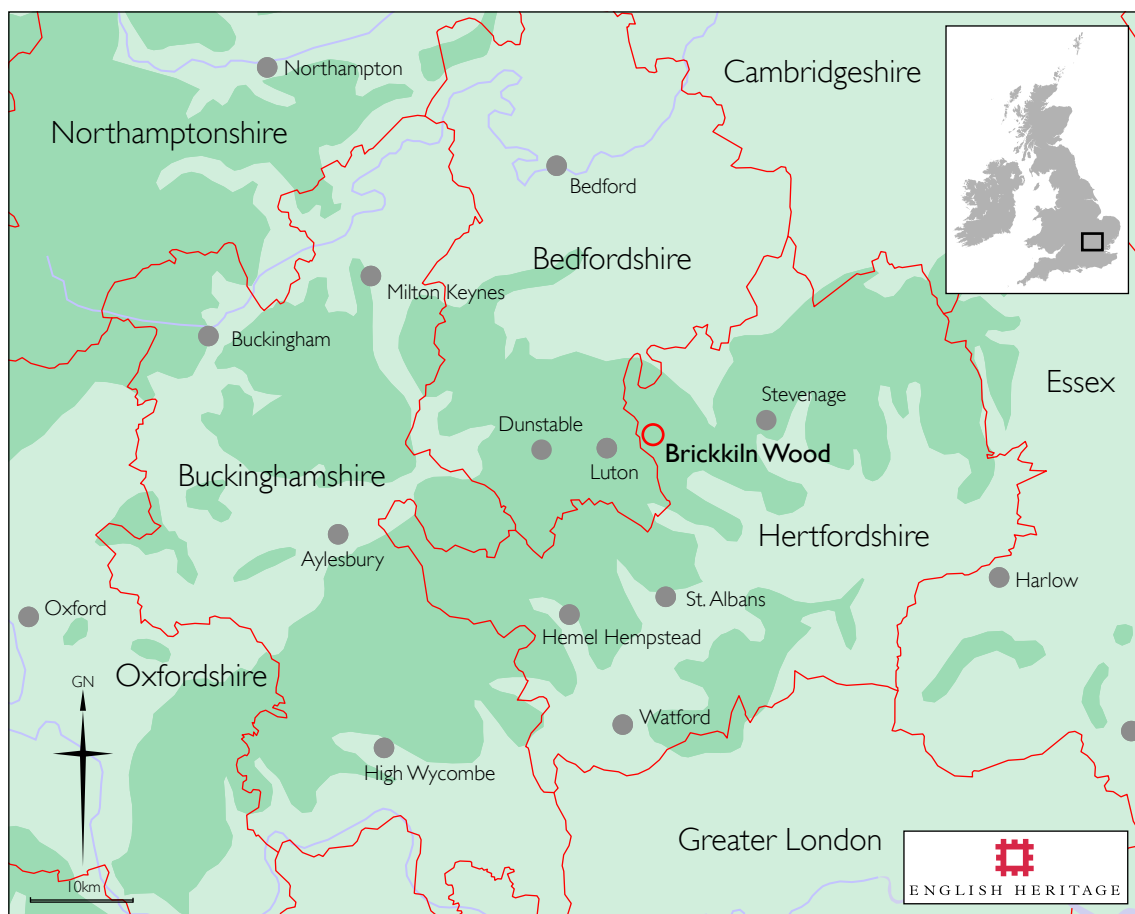


Figure 1: Location map. Drawn by Rebecca Pullen and Magnus Alexander, © English Heritage

The survey

The surviving earthworks within Brickkiln Wood were brought to the attention of English Heritage by Stewart Bryant, Historic Environment Officer for Hertfordshire County Council. Survey and analysis of the remains were carried out as the first in a proposed series of targeted archaeological investigations to enhance current understanding of the historic environment across land in North Hertfordshire and South Bedfordshire. This lies within the southern sector of the Milton Keynes South Midlands (MKSM) Growth Area and as such has been ear-marked for potential large-scale development.

Detailed earthwork survey was undertaken within the woodland standing to the south-west of Brick Kiln Lane, but not in the smaller portion of woodland to the north of the road where the land has been almost entirely remodelled by 19th-century clay extraction activities. A rapid walk-over assessment was undertaken for features north of Brick Kiln Lane. A detailed statement of methodology is provided towards the rear of this report.

Topography, geology and land use

Brickkiln Wood sits on fairly level ground some 160m above Ordnance Datum (OD), on the south-western edge of a gently undulating chalk escarpment that extends on a NW-SE alignment. This broad ridge of high ground is a component of the Chilterns chalk escarpment and, indeed, the site lies to the south of the northern portion of the Chilterns Area of Outstanding Natural Beauty (AONB). Land dips away gently to the immediate south-west of the woodland to c. 145m above OD where it meets the Bedfordshire border and the eastern fringe of Luton (Figure 2).

The area of Brickkiln Wood is underlain by Upper Chalk, with Middle Chalk outcropping in the valley sides. The surface of the Upper Chalk is shown by the 1:50,000 British Geological Society map to be mantled by glacial deposits of Clay-with-Flints (BGS 1995, map 221 Hitchin, Solid and Drift). Composition of the Clay-with-Flints is variable, and while the matrix is typically of stiff and often waxy clay, it is known to be silty/sandy in places (Hopson 1996). The Hertfordshire Geological Society reports that the thickness of the Clay-with-Flints does not exceed 4.5m on the Upper Chalk outcrop of the Chiltern Hills, and that it is derived from the insoluble residues of weathering processes (www.hertsgeolsoc.org.uk, in Trehay 2007b). Soils across the site are slow permeating, fine loamy subsoils with occasional tendency to seasonal waterlogging (Cox 2007). No active watercourses or standing bodies of water lie close to the site, but several seasonal springs are present in the surrounding area (Sheldon and Barber 2008).

Brickkiln Wood is a small block of lightly managed woodland covering an area of approximately 9.2ha (23 acres). The central and north-western portion of the site is dominated by a large regimented block of pine plantation; areas peripheral to this are more mixed in nature, generally characterised by out-grown beech coppice interspersed by occasional mature oaks. A zone across the central eastern area of the wood exhibits far more open planting than seen in the rest of the site, typically of mature trees including old oaks; this area may have been, formerly, woodland pasture, and appears as a distinct bounded area devoid of tree cover on several historic Ordnance Survey (OS) map editions from at least the mid-19th until the mid-20th century.

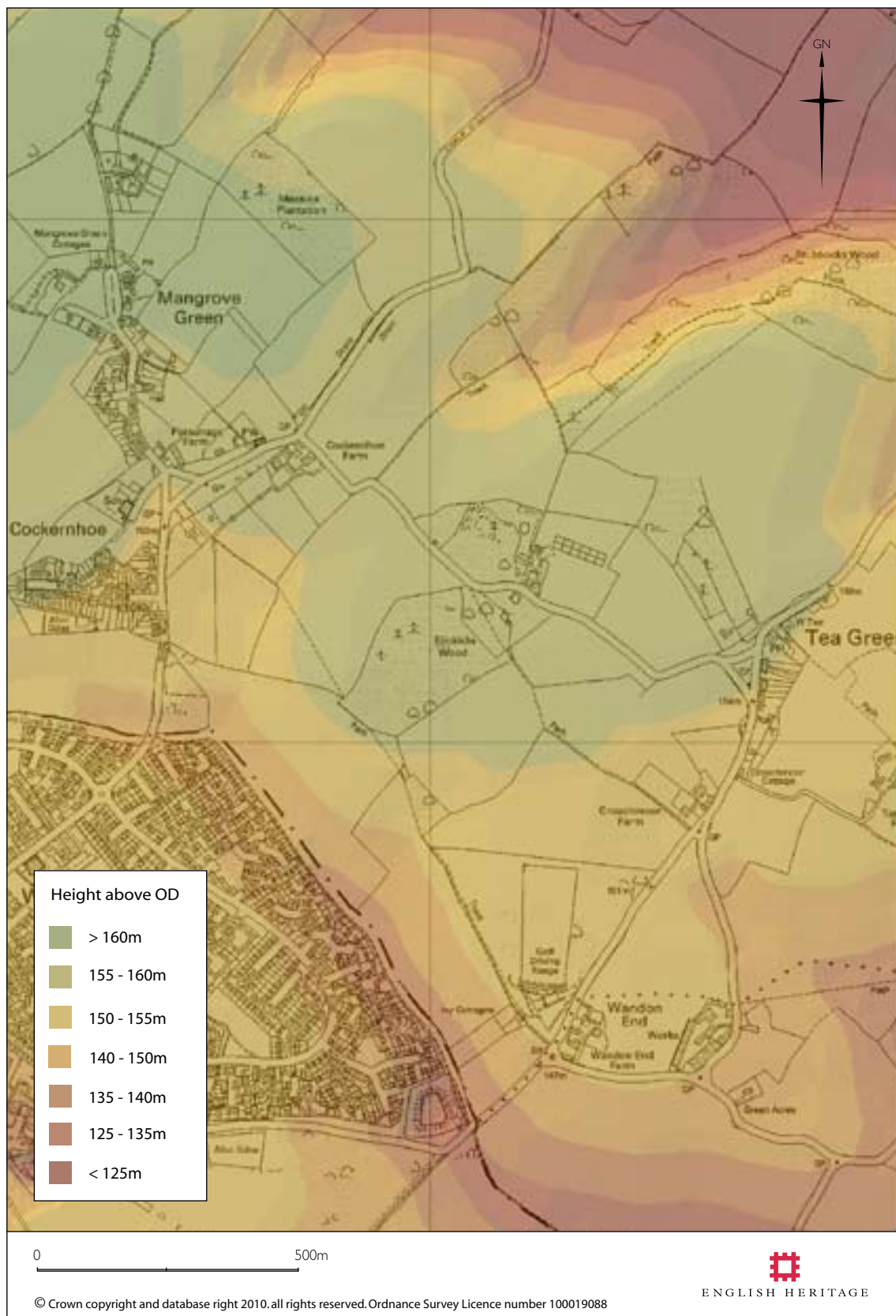


Figure 2: Topographic map. Drawn by Rebecca Pullen and Derwin Gregory, © English Heritage

Brickkiln Wood is frequented by local dog-walkers, bird-watchers and occasional horse-riders that make use of the informal footpaths to enjoy the plants and wildlife. The wood also contains evidence of shelter-building activities, and less formal indications of small fires and youth 'dens'. Although modern OS data indicates a couple of boundaries extending through the wood, they no longer appear to be maintained or functional, and are marked purely by remnant coppice banks.

Land surrounding the wood is under mixed agricultural use with the exceptions of residential foci at the nearby villages of Cockernhoe, Mangrove Green, and Tea Green. Fields immediately adjacent to the wood are under arable cultivation for wheat and beans, whereas land a little further west is grassed for use as paddocks for a riding stable (Figure 3). The field behind Brick Kiln cottages, immediately east of the northern portion of the wood, is also under grass and has until recently been used for rearing pheasant. There are several small pockets of managed deciduous woodland in the vicinity, and there is one area of replanted ancient woodland nearby at Stubbocks Wood, to the north-east.



*Figure 3: View across 'Mabbots' field with Brickkiln Wood to the left, looking north-east.
Photograph: Rebecca Pullen, © English Heritage*

DOCUMENTARY AND CARTOGRAPHIC BACKGROUND

Prehistoric and Roman

Known prehistoric sites in the immediate area are rare. Waulud's Bank (NMR No. TL 02 SE2) is located in north-west Luton: the well known large D-shaped earthwork enclosure here is thought to date from the middle of the 3rd millennium BC based pottery of Grooved Ware type and Neolithic flint implements (Dyer 1955, 9-13).

Perhaps of greatest note is the close proximity of the Icknield Way prehistoric trackway, which passes some 5.5km north-west of Brickkiln Wood. The antiquity of this routeway is disputed (Taylor 1979, 2, 36-9; Hindle 2001, 6-9) but it is generally accepted that, in part at least, it is associated with a number of pre-Roman monumental complexes such as the clusters of round barrows on Galley Hill (NMR No. TL 02 NE40) and Telegraph Hill (NMR No. TL 12 NW9). The region, in general, hosts substantial evidence for activity in the Romano-British period, including a number of nearby settlement foci, such as that identified by fieldwalking and excavation near Winch Hill Farm in Kings Walden (Burleigh and Went 1990a; 1990b), and more locally, evidence of Romano-British occupation in three concentrations around Cockernhoe and Brickkiln Wood (Trehay 2007b; Sheldon and Barber 2008) (see following section on Previous Archaeological Investigation for more detail). Indeed, the major Roman Road of Watling Street (the modern A5/A5183) passes less than 10km south-west of the site, and it connects the nearby important Roman towns of Verulamium (St. Albans) and Durocobrivis (Dunstable).

Early medieval

In the early medieval period this area of North Hertfordshire formed part of the territory of the Hicce/Hicca Anglo-Saxon tribe, from which the nearby town of Hitchin is thought to derive its name (Gover *et al* 1938, 8; Friel 1982). Discoveries in the 1790s and 1830s suggest the presence of a large cemetery at Pirton, some 8.5km north of the Brickkiln Wood, containing cremations in urns and approximately a hundred inhumations, thought to belong to the 6th or 7th centuries (Went and Burleigh 1990a, 1).

In the late 8th century the Hicca and their lands eventually came under the rule of Offa, King of Mercia. The English Place-Name Society have suggested that the name Offley means Offa's clearing or wood, and may originate from a tradition that says Offa died here (Gover *et al* 1938, 19). Offley is thought to have roots in at least the 10th century under the guise Offanleáh or Offanlege (Page 1912, 39); though it may be of earlier origin.

The earliest confirmed documentary reference to the area is dated to the end of the 10th century and comes from the will of Æthelgifu, in which bequests of land are listed as including land at Offley for beneficiaries at St Albans Abbey and a number of Hertfordshire churches (Sawyer number SI497). There are no known Anglo-Saxon charters that make reference to settlements at Cockernhoe or Mangrove Green.

The nearest evidence of early medieval activity was discovered in 1913 by workmen operating between Darleyhall and the Heath, around 1.5km south-east of Brickkiln Wood, and represented the site of a probable female inhumation complete with four Anglo-Saxon brooches and what are thought to be Bronze Age artefacts (NMR No. TL 12 SW5), perhaps reflecting a monument within a prehistoric burial landscape reused for secondary burial practice in early medieval times (Trehy 2007b, paragraph 4.9).

Medieval

Hertfordshire was among England's most densely wooded counties in the medieval period, with some 30 per cent covered by woodland (Marren 1992, 104); this is thought to be a marked change from an earlier landscape characterised by open farmland (Dyson-Bruce *et al* 2006, 66-8). However, this was concentrated predominantly in the south-west of the county; woodland in the northern half of Hertfordshire was patchy, but with some concentration of resources around Hitchin and along the Essex border (Rutherford Davis 1982, 13). Despite this coverage, none of Hertfordshire was ever designated as forest; much of the woodland was granted to large monastic estates in the region though later in the Middle Ages many woods were enclosed and preserved as deer parks (Barton 1979). Managed woodland provided an important resource in Norman Hertfordshire not just as a source of fuel and for raw building and craft materials, but also for keeping and feeding pigs (Rutherford Davis 1982, 13). Ancient woodland on the chalk scarps and clay plateau of the Chiltern ridge east of Luton would have primarily been of beech trees, the majority of which would have been managed as coppice (Marren 1992, 104).

According to Domesday records, the northern area of Hertfordshire was most densely populated, and there is a concentration of deserted villages which continues across the adjacent county boundaries (Rutherford Davis 1982). In the Domesday accounts, the modern parish of Offley is situated within the pre-conquest half hundred of Hitchin or 'half Hundret de Hiz' (Morris 1992). Offley is referred to as *Offelei* in the Domesday records, though it makes no direct reference to settlement at Cockernhoe or Mangrove Green.

The earliest confirmed reference to Mangrove Green is from 1240 in the form of *Manegrave*, and later as *Manegraveffeld* in 1532 (local Feet of Fines); both forms almost certainly deriving from Old English and meaning thicket in common use or possession (Gover *et al* 1938, 19).

From the 14th century, the manor of Cockernhoe was held along with the manor of Offley by the St Ledger family; the two manors shared a descent of ownership until 1813 when the manor of Cockernhoe is thought to have been sold to Richard Oakley of Hitchin (Page 1912, 41). The first confirmed reference to Cockernhoe appears in a local Feet of Fines from 1314, using the form *Cockernho*. The name Cockernhoe derives from Old English suggesting the settlement has roots fairly contemporary with the now adjoining village of Mangrove Green. The suffix '-hoe' comes from *hoh* meaning spur of land, and probably refers to the raised ground/hill east of Cockernhoe Farm, which is currently topped by Brickkiln Wood. Additionally, the prefix could represent

a compound of *cocc* meaning cock and *ærn* meaning house (Gover *et al* 1938, 19). It is mentioned again in an extent of the manor from 1326 as 'an oxhouse called Qukerno', and from then on it always referred to as a manor (Page 1912, 41).

By 1475, this area came under Poletts hundred, associated with the present village of St Ippollitts/Ippolyts (Gover *et al* 1938, 8).

Crouchmoor, the name of a farm at the south end of Tea Green close to Brickkiln Wood, appears in the late-16th century as *Crutchmere*. Its meaning is uncertain, possibly coming from Celtic *cruc* or *crich* meaning barrow or hill, there is no obvious detached hill other than the low crest capped by Brickkiln Wood itself. Alternatively, it may derive from the Middle English *crouche* meaning cross, possibly linked with a likely crossroads position (Gover *et al* 1938, 19).

Post medieval

The earliest identified cartographic record for the area is a manorial estate map from October 1658 describing one messuage near Cockernhoe Green in the Parish of Offley held by William Hoskins Esquire, along with land belonging to that estate (HALS doc ref DE/R/P9 A-B). The map covers a narrow area stretching from Cockernhoe Green in the south-west towards the outer edge of Great Offley, and it depicts the names of fields, woods and greens, strips within commonfields, and the state of cultivation, along with houses drawn in elevation. Although the map does not show Brickkiln Wood itself, which was presumably held under different landownership, it does show the field immediately adjoining Brickkiln Wood to the south-west; the position of the wood can be inferred from the associated notch in the field boundary that still survives today (Figure 4). The document gives a useful insight into the surrounding area in the mid-17th century. It suggests that while much land north-east of Lilley Bottom (a road previously known as Sandpitts Lane) was still farmed as arable strips in common open fields, the majority of agricultural land south-west of Lilley Bottom was under pasture in a series of small enclosed fields, often referred to as crofts, and dotted with dispersed small patches of woodland.

A legal agreement relating to a messuage and strips of arable land near Cockernhoe and 'Mangrove', dated to 30th March 1676, and referred to as a Deed to Lead Uses of a Fine, tantalisingly refers to crofts by 'Brick Pond Lane' which might be an earlier name for Brick Kiln Lane. Should that be the case, then it follows that some of the localised clay extraction had already taken place by the 1670s (HALS doc ref DE/Cm/37819).

In their Topographical Map of Hertfordshire produced in 1766, Dury and Andrews depict Mangrove Green as 'part of Lilley parish' unlike its present status under the authority of the parish of Offley, the map also links the settlement with the personal name John Field Esq. As this suggests, Mangrove Green was originally an isolated outlying area of Lilley Parish, and its island-like parish boundary can be seen on 19th-century maps until the 1899 OS 1:2500 scale edition. Additionally, no village settlement is named immediately north of Crouch Moor Green, where Tea Green is now located. Somewhat unusually for these celebrated cartographers, in this instance, the general proportions and alignments



Figure 4: Extract from a 1658 manorial estate map, showing Cockernhoe Green (A), and the notched field boundary that currently marks the southern extent of Brickkiln Wood (B), orientated to north © Hertford Archives and Local Studies, reproduced with permissions (HALS doc ref DE/R P9 A-B)

of their map appear to be quite skewed in comparison with other historic maps and true road and settlement layout. That said, the map is still very recognisable and provides the added detail of illustrated directional ploughing regimes and pasture fields unseen in other cartographic representations of the area. Brickkiln Wood can be seen directly under the 'G' of Cockernhoe Green; it is presented as two square blocks of trees of roughly equal size located on either side of Brick Kiln Lane (Figure 5). Without the comparison of other maps of earlier or contemporary date it is not possible to suggest whether this rigid woodland boundary is misleadingly skewed like other aspects of the map, or whether the more extensive and gently curving perimeter of the wood seen today is the result of later expansion and/or remodelling. Likewise, matching up field boundaries shown on this map with their modern equivalents is problematic due to

the apparent distortion, but it is clear that fields directly south of Brickkiln Wood and towards Wandon End were probably under arable cultivation at this time, whereas land around the north, east and west of the wood appears to have been used for pasture (see Figure 5).

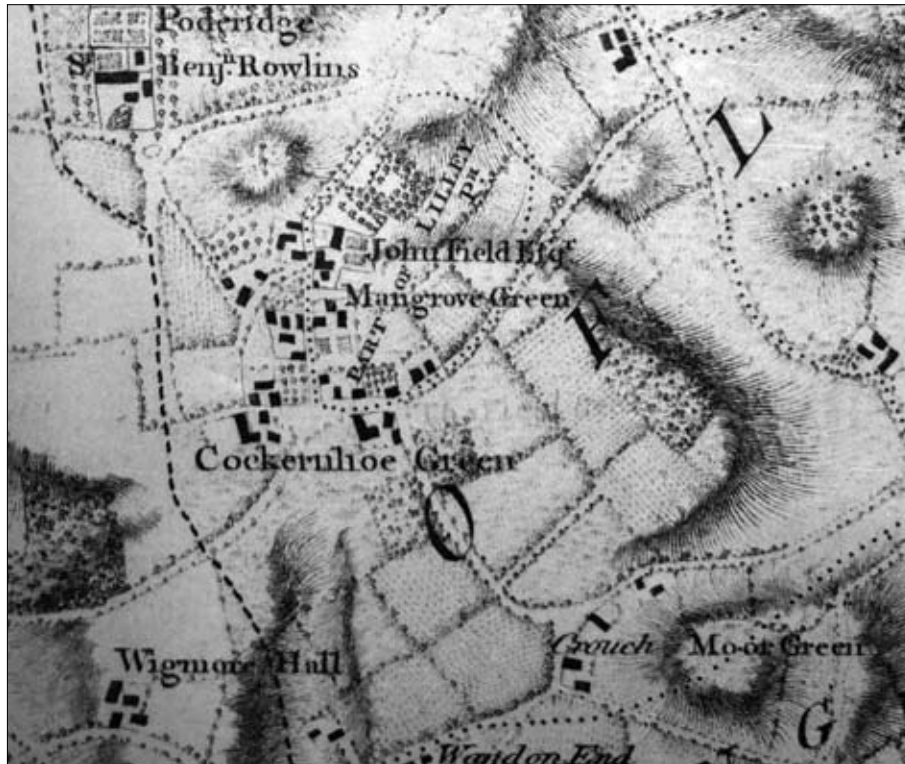


Figure 5: Extract from Dury and Andrews' 1766 'Topographical Map of Hertfordshire'.
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Modern

The parish of Offley was enclosed by an award under an Act of 1807 (Page 1912, 39).

Similar to Dury and Andrews' 1766 map, Bryant's map of Hertfordshire from 1822 depicts Brickkiln Wood as a very regular straight-sided block of trees, but with the majority of the wood now shown to be south-west of Brick Kiln Lane (Figure 6). Of greatest interest on this map is the appearance of a small complex of buildings adjacent to the smaller north-eastern portion of the wood which could feasibly represent the earliest depiction of the former brickworks. This map also shows mostly clearly the detached nature of Mangrove Green's allegiance to the parish of Lilley, prior to its incorporation into Offley parish.

The 1830 tithe map for Offley does not show the southern arm of the parish which would include Brickkiln Wood and its surrounding villages (HALS doc ref IR30/15/74).

The earliest OS sheet of the area is a 1-inch scale map published in 1834. Uniquely, it shows Brickkiln Wood as a wide periphery of trees surrounding two large internal clearings; later maps show only a single smaller clearing abutting the southern edge of Brick Kiln Lane. Crucially, this map also provides the first direct reference to the brickworks, marked as a 'kiln' situated at the north-east end of the wood (Figure7).



Figure 6: Extract from Bryant's 1822 'Printed Map of Hertfordshire.' © Hertford Archives and Local Studies, reproduced with permissions

Subsequent OS maps from the late 19th century confirm that Brickkiln Wood was home to Cockernhoe Brickworks (HHER 13723): a small industrial enterprise responsible for the dramatic clay extraction scars surviving on either side of Brick Kiln Lane. The site is clearly labelled as Cockernhoe Brickworks on the 1884 1st edition 6-inch OS map, and is then marked as 'disused' on successive OS sheet editions (Figure 8). Lyle Perrins (205, 5) includes the site within a gazetteer of Hertfordshire Brickworks, listed under Tea Green. One of the extraction hollows south of the road appears to be marked as a pond surrounded by trees on the 1st edition OS map and this is joined by a second body of water on the 2nd edition



Figure 7: Extract from the 1834 1-inch Ordnance Survey map, sheet 166, showing Brickkiln Wood towards the centre.

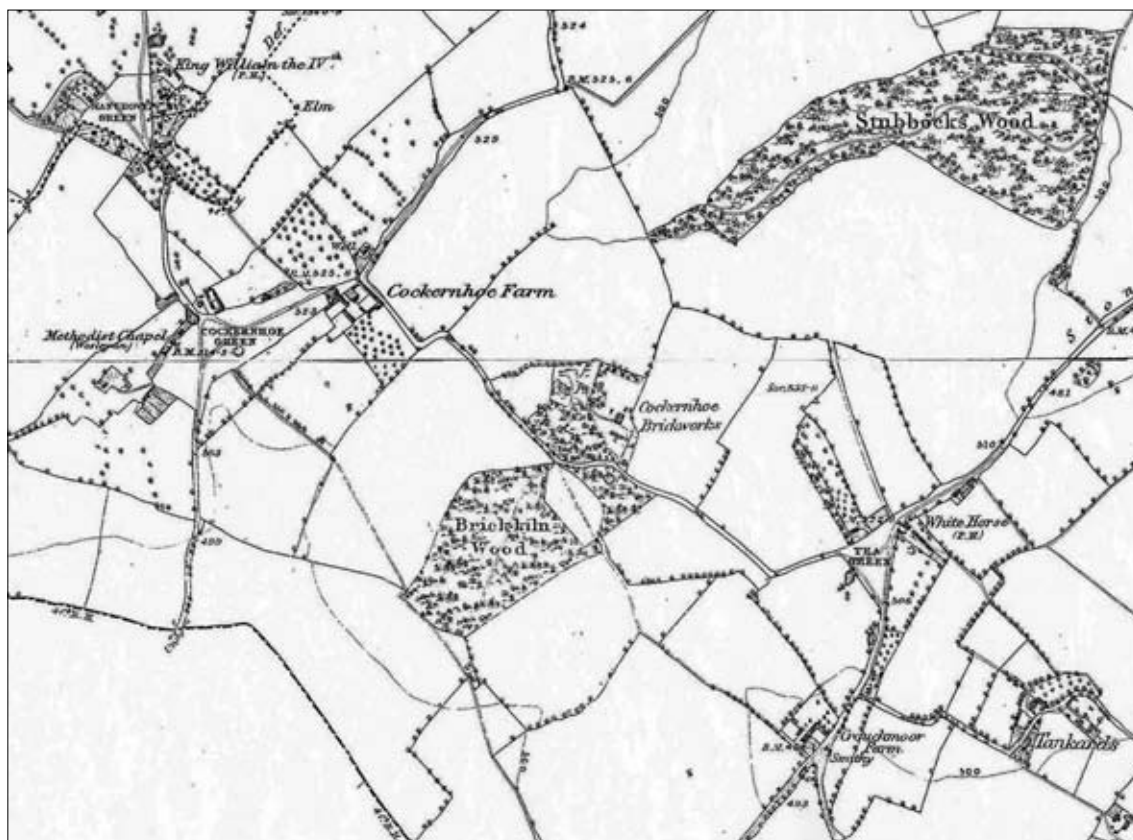


Figure 8: Extract from the 1884 1st edition 6-inch Ordnance Survey map, sheets 11 and 19

OS map; at the time of the 1st edition OS map, extraction pits north of the road are marked as active, therefore suggesting clay was removed in the area south of Brick Kiln Lane before activity moved north across the road.

Depiction of the brickworks site on the 1884 1st edition 6-inch OS map includes a handful of small buildings and a large area of extraction labelled as a 'clay pit'; all located some 80m north of the road. By publication of the 2nd edition 1:2500 scale OS map in 1899 the brickworks are marked as 'disused' and the extraction earthworks as 'old clay pit' (Figure 9), suggesting its operation spanned a minimum period of operation from the 1820s to the 1890s, though an earlier date of establishment is thought possible. Extensive extraction scars immediately north of the road do not appear in any form on OS mapping, suggesting the features were only selectively depicted, a factor which will hinder any attempt at phasing the site solely through cartographic representations.

A pair of semi-detached brick cottages face south onto the road through Brickkiln Wood at its eastern edge, the cottages are depicted on the 1884 1st edition 6-inch OS map, and appear to be present on Bryant's 1822 map of the area and on the earlier 1-inch scale OS map from 1834 (see Figures 6 and 7). These may originally have been associated with the brickyard and clay pits, perhaps housing the owners or manager.

Based on cartographic evidence, Perrins describes the brickworks as having been in existence from at least 1878, and having fallen into disuse by 1951. Closer examination of

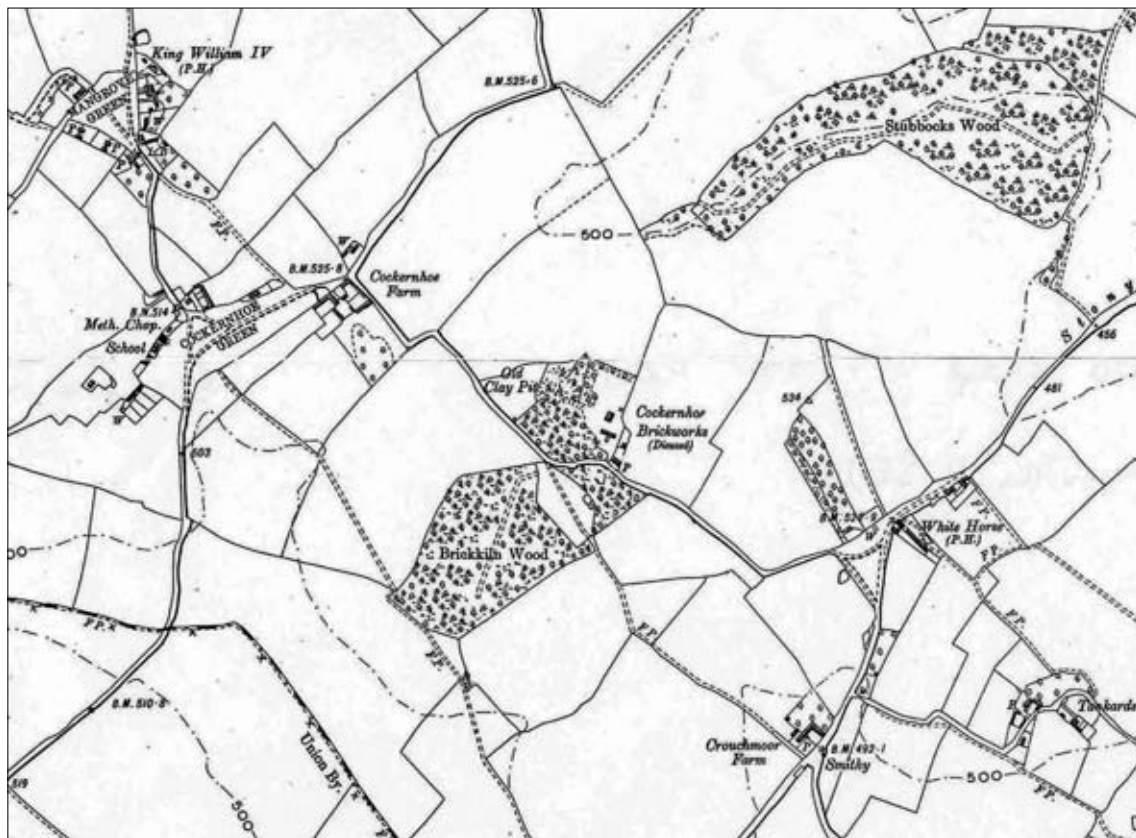


Figure 9: Extract from the 1899 1:2500 scale Ordnance Survey map, sheets 11 SE and 19 NE

historic OS maps reveals a kiln recorded in this location from at least 1834. At present no further documentary records for the Cockernhoe Brickworks have been identified, and so details of the small industrial site remain uncertain.

Subsequent OS map editions from 1925 and 1947, show little discernable change to the immediate area. However, from the 1930s onwards Luton itself saw considerable expansion along its eastern edge, with the suburbs now stretching to within 250m of Brickkiln Wood. Modern housing now fronts onto the main road through Tea Green, and a small estate occupies the western side of Cockernhoe and Mangrove Green, essentially conjoining the two villages into a single settlement. Conversely, a row of former terraced houses behind the White Hart public house in Tea Green was demolished in the 1960s.

PREVIOUS ARCHAEOLOGICAL INVESTIGATION

No previous archaeological investigation has taken place within the present boundary of Brickkiln Wood. However, over the past two decades a number of archaeological assessments, primarily coordinated by Terence O'Rourke consultancy (Trehy 2007a; 2007b), have been undertaken in the area immediately surrounding the site, in response to a pre-determination planning proposal for extensive urban expansion on land in North Hertfordshire, to the east of Luton.

The major outcome of these investigations has been the identification of potential foci of archaeological activity and enhancement of any existing record for these sites. Of most immediate interest with regard to Brickkiln Wood are two key areas highlighted by the Hertfordshire HER as possible Romano-British occupation sites close to the periphery of the wood (referred to by Trehy as TOR 10 and 13). A probable third example, this time associated with both Iron Age and Romano-British material, is located west of Cockernhoe (TOR 8).

During 1989 and 1990, a programme of archaeological assessment by way of fieldwalking, geophysical survey by Geophysical Surveys Ltd of Bradford, trial trenching and subsequent archaeological monitoring by Wessex Archaeological Trust of service trench excavations along the route of the Humberside to Buncefield oil pipeline were undertaken by North Hertfordshire District Council Field Archaeology Section (Burleigh and Went 1990a; 1990b; Burleigh *et al* 1990; Went and Burleigh 1990a; 1990b). The route of the pipeline lies some 1.5km east of Brickkiln Wood, passing west of Pirton and then extending south, to the east of Darley Hall and Winch Hill Farm. Several sections of the pipeline exposed archaeological features, including the identification of six late Pre-Roman Iron Age linear ditches located north-east of Tea Green in fields south of Stony Lane. Few sites of this period are currently known in the County and the ditches produced datable ceramic material suggesting that abandonment of the site took place during the early to mid-1st century AD (Burleigh *et al* 1990). At least two pits containing material thought to confirm the existence of a fairly extensive Romano-British settlement in the vicinity of Winch Hill Farm were also identified during excavations (Burleigh and Went 1990a, 7). Building on this, subsequent investigations at Winch Hill Common suggest the presence of a substantial settlement ranging in date from the second half of the 1st century BC until the 2nd century AD (Burleigh and Went 1990b). Additionally, alongside the pipeline near Darley Hall the earthwork remains of a large hollow interpreted as a former clay extraction pit was identified and tentatively ascribed to a 19th-century brickworks in nearby Breachwood Green (Burleigh and Went 1990a, 7).

Between 1993 and 2008, several programmes of fieldwalking across ploughed fields around Cockernhoe and Mangrove Green, and up to the western edge of Tea Green and Wandon End, were undertaken by the Manshead Archaeological Society of Dunstable. Results of these fieldwalking excursions have produced large quantities of material suggesting either intermittent or continuous occupation in the area from prehistory to the present (Hudspith 1991; 1995; 1997; 2008; Doherty 2000; 2005).

Quantities of Neolithic/Bronze Age flints have been identified across much of the area, with a further handful of flints (blade fragments) identified as Mesolithic in origin. Hudspith (1995; 1997; 2008), suggests that local surface flint resources were being exploited by early, transient, communities living in open woodland or a partially cleared landscape. No finds of Iron Age date were recovered from the immediate vicinity of Brickkiln Wood during fieldwalking, though sherds were collected to the west of Cockernhoe (Hudspith 1995), and from a field west of Winch Hill Farm, a short distance south of the wood (Hudspith 1991).

A concentrated assemblage of Romano-British material, comprising mostly *tegulae* with some fragments of *imbrices* and a single sherd of Samian ware, was retrieved immediately east of Brickkiln Wood (referred to in places as TOR 13). The most numerous finds in this area were cuboid *tesserae* numbering almost 300 pieces (Doherty 2000). The hedged field boundary passing through this area was noted as comprising a bank 0.3m high and containing numerous flint nodules and *tegula* fragments. Hudspith (2008) suggests this field clearance material might represent the ploughed up footings of a building; it may also be the source of the concentrated scatter of tile fragments and mosaic pieces (Doherty 2000).

A second less dense scatter of Romano-British material was highlighted within the field to the west of the woodland (TOR 10), close to a seasonal springhead. The small assemblage comprised, mainly, undiagnostic tile fragments and ceramic sherds; additionally two fragments of Hertfordshire conglomerate were thought to potentially represent evidence of quernstones. Similar material was recorded in a thin scatter along the plateau edge in the field to the south, possibly indicating movement and build up of soil through lynchetting (Hudspith 2008).

Further evidence for Romano-British occupation was recovered in small linear assemblages west of both Cockernhoe and Mangrove Green, interpreted as ploughed-out ditches close to habitation sites. Material including fragments of *mortaria* and sherds of 4th-century oxidised coarsewares (Hadham or Oxford type) (Hudspith 2008).

No finds identified as of early medieval origin were recorded, and despite extensive evidence for medieval ploughing in the area, only a single sherd of medieval pottery was recovered close to Cockernhoe. Finds of late medieval/Tudor brick were collected in the area east of Brickkiln Wood (Hudspith 2008).

Ceramic building material (CBM) of post-medieval and modern date represented the bulk of material gathered across the survey, including some concentrated scatters of 18th- to 19th-century ceramics. Hudspith used these to suggest the possible locations of several ploughed-out post-medieval buildings and demolished modern dwellings (Hudspith 1997; 2008). Additionally, Hudspith suggests that the later CBM assemblage derives partially from manuring scatters, but more commonly relates to the extraction and manufacturing activities of the localised brick and tile industry.

A survey of several 30m stretches of hedgerow carried out by the Luton Archaeological Group a short distance south of Brickkiln Wood, close to Luton airport, identified

evidence of up to six species: oak, hawthorn, holly, elder, ash and hazel (Hudspith 1999). The mix suggesting a post medieval, and probably pre-enclosure, date for the surveyed parts of the boundaries (after Rackham 1986, 194-7).

In 2003, Doherty and Hudspith undertook a small targeted earth resistance survey in the small field known as Mabbots immediately east of Brickkiln Wood in advance of fieldwalking. The resultant plot showed high contrast anomalies, some of which Doherty (2005) suggests could be interpreted 'with the eye of faith' as a corridor building. On reviewing Doherty and Hudspith's geophysical plot, the linear anomalies appear more consistent with patterns created by methodological or ground conditions along the lines of the survey grid. Doherty further suggests that a tree-lined track leading into Mabbots field from the north-east, as marked on the Dury and Andrews' map of 1766, may indicate the original approach to the site. However, this track does not appear on other maps and it may represent a mislocation of a track leading towards Stubbocks Wood from the east edge of Tea Green as shown on later maps of the area.

An interpretation of vertical and oblique aerial photographs from the 1940s to the present, covering the 5.5km² study area highlighted for potential housing development, was prepared by Waterman CPM Ltd on behalf of Terence O'Rourke in 2007 (Cox 2007). The comprehensive study identified 23 individual sites, including extensive traces of medieval and post-medieval agriculture and land use including headlands and traces of ridge-and-furrow cultivation, a variety of pits and tree boles, small extraction sites and natural features showing as crop or soil marks, along with the remains of a former landscape associated with the Grade II registered park at Putteridge Bury to the north-west of Mangrove Green. Remnant ploughing regimes were most clearly defined along the eastern fringe of Mangrove Green and Cockernhoe, where the scheme appears to have been one of tightly spaced narrow plough ridges, predominately on a NE-SW alignment. The majority of the sites identified by Cox have been heavily eroded by later ploughing and none of them were deemed by her to be of national or regional importance. Some distance to the south of the woodland, a pair of conjoined circular enclosures, along with other ditches, were identified beneath superimposed but slight ridge-and-furrow, and may represent elements of pre-medieval settlement or stock-penning. Iron Age and Romano-British pottery was also found in this area during fieldwalking (Hudspith 1991). Additionally, to the north-east, on a west-facing chalk ridge, a number of features were identified, including prehistoric enclosures and probable Bronze Age round barrows (Cox 2007).

Between March and April 2008, Archaeological Services & Consultancy Ltd (ASC) undertook 11.1 hectares of detailed magnetometry in 31 blocks across land proposed for development centred on Cockernhoe, to the east of Luton (Figure 10). The individual survey block locations were chosen to target potential points of archaeological interest highlighted by the preceding programmes of fieldwalking and aerial photographic transcription. The individual geophysical survey blocks covered four broad zones; a large area north-west of Cockernhoe, a small area east of Mangrove Green, and two areas to the north-west and south-east of Brickkiln Wood. Survey blocks 16-31 were located in fields surrounding Brickkiln Wood (Hancock 2008); the location of block 30 encompasses and resurveys the area of the original earth resistance survey undertaken by Doherty

and Hudspith in 2003 (Doherty 2005), though the earlier survey is not presented or discussed as a comparison in the ASC report.

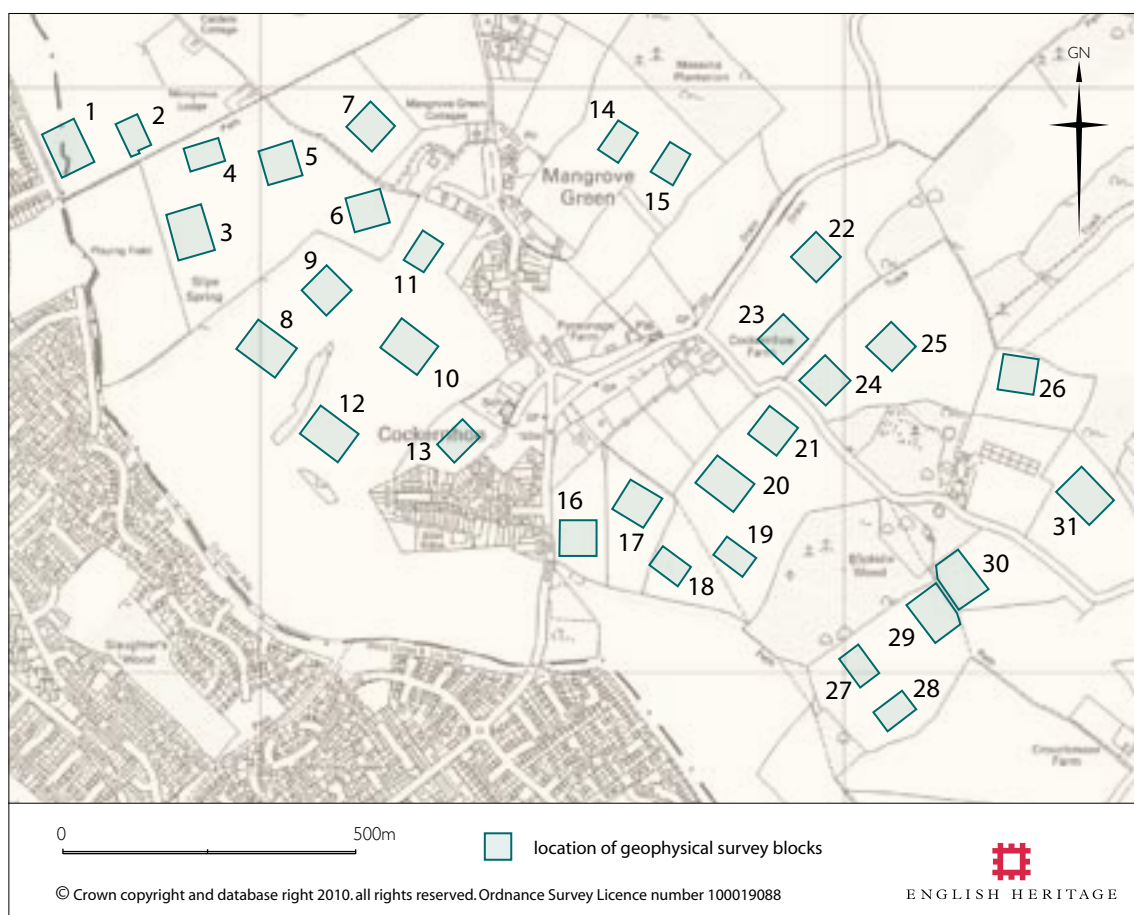


Figure 10: Location of geophysical survey grids from the 2008 survey by ASC Ltd. Drawn by Rebecca Pullen (based on Hancock 2008, 6, figure 2), © English Heritage

The majority of geophysical anomalies identified across the survey blocks were characteristically sub-circular concentrations of low resistance readings of varying diameter. They were interpreted as possibly representing in-filled features relating to extraction or to modern agricultural disturbance; though this was deemed difficult to confirm without details of possible modern disturbance. There was little correlation of anomalies with features identified by the aerial photographic assessment, and it was felt that changes in the surface geology could also be responsible for low resistance readings of this nature (Hancock 2008).

Three blocks (6, 7 and 11) surveyed immediately west of the northern end of Mangrove Green exhibited anomalies interpreted as possible in-filled ditches or settlement features, and may well be related to an earlier plan of the village. South of this, in the large open field west of the junction between Mangrove Green and Cockernhoe, survey results appear to pick out an older field system consisting of ridge-and-furrow cultivation on

a NW-SE axis (in block 9 and possibly 10), which would correspond with features identified by Cox (2007) in her aerial photographic assessment. Hints of former ploughing activity were also thought to be present in survey block 18 close to the south-west corner of Brickkiln Wood.

Two blocks of geophysical survey (29 and 30) were undertaken abutting either side of the short length of field boundary spanning the area south-east of Brickkiln Wood where the greatest density of Roman surface finds had been collected during preceding fieldwalking exercises. Magnetic data collected on the south-west side of the hedge line showed a degree of disturbance, but it was unclear whether this related to structural features, in-filled features, or just the density of ceramic building material and possible small ferrous objects present throughout the topsoil. To the north-east, the magnetic signatures showed greater contrast and some linear alignments here may well represent in-filled ditches, areas of extraction, or geomorphological features (Hancock 2008).

All three survey blocks (19, 20 and 21) in the field immediately west of Brickkiln Wood appear to show features suggestive of removed field boundaries possibly relating to earlier enclosed open fields.

The survey also identified the footprint of a now demolished small brick building (in block 13) visible on OS maps prior to the 1947 edition, as well as the signatures of several modern service pipes.

Overall, the geophysical results were inconclusive. It would seem likely, for instance, that had brick kiln or brick clamp remains of Romano-British origin or later survived anywhere in the areas surveyed, strong magnetic specific signals would perhaps have been more apparent.

Between August and September 2008, Cotswold Archaeology undertook the excavation of 164 evaluation trenches in advance of the proposed Cockernhoe development. Trenches were located according to data collected during previous non-intrusive programmes of fieldwalking, aerial photographic transcription, and geophysical survey. Archaeological deposits were typically encountered surviving between 0.4-0.6m below present ground level, and evidence was recovered for activity dating from the middle of the 3rd millennium BC through to the modern period, with the majority of deposits being attributed to the Roman and post-medieval periods. Overall, archaeological features were only identified within 65 of the trenches (less than 40%). Furthermore, excavation also revealed that in a number of cases pit-like geophysical anomalies targeted by the trenches can be explained by abrupt changes in the natural substrates (Sheldon and Barber 2008).

Evidence for prehistoric activity was sparsely represented by a limited number of isolated pits and ditches across the site. Cotswold Archaeology concluded that these features probably represent clay extraction and low intensity agricultural activity (Sheldon and Barber 2008), indeed, these ditches could be part of an earlier underlying field system.

In line with concentrations of material recovered during previous fieldwalking exploits in the area, the programme of trial trenching recorded an apparent concentration of activity of likely Romano-British origin on land immediately south-east and north-west of Brickkiln Wood. Approximately, 20 cut features described as possible clay extraction pits were recorded (only eight of which were fully or partially excavated), along with neighbouring areas of hard-standing and associated finds including tile, bone, pottery and *tesserae*. Crucially, no kilns, kiln furniture, misshapen or over-fired tiles were identified during excavation; so onsite production of tile cannot be confirmed (Sheldon and Barber 2008, 26).

In agreement with previous fieldwalking results, the medieval period was essentially absent from the excavation results.

Features identified as post-medieval or modern in date were represented by ditches of likely agricultural origin and a number of probable clay extraction pits; these were mainly focused to the north and west of Cockernhoe. Unstratified finds of post-medieval and modern date were recovered throughout the study area.

Although evaluation trenches were located according to data collected during previous surveys, in most cases, the excavation results were reasonably limited in what they were able to add to the overall understanding of landscape development here. This may be in part due, however, to the unsatisfactory nature of narrow strip trenches for maximising understanding of individual below ground features and contextual sequences.

Drawing together evidence collected by all previous local archaeological investigations, the large quantities of Roman brick, tile and *tesserae* recovered close to Brickkiln Wood appear to represent the nearby site of a formerly substantial Romano-British building or farmstead rather than an early tiler. However, neither the geophysical survey nor the trial trenching exercise identified any indication of wall footings or structural remains. Results from the evaluation trenches broadly correlate with the findings of the preceding non-intrusive surveys, most notably the geophysical survey undertaken by ASC, in suggesting that agricultural ditches and pits, probably associated with clay extraction, were present across parts of the site, but no coherent evidence for settlement foci was identified other than affirmation of a concentration of Roman and/or later activity south-east of Brickkiln Wood, as initially suggested by fieldwalking results.

It is perhaps unusual that more intensive traces of medieval activity were not apparent amongst the various assessments undertaken. More so, considering the visible evidence for cultivation of this date in the area, alongside the detail from documentary sources that settlements were in existence nearby at Mangrove Green, Wandon End and Cockernhoe during this period.

DESCRIPTION AND INTERPRETATION OF THE REMAINS

Summary

The analytical earthwork survey by English Heritage assessed an area of approximately 6.5ha (16 acres) which comprised the full expanse of woodland on the south-west side of Brick Kiln Lane (see Figure 34), which is approximately 70 per cent of the total footprint of Brickkiln Wood.

The investigation identified archaeological earthworks of varying condition extent and date across the interior of Brickkiln Wood, and illustrates a complex history of land use (Figure 12). In the absence of more accurate dating information, phasing of the features in the subsequent descriptions is relative and derived from ground observation of specific physical relationships between different archaeological components.

The earliest features identified appear to be part of a large sub-rectangular univallate embanked enclosure, with remnants of an internal ditch partially surviving close to the south-east corner. The line of the bank is visibly truncated, and in some places, mirrored, by later boundary features.

Conceivably of similar antiquity is a group of possible occupation platforms immediately to the east of the enclosure; fragments of baked clay and Roman-type tile were noted in the upcast of rabbit burrows here. In possible association with this zone of activity is a shallow hollowed area on the southern edge of the 19th century clay pits which has tentatively been ascribed to earlier, possibly Romano-British extraction; the hollow appears to have up to three entry points alongside a low spoil mound, and is overlain by later coppice banks (see Figure 12).

The southern end of the woodland covers earlier field system surviving as remnant ridge-and-furrow with associated headlands and possible furlong boundaries. Much of the survey area is traversed by former coppice boundaries, many of which are marked by out-grown unmanaged coppice, although others survive only as narrow treeless banks of earth. In a number of instances these coppice boundaries are superimposed upon earlier features (see Figure 12).

The most dramatic, and best preserved evidence of former land use in the wood survives in the form of deep, steep-sided, clay extraction hollows clustered around the road, and directly linked with the Cockernhoe Brickworks (see Figure 12).

Several small isolated depressions in the central and southern reaches of the wood may also be associated with this industrial activity, though alternative explanations are equally plausible. A handful of shallow square-cut pits and curvilinear dumps of soil were noted across the site and have been attributed to modern disturbance (see Figure 12).

Earthwork enclosure

NGR: TL 1299 2318 (centre) NMR: TL 12 SW 38

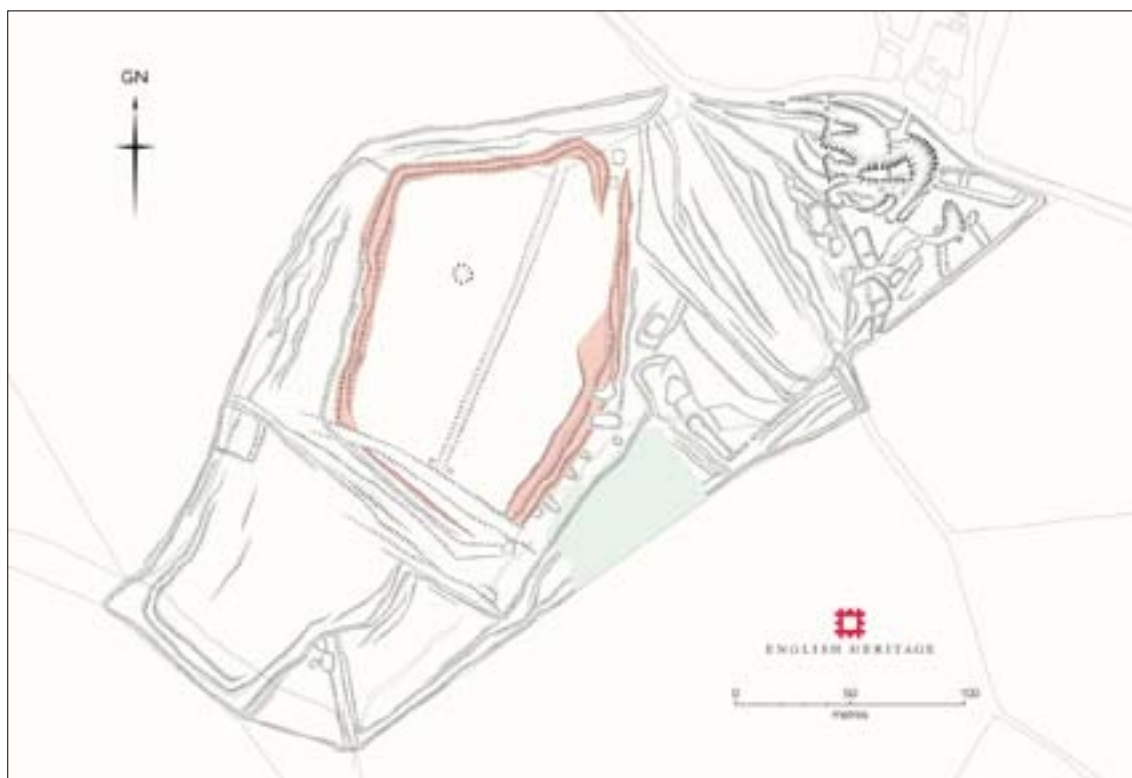


Figure 11: English Heritage survey of Brickkiln Wood, highlighting the earthwork enclosure. Drawn by Philip Sinton and Rebecca Pullen, © English Heritage

A previously unrecorded sub-rectangular enclosure aligned roughly NE-SW was identified in the centre of the survey area (Figure 11). It survives as a low spread bank following an irregular trapezoidal circuit with traces of an internal ditch surviving in places. The south-west section of the earthwork bank is poorly defined as a result of truncation by later features. In total, the enclosure measures c. 170.0m by 120.0m on its longest (NE-SW) axis, and the banks enclose an area of c. 1.3ha (3.2 acres). The monument sits at a height of 160m above OD on the crest of a plateau, and is, thus, afforded a prominent position in the landscape, albeit one currently masked by trees.

The bank circuit is composed of five fairly straight segments, each between 80m and 100m in length. It survives to c. 0.4m in height at best and varies between 5.0m and 12.0m in basal width along its course. In general, the bank is best observed along its eastern and western flanks particularly in areas, currently, of low tree cover and limited vegetation (Figure 13).

On the south-west only the outer face is traceable as a scarp 0.2m high at best. Likewise, the western flank has been visibly damaged and distorted by tree planting furrows, giving the low enclosure bank an almost 'crinkled' morphology.



Figure 12: English Heritage survey of archaeological features within Brickkiln Wood, coloured by phase. Drawn by Philip Sinton and Rebecca Pullen, © English Heritage

The internal ditch is well preserved at the south-east corner of the enclosure. Here, a ditch up to 8.0m wide and 0.3m deep extends for about 80.0m parallel to the inner face of the bank. Along the south-western edge of the enclosure, all evidence for a continuation of the internal ditch has been cut away by a more recent hollowed track but a short, 20m sweep, of shallow inner ditch survives at the north-east corner of the enclosure, where it is between 3.0m and 5.0m wide to a depth of 0.2m. Traces of a possible external ditch, 8.0m wide and 0.2m deep were noted here, too, extending for a length of 50.0m.



Figure 13: Eastern edge of the enclosure bank, looking north. Photograph: Rebecca Pullen, © English Heritage

There is one possible entrance, close to the north-western apex of the enclosure, and this consists of a gap c. 5m wide between two overlapping segments of bank; a funnelled entrance, c. 20m in length is apparent. Two small flat-based rectangular hollows interrupt this entrance. Both depressions were aligned approximately north-south; the northern example measured roughly 6.5m by 5.0m in area, while the southern example was smaller and less rectangular, measuring 6.0m by 4.5m. Occasional fragments of modern brick were noted close to these features and it is thought they might represent the footprints of two small brick structures, possibly associated with 19th-century clay extraction and processing. A second possible entrance is located close to the south-east corner of the enclosure where the banks again appear to form an opening; however this corresponds, in part, to the route of a later track and the gap may relate to modern disturbance.



Figure 14: Scooped feature inside the enclosure, looking west
Photograph: Rebecca Pullen, © English Heritage

The interior of the enclosure is seemingly devoid of recognisable archaeological features; only a single, shallow, circular hollow was noted and no chronological relationship with the enclosure could be inferred (Figure 14). A modern track is visible as a shallow hollow way 8.0m wide and up to 0.3m deep, crossing the width of the wood and disrupting the southern end of the enclosure (Figure 15).

In addition, a number of small, amorphous, undulations of very recent date were also noted but not planned. This apparent lack of internal activity undoubtedly reflects the disturbance and impact from more recent land use particularly the planting and management of a dense pine plantation in this area: for example, as well as the tree-planting furrows, a ground-level build up of pine needles 0.2m thick, is evident.



Figure 15: View along the hollow track that crosses the southern end of the enclosure, looking north-west. Photograph: Rebecca Pullen, © English Heritage

Early occupation features

NGR: TL 1308 2316 (centre)

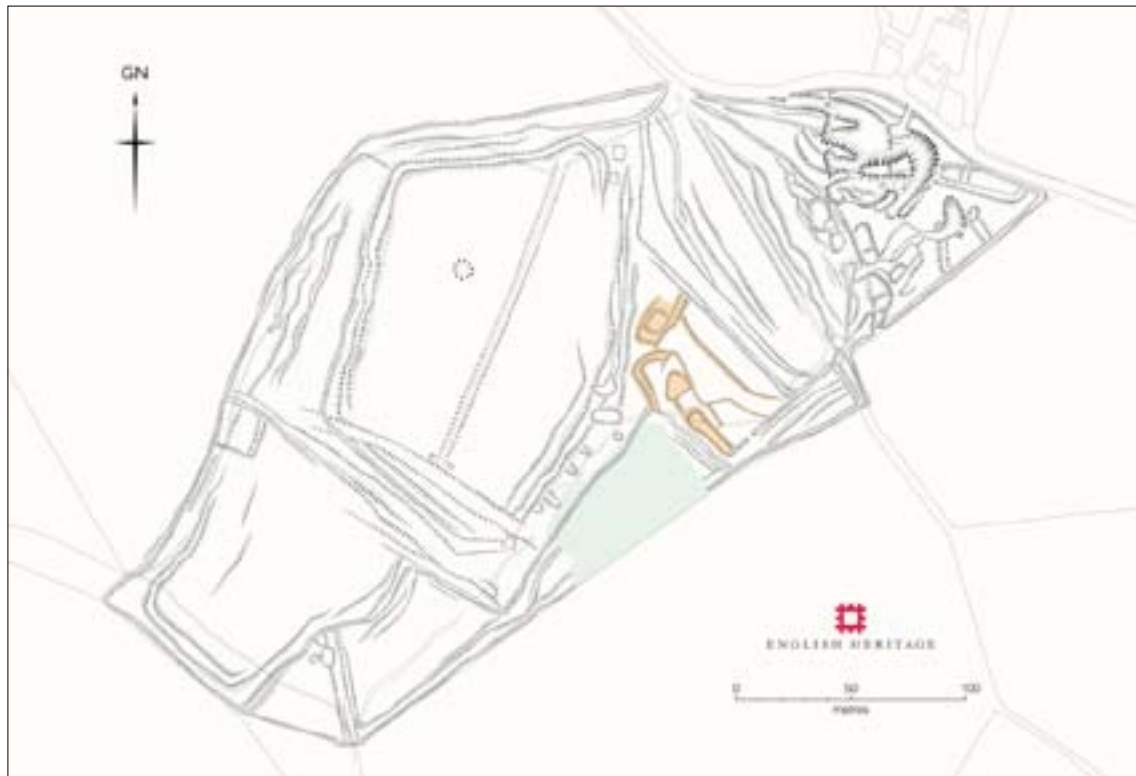


Figure 16: English Heritage survey of Brickkiln Wood, highlighting the early occupation zone. Drawn by Philip Sinton and Rebecca Pullen, © English Heritage

A complex of small low platforms and associated banks was recorded in a more open location immediately adjacent to the midpoint of the eastern flank of the enclosure (Figures 16 and 17). Numerous fragments of baked clay and brick or tile were noted during brief investigation of surface debris produced by fairly intense rabbit burrowing activity directly east of the platforms.

The earthwork remains are dominated by two small sub-rectangular embanked compounds; in both cases the surrounding banks appear to comprise at least two components suggesting that they have seen at least one phase of remodelling. The northern example is orientated roughly NE-SW, measures almost 15m wide and at least 28m long. It is defined on the south-west by a low bank, 3.5m wide at the base and 0.1m high; the course of the compound at the north-east end is unclear. A small rectangular hollow 12.0m in length, 10.0m wide and 0.1m deep occupies its southern end.

The southern compound is less clearly defined but it is aligned on a NNW-SSE axis and measured c. 20m wide and at least 43m in length. The northern and western flanks of this compound survive as a low, wide, bank 6.0m wide at the base and 0.1m high. On the north-east side only a slight scarp, 0.2m high, can be seen. Within the compound are

two substantial platforms in close association. The best preserved of these is triangular in outline, 15.0m by 10.0m in area, and 0.2m high. To the south-west is an elongated rectangular platform 25.0m in length, 10.0m wide and 0.3m high. They are linked by a low bank which may well be much more recent in date. East of the platforms a parallel pair of low inward-facing scarps form a shallow funnelled hollow possibly representing a contemporary track into this localised occupation zone. Additionally, the southern corner of the rectangular platform has been truncated by a later coppice bank. Indeed, both platforms and the compound boundary are associated with later coppicing earthworks but they are much slighter in stature than these, more recent, structures.



Figure 17: The area of occupation platforms, seen as a slight rise in the ground level under the mature trees towards the centre of the image, looking west. Photograph: Rebecca Pullen, © English Heritage

Early extraction features

NGR: TL 1316 2320 (centre)

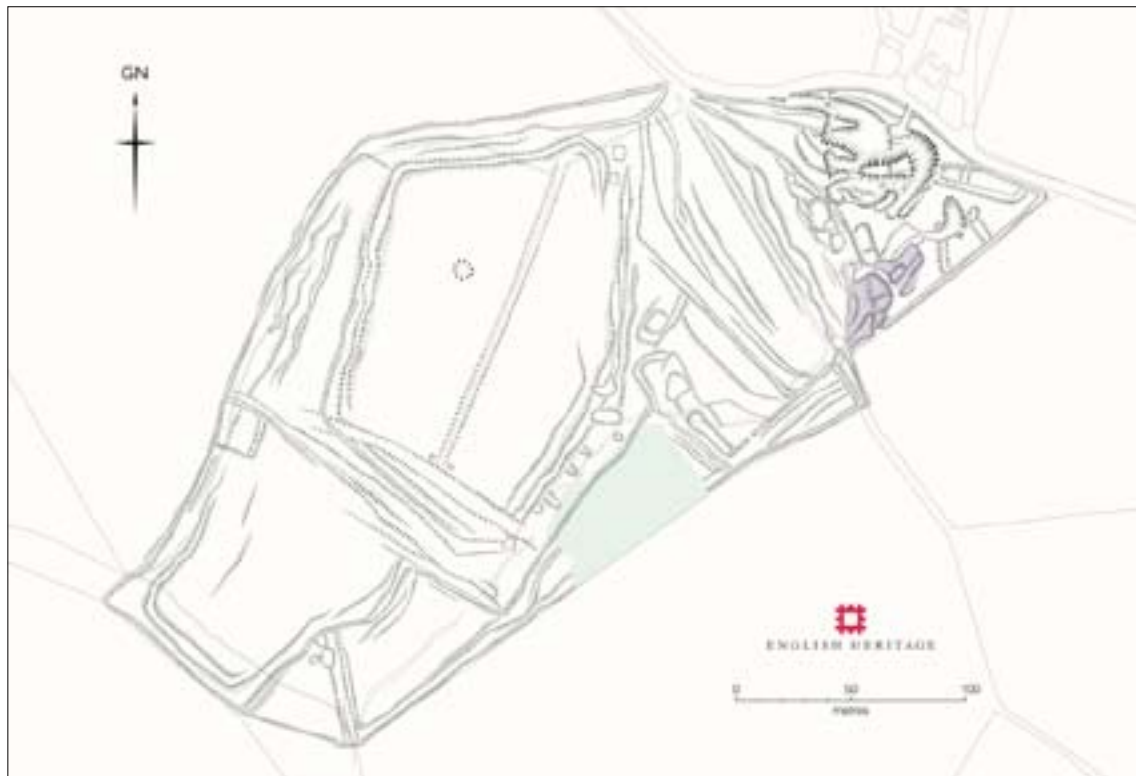


Figure 18: English Heritage survey of Brickkiln Wood, highlighting the early extraction pits. Drawn by Philip Sinton and Rebecca Pullen, © English Heritage

Alongside the steep-sided hollows left by 19th-century extraction, there are two shallow dished areas of different character (Figure 18). They sit on the southern fringe of the more recent extraction pits adjacent to the modern day woodland edge and each comprises an irregular flat-based sub-oval hollow. Recent work suggests that these may well be Romano-British in date and be part of a larger spread of clay extraction that extended to the south and east (Sheldon and Barber 2008). The larger of the two, consists of a shallow hollow 0.6m deep delineated by well-defined but smooth extraction edges (Figure 19). The base of the hollow measures approximately 25m by 15m in area and it is approached by at least three accessways; two on the western edge and one to the south-east. The clearest of these is an elongated hollow that enters close to the south-western corner of the clay pit. Crucially, the western edge of this complex is overlain by a bifurcated coppice boundary, which is, in turn, truncated by modern extraction pits to the north.

A second, possibly early, area of clay extraction lies immediately to the north-west. The clay pit here is more discrete and much shallower than the 19th-century extraction to the north. It consists of a shallow, rectilinear trench, 20.0m in length, 10.0m wide and 0.3m deep. A deeper pocket of extraction is evident at the south-east end of the clay

pit and the whole hollow is flanked by low spread banks of spoil on the north and south. The extraction pit is serviced by a shallow hollow way that extrudes from its north-western terminal.



Figure 19: View into the south-western example of the possible Romano-British clay extraction hollows, looking north-east. Photograph: Rebecca Pullen, © English Heritage

Field system

NGR: TL 1294 2311 (centre)

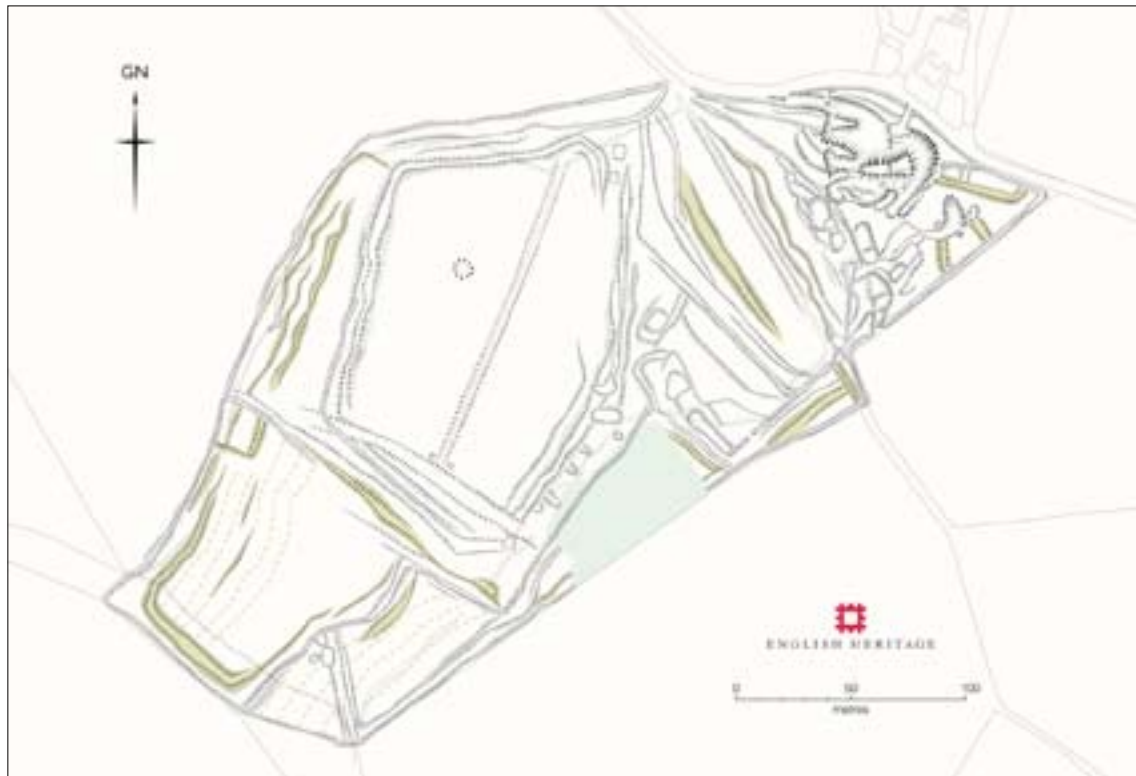


Figure 20: English Heritage survey of Brickkiln Wood, highlighting elements of field system. Drawn by Philip Sinton and Rebecca Pullen, © English Heritage

Coherent traces of a multi-period field system, comprising embanked field boundaries, lynchets as well as the remains of ridge-and-furrow, can be seen on the southern, western and eastern peripheries of the survey area (Figure 20). These certainly pre-date many of the coppice boundaries recorded and are the surviving fragments of a once more extensive pattern of land use. The overall pattern of the ridged cultivation appears to have been undertaken fairly uniformly on a NE-SW alignment, with a spacing of 7.5m to 8m between the centres of individual plough ridges (see Figure 11 and 20). Remnant ridge-and-furrow was noted across the full width of the south-western end of the survey area, however, no substantial traces of any field system was noted within the centre of the early enclosure. Some components of the field system can be seen to its west but these have been visibly damaged by more recent tree planting. Furthermore, in places the alignment of the field banks and plough ridges is mirrored, or overlain, by later woodland banks (Figures 21 and 22).

Very slight remains of low banks and scarps, no more than 0.2m in height, were noted in the area between the early enclosure and intensive clay extraction to the north-west. These appear to be the disturbed traces of further field boundaries or plough ridges

distorted by this, later, activity. Likewise, low scarps to the south-west of the enclosure are likely to be plough lynchets.

In the areas where ridge-and-furrow was noted, there was an increase in the occurrence of fire-cracked flint surface debris; it seems likely that this relates to later prehistoric or Romano-British activity which has since been disturbed by intensified medieval ploughing across the area.



Figure 21: Corner junction between a low furlong boundary bank (left) and a later coppice boundary (right), looking south. Photograph: David McOmish, © English Heritage

The terminal ends of what appear to be a series of four parallel banks were observed abutting the enclosure bank on the south-east. These could represent the surviving elements of cultivation to the east or, could reflect underlying plough ridges in which case the date of the earthwork enclosure could be considerably later than initially presumed. However, these mounds are much better preserved than the other plough ridges, surviving to a height of 0.4m in places. Their spacing varies noticeably more than in other areas of relict cultivation, they all end rather abruptly with no visible headland feature, and it is not possible to identify any continuation within the interior of the enclosure because the modern pine planting lines (which form slightly raised ridges themselves) follow a similar alignment.



Figure 22: The south-west edge of Brickkiln Wood, showing the external boundary bank with broad low headland bank behind (marked by 1.0m scale), looking north-east. Photograph: David McOmish, © English Heritage

Woodland boundaries and management

NGR: TL 1306 2323 (centre, recorded throughout the survey area)

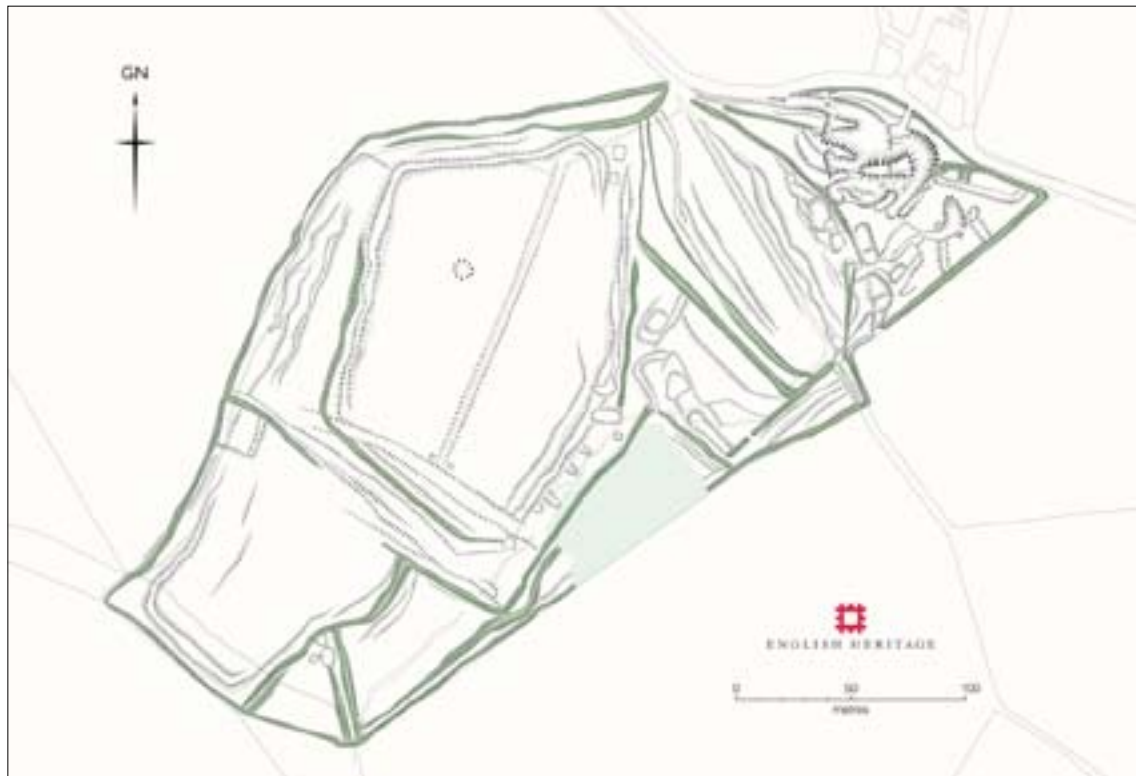


Figure 23: English Heritage survey of Brickkiln Wood, highlighting woodland boundaries. Drawn by Philip Sinton and Rebecca Pullen, © English Heritage

Coppice banks and woodland boundaries traverse much of the survey area (Figure 23). These features survive both as pronounced but low, narrow, banks and, occasionally, as slight low spread banks, often still supporting a line of out grown beech coppice. The best examples survive either side of the footpath towards the north-east end of the survey area, where the trees are more sparsely planted, and close to the south-eastern corner of the enclosure. The better defined coppice banks tend to follow existing or former boundaries marking divisions within and around the woodland, whereas the more ephemeral banks appear to solely represent planting regimes within the wood itself. In addition, the entire perimeter of the wood south of Brick Kiln Lane is formalised by a narrow boundary bank (Figure 24).

A pair of fairly well defined coppice banks, each 2.0-3.0m wide at the base and 0.2m high, partly demarcates a sub-rectangular internal compartment within the wood, immediately to the west of the 19th-century clay pits. This parcel of once open land is clearly identifiable on historic OS maps from 1834 until at least 1947 (for example see Figure 7), and is still marked as a boundary on modern OS maps of the wood. The main north-eastern footpath bisects this area longitudinally and sits on a slightly embanked, linear, possibly raised or cambered, track some 3m wide at best (Figure



Figure 24: Portion of the perimeter bank around the wood, seen here skirting the southern edge of Brick Kiln Lane, looking east. Photograph: Rebecca Pullen, © English Heritage



Figure 25: View along the northern embanked footpath, looking south-east. Photograph: Rebecca Pullen, © English Heritage

25). This track is depicted on early OS maps as extending from Brick Kiln Lane and forming a wide boundary between Thursley and Mabbots fields (see Figure 9). It may well be that this open space was a former yard and central access track associated with the clay extraction and brick-making: perhaps somewhere to stack and store the clay while it weathered prior to processing and forming into individual bricks. The line of the boundary bank around this area is disrupted in places by the deep clay extraction pits suggesting it was in existence prior to the adjacent extraction activity. Additional woodland bank features inside this space follow the same general alignment as those forming its boundary (Figure 26).



Figure 26: Pair of parallel woodland boundaries (1.0m scale marks the nearest bank), looking west. Photograph: Rebecca Pullen, © English Heritage

Typically, the woodland banks survive to between 0.1m and 0.3m in height, and c. 2.0m to 4.0m wide at the base (Figure 27). Relationships between these woodland banks and other types of feature were apparent in a number of places. For example, the north-east coppice bank which defines the edge of the internal compartment clearly overlies the larger of the possible Romano-British extraction hollows. Conversely, it is truncated in several places by the more recent, deeper, clay pits. Further to the west, a coppice boundary can be seen reusing the line of the early enclosure around its south-western corner. At the south-west corner of the enclosure, this coppice bank crosses an earlier hollow trackway; at the same point the hollowed track cuts through the enclosure bank, illustrating a clear sequence of construction. A second, more pronounced, coppice boundary mirrors the alignment of the enclosure bank close to the south-eastern apex

for a distance of c. 100m before turning sharply to the north-west. At this point it visibly cuts across earlier remnants of ridge-and-furrow as well as associated furlong boundaries (Figure 28). This relationship is, again, illustrated close to the southern limit of the surveyed area where a substantial linear bank and ditch, a woodland boundary earthwork, aligned north-south, overlies ridge-and-furrow cultivation (Figures 29).



Figure 27: View along the long curving coppice bank at the north end of the survey area, looking north-west. Photograph: Rebecca Pullen, © English Heritage



Figure 28: Long straight coppice bank, looking south-west. Photograph: Rebecca Pullen, © English Heritage



*Figure 29: Woodland bank overlying traces of ridge-and-furrow, looking north (scale 1.0m).
Photograph: Rebecca Pullen, © English Heritage*

Cockernhoe Brickworks and associated clay extraction

NGR: TL 13121 23335 (centre)

NMR: TL 12 SW 37

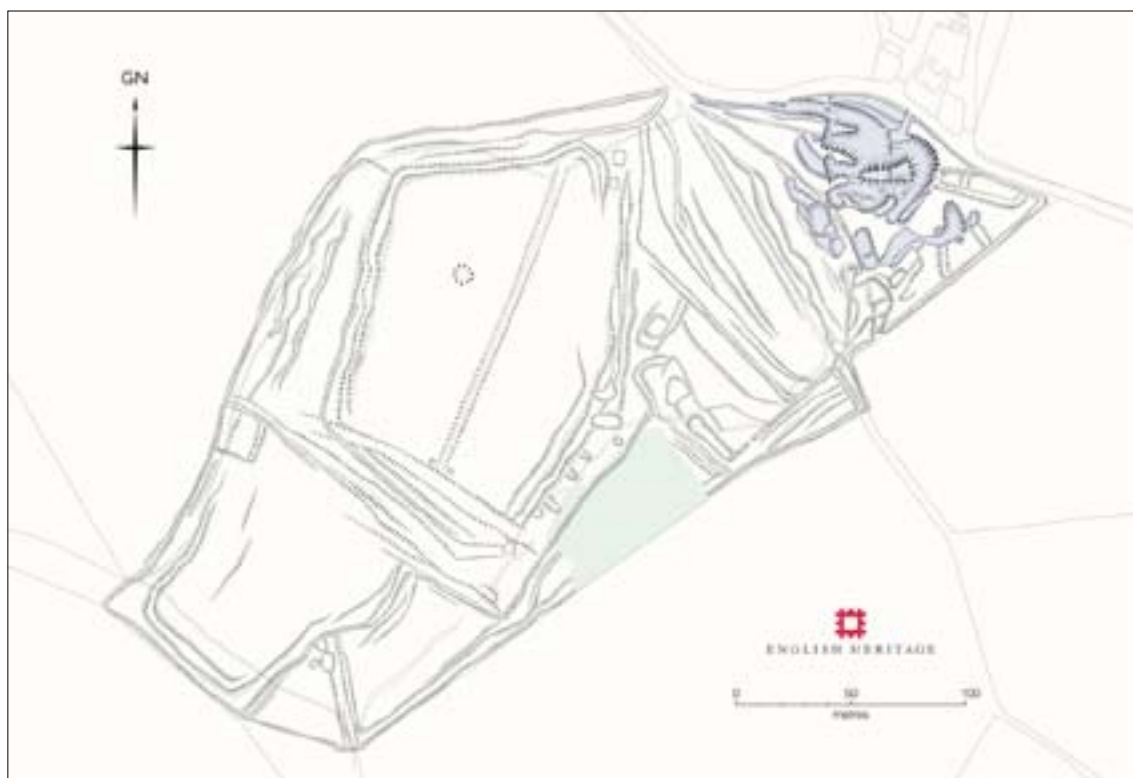


Figure 30: English Heritage survey of Brickkiln Wood, highlighting the 19th-century clay pits. Drawn by Philip Sinton and Rebecca Pullen, © English Heritage

South of Brick Kiln Lane

Remains of extensive extraction activities survive to the south of the road, covering an area some 0.7 hectares (c. 1.7 acres) (Figure 30). The deep irregular hollows are characterised by steep concave-sided depressions up to 4m deep, with narrow scooped bases (Figure 31). Each major extraction pit appears to have some form of associated entrance/exit ramp or gangway, and several 'spurs' and discrete dumps of unwanted deposits were noted in and around the hollows (Figure 32).

The largest of those on the south side of the road appears as a pond on the OS 1st edition 6-inch map suggesting it had long gone out of use by 1884. Comparing this to the depiction of active clay removal north of the road on the same map, it can be deduced that extraction was undertaken to the south of Brick Kiln Lane before being expanded into the area north of the road (see Figure 8). This likely phasing in the sequence of extraction may also explain the difference in the character of extraction features either side of the road, though it is possible that changes in the nature of the clay deposits was a determining factor.



Figure 31: View into the central 19th-century clay extraction pit south of Brick Kiln Lane, looking east. Photograph: Rebecca Pullen, © English Heritage



Figure 32: Earthwork ramp leading out of the central 19th-century clay extraction pit south of Brick Kiln Lane, looking east. Photograph: David McOmish, © English Heritage

North of Brick Kiln Lane

The most dramatic and extensive legacy of 19th-century clay extraction lies within the area of woodland to the north of the road. Here, the intensity of clay extraction and processing activity associated with the former brickworks has disturbed and remodelled the ground to such an extent that traces of earlier land use have been almost entirely obliterated, leaving only intermittent traces of earlier, low, compacted woodland banks on a roughly NE-SW alignment.

Fronting directly onto the north side of Brick Kiln Lane is a pair of semi-detached brick cottages, each with an infill front-porch that was added at a later date. It is unclear whether the cottages were originally built as a pair, or as a single substantial building; however, based on the chimney arrangement, the former is thought to be more likely. A structure is marked at this location on the 1834 OS 1-inch map of the area, and there are suggestions of a similar structure depicted on Bryant's 1822 map of Hertfordshire (see Figures 6 and 7). It seems likely that these properties were constructed for the site manager or owner. South of the road, and directly opposite the cottages, is a narrow access ramp leading into the centre of the clay pits; this access point is depicted as a path leading towards a disused extraction hollow (represented as a pond) on OS maps from 1884 and 1899 (see Figures 8 and 9). Another, even more pronounced, access-way emanates from the north-western corner of this large clay pit.



Figure 33: Interior of the extensive area of clay extraction north of Brick Kiln Lane, looking north. Photograph: David McOmish, © English Heritage

The character of the extraction activities north of Brick Kiln Lane differs somewhat from that within the survey area. The northern extraction scars are larger in footprint, with broad flat bases and wider shallow entrance ramps more suitable for removing cartloads of material (Figure 33). The hollows in this area are less defined as individual extraction episodes, appear to be more interconnected and are on a bigger, industrial, scale. These expansive steep-sided clay pits, between 2-5m deep, with wide access ramps, survive across almost the entirety of this area. As well as the extraction hollows, there are a number of ancillary and processing structures including, adjacent to the clay pits, a large circular dished concrete tank with pipe inlets, c. 20m in diameter (marked as a sub-circular features on modern OS maps), which is the remains of a settling or puddling tank associated with processing clay. Additionally, amongst the extraction pits here, there are the remnants of possible temporary structures, building platforms, and areas of hard-standing associated with processing clay and forming bricks.

The suite of clay pits seen on both sides of the road share distinctive morphological traits with other woodland extraction sites of this type known throughout the Chilterns (Morris 1999; 2009).



Figure 34: South-eastern example of the two small earthen mounds at the south-west end of the central footpath, looking west (scale 1.0m). Photograph: Rebecca Pullen, © English Heritage

Miscellaneous or modern disturbance

Several features related to access are present in the survey area. The main NW-SE footpath sits on top of a slightly raised and embanked track spanning the width of the wood (see Figure 25); it leads from a former access gate at a slight bend in Brick Kiln Lane, and out to a wide field boundary leading away from the south-east edge of the woodland. A second footpath sits within a shallow linear hollow crossing the centre of the enclosure on a NNE-SSW alignment. Another similar track is visible as a sunken earthwork surviving as a slightly hollow flat-based linear some 8m wide, again crossing the width of the wood and disrupting the southern end of the possible early enclosure (see Figure 17). In addition, narrow slightly worn former and informal footpaths are present towards the perimeter and across the centre of the survey area.

A small number of additional features of uncertain date and function were also identified and are probably related to more recent episodes of disturbance in the woodland.

Several smaller additional shallow sub-circular hollows may relate to insubstantial or prospecting extraction pits, or possibly to ponds associated with grazing and previous agricultural use of the site. Indeed, a number may well be tree-throws, however, they could not be ascribed to a particular function or period with any confidence.

A pair of small roughly squared cut features with associated spoil dumps were noted either side of the footpath in the south corner of the survey area. The pair appears to partially cut into the scarp of an earlier woodland bank, and this, along with their sharp cut clean edges and neat avoidance of the line of the footpath itself, suggests these represent fairly recent intentional disturbance (see Figure 29, here the northernmost of these cut features can be seen in the foreground).

At the southern end of the central hollow way, and on either side of it, are two low mounds of dumped soft sandy material, each around 3.0-4.0m in diameter and 0.4m high (Figure 34).

A number of woodlands in the Chilterns area were used for a variety of purposes during the First and Second World Wars, including shelters, pits and trenches (Morris, 1999; 2009), and could account for some of the more recent small-scale disturbance noted in Brickkiln Wood.

LANDSCAPE ANALYSIS

Traces of early land use surrounding Brickkiln Wood have been largely erased by later agricultural activity, however, the underlying character of the historic environment has been revealed through a programme of Historic Landscape Characterisation (HLC). When added to the results of the EH survey a more detailed assessment of landscape development in this area is achievable. The HLC work was undertaken by the County Archaeology Service at Hertfordshire County Council between 1999 and 2006, providing a broad-brush interpretation of the historic environment at a regional scale (Dyson-Bruce *et al* 2006). A more indiscriminate Landscape Character Assessment for the North Hertfordshire and Stevenage region, encompassing Brickkiln Wood and surrounds, described the historic land use pattern on the Breachwood Green Ridge (Area 202), as 'insignificant' (Tereszczuk 2004, 43-7). Targeted investigation of areas of particular interest, such as the EH study in and around Brickkiln Wood, has enhanced, refined, complimented, and in some cases challenged, these initial interpretations.

Discounting the expansive suburbs of Luton to the south-west of the woodland, the site sits within an intensely farmed and settled landscape, dominated by small linear and nucleated villages, arable fields, and pockets of woodland. The surviving field pattern across the parish is one largely characterised by enclosed open fields, often with visibly jagged or notched boundaries indicative of earlier furlong boundaries and field edges, though in places intermittent boundaries have been entirely erased to leave much more expansive fields typical of modern agricultural practise.

Initial HLC assessment of the area ascribed the field patterns surrounding Brickkiln Wood to a mosaic of relict pre-18th-century enclosure surviving amongst 20th-century agriculture. At Putteridge Bury, to the north, boundaries of the estate's former parkland have been fossilised despite some parts having been given over to agriculture. Additionally, a broad swathe of land beyond Stubbocks Wood, to the north-east of Brickkiln wood, is described in the HLC assessment as characterised by 18th to 19th-century enclosure (Dyson-Bruce *et al* 2006).

The classic structure of open or common field system is most often attributed to the midland counties of England and probably reached this form by the 12th century; the system can certainly be attributed to a pre-Conquest origin, but the variety and complexity of localised field patterns and operation was considerably less homogenous (Taylor 1987, 71-94). Fields were divided into furlongs, each of which would contain a group of parallel strips; the size and shape of these furlong units was often affected by the nature of any 'underlying' earlier field systems, and by the soils and physical nature of the field's location. Seasonal rotation was based on the furlong unit rather than the whole field. The manorial estate map from 1658, clearly shows open fields in the area just south of Offley Chase (c. 1km north of Brickkiln Wood) that are divided first into furlongs and then again into strips of grouped ridges to be cultivated by individual farmers (Figure 35).

There is also clear evidence for assarted fields in the area around Brickkiln Wood. These fields, created by the process of clearing and enclosing previously uncultivated land such

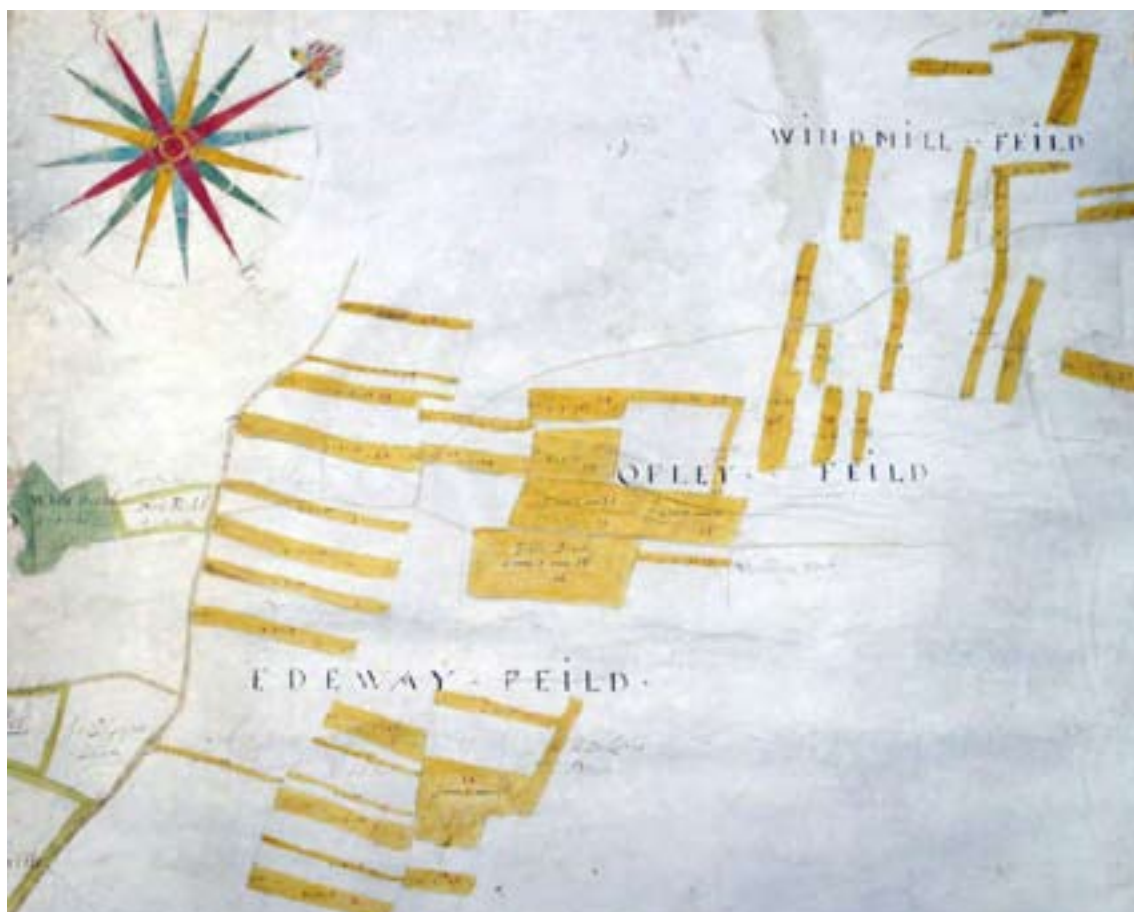


Figure 35: Extract from a 1658 manorial estate map, showing the layout of strips within open fields to the south of Offley Chase (north-west of Brickkiln Wood). © Hertford Archives and Local Studies, reproduced with permissions (HALS doc ref DE/R P9 A-B)

as woodland, have an, often, distinctively irregular shape. Examples can be seen along the jagged parish boundary extending to the south-east of Lilley.

The area of North Hertfordshire containing Brickkiln Wood exhibits many 'Green' and 'End' places names, as is often found where small hamlets are common (Gover *et al* 1938, xx). The suffix 'Green' usually indicates pasture or a prominent village green, whereas the suffix 'End' is often connected to the end or far district of an estate (Mills 2003, 521-7).

Local field names also give a good insight into former land use in the area surrounding Brickkiln Wood. The manorial estate map from 1658, and a plan prepared by Doherty (2005, 3) provide names for a number of the fields in close proximity to the wood (Figure 36). For example, to the immediate south and east of the wood, several fields names have the ending '-ley' or 'Leys', this is usually taken to mean a woodland clearing, meadow or pasture, and may suggest that these fields or some of their component strips (with temporary fences to create foldings) were used as pasture at some point. Immediately east of Brickkiln Wood, and bound to the north by Brick Kiln Lane, is the field named Mabbots, this name probably derives from a personal name. Named fields

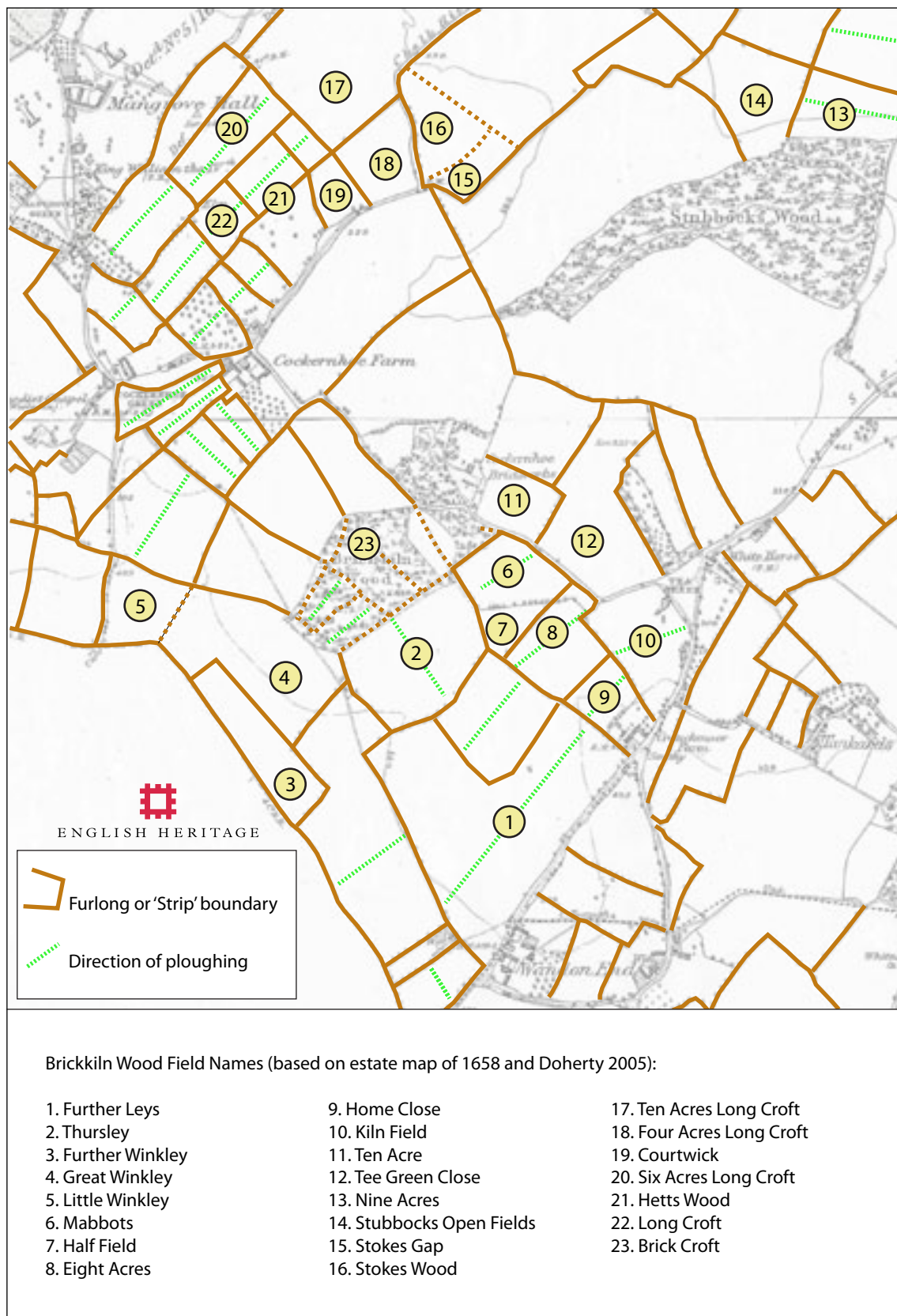


Figure 36: Plan showing reconstructed furlong boundaries and ploughing regimes. Drawn by David McOmish

nearer to Cockernhoe and Mangrove Green frequently include the component 'Croft', meaning small enclosed field. Immediately west of Tea Green, and close to Brickkiln Wood is 'Kiln Field'; this suggests that some form of activity requiring the use of a kiln (probably for firing clay) was known in the area by, or before, the mid-17th century. According to Morris (1999, 19), brick and tile making were medieval industries in the Chilterns, making good use of the local resources of brick-earth/clay and widespread woodland for fuel. It is likely that small-scale clay extraction and brickmaking took place in several locations around the parish, but may have been a fairly transitional industry. Modern names in the area, such as Claypit Cottages in Great Offley, reflect this, perhaps widespread activity.

Brick Kiln Lane is a narrow, winding road, flanked on both sides by a small bank. It is entirely possible that this route is of some antiquity and may follow the line of an old green lane moving through a landscape dominated by enclosed open fields of medieval date; it is earlier than the present wood at Brickkiln and clearly follows, and mirrors the layout of, earlier field boundaries.

DISCUSSION AND CONCLUSIONS

The English Heritage survey within Brickkiln Wood has brought to light a wide range of previously unknown features. In turn, the opportunity has been taken to examine and add detail to the patterns of former land use that were encountered, not only in the wood itself, but further afield too. This wider characterisation has successfully asserted the context of the remains found in the wood and greatly aids an appreciation of their broad chronological sweep as well as their heritage asset value. The distinctive indicators of small-scale industrial clay extraction had long been known in Brickkiln Wood, but the discovery of subtle remnants of earlier land use regimes, in the form of enclosure banks, occupation platforms, plough ridges, and field boundaries beneath the extant coppice banks and extraction scars, adds much to the accepted narrative of the area as well as to story of the wood itself. For example, in an area where historic land use patterns were deemed to have had an insignificant impact on the local character (Tereszczuk 2004, 43-7), this study has revealed that important and surprisingly coherent remnants of field systems and ploughing regimes survive as earthworks, can be reconstructed from cropmarks or, extrapolated from earlier cartographic sources in and around Brickkiln Wood.

Pre-medieval occupation

The central enclosure is a fairly basic, almost trapezoidal, five-sided form with straight sides, rounded corners, and traces of a single internal ditch. The low, embanked, circuit probably represents a single main phase of construction, with at least one entrance, and a possible simple reworking along the north end of the eastern bank. Here, the outer face of the bank appears to have been enlarged, and perhaps lengthened to create an overlapping and elongated entrance-way. At present no dating evidence is available for the enclosure and interpretations are conjectural based on physical form, stratigraphic relationship between features, and comparison with known local sites.

The landscape position of this enclosure would have afforded a commanding view of the surrounding countryside, in particular to the south, east and west; a prominent location often favoured by prehistoric or Roman sites. The LiDAR data for the area underscores the prominence of this position – the location of the Brickkiln Wood enclosure is clearly located towards the edge of a small discrete plateau on the chalk ridge, which is delineated by dry valleys to the north and south, each extending in a south-westerly direction towards the valley bottom (Figure 37). Indeed, one of these dry valleys appears to lead directly into the area that hosted the remains of a Roman building. The LiDAR data also highlights a line of large circular pits along the lower slopes of the valley, probably the results of localised chalk quarrying.

The lack of any significant ditch with the enclosure is surprising: it may well have never existed on any great scale, or perhaps later activities could have resulted in its infill. Regardless, it is evident from Hunn's (1996) regional review of later prehistoric and Romano-British enclosures, that there is an apparent lack of comparative local sites in the vicinity (and beyond) of Brickkiln Wood. It is worth bearing-in-mind, though, that in a heavily arable landscape, unditched enclosures would not survive either as earthworks or,

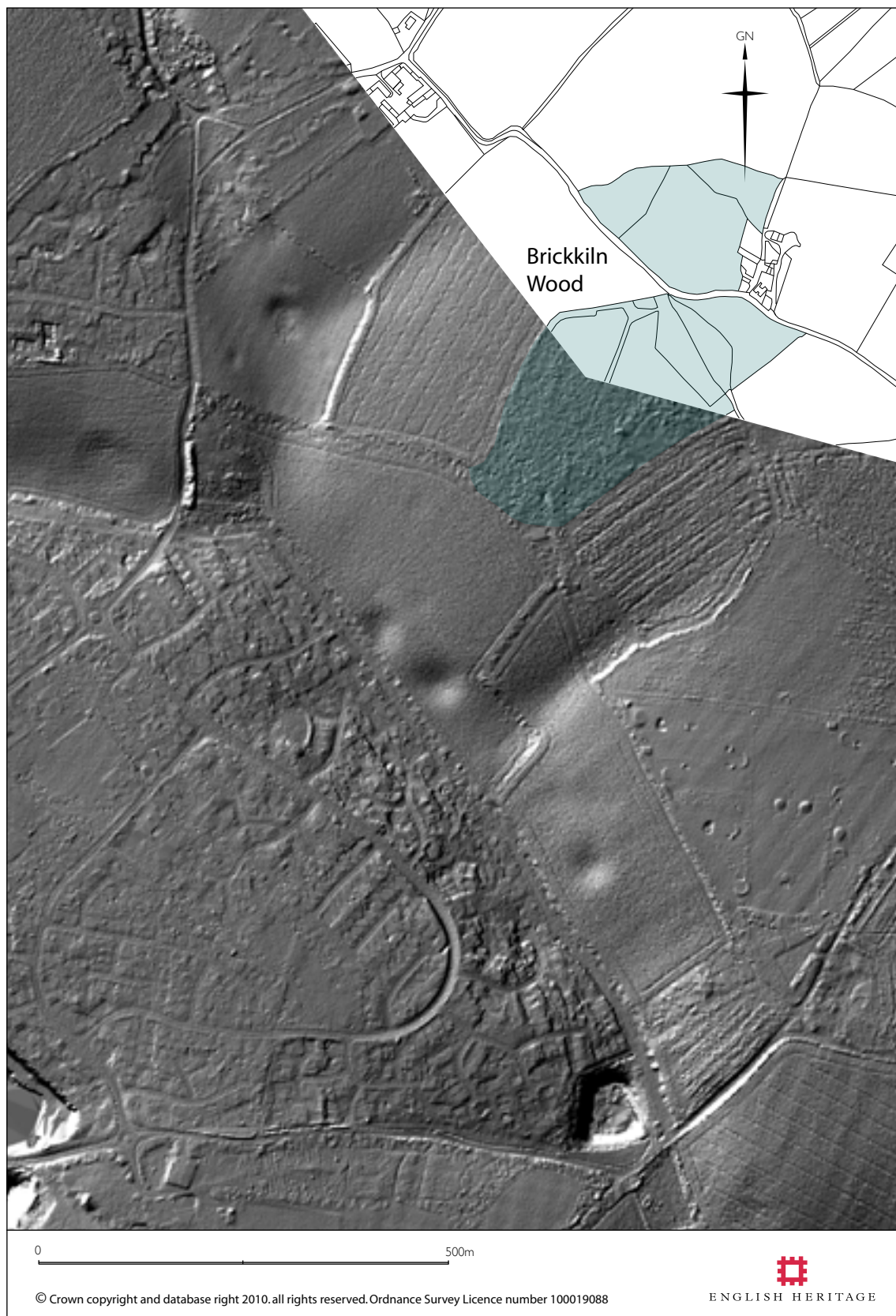


Figure 37: LiDAR terrain data (1m resolution) for the area south-west of Brickkiln Wood. Drawn by Rebecca Pullen and Derwin Gregory, © licensed to English Heritage for PGA, through Next Perspectives TM

indeed, show as crop- or soilmarks. The boundary of the enclosure has been distorted in places by the later planting regime of pine trees; this along with the very slight nature of the earthwork remains mean it is not possible to identify the method of construction, for example, segmented gang-dug sections that are so characteristic of large, early, enclosed sites. Likewise, very little in the way of internal features was noted. Rather than point to an absence of internal activities, it may well be that, again, the planting regime in this area has destroyed any slight internal features, and build up of decaying leaves and pine needles here is thick enough to have a masking effect on very subtle morphology.

Several analogies for enclosures of a similar form and scale are present in Hunn's review of Iron Age and Romano-British enclosures in Hertfordshire. Hunn has compiled a comprehensive, though not exhaustive, gazetteer that includes 102 sites; the vast majority of which (94) are cropmark enclosure sites and only a relatively small proportion of the 102 enclosures have received some level of archaeological investigation. The distribution of these identified sites leaves an 'empty' area of almost 10km² around Brickkiln Wood; though undoubtedly this spatial pattern relates in part to soil make-up, responsiveness to cropmark formation, plough erosion and intensity of preceding aerial photographic transcriptions.

According to Hunn's classification system, the Brickkiln Wood enclosure falls most comfortably into the category 'single ditched irregular long quadrilateral enclosure' (1996, 7). Potential enclosure sites in Hertfordshire predominantly have a regular layout, and judging by associated excavation and fieldwalking data, the more rectangular sites seem to belong to the Late Iron Age and early Roman periods. Further to this, Hunn (*ibid*, 8) suggests that from present dating evidence for 24 of the enclosure sites, the majority of rectangular cropmark sites may date to the late pre-Roman Iron Age, and cease to be maintained (by way of keeping ditches clear) towards the end of the 1st century AD. In comparison with the enclosure at Brickkiln Wood which has an internal footprint of some 1.3ha, sites reviewed by Hunn were most commonly less than 1ha in area, with a handful of much larger examples, and nine out of the overall sample falling into the 1.2 to 1.4ha bracket. In summarising the data sets, Hunn concluded that in most cases the morphology of the sites is often incomplete or too ambiguous, due to the lack of surviving earthwork or detail gleaned by excavation, to facilitate understanding of the function or development over time of these sites. However, the review highlights particular repeated traits which may afford some insight into how these sites were used and managed. There is evidence for parallel ditches at over a third of the sites considered, and Hunn postulates that these are droveways associated with the enclosures, and are suggestive of specialised settlements, most likely involving some element of stock control (*ibid*, 8). At Brickkiln Wood, no obvious paired ditches were identified, however, both the possible northern entrance to the enclosure, and the slight funnelling feature formed by inward facing scarps east of the small platform complex, could both be tentatively interpreted as relating to controlled stock movement. At least four other sites listed by Hunn, and of similar size and shape to the Brickkiln Wood enclosure, exhibit a similar trait of 'overlapping' entrance terminals: Prae Wood II (HHER 1341), Reed (HHER 2340), Buckland II (HHER 4738), and Redbourne III (HHER 6001).

The Brickkiln Wood enclosure also shares a number of similarities with an earthwork enclosure on Ashted Common, Surrey, surveyed by English Heritage in 2006 (McOmish and Newsome 2007). The earthwork at Ashted Common encloses an internal space of some 1.45ha, and survives as a trapezoidal bank circuit with rounded corners, an external ditch flanked in places by a pronounced counterscarp bank, and a single possible entrance. It sits in a prominent location on the Ashted Ridge of London Clay, and much like the Brickkiln Wood enclosure, it is located adjacent to evidence for Roman occupation in the form of a villa, bathhouse, tile works, clay pits and Roman road; and also to a relict field system of unknown date.

The enclosure in Brickkiln Wood, in association with nearby platforms and shallow surface extraction, may well represent the earliest extant earthworks in the survey area, and could conceivably date to the Late Iron Age or early Romano-British period. If correct, it would afford the site, and its setting, high regional significance as few settlements dating to this period are currently known in this area.

However, no secure dating for the enclosure is apparent, and, as a consequence, the later prehistoric – Romano-British date suggested here must be viewed as 'tentative': a post-Roman origin for the enclosure should not be discounted.

Roman clay exploitation

The remains of clay extraction are the most visible, extensive and well preserved earthworks in Brickkiln Wood. Although the majority of these extraction pits almost certainly relate to 19th-century activity, a number of factors suggest that the tradition of exploiting and processing the local clay deposits may have much earlier origins.

The initial impetus behind this survey was to assess the potential for surviving elements of Roman period clay extraction within Brickkiln Wood: excavation of several probable clay pits of this date had been undertaken in the fields immediately east of the Wood (Sheldon and Barber 2008). Clear traces of this industry were identified during the survey, but in the absence of any dateable evidence, attributing these features to Romano-British activity can only be undertaken with limited confidence. The clay pits in and around Brickkiln Wood are located on a high spur of land, and it is plausible that they were intimately associated with a localised kiln site producing brick and tile, possibly for the construction of substantial, local, buildings.

Few Romano-British kiln sites have been recorded more than c. 400m from a spring site or water-source, and at most sites there would almost certainly have been wells, tanks or water-storage facilities close to the pottery workshops (Swan 1984, 6). Although there are no water-courses close to Brickkiln Wood, a couple of spring heads are known in the vicinity. Likewise, sand is an important component in the manufacture of pottery, brick and tile: the high silica content of sand improves the ability of the clay to withstand high temperatures in the kiln, and aids the counteraction of excessive shrinkage, warping and splitting (Swan 1984, 3). Small mounds of sand were noted in several locations during the survey and below ground sandy deposits were recorded in the adjacent fields during archaeological evaluation by Cotswold Archaeology (Sheldon and Barber

2008). Furthermore, Cotswold Archaeology recorded areas of hard-standing adjacent to clay extraction pits, and it is possible these were used to stack and 'weather' the clay in preparation for forming into bricks, tiles, tesserae or other ceramic products. No kiln fabric or structure was encountered during the archaeological evaluation though it is possible that a temporary clamp structure was used, or that clay extracted from this site was taken elsewhere before being processed into ceramic building materials or tesserae.

It seems most likely that evidence for Romano-British activity in the area hints at the presence of a substantial Roman building in the vicinity; a conclusion reached by several other archaeological investigations in this area, but yet to be proven. Following fieldwalking in the two fields east of Brickkiln Wood, Doherty (2000, 12), noted that localised waterlogging may indicate a spring in the field, or that floor surfaces surviving beneath the plough soil might be responsible for the water-retention. Doherty also put forward the tentative suggestion that the concentration of material, and close co-location with a spring, could represent a shrine. Of course, it is equally plausible that the presence of sub-surface clay pit features and associated areas of hard-standing may be responsible for patches of poor surface drainage in this area, or, indeed, the natural clay deposits themselves. It is likely that where good quality clay was found at shallow depths, it would have been exploited, and used in producing, on site, ceramic materials for the potential building. The possible identification of clay pits contemporary with this, in the fields east of Brickkiln Wood, and more tentatively, within the wood itself, could represent a small-scale and parochial Roman tile works, rather than a more commercial ceramic production enterprise. Unfortunately, evidence for the nature of Roman clay pits in Britain, for comparison, is still relatively limited (Darvill and McWhirr 1982). In the absence of direct evidence for any kiln structures, this hypothesis remains purely conjectural.

Early field patterns

The current perimeter of the woodland and several of the internal woodland banks appear to follow or respect the boundaries and alignments of an earlier field system, suggesting that the footprint of Brickkiln Wood has been superimposed upon a cluster of earlier agricultural field and furlong land parcels. It seems plausible that the central area, now occupied by the earthwork enclosure and adjacent platforms, may have formally been used for pasture as no trace of ridge-and-furrow cultivation or similar was identified. The EH survey revealed the intermittent and partial remains of former furlong boundaries, headlands and cultivation ridges (see Figure 36). For instance, the lines of two headlands, and a probable third, were recorded extending through the wood on a roughly NW-SE axis. In all cases, these represented a continuation of either an existing field boundary visible outside of the wood, or the trace of one seen in aerial photographs and/or LiDAR plots of the area. Distinctive banks recorded running perpendicular to these have been interpreted as associated furlong boundaries, and further slight ridges, parallel to these, correspond to eroded ridge-and-furrow. The overall pattern is one of relatively small furlongs somewhere between 0.75 and 1.5ha in area, each filled by plough ridges orientated roughly NE-SW, 8.0m wide.

Previous aerial photographic assessment of the area identified traces of ridge-and-furrow ploughing in many of the fields surrounding Brickkiln Wood (Cox 2007). Comparing this with 1m LiDAR terrain data, remnant ploughing seen in aerial photography is both confirmed and extended across an even broader sweep of fields (see Figure 37). Again, the visible direction of cultivation is almost uniformly orientated NE-SW, yet the position of a number of pronounced lynchets along current field boundaries, probably representing headlands or earlier boundaries, suggests that at some point ploughing almost certainly took place on a perpendicular axis to the ridging seen today.



Figure 38: High lynchet giving a drop in ground height of over 1m between fields to the west of Brickkiln Wood. Photograph: Rebecca Pullen, © English Heritage

Several of the present hedged boundaries surrounding Brickkiln Wood have developed on top of substantial lynchets, on occasion more than 1m in height (Figure 32). Further slight lynchets mark the edges of relict furlong boundaries within the wood itself. The form and enduring nature of these features suggest that the area have been subject to intense cultivation for a prolonged amount of time, and that the position of associated field boundaries remained fairly static during that period.

Isolated scooped pits identified during the survey may also relate to the former agricultural land use. For example, ponds are particularly known in areas of woodland on former open commons, where they provided water for grazing livestock (Morris 1999, 19). It is possible that the isolated pond-like feature within the bounds of the earthwork

enclosure represents an old pond; the lack of plough ridges showing under, over or within this area may indicate that this patch was previously under pasture unlike adjacent areas. The apparent earlier naming of this area as 'Brick Croft' would support this hypothesis (Doherty 2005, 3) (see Figure 30).

For an area where historic land use patterns were deemed to have had an insignificant impact on the local character (Tereszczuk 2004, 43-7), this study has revealed that important and surprisingly coherent remnants of field systems and ploughing regimes survive as earthworks, can be reconstructed from cropmarks or, extrapolated from earlier cartographic sources in and around Brickkiln Wood. The relict field system identified in this survey is thought to represent medieval enclosed open fields, characterised by small furlong plots with reasonably wide and uniform plough ridges. However, the relative phasing, particularly between the central enclosure and elements of the adjacent field system, is unresolved. It is entirely plausible that the medieval field system seen here owes much of its form to a pre-existing prehistoric or Romano-British field system. This would go some way to explaining the apparent relationship between the earthwork enclosure and the surrounding lynchets and field banks, and may also account for the particularly small nature of the individual furlong plots.

Woodland management

It is apparent that while Brickkiln Wood covers the south-western edge of the localised low crest of land, the area designated as ancient woodland, Stubbocks Wood, forms a northern rim to this crest above its steeper north-eastern escarpment. A further small area of woodland survives on the northern edge of Tea Green village. The line and location of the outer down-slope boundaries of these woodlands could conceivably reflect the boundary of a much larger area of early woodland covering the entirety of this low crest (see Figure 2).

However, Brickkiln Wood is thought to represent an area known as secondary woodland; a term often now used to indicate woods that have arisen since the late 17th century. Areas of secondary woodland have generally developed on land that has been cleared for agriculture; many areas in the Chilterns and North Hertfordshire would have been more open from Bronze Age to Roman times before becoming wooded again (Morris 1999, 13), and remained a heavily forested county until the Middle Ages (Johnson 1970, 13-14). Although Brickkiln Wood is not deemed to be 'ancient woodland', its boundaries are curved and sinuous, possibly indicating that the wood was established before c. AD 1700: after this approximate date, straight regular land boundaries were frequently imposed during the process of enclosure (Morris 1999, 14). The central area of conifer planting is likely to be more recent, nonetheless, it cannot be confidently ruled out as contemporary with the initial conversion of arable land into woodland.

Beech coppice would have been cut to fuel the local brick kiln; beech smallwood makes especially good firewood and has been favoured in the Chilterns area since the Middle Ages for this reason. In particular, it was used in association with fuelling local brick kilns and lime kilns during the 18th century (Marren 1992, 57-60).

Woodland is depicted north of Brick Kiln Lane on Dury and Andrews' 1766 map, but not on OS maps from 1822 or 1834. It is likely that this area provided the fuel for the brick kilns and was then exploited for its clay deposits following an earlier phase of extraction south of road. According to subsequent OS mapping, woodland appears to have regenerated or been replanted in later 19th century.

Cockernhoe Brickworks and the Hertfordshire brick industry

No detailed documentary records for Cockernhoe Brickworks have been identified to date. Intriguingly, despite the depiction of a number of structures on historic maps, and the presence of 19th-century clay pits as earthworks and as earlier buried cut features, no physical remains of brick clamps or kilns of any period, or associated debris, have been identified in, or immediately adjacent to, Brickkiln Wood. Consequently, it is not known what type of brick-firing the site was employing.

There has been a kiln at the site from at least 1834; at this time the area north of the road appears to be relatively clear of trees and contained several structures (see Figures 6 and 7). The brickworks was certainly in operation by 1884, if not from the 1820s or even earlier, but the site had fallen into disuse by 1899. Extraction seems to have taken place initially to the south of Brick Kiln Lane, later spreading and increasing in scale to the north of the road; it would appear that all associated structures substantial enough to be mapped were also located north of the road.

The brickkilns operating in the 18th and 19th centuries would have been fired once or twice a week, and fuelled with wood, faggots and roots, sourced from the adjoining woodland. Clay would have been extracted during the winter, then left in heaps to allow weathering and frost to break down the clods. To prepare the clay, stony inclusions would be removed, and then sand and often coal dust would be added to the matrix. The brick and/or tiles would then be formed and fired through the spring and summer months (Perrins 2005).

The circular concrete tank in the north easternmost corner of the site probably represents some form of puddling or settling tank which may have been used to remove flint and stone inclusions from the extracted clay. Alternatively, though less likely given the dished shape of the structure, it may have been a horse-driven mill for grinding clay. The use of concrete suggests a late-19th-century date for this structure.

A pair of red brick semi-detached cottages stands at side of the Brick Kiln Lane, and are shown on OS maps from 1834 onwards. The low pitch of the roof line and the general style are typical of properties from the 1820s and 1830s, and so, contemporary with the brickworks (Figure 33). A well still stands in the front garden of one of the cottages, and is marked 'w' as a structure on the 1924 OS map, possibly indicating a managed spring head or water-source.

There are no major deposits of brick-making clay in Hertfordshire, but small-scale brick and tile works developed across much of the county targeting pockets of glacial clay and London Clay throughout the region, and c. 200 former brick kiln locations have been



Figure 39: Pair of semi-detached properties and water well, adjacent to Brickkiln Wood, looking north. Photograph: Rebecca Pullen, © English Heritage

noted in Hertfordshire (Johnson 1970, 19-21; Graham 2001; Perrins 2005). For example, a number of large clay extraction pits have been identified south of Darley Hall (Burleigh and Went 1990a, 2) probably relating to a known brickworks at Breachwood Green (Perrins 2005, 195).

Chalk extraction can be seen on historic mapping and aerial photographs of the area, the closest example to Brickkiln Wood is on 'Chalk Hill' in a field known as Chalk Pit Close. There is also a pit depicted on the green at Cockernhoe on 1st edition 6-inch OS map. These nearby chalk pits may relate, in part, to the common practice of using of the spring/summer brick kiln firing episodes for producing a side product of lime by placing chalk in the hotter parts of the clamp (Perrins 2005, 189-90).

It seems most likely that brick and tile manufacture taking place at Brickkiln Wood in the 19th century will have been related to demand for bricks from the rapidly growing town of Luton. Without the aid of documentation relating to the site it is currently not possible to say whether the brickworks was a stand-alone enterprise or, perhaps, a side-line venture for a local farmer. By the 20th century, however, most of these local initiatives died out as a result of competition with the industrial brickworks in neighbouring Bedfordshire (Johnson 1970, 19-21; Cox 1979).

METHODOLOGY

The field investigation was carried out by Rebecca Pullen and David McOmish. The earthwork survey was undertaken between 15 March and 13 April 2010 using a combination of total-station theodolite (TST) equipment and infill by hand using tape and offset measurements from a series of control points established using the TST. The earthwork plan was produced within Ordnance Survey National Grid coordinates using a survey grade Global Positioning Satellite (GPS) system.

Initially, a Trimble 5600 series TST was used to establish a thirteen station ring traverse within the area of Brickkiln Wood south of the road. These observed stations were used to collect topographic data relating to extant clay-extraction features at the north-east end of the traverse, and to establish a series of some seventy control points marked by temporary wooden pegs.

During the survey an additional four external control points were established each some 150-200m beyond of the wooded area to allow accurate and unobstructed differential GPS coordinates to be observed to enable transformation of the temporary local site grid to National Grid coordinates. For each observation a Trimble R8 GPS rover was used to record an observed control point using real time differential data provided by the Ordnance Survey (OS Net) using VRS. This process took approximately 3 minutes to get an accurate fix, and was repeated for each of the four external control points.

Traverse observations and topographic points were imported into Trimble GeoSite Office 5.1 software where the raw survey data was checked for errors, and transformed to OS National Grid coordinates based upon the GPS observed control points.

The resultant plan was then printed out at 1:1000 scale through AutoCAD 2007 3D Map software, and used as a base map with known anchor points for the hand-survey. The majority of the survey was then carried out by hand using tape and offset from the network of observed control points to create a large-scale earthwork survey on polyester drawing film. The hand-drawn plan was scanned, geo-referenced and digitally traced to produce an overall plan of identified earthwork features within Brickkiln Wood.

A 1:500 scale hachured drawing of the extraction hollows at the north-east end of the area of survey was produced in the field by David McOmish. This further detail was scanned, geo-referenced, and digitised to complete an accurate draft plan comprising all collated survey data and corrections, produced by Rebecca Pullen. The final earthwork plan was then produced by Philip Sinton using Adobe AutoCAD and Adobe Illustrator software (Figure 34).

The site archive has been deposited with English Heritage's National Monument Record Centre, Kemble Drive, Swindon, SW2 2GZ. The archive includes two field survey plans; additionally, the wider digital archive is held on the English Heritage server, Cambridge. The project is logged as RaSMIS number 5989.

Although several instances of material culture were noted on the surface or in the upcast of burrows, no finds were retained for archive.

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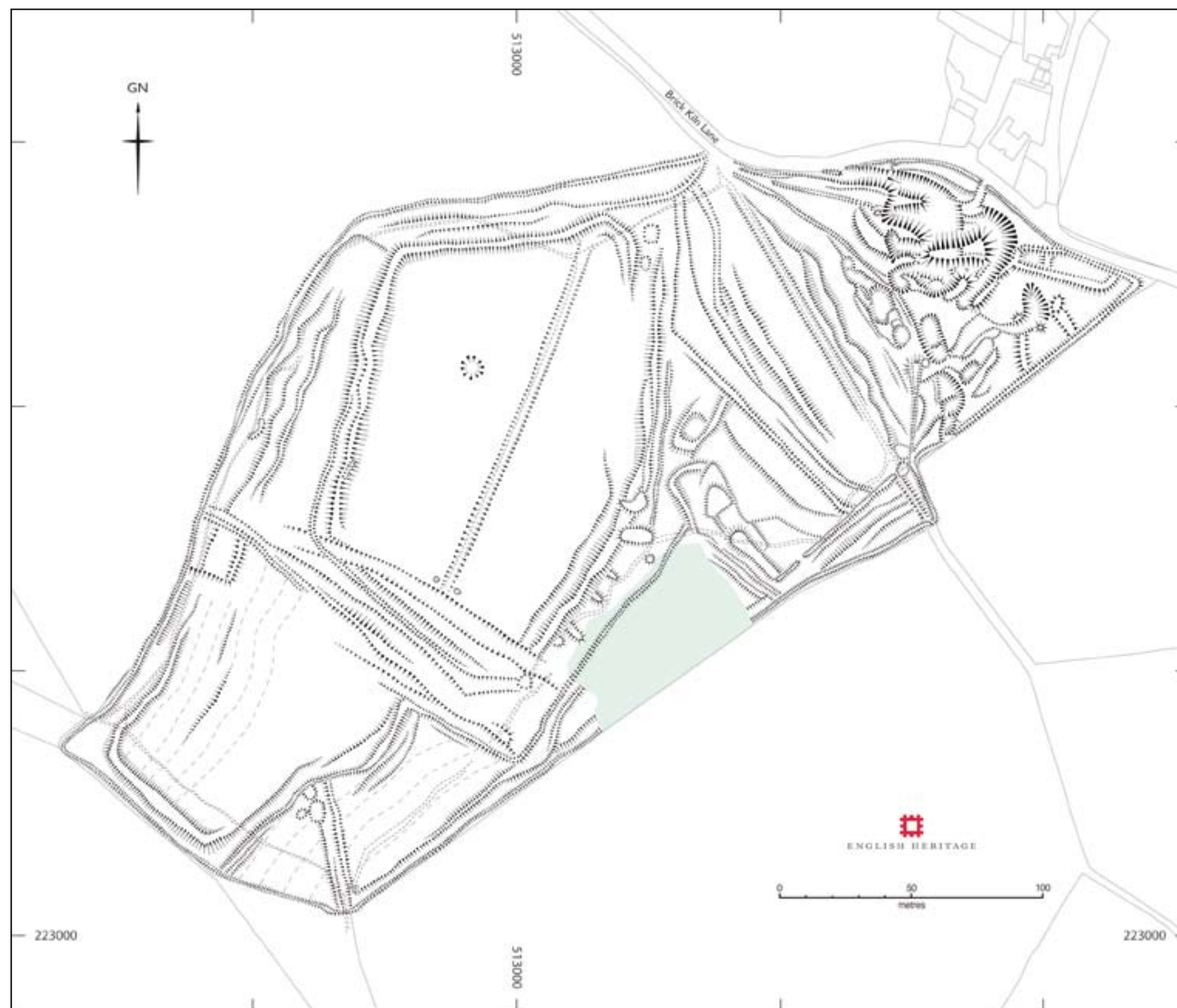


Figure 40: English Heritage survey drawing of archaeological features within Brickkiln Wood
 Drawn by Philip Sinton, © English Heritage

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