



LAND NORTH OF BROOM ROAD, LAKENHEATH, SUFFOLK

ARCHAEOLOGICAL DESK-BASED ASSESSMENT





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Archaeological Desk-Based Assessment

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Abstract

Britannia Archaeology Ltd was commissioned by Ellis Drafting Services on behalf of the landowners to undertake an archaeological desk-based assessment of a site on land north of Broom Road, Lakenheath, Suffolk (NGR: 572400 282600)

The assessment identified a high potential for Upper Palaeolithic deposits of potentially national significance on the proposed site.

The wider area has also been a site of occupation activity since the Mesolithic period with significant settlement activity identified in the Roman, Saxon, medieval and post-medieval periods. The assessment site is situated at least 500m from the focus of much of this settlement activity, and a moderate potential for Bronze Age, Roman and medieval remains is suggested.

The potential for all other periods is considered to be low and the historic maps show the site probably remained in agricultural use until the mid-19th century when quarrying first appears on the historic maps, evidence of this quarrying activity has also been identified by the aerial photography and LiDAR data.

Two cartographic sources suggest the presence of an 'Old Church Yard' in the north-eastern corner of the site in 1836 and later sources show extensive damage to the centre of the site from levelling and farm building construction. The potential for later post-medieval and modern remains is therefore high.

The impact on setting of existing heritage assets is likely to be low due to the surrounding topography and existing housing developments.



1.0 INTRODUCTION & METHODOLOGY

1.1 Project Background

Britannia Archaeology Ltd was commissioned by Ellis Drafting Services on behalf of the landowners to undertake an archaeological desk-based assessment of a site on land north of Broom Road, Lakenheath, Suffolk (NGR: 572400 282600) (Fig. 1). The site is located to the south-east of the medieval core of the village, on the apex of Maidscross Hill, outside the Lakenheath Conservation Area (Fig. 2). Although not in a formal Area of Archaeological Importance (AAI), it lies to the west of a location generally recorded as a site of archaeological interest, (572630 282560), in the Suffolk SMR (LKH 036) and is similarly recorded by both Roe (1968) and Wymer (1985), (Green, 2014; this report).

This assessment has been prepared in response to a Brief issued by Suffolk County Council Archaeology Service Conservation Team (SCCAS/CT) (Brudenell, 21st Oct 2013), with specific requirements for specialist reporting (Sec. 2). It will accompany a planning application for the residential development of the site and provide a baseline of information on which the scope of further pre-determination archaeological work will be assessed. It will also consider the setting of the works in relation to existing listed buildings and known archaeological sites within the immediate area.

The proposed development includes the construction of around 132 residential dwellings, landscaping, infrastructure and associated services. The provisional location plans have yet to be devised, however it is assumed that the development will use trench foundations over much of the site.

1.2 Site Description (Fig. 1)

The site is located 940m east of the medieval core of the village of Lakenheath on the edge of the modern settlement, in the Forest Heath District of Suffolk.

It lies north of Broom Road and is bounded to the west by residential development, to the north by houses fronting onto Maidscross Hill Road and to the east by a nature reserve on Maidscross Hill which is the site of a sandy warren described as an important remnant of the Brecks Heath (Natural England). The nature reserve falls within the Breckland SSSI, but the site itself does not.

The site is a roughly rectangular parcel of land covering 4.64ha at a height of between 22m and 32m AOD, sloping down in a west-south-westerly direction. It is split into seven distinct plots, two large in the north and south and five small along the western boundary. The southern area contains a pine tree plantation, the northern area is laid to dense scrub and undergrowth and the western plots comprise gardens, allotments and a small spinney of mixed trees.



The underlying bedrock comprises chalk described as Holywell Nodular Chalk Formation and New Pit Chalk Formation. This is also noted at the surface in the north-west corner of the site (Green, 2014). The superficial geology on the western half of the site is described as 'Head' (clay, silt, sand and gravel) and the eastern half is occupied by pre-Anglian Ingham Sand and Gravel Formation (Green, 2014).

2.0 METHODOLOGY

2.1 Aims & Scope

This report will assess all available information relating to archaeological remains within a 1km radius centred on the site. The assessment will identify the potential for archaeological remains that are likely to be impacted upon during the remediation work. It will also consider the impact of the works on the setting of existing archaeological sites and listed buildings in the immediate vicinity. This report will take into consideration existing truncation from previous developments and the potential impact caused by the implementation of the proposed remediation plans.

In addition to the Holocene archaeological assessment, specialist reports on the lower Palaeolithic finds and archaeological potential of the site and a detailed aerial photography and LiDAR survey have also been commissioned as part of this report. The full specialist reports are contained in the appendices and referenced throughout.

A mitigation strategy will be suggested in this report and further consultation is recommended with the Suffolk County Council Archaeology Service Conservation Team (SCCAS/CT) and Quaternary Scientific (Quest), in relation to the lower Palaeolithic deposits.

2.2 Research and Sources

Historic Environment Record Office

The Suffolk Historic Environment Record Office (SHER) was consulted and provided details of all data held within a 1km radius of the site. The HER database hold records of archaeological sites, scheduled monuments, listed buildings, finds spots, registered parks and gardens, protected wreck sites and battlefields.

Documentary Sources

Primary and secondary documentary sources were consulted via the HER, the Suffolk Record Office and the Archaeology Data Service (www.archaeologydataservice.ac.uk). All sources consulted are listed in the bibliography.

Specialist reports by Dr Chris Green of Quaternary Scientific (QUEST) and Alison Deegan were commissioned and consulted throughout.



Cartographic Sources

A search of primary and secondary cartographic sources was undertaken via the Ordnance Survey and the Suffolk Record Office.

Site Visit

A site visit was undertaken on the 22nd November 2013 and a photographic record compiled. The visit aimed to identify any existing earthworks or visible archaeological remains, establish the condition and character of the existing site and note its setting. Plans showing areas of proposed works were consulted during the visit to assess the areas most at risk from the development.

Presentation of Results

The results are presented by historical/archaeological period and are a synthesis of all data relevant to the site. Only the most relevant SHER data pertaining to the site are referenced in the report, however Appendix 1 contains a full table and brief description of the HER search results which are also shown in full in Fig. 2.

3.0 PLANNING BACKGROUND

The archaeological investigation was carried out in consultation with SCCAS/CT, following guidance laid down by the *National Planning and Policy Framework* (NPPF, DCLD 2012). The relevant local planning policy is the *Forest Heath Local Plan (Policy 8.20, 1995)*.

3.1 National Planning Policy Framework (NPPF, DCLG March 2012)

The NPPF recognises that 'heritage assets' are an irreplaceable resource and planning authorities should conserve them in a manner appropriate to their significance when considering development. It requires developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. The key areas for consideration are:

- The significance of the heritage asset and its setting in relation to the proposed development;
- The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance;
- Significance (of the heritage asset) can be harmed or lost through alteration or destruction, or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification;
- Local planning authorities should not permit loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred;



- Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to scheduled monuments, should be considered subject to the policies for designated heritage assets.

3.2 *Forest Heath Local Plan, (Policy 8.20, 1995)*

Forest Heath's local plan development plan was adopted in 1995 and has undergone some revision since. A Core Strategy was released in 2010 and an updated assessment of their Heritage Policy is pending. The Council's position on heritage assets is summarised as follows:

- The District Council will seek provision to be made for the evaluation of archaeological sites of unknown importance and areas of high potential prior to the determination of development proposals. Where nationally or locally important sites, whether scheduled or not, and their settings, are effected by proposed development, there will be a presumption in favour of their preservation. On sites where there is no overriding case for preservation, development will not normally be permitted unless agreement has been reached to provide either for their preservation or for their recording and, where desirable, their excavation prior to development.

4.0 **ARCHAEOLOGICAL AND HISTORICAL RESEARCH RESULTS**

The following results are presented as a synthesis of all the data obtained from the sources detailed above (Section 2.0) and listed in the bibliography (Figs. 2-6). Where possible, the HER preferred reference has been used and corresponds with Figures 2 & 3).

4.1 **Prehistoric (750000BC – 43AD) (Fig.2)**

Lakenheath is situated on the north-west side of a hill at the edge of the Brecklands where it meets the Fens. The top of the hill is located immediately east of the proposed site at Maidscross Hill (31m AOD) and slopes down to the Fens (2 - 4m AOD) around 1 - 2km to the north and west.

The HER search results returned 23 records dating between the Lower Palaeolithic and late Iron Age periods.

Palaeolithic

The earliest recorded activity in the area dates to the Lower Palaeolithic period (750,000 – 300,000) and is located on and adjacent to the proposed development area (LKH 032). At least seven handaxes and miscellaneous worked fragments were discovered during mid-19th century gravel quarrying which occupied over 60 acres on Maidscross Hill (Fig. 2). Wymer (1985) also describes the quarry site briefly and suggests that a larger



number of handaxes simply marked 'Lakenheath' in museum collections also come from the Maidscross Hill gravels (Green, 2014).

The gravels on Maidscross Hill date to a period when the local topography was considerably different. They were deposited by the Bytham River which wound its way across the Midlands and East Anglia (Fig. 4) and out into land now submerged by the North Sea.

The Anglian Glaciation overrode the river, especially along its northern course and it was either buried by varying thicknesses of till deposits (in the west Midlands and East Anglia) or eroded completely around the Wash and Fen Basin which were formed at this time. The deposits at Lakenheath mark the beginning of more continuous, but still fragmentary Bytham river deposits in East Anglia which were also partially eroded by glacial melt water (Rose, 2006).

At Maidscross Hill the projected course of the Bytham River, based on the positioning of the terrace gravels, is approximately north to south with the assessment site located in the centre and to the east of the floodplain. The gravels on the summit of Maidscross Hill were examined by Lewis (1993) and assigned to his Lakenheath Sand & Gravel Member forming part of the Shouldham Formation, making them part of the oldest deposits of the Bytham River in its Fen Margin reach (Green, 2014). Subsequent excavations by Ashton & Lewis on the assessment site in 2004 (2005) showed around 3m of surviving gravel deposits overlying chalk bedrock, however no archaeological finds or organic material was recovered during this excavation (Ashton & Lewis, 2005).

Artefacts recovered from the Bytham river deposits at the Maidscross Hill site and other sites further east in Suffolk such as High Lodge, Warren Hill and Pakefield, show that the Bytham River was a major migration route for early humans (most likely *Homo Heidelbergensis*) travelling into Britain. These form some of the earliest evidence for hominid occupation in Britain and as such are considered to be crucial, if not some of the most important, archaeological deposits so far discovered in the country (Rose, 2006).

Mesolithic – Iron Age

Breckland soils are notoriously poor for agricultural use, however the combination of alluvial and peat deposits at the Fen Edge produced abundantly fertile soils well suited to habitation during prehistory. For this reason, prehistoric archaeological sites have been recorded all along the Fen Edge, indicating that these areas were well populated and exploited from an early date. Unusually, Maidscross Hill also contains highly significant Lower Palaeolithic deposits associated with the Bytham River, dating to before the Anglian Glaciation (476,000 to 422,000BC), and flint tools recovered from these are associated with the very earliest known hominid occupation of Britain.

The earliest post Devensian glaciation activity noted in the search area dates to the Mesolithic period (12000 – 4000BC). This was recorded approximately 900m east of the assessment site (LKH 127) where a section cut through sand dunes on Lakenheath Warren in 1931 revealed microliths and worked flint.



The Neolithic period is well represented in the search area with five records indicating a moderate level of activity. Four of the records (LKH 003, LKH 004, LKH 013 and LKH 044) relate to findspots located in two fields, around 800m to the north-east of the site. Neolithic Grooved Ware (LKH 013) and a single barbed, hollow base type arrowhead (LKH 003) were found as part of a larger multi-period finds scatter. A polished greenstone axe (LKH 004) and a leaf-shaped arrow head (LKH 044) were found at Roman field which is also described as a multi-period site. This concentration suggests a possible focus of activity in this direction along the northern edge of the Fen.

Later Neolithic settlement and agricultural activity patterns in East Anglia tends to persist into the early Bronze Age and many artefacts such as beaker style pottery are noted in both periods. In Lakenheath, the evidence goes some way to support this theory with over 400 sherds of Bronze Age Beaker pottery (LKH 013) recovered to the north-east in the same location as the earlier Neolithic Grooved ware.

Three further Bronze Age entries (LKH 041, LKH 048 & LKH 128) record find spots also located to the north and north east, in the same fields as the earlier Neolithic finds. The closest to the assessment site was located 170m to the north and comprised a barbed and tanged arrowhead and half a javelin head (LKH 048).

The remains of a possible Bronze Age round barrow (LKH 042) are also noted 80m north-east of the proposed site. This has been later associated with a medieval stone cross that stood on top of it, but is no longer extant.

Bronze Age activity is clearly focused to the north-east of the assessment site in roughly same locations as earlier activity. This suggests a continuity of focus for human activity in the area.

The search results show a steady increase of activity into the Iron Age period with 11 records noted within the search area (LKH 014, LKH 020, LKH 029, LKH 041, LKH 076, LKH 108, LKH 156, LKH 181, LKH 202, LKH 211 and LKH 269). Two distinct areas of activity can be identified with significant finds and features recorded to the north and north-east as with previous periods, however the south-western Breckland/Fen boundary also seems to have been well used.

Roman field and Sahara field to the north-east account for five records (LKH 014, LKH 020, LKH 029, LKH 041 and LKH 108) and show substantial activity probably related to settlement. An extensive scatter of pottery covering over half a mile (LKH 014) in Sahara field is indicative of a potential settlement or industrial area associated with a nearby settlement. A coin hoard (LKH 020) recovered in the adjacent Roman field along with an inhumation (LKH 041) would suggest satellite settlement activity as does the presence of Iron Age pits and ditches (LKH 211) recorded south of Sahara field. The finds and features in this north-eastern area further contribute to an overall pattern of continued activity throughout prehistory.



Approximately 1km to the south and south-west of the assessment site, a further five locations (LKH 076, LKH 156, LKH 181, LKH 202 and LKH269), have provided evidence of Iron Age activity along the Fen Edge. Most notable is a burnt mound (LKH 156) containing a scatter of burnt flints, just inside the fenland area. A pit was also recorded close-by during an evaluation at Eriswell Drive (LKH 269) on the Breckland side of the margin, suggesting more substantial activity in the south-western area than the finds scatters (LKH 076, LKH 181 and LKH 202) located to the west of the assessment site.

The search results show increasing levels of prehistoric activity dating between the Mesolithic and Iron Age. The main focus was to the north and north-east in fields located around 80m to 1km from the assessment site.

4.2 Romano-British (43AD – c. 410AD) (Fig. 2)

The Romano-British period marked a significant change in development for the wider area with *Camulodunum* (Colchester) becoming the Roman Capital of Britannia and consequently East Anglia underwent more rapid change than perhaps the rest of the country. Iron Age settlements often became at least partially Romanised and villa complexes became common throughout the region.

The nearest settlement of note was at Thetford, 10km east of the assessment site (Sealy, 1997). However various finds and archaeological work around Lakenheath have provided substantial evidence for Roman occupation.

The HER search returned 20 records dating to the Roman period of which 15 relate to finds and features located to the north and north-east of the assessment site. Six of these (LKH 011, LKH 012, LKH 019, LKH 061, LKH 062 and LKH 073) directly relate to settlement and industrial activity, most notably four kilns (LKH 019, LKH 061, LKH 062 and LKH 074) and two buildings (LKH 011 and LKH 012).

The fields adjacent to this and around 500m north and north-west of the assessment site contained numerous findspots and artefact scatters dating to the Roman period and suggest wide spread activity around the settlement mentioned above. These include a bronze cauldron (LKH 139), miniature axe (LKH 109), bronze scales and bowls (LKH 055) and Aucissa related brooch with two coins from the reign of Constantine (330 – 335AD) (LKH 180).

Three records (LKH 076, LKH 103 and LKH 181) show continued activity between 600m to 1km to the south-west along the Fen Edge. This continues the pattern of activity seen in the Iron Age and includes larger features such as a ditch (LKH 076) suggesting that occupation or use of this area was increasing.

No features prehistoric or Roman date were positively identified on the air photos (Deegan, 2014; this report).



Once again, the main focus is to the north and north-east of the assessment site at 'Roman' field, showing an increase in settlement and industrial activity from the Iron Age.

4.3 Anglo-Saxon (Early medieval) (c.410AD – 1066AD) (Fig. 2)

Lakenheath, like many of the surrounding villages, can trace its modern origins to the Anglo-Saxon period which was a time of significant change in East Anglia. After the withdrawal of Roman authority in Britain in the early 5th Century AD, many Roman towns like Colchester waned in significance while new towns such as Ipswich and Hadleigh emerged as centres of administration. Settlement patterns persisting throughout Iron Age and Roman Britain did not necessarily continue into the Anglo-Saxon period.

Lakenheath can certainly trace its origins back to the Anglo-Saxon period; the name is a corruption of three Old English (Anglo-Saxon) words; *Lacu + inga + hyth* meaning 'landing place of the people who live by streams' (Mills, 2003). It is recorded in AD 945 as *Lacingahith* and later as *Lakingahethe* in the Domesday Survey of AD 1086.

It is worth noting that one of the most important Anglo-Saxon burials discovered in Britain was excavated 2.5km south of the assessment site in RAF Lakenheath in 1996. This was a very early (late 5th century AD) Anglo-Saxon warrior and horse burial found in an extensive cemetery complex. Subsequent analysis indicated that the warrior was probably born locally and the artefacts recovered from his grave were of the highest quality making this a very high status burial, probably a local chieftain or king. Several hundred other Anglo-Saxon bodies have since been recovered from three associated cemetery sites on the airbase, indicating significant settlement activity in the area during this period.

The HER search returned 12 records dating to the Anglo-Saxon period and eight of these (LKH 010, LKH 016, LKH 017, LKH 041, LKH 042, LKH 046, LKH 188 and LKH 195) record activity to the north and north-east of the assessment site in the same location as earlier activity. However, unlike the earlier settlement and industrial activity, the Anglo-Saxon records show significant funerary activity dating to the 5th and 6th centuries AD. Three records (LKH 017, LKH 041, LKH 042) note separate cemeteries, or three parts of one larger cemetery off Sandy Drove and include cremations (LKH 017), numerous inhumations with bead necklaces (LKH 041) and an area of mixed inhumation and cremations (LKH 042).

Five find spots (LKH 010, LKH 016, LKH 046, LKH 188 and LKH 195) located to the north and north-east are consistent with ploughed up or disturbed grave goods and may suggest significant damage to the cemeteries over a wider area. These finds include glass beads (LKH 016), an 'S' shaped brooch (LKH 046) and a significant scatter of finds (LKH 010) in Sarah field comprising a cruciform brooch, two combs, tweezers, a sleeve clasp, bracelet and pottery fragments.



The remaining records (LKH 103, LKH 104, LKH 202 and LKH 315) are located to the south and south-west and once again are located in the same area along the Fen Edge as the Roman and prehistoric records. The most notable record (LKH 315) relates to a long-maintained property boundary 900m west of the assessment site in the modern settlement and may be indicative of the early origins of the medieval and modern settlement. Monitoring work at Anchor Lane (LKH 202 and LKH 322) also revealed middle to late Anglo-Saxon features. These records suggest that a later settlement built up along the Fen Edge where the medieval core of the modern town exists today.

It is worth noting that the cemetery area to the north-east is dated to the early Anglo-Saxon period (AD 410 – AD 700), while the material recovered to the south-west is generally dated to the latter half of the period (AD 800 – AD 1066). This may well relate to a regional trend (known as the Middle Saxon Shift or *Schwerpunktverlagerung*), where earlier settlements were abandoned and later settlements located in different locations. It may therefore be a coincidence that the later Anglo-Saxon activity at Lakenheath follows a similar pattern to previous periods and may have more to do with siting a newer settlement in an excellent location adjacent to the Fen Edge, rather than following existing practice.

The evidence shows substantial Anglo-Saxon activity in the search area and in similar locations to the earlier periods, however this takes a different form than earlier activity and is consistent with well-established activity in the wider area, such as the cemeteries to the south at RAF Lakenheath. Archaeological work and findspots suggest that a latter Anglo-Saxon settlement was established on the edge of the Fen where the core of the modern settlement is today. As with all the post-Palaeolithic activity so far, much of this is located some distance from the assessment site.

4.4 Medieval (1066 AD – 1540 AD) (Fig. 2)

The medieval period in Lakenheath is fairly well represented in both primary and secondary sources. The Norman invasion of AD 1066 ended Anglo-Saxon rule in Britain, but in practice it did not affect the area to any great extent.

The later Anglo-Saxon town appears to have continued to grow in the medieval period and the Domesday Survey of AD 1086 records a total of 24 households which was considered quite large. The tax value in AD 1066 was around £4 which rose to £6 by AD 1086 (Phillimore, 1986). The ownership of many manorial demesnes passed to Norman aristocrats after the Conquest, however the manor of Lakenheath (in the Hundred of Lackford) remained under the lordship of the Abbey of St. Ethelreda in Ely and as such little would have really changed for the town.

Literary and archaeological sources show the town was well established by the 11th century (LKH 254) and was recorded from c. 1100. It had a market granted 1201 and a market and fair (LKH 130) in 1309; the granting of the first market was contested by the Abbot St Edmunds as an injury to the market in Bury St Edmunds and was revoked in 1203 (Copinger, 1909).



The Church of St Mary the Virgin (275834) lies around 850m west of the assessment site and was built in the 12th century. Five rare and unique schemes of wall painting dating from 1220 through to 1610 have been recently restored after their re-discovery in the 19th century. The church and the paintings were clearly the product of an affluent town which may have resulted from a thriving fenland fisheries industry (Scarfe, 2007).

In late 1370, Lakenheath was the centre of civil dissent when several residents refused to pay taxes owed to the King. Several royal officials including John Bole were driven out of the town by an angry mob and in early 1371, Edward III sent four senior enforcers including John de Cavendish who restored the Crown's authority. In 1377 a large fire caused devastation to the northern part of the town including the manorial complex of the prior and convent of Ely. The rental property of the town dropped from £15 to £5 and the town's folk refused to rebuild the 40 or so properties that were destroyed despite numerous orders from the Abbey to do so. Further animosity was fanned in 1379 when John de Cavendish sat at the court of the King's Bench in Thetford and Bury St Edmunds prosecuting local workers and the new bailiff for Lackford, John Bole, enforced the rulings. This accumulation of perceived injustices led to the murder of both protagonists in Bury St Edmunds during the Peasants Revolt of 1381, which was particularly brutal in Suffolk (Bailey, 2010).

During the medieval period rabbit was considered desirable for high status food and clothing. Enclosed warrens were created in many areas to farm and manage them. The Breckland soils were notoriously bad for arable farming and consequently many rabbit warrens or 'lodges' were located here. The prior obtained a grant in 1252 to 'free warren' and the remains of a large warren (LKH 174) are located 500m south-east of the assessment area and comprise the surviving earth works boundary bank (Copinger, 1909).

The medieval economy of Lakenheath seems to have relied heavily on exploitation of the Fen marshes and inland river transportation network. An inland port somewhere on the west of the town and at least 1km from the assessment site, was connected to the River Little Ouse, 2.5km to the north, by a navigable 'lode,' or narrow channel, cut through the marshland. Shallow-draft boats were used to ferry goods from Lakenheath to the river and on to Ely, Lynn and the Midlands (Bailey, 2010).

Communal rights existed over large areas of the Fen located in the Parish and the freshwater marshes provided fish, waterfowl and an abundance of eels for which the Lakenheath market was well known. Extensive turf, sedge and peat cutting was undertaken in the large expanse of fen to the west and in the early 14th century Lakenheath was supplying 100,000 turves a year to the monastery at Ely (Bailey, 2010).

The HER search returned 17 records dating to the medieval period, however several of these originated in the late Anglo-Saxon period and show the continuation of settlement activity into the medieval period. The extent of the medieval town is recorded as LKH 254 which lies around 650m west of the assessment site. The boundary suggests that



the medieval core grew from the late Anglo-Saxon settlement along the Fen margin in a north south alignment.

Ten of the records (LKH 057, LKH 058, LKH 103, LKH 112, LKH 130, LKH 181, LKH 202, LKH 322, LKH 236 and LKH 254) are located in the area south-west of the assessment site and provide substantial evidence of medieval activity. Excavations at Anchor Lane (LKH 202) and Back Street (LKH 322) uncovered medieval ditches and pits, the former also contained late Anglo-Saxon pottery. Many of the remaining records identify artefact scatters and findspots, with the most notable (LKH 130) being the site of the fair granted in 1301.

Five records (LKH 043, LKH045, LKH 047, LKH 058 and LKH 188) are located to the north and north-east, however the distribution and density of finds here is much lower during the medieval period in comparison with earlier periods.

Two records (LKH 043 and LKH 047), are located close to the assessment site and relate to the remains of a medieval cross (LKH 043) on a barrow mound situated just 80m to the north-east and an artefact scatter comprising two silver short cross coins located 120m to the north. The remaining records relate to pottery scatters (LKH 045) and metal work finds (LKH 180 and LKH 188) which may be indicative of industrial activity in the northern fields, however no evidence of industrial structures has been identified.

The manor was taken over by the Crown after the Dissolution (in 1541) and was subsequently granted to the Dean and Chapter of Ely (Copingier, 1909).

A sinuous bank identified in AP no. 2, which runs parallel to the Maids Cross Hill road, may be a medieval plough headland. The other two possible banks in this field, which are straighter and less well defined may also be of this date. However a post medieval origin for all or any of these banks cannot be discounted (Deegan, 2014).

The records show substantial medieval activity in Lakenheath and the beginnings of the modern town as it is laid out today. The majority of activity is situated to the west of the assessment site with some limited satellite activity located to the north and north-east. This marks a significant change from earlier periods where the focus had been in the northern area.

4.5 Post-medieval and Modern (1540AD – Present) (Figs. 2–6)

Lakenheath, like many towns in Suffolk, continued to grow during the post-medieval period. Other towns in Suffolk began to expand significantly due to wealth from emerging textile industries, however the local economy in Lakenheath continued to rely on the rabbit warrens, exploitation of the Fens and, to some extent, agriculture.

The early post-medieval period saw the rise of several powerful families in Lakenheath including the Gerardes, Mans and in particular the Stywards who diverted the High Street to the west around a new manor house they had built (Munday, 1969). Other more



permanent houses began to be constructed at this time and one of the oldest surviving examples is Chalk Farmhouse (275835), the core of which dates to the 15th century. Another (275838) dates to the 16th century, although underwent extensive renovation in the mid 18th century. Both these buildings lie around 800m to the west and north-west of the assessment site.

The manor was leased by the Dean and Chapter of Ely in 1516 to the vicar, Sir William Gerarde and two brothers, William Man (a fisherman) and Thomas Man (a butcher) (Munday, 1969).

The earliest maps of the area show very little detail of the town itself, but confirm the rough location in relation to surrounding towns and villages. Saxton's Map of Suffolk dates to 1575 and shows pictorial representations of the towns and villages and scales the size to match population and importance. Lakenheath is shown as a smaller town (Fig. 4), subordinate in importance to the larger towns of Brandon, Thetford, Bury St Edmunds and Mildenhall. The area of Breckland is also represented and shows relatively sparse settlement distribution.

Seven HER records (LKH 106, LKH 130, LKH143, LKH 163, LKH 181, LKH 315 and LKH 318) date to the early part of the post-medieval period and give a good representation of activity in area at that time. A warren Lodge (LKH 143) was located 760m south-east of the assessment site and was probably one of three in the area by 1649. A fen causeway (LKH 163) located 850m east of the assessment area ran from the south end of High Street across Turf Fen to Babbridge and Underly Hall and was present by at least 1616, but probably much earlier in the medieval period.

The excavation at Churchgate Farm (LKH 315) mentioned above in the Anglo-Saxon section, also contained evidence of a post-medieval farm building and well and an adjacent site (LKH 318) revealed the remains of a yard dating to the 16th century. The fair (LKH 130) continued well into the post-medieval period with numerous artefact scatters dating through the early half of the period right up to the 19th century.

A Boy Bishop (LKH 106) token is the only findspot located to the north of the assessment site (760m) and completes the reversal in focus of activity that began in the Anglo-Saxon period.

By the end of the 17th century, Lakenheath had a population of 360 people and 75 houses with a large increase in services supplied by tradesmen as-well-as the traditional fishermen and farmers (Edwards, 2006).

The 18th century saw a steady increase in population and activity. The town had three windmills (LKH 129, LKH 131 and LKH 161) located between 450 – 700m north-west and west of the assessment site, but a devastating fire in 1713 destroyed many of the medieval and early post-medieval buildings and few structures pre-dating this survive in the town (Edwards, 2006). Two listed buildings (275832 and 275837) along the High Street date to this post-fire period showing a steady programme of rebuilding.



John Kirby's map from 1736 (Fig. 4) is a little more detailed than Saxton's map and shows some roads and the basic layout of the larger settlements including Lakenheath. The High Street is clearly identified as the main built-up area, with the manor house belonging to the Stywards (now spelt Stewart) clearly marked at the northern end of the town. The assessment site is not shown in any detail.

Farming in Lakenheath was undertaken in the traditional manner until Enclosure in 1813 (Munday, 1969). The 900 acres to the north-east, east and south-east of the settlement were split into three 'fields' which were in turn subdivided into furlongs. Each furlong was further subdivided into 'strips' of varying size and each strip was the property of an individual owner. The owner had a strip in each field of roughly the same size and a system of crop rotation was practiced where by one strip remained fallow for a year while the others were in use. Unusually, a complete picture of the Lakenheath Fields system survives and the assessment site can be easily identified (Fig. 4) within this system. It was located at the eastern end of Middle Field in furlongs 22, 27 and 28 which were described as follows before Enclosure:

FURLONG	NAME	No. of STRIPS	TOTAL AREA			ADDITIONAL INFORMATION
			A	R	P	
22	DOWN FURLONG	38	29	1	8	Numbered north to south
27	MAIDSCROSS WAY HEADLAND TO MILL FURLONG	12	21	1	32	Including in its middle 14a. 3r. 27p. in the occupation of John Beeton)
28	MAIDSCROSS FURLONG	6	1	3	20	1 rood and 4 perches of common pasture (for the cross LKH 043)

Table 1: Location of Assessment Site in Pre-Enclosure Field System

The Lakenheath Hall Estate map (Fig. 4) dates to the early 19th century and is far more detailed than earlier maps. The assessment site is clearly identifiable and no buildings or development are shown on it. The nearest structure is the windmill (LKH 129) located 450m to the north-west on the eastern edge of the town and the warren (LKH 174) is marked to the south-east. Broom Hill Road is not named but clearly shown and the road to the north is described only as 'Road'.

The Enclosure Map for Lakenheath dates to 1836 and is still more detailed than earlier maps. The pre-enclosure furlongs were replaced with new boundaries which mostly survive today. The assessment site is easily identified in the eastern part of Plot 50f, but is also described in the northern area as the 'Old Church Yard'. This is somewhat surprising as no indication prior to this map suggests the presence of a churchyard on, or close to, the assessment site. Broom Hill Road is called Private Road No. 6 and the road north of the site is called Public Road No.2. The apportionment entry records the following details:

PLOT NUMBER	LAND OWNER	DESCRIPTIO	A	R	P
50	WILLIAM EAGLE	IN LIEU OF FREEHOLD LAND COMMON	30	1	20

Table 2: Enclosure Apportionment



The David & Charles Map is also dated to 1836 and is less detailed than the Enclosure Map, however it attempts to show the topography by way of hatched relief shading. It also puts a boundary around the 'Old Church Yard' which does seem to partially lie within the boundary of the assessment site. It also suggests four small buildings were present at the south-west corner of the Old Church Yard which would put them on the assessment site.

The Tithe Map for Lakenheath dates to 1853 and is more detailed than the Enclosure Map. It shows that little in the way of development had taken place, however some larger plots to the west had been further subdivided. The assessment site is still clearly defined in the western half of a larger plot numbered 252a. There is no indication of the Old Church Yard or any buildings on the site. The apportionment entry records that the landowner remained the same from the earlier Enclosure record, although the plot area seems to be slightly larger than before:

TITHE NUMBER	LAND OWNER	OCCUPIER	SITE NAME	LAND USE	A	R	P
252a	WILLIAM EAGLE	JOSEPH FLACK	-	ARABLE	31	-	2

Table 3: Tithe Apportionment

The occupier, Joseph Flack, is recorded as having a minor interest in the nearly 3000 acres of rabbit warren of which he occupied 250 acres and the assessment site bordered the warren to the south-east. A 'Mr Phipps' was recorded as occupying the remaining 2400 acres (Kelly, 1869).

The population of Lakenheath increased from 745 in 1801 to 1864 by 1851, but the town was described as a large village by this point as the importance and size of other settlements in the area out-stripped its more sedate growth (Directory of Suffolk, 1853).

The middle and late 19th century saw an increase in industrial activity in Lakenheath. A Lime Kiln (LKH 151) was established 800m north-west of the assessment site in a former chalk quarry. Most significantly, gravel extraction began on, and adjacent to, the assessment site (LKH 032), which led to the discovery of the Upper Palaeolithic tools at Maids Cross Hill by Flower in 1869 (Green, 2014).

The First Edition Ordnance Survey Map (1882) shows a track and quarry pit in the centre of the assessment site and trees along the south and western boundaries. The larger plot shown on the earlier maps is still evident, however a tree plantation is present in the centre of it and on the eastern fringe of the assessment site. Numerous gravel pits marked as 'stone works' are located immediately to the east and suggest significant quarrying activity. Indeed, the earliest aerial photographs suggest a wider area has been disturbed than the OS Maps would suggest (Deegan, 2014).

The Second Edition Ordnance Survey Map (1905) shows the plot boundaries to be almost the same as they are today. The larger plot has been split into two and the assessment site forms the new western plot. The plantation and trees along the southern boundary have gone, but a strip of trees remain along the western boundary. No evidence of



quarrying is shown on the map, but again the early aerial photographs indicate that a wider area than that depicted on the historic maps appears to have been disturbed (Deegan, 2014).

The Ordnance Survey map dating to 1975-6 shows that the site had been further subdivided into the plots which exist today. The centre and north of the site show several buildings associated with Grey Gables farm which would have had some significant impact on the subsurface archaeology. Only one shed remains in 2014 and demolition of the other buildings is also likely to have impacted the subsurface remains. The south and east of the site show relatively little disturbance.

The LiDAR data shows a distinct ridge in the centre of the site adjacent to where the Grey Gables development once stood to the west. Quarrying on the eastern edge of the Survey Area, which though relatively shallow and piecemeal was quite extensive by the late 20th century. Some of these workings predated the earliest of the air photos and may have had their origins in the post medieval period (Deegan, 2014).

Numerous archaeological evaluations and monitoring projects (LKH 221, LKH 257, LKH 266, LKH272, LKH 275, LKH 320 and LKH 331) have been conducted to the south-east of the assessment site along the boundary with RAF Lakenheath (LKH 339) which is located in the area of the former warren (LKH 174). These have generally recorded little in the way of activity other than undated ditches (LKH 272 and LKH 275) or natural hollows associated with the ancient Breckland landscape.

4.6 Site Visit (Fig. 5)

A site visit was undertaken by the author on 22nd November 2013 to determine the current state of the assessment area, investigate the presence of any surface or potential sub-surface archaeological remains and to ascertain the current level of truncation.

The southern area of the site is currently set to a conifer plantation (DP2) which covers around 30% of the total area. This is due to be removed. Numerous humps and bumps, possibly associated with quarry pitting or tree removal, were noted, however the ground was obscured by a carpet of pine needles.

The centre and north of the site was heavily overgrown with hawthorn and other scrub plants, however it was clear that significant disturbance had occurred in the area of farm buildings shown on the 1975 OS map (DP3). It would appear that the area has at least been partially levelled and numerous mounds of modern demolition and natural material were evident. The boundary for this is clearly visible on the LiDAR image.

The eastern side of the site, towards the top of Maids Cross Hill, was less overgrown and was a mixture of grass, scrub and coppiced trees. This area seemed relatively undisturbed, however old concrete blocks forming a disused entrance (DP10) were noted on the eastern boundary.



No obvious archaeological structures or earthworks were observed.

5. DISCUSSION

5.1 Archaeological Potential

Archaeological information in the immediate area of the assessment site is relatively good, especially in relation to the Upper Palaeolithic deposits. Information regarding more recent archaeology is not as well documented on the assessment site and the numerous archaeological works in the search area tend to focus on the medieval town over 600m to the west, or RAF Lakenheath 600m to the south-east.

The evidence suggests a relatively high level of human activity in all archaeological periods over the 1km search radius, with two main focal points. Prehistoric to Saxon activity is focussed around 500m to the north and north-east with some limited activity present in a second area to the west and south-west along the edge of the Fen. From the Saxon period onwards, this trend seems to reverse and by the post-medieval period the modern town of Lakenheath is well established in this second area, although there is significant satellite activity in all areas.

The most significant results relate to the Upper Palaeolithic material recovered on or adjacent to the assessment site. These deposits are potentially nationally important and appear relatively intact in the eastern half of the site, despite extensive 19th century quarrying. Consequently, there is a **very high** potential for the presence of archaeological and significant geo-archaeological material on the assessment site. These deposits are likely to be encountered below the topsoil and the 2005 excavation by Ashton and Lewis found them to be around 3m thick where not disturbed.

The results show limited evidence for Mesolithic activity in the search area with only one site recorded. The potential for encountering archaeology dating to this period is therefore **low**.

The results show some limited Neolithic activity to the north, however nothing has been recorded within 500m of the assessment site. Consequently there is a **low** potential for the presence of material dating to this period.

Bronze Age activity is similarly focused to the north and north-east, however the possible barrow on which the medieval cross at Maidcross Hill was situated is just 80m from the assessment site. An artefact scatter is also located quite close to the north and as such the site has a **moderate** potential for remains dating to this period.

Although the Iron Age period is well represented in the search area, the focus tends to be to the north-east and west near the Fen edge and consequently there is **low** potential for finding remains dating to this period on the assessment site.



A large amount of Roman finds and features are noted within the search area, again these are especially well defined to the north and north-east of the site. Some artefacts have also been recovered from fields to the south with the assessment site located in between these areas. However, these results are not especially close to the proposed site and such, there is only a **moderate** for recovering material of this date, despite the large number of records returned in the search.

The origins of Lakenheath as a modern parish lie in the Anglo-Saxon period and there is substantial evidence for funerary activity to the north and north-east and settlement activity to the west and south-west. However these locations are between 500m and 1km from the assessment site and as such the potential for finding additional material is **low**.

The parish was properly established by the medieval period, and the later medieval sources suggest the town was locally important, probably thanks to the inland port on the edge of the Fens. Civil dissent in the town during the 14th century seems to indicate it was considered quite dangerous by the middle of the medieval period. The search results show that the settlement activity was also highly localised along High Street to the west and south-west of the assessment site and did not extend as far as the assessment site, but more agrarian and industrial activity spread out well beyond the town centre and was noted in many parts of the search area. The potential for finding medieval remains is therefore **low to moderate** with the emphasis on outlying field systems.

Lakenheath continued to developed along the High Street during the majority of the post-medieval period, with some development out towards the assessment site as far as the windmill at the end of Mill Lane. Cartographic sources from the 18th and 19th century show the site remained undeveloped, however the presence of the 'Old Church Yard' on two maps from 1836 may suggest the presence of a post-medieval cemetery in the east and north-eastern part of the site, but later maps do not show this. Quarry pitting from the mid-19th century onwards may also have significantly disturbed the site and adjacent plot. The construction and subsequent demolition of farm building called 'Grey Gables' will also have impacted on the centre of the site. Therefore the potential for post-medieval and modern features and finds is **very high** in relation to quarry pitting, the Old Church Yard and the Grey Gables development.

5.2 Existing and Proposed Impact (Fig. 5)

Existing Impact

Very little in the way of development seems to have taken place on the assessment site until the mid-19th century. The extensive quarry pitting on Maidscross Hill is likely to have had a significant impact on archaeological remains, especially those from the Mesolithic onwards, however the relatively shallow quarrying is likely to have left some deposits associated with the Upper Palaeolithic intact.



The construction of the buildings associated with Grey Gables is also likely to have had a significant impact on subsurface remains. The area has certainly been levelled in the centre of the site and this is likely to have removed any archaeological material dating to the Mesolithic and later. A well-defined ridge noted during the site visit and visible on the LiDAR image marks the eastern extent of this truncation. Once again, it is possible that the Upper Palaeolithic deposits have partially survived this process.

The eastern, southern and western areas of the site seem relatively undisturbed, however the extent of the 19th century quarrying is not known and may have also impacted on these areas.

Given the above, the preservation potential of archaeological remains dating to the Upper Palaeolithic period is **high**.

If later archaeological remains (Mesolithic onwards) had been present in the centre of the site, the Grey Gables development is likely to have removed them and as such the conditions for preservation in this area are considered **low**.

In the rest of the site, if subsurface remains were present, the conditions are generally **moderate** for preservation given the nature of modern activity in these areas.

Proposed Impact

The proposed development involves the construction of around 132 residential houses and includes extensive landscaping, foundation trenching and services excavation.

If archaeological remains are present in the areas of the proposed work then the impact will be high due to the depth of the intended excavations. The majority of works will cut into the Upper Palaeolithic gravel deposits and any surviving later archaeological remains will be heavily impacted where encountered

The impact to remains dating to all periods will therefore be **high**, but it is likely that many of the remains dating from the Mesolithic onwards have already been removed in the centre of the site and where quarrying has taken place.

Impact on Setting

The current site is relatively well screened by trees in most areas, however the plantation to the south is due to be removed as are many of the tree-lined borders within the site itself. The construction of 132 new homes is likely to be clearly visible, especially to the west, south-west and south in the direction of the slope.

It is unlikely that the development will be visible from the north or north-east as it will be screened by the summit of Maids Cross Hill and existing housing, however it will be visible from the east immediately adjacent to the site.



The heritage assets that lie to the north and north-west and will not have line of sight to the development and their setting will not be affected.

Similarly the heritage assets to the west and south-west are located within the built up area of modern Lakenheath and are highly unlikely to have direct line of sight to the development, especially as a recent housing development already lies immediately west of the proposed development. None of the listed buildings noted in the HER search have line of sight to the proposed development.

The impact on setting with regard to heritage assets is therefore **low**.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Lakenheath is unusual in that hominid activity in the immediate area can be traced back half a million years, and more importantly, can be placed on the assessment site itself. The site therefore has the potential to hold nationally important archaeological remains and as such is likely to require further archaeological and geo-archaeological investigation (dependent upon the development plans).

The area has also been a site of occupation activity since the Mesolithic period with significant settlement activity identified in the Roman, Saxon, medieval and post-medieval periods. The assessment site is situated some distance from the focus of much of this settlement activity, although some Bronze Age, Roman and medieval finds and sites have been noted within a few hundred metres.

The assessment site itself is recorded in the SHER as the site of Upper Palaeolithic finds and deposits and as such the potential for encountering remains associated with it are high.

The overall potential for encountering remains other than Upper Palaeolithic deposits and pre-dating the 19th century is general **low** to **moderate**.

The presence of an Old Church Yard, quarry pitting and the construction of buildings associated with Grey Gables means that the potential for encountering 19th century and modern remains are **high**.

The construction of 132 new homes is likely to have a minimal impact on the setting of existing heritage assets due to the surrounding topography and existing housing developments.

6.2 Recommendations

Given the results of the assessment several recommendations are made for further work, however none of these have yet been discussed with SCCAS/CT and are therefore



subject to change. With regard to the Palaeolithic deposits, Dr Chris Green has recommended the following be implemented to properly assess the resources:

- In the interest of providing for future reference a more complete understanding of the Quaternary deposits on Maids Cross Hill, it is recommended that a number of geoarchaeological sondages are put down from the base of the archaeological evaluation trenches until the bedrock Chalk is reached. This will enable the bedrock relief and complete overlying sediment sequence to be recorded. A minimum of nine sondages forming three north-south transects of three sondages each would give a broad indication of bedrock relief and the pattern of the overlying sediments. With regard to the exact location of the sondages, the eastern half of the site is mapped as *in situ* sand and gravel, whereas the western part is mapped as 'Head'. The eastern half ought therefore to be of greater interest. If the BGS mapping is correct and the Chalk is close to the surface beneath some of the western part of the site, evaluation trenches may reach the Chalk there, in which case, either fewer sondages could be put down, or, and more preferably, the north-south sondage transects could be placed closer together in the eastern half of the site. Additional sondages might be advantageous if a complex bedrock topography and/or overlying sedimentary sequence is recorded.
- An initial stage of geoarchaeological boreholes is not recommended for the following reasons: (a) the whole site is mapped by the BGS as occupied by Sand and Gravel or Head. The Head is likely to be disturbed sand and gravel and will not be easy to distinguish in borehole samples from *in situ* sand and gravel; (b) a large amount of trenching is visualised during archaeological evaluation (5% proposed by Brudenell in email correspondence on 17th October 2010). This would provide a far better opportunity to map and understand the sub-surface stratigraphy than the information gained from geoarchaeological boreholes, and (c) trenching would be a much more efficient way of assessing the impact of gravel extraction. It would be much easier in section to recognise such features as spoil heaps or talus accumulations associated with old working faces and distinguish them from *in situ* sediments.
- Depending on the outcome of the evaluation, it is recommended that either:
 1. A more extensive strip, map and record programme is put in place; or:
 2. A watching brief is put in place to monitor all excavations undertaken at the site during all phases of the proposed building work.

With regard to the later deposits (Mesolithic onwards), SCCASCT have already suggested that a programme of trial trench evaluation might be appropriate. Given the significance of the Quaternary deposits and the assessment of later remains in this report, it would be prudent to discuss in more detail the how best to proceed with SCCASCT.



If an evaluation is considered appropriate it will be important to combine this standard archaeological work with the recommendations made above for the quaternary deposits in a combined mitigation strategy.

7.0 ACKNOWLEDGMENTS

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8.0 PROJECT ARCHIVE & DEPOSITION

A full archive will be prepared for all work undertaken in accordance with guidance from the *Selection, Retention and Dispersion of Archaeological Collections*, Archaeological Society for Museum Archaeologists, 1993. Arrangements will be made for the archive to be deposited with the relevant museum or the SHER Office.

The archive will be quantified, ordered, indexed, cross-referenced and checked for internal consistency. The material will be catalogued, labelled and packaged for transfer and storage in accordance with the guidelines set out in the United Kingdom Institute for Conservation's *Conservation Guidelines No.2* and the Archaeological Archives Forum's *Archaeological Archives, A guide to best practice, compilation, transfer and curation* (Brown, 2007).



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English Heritage National List for England
www.english-heritage.org.uk/professional/protection/process/national-heritage-list-for-england



DEFRA Magic <http://magic.defra.gov.uk/website/magic>

Natural England <http://naturalengland.org.uk>

Lakenheath Wall Painting Project <http://www.lakenheathwallpaintings.co.uk>



APPENDIX 1 – HER DATA

MONUMENT DATA

PREFERRED REFERENCE	MONUMENT ID	PERIOD	MONUMENT TYPES	RECORD TYPE	NAME	SUMMARY
LKH 036	MSF9471	Lower Palaeolithic	ARTEFACT SCATTER	MON	Maldscross Hill; The Broom; The Old Churchyard	Major Lower Palaeolithic site.
LKH 127	MSF9636	Mesolithic	SITE	MON	Lakenheath Warren (W); Lakenheath Airfield	1931: J G D Clark excavation - a section cut into sand dune complex (S1 fig 4.
LKH 013	MSF6029	Neolithic	SITE	MON	Sahara Field	Grooved ware found among predominantly Beaker material (S1).
LKH 137	MSF11241	Neolithic	FINDSPOT	MON	7 Arrowhead Drive, Lakenheath.	Flaked flint axehead found in garden , circa 1976.
LKH 003	MSF2243	Neolithic	FINDSPOT	MON	Sahara; No. 1 field	"Lop-sided", single barbed, hollow based type arrowhead found in number 1 field (S1)(S2)(S3).
LKH 004	MSF2244	Neolithic	FINDSPOT	MON	Roman Field	Polished greenstone axe, 5 and a half inches long, weight 2lbs found within multi-period site LKH 072.
LKH 044	MSF9511	Neolithic	FINDSPOT	MON	Roman Field	Leaf-shaped arrowhead, thin colourless (S1)(S2).
LKH 041	MSF23204	Middle Bronze Age	FINDSPOT	FS	Sandy Drove	Basal looped spearhead, 205mm long. Found in carrot wash 1972, but believed to derive from one of two fields on either side of cited NGR. Details in (S1).
LKH 013	MSF2254	Bronze Age	ARTEFACT SCATTER	MON	Sahara Field	Site represents a Beaker scatter within a larger IA scatter (site LKH 014).
LKH 128	MSF12091	Bronze Age	FINDSPOT	FS	Sandy Drove	Fragment of bronze socketed axe found metal detecting, circa 1978 (S1)(S2).
LKH 048	MSF9515	Bronze Age	ARTEFACT SCATTER	MON	? The Glebe	A barbed and tanged arrowhead and half a javelin head found.



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LKH 211	MSF20116	Middle Iron Age	PIT, DITCH	MON	RAF Lakenheath, New Perimeter Road	Pits and ditches dating to MIA found near sites excavated in 1930's and 40's.
LKH 211	MSF20116	Middle Iron Age	PIT, DITCH	MON	RAF Lakenheath, New Perimeter Road	Pits and ditches dating to MIA found near sites excavated in 1930's and 40's.
LKH 029	MSF9413	Iron Age	FINDSPOT	MON	Roman Field	Patches of black soil, with large stones and much IA pottery found deep ploughing (S1)(R1)(S2).
LKH 041	MSF9476	Iron Age	INHUMATION, FINDSPOT	MON	Rearing Field; Sandy Plantation	Bronze dragonesque brooch found in C19, said to have been found in a grave with an inhumation in Sandy Plantation at Lakenheath.
LKH 020	MSF2261	Iron Age	FINDSPOT	MON	Roman Field	Coin hoard in butt beaker brought to surface by deep ploughing on 23 November 1959.
LKH 014	MSF2255	Iron Age	SETTLEMENT, PIT, HEARTH, SOILMARK, ARTEFACT SCATTER	MON	Sahara Field; Lakenheath Airfield	Extensive pottery scatter over approximately half a mile within an area of multi-period site, LKH 070.
LKH 181	MSF16277	Iron Age	FINDSPOT	FS	Pam Finchams; Bell Meadow	February 1995: Silver, or silver coated forgery of Iceni Pattern-Horse type coin, corroded but probably Anted or Ecen.
LKH 108	MSF1084	Iron Age	ARTEFACT SCATTER	MON		Metal detected finds from small, mainly Rom, area includes 3 Iceni staters (not seen).
LKH 076	MSF9593	Iron Age	SITE	MON	High Lakenheath. Street,	Pottery sherds.
LKH 269	MSF23530	Prehistoric	PIT	MON	land to the rear of 6 Eriswel Drive	An evaluation in advance of a housing development identified a single prehistoric pit.
LKH 202	MSF18502	Later Prehistoric	FINDSPOT	MON	Anchor Lane	Amongst the artefacts recovered during two phases of monitoring were later prehistoric worked and burnt flint.
LKH 156	MSF14653	Later Prehistoric	BURNT MOUND	MON	Smeeth	Notable scatter (not profuse) of burnt flints on one of sand ridges in area of hummock and hollow (peat filled) micro-relief.
LKH 108	MSF1085	Roman	ARTEFACT SCATTER	MON		Small scatter of finds, fairly concentrated.
LKH 181	MSF16278	Roman	FINDSPOT	FS	Pam Finchams; Bell Meadow	March 1995: Oval plate type brooch.



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LKH 106	MSF1597	Roman	FINDSPOT	MON	`Gerald Palmers, Maids Cross'	Bronze balance beam of the Rom period with small silver weighing discs and traces of a chain on one of the terminal rings (S1).
LKH 139	MSF11877	Roman	FINDSPOT	MON		Bronze cauldron found on ploughed land, 2 ft deep `in lighter sand', rim uppermost (S1).
LKH 109	MSF1843	Roman	FINDSPOT	FS		Miniature axe.
LKH 180	MSF16272	Roman	ARTEFACT SCATTER	MON	The 50 Field	1992 - November 1995: Metal detector finds include occasional Rom finds including Aucissa related brooch and two Ae3 coins of Constantine (AD 330-335).
LKH 055	MSF9539	Roman	ARTEFACT SCATTER	MON	Sandy Drove (W)	Pair of bronze (scales ?) bowls and remnants of ? bronze bowl.
LKH 026	MSF9408	Roman	FINDSPOT	MON		Coin, third brass, probably Decius (AD 249-251)(S1)(R1).
LKH 028	MSF9412	Roman	FINDSPOT	MON		Third brass of Magnentius (AD 350-353), found by Eb (Gathercole or Terrington?)(S1)(S2)(S3).
LKH 076	MSF9594	Roman	FEATURE, DITCH, SITE	MON	High Lakenheath.	Pottery & feature.
LKH 103	MSF9624	Roman	ARTEFACT SCATTER	MON	North Lakenheath.	Three brooches found with a metal detector, reputedly `in an area 100m sq.
LKH 074	MSF9591	Roman	FINDSPOT	MON	Roman Field	Pot - face mask urn.
LKH 073	MSF9590	Roman	POTTERY KILN, ARTEFACT SCATTER	MON	Sandy Drove	`Deep ploughing disclosed a Romano-British kiln of burnt clay, 250 yards from kiln noted in 1957 (LKH 019).
LKH 188	MSF16311	Roman	ARTEFACT SCATTER	MON		`Roman door-lock' found metal detecting.
LKH 011	MSF2252	Roman	BUILDING, DITCH, POST HOLE, FLOOR, HEARTH, PIT, POTTERY KILN, POTTERY MANUFACTURING SITE	MON	Roman site; Roman field; Rearing field; Turkey Farm	Buildings etc.
LKH 012	MSF2253	Roman	FLOOR, SITE	MON	Rearing Field	1945: Cable trench dug E-W in field 1021 (Rearing Field) cut through middle of a chalk `floor' above which, in a patch of black sand, was found 400 or 500 sherds at TL 7285 8304.



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LKH 019	MSF2260	Roman	POTTERY MANUFACTURING SITE, POTTERY KILN, ARTEFACT SCATTER	MON	Roman Field	"Decorated sherd on surface gave clue to small kiln.
LKH 061	MSF9546	Roman	POTTERY KILN, MANUFACTURING ARTEFACT SCATTER	POTTERY SITE, MON	Roman Field, Kiln 2	1978: Material from kiln, excavated in 1974.
LKH 062	MSF9547	Roman	POTTERY KILN, MANUFACTURING ARTEFACT SCATTER	POTTERY SITE, MON	Rearing Farmyard Field,	1978: Material from kiln, excavated.
LKH 128	MSF9637	Roman	SITE	MON	Harrisons Sandy Drove Field;	Bronze scrap, found
LKH 017	MSF2258	Early Saxon	CREMATION, CEMETERY, ARTEFACT SCATTER	MON	Rearing Field	Anglo-Saxon sherds and cremations.
LKH 041	MSF9477	Early Saxon	CEMETERY, SCATTER	ARTEFACT MON	Rearing Field; Sandy Plantation	Many skeletons with beads round their necks were found on a rise of ground when Sandy Plantation was removed "over sixty years ago" (circa 1888).
LKH 042	MSF9478	Early Saxon	CEMETERY, INHUMATION, CREMATION, SITE	MON	Rearing Field	"Pots of handmade ware, with cremations and inhumations".
LKH 016	MSF2257	Saxon	FINDSPOT	MON	Roman Field	Segmented bead of green glass pre 1964.
LKH 046	MSF9513	Saxon	FINDSPOT	MON	Sahara; No 1 Field	`Anglo-Saxon `S' shaped brooch of bronze plate, now in Mildenhall Museum' (S1, 1964 entry)(R1).
LKH 188	MSF16586	Saxon	FINDSPOT	FS		1996: Metal detector find of foot of small-long type brooch broken at base of bow.
LKH 010	MSF2251	Saxon	ARTEFACT SCATTER	MON	Sahara; Pashford Wood; Number 1 field	ESax objects within multi period site, LKH 070 .
LKH 103	MSF9625	Saxon	FINDSPOT	MON	North Road, Lakenheath.	Bronze dress fastener.
LKH 195	MSF17390	Saxon	ARTEFACT SCATTER	MON	Maids Cross Hill	Ornate bronze buckle and plate in Urnes Style, circa C11.



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LKH 202	MSF18539	Middle Saxon to Late Saxon	ARTEFACT SCATTER	MON	Anchor Lane	Two episodes of monitoring recovered Mid and Late Saxon pottery, together with prehistoric and medieval finds.
LKH 315	MSF24254	Middle Saxon to Medieval	BOUNDARY DITCH, PIT, POST HOLE, STRUCTURE?, DITCH	MON	82/82A High Street, Lakenheath	Evaluation revealed evidence for a long maintained property boundary, together with medieval pits, postholes and building material, suggesting a possible medieval precursor to the existing farm.
LKH 104	MSF9627	Late Saxon	FINDSPOT	FS	South Lakenheath. Road,	Bronze disc brooch with interlace ornament.
LKH 181	MSF16279	Medieval	ARTEFACT SCATTER	MON	Pam Finchams; Bell Meadow	1989 - November 1995: Med metal detected finds include vesica-shaped seal of John, Vicar of Lakenheath, 5 coins (C13- C15), 3 buckles, 1 Boy Bishop token & 4 other lead tokens of possible Med date.
LKH 130	MSF10301	Medieval	FAIR, ARTEFACT SCATTER	MON		?1950-1980s: Fieldwalking & metal detecting located scatter of various finds from Henry II (AD 1154-1189) through to George III (AD 1760-1820) including coins, seals, buttons, pipes etc - believed to be fairground site.
LKH 057	MSF9541	Medieval	ARTEFACT SCATTER	MON	New Cut	100 yards S of New Undley Bridge collection of Med sherds lying on little beach at water level, New Cut.
LKH 058	MSF9542	Medieval	ARTEFACT SCATTER	MON		Collection of Med sherds from upcast of New River Cut, where it crosses garden of ancient house.
LKH 043	MSF9480	Medieval	CROSS	MON	Maids Cross Hill	'The base of a Med stone cross stands on a barrow on Maids Cross Hill'.
LKH 047	MSF9514	Medieval	ARTEFACT SCATTER	MON	The Glebe	"Found close together, two silver short cross coins, John penny and Champagne denier, probably Theobald III (possibly Theobald II)".
LKH 180	MSF16273	Medieval	ARTEFACT SCATTER	MON	The 50 Field	1992 - November 1995: metal detector finds include various Med coins and tokens and buckles, strap ends, studs etc - see (S1)(S2) for details.



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LKH 103	MSF9626	Medieval	ARTEFACT SCATTER	MON	North Lakenheath.	Road,	Various items Med metalwork found with a metal detector, reputedly ` in an area 100m sq
LKH 188	MSF16587	Medieval	ARTEFACT SCATTER	MON			1993-1996: Detector finds of Med date listed as bronze `arched pendant' (belt fitting), oval buckle, gilded double buckle and gilded buckle plate.
LKH 174	MSF17748	Medieval	BANK (EARTHWORK), RABBIT WARREN	MON	Lakenheath Warren		Single earthwork bank running around the existing (eastern) part of Lakenheath Warren.
LKH 045	MSF9512	Medieval	ARTEFACT SCATTER	MON	Roman Field		`Deeper ploughing revealed a scatter of pottery C13/C14, glazed and twisted handles, and two long cross silver half pennies of Edward I and III (Grace, Lady Briscoe)^(S1)(S2).
LKH 202	MSF18540	Medieval	ARTEFACT SCATTER, PIT	MON	Anchor Lane		Two phases of monitoring recovered sherds of medieval pottery, and recorded a number of pits.
LKH 108	MSF9629	Medieval	ARTEFACT SCATTER	MON			Thin scatter of Med silver pennies etc on mainly Rom site (S1)(S2).
LKH 236	MSF23510	Medieval	DITCH, PIT, POST HOLE	MON	Land to rear of 132 High Street		Monitoring and evaluation of footing trenches revealed six ditches, two pits and a posthole.
LKH 112	MSF2694	Medieval	CHURCH, PULPIT	CHURCHYARD,	MON	Church of St Mary	This church is in the diocese of St Edmundsbury and Ipswich, the archdeaconry of Sudbury and the deanery of Mildenhall.
LKH 254	MSF22767	12th century to Post Medieval	TOWN, MARKET, FAIR	MON	Town of Lakenheath		Lakenheath, recorded as a town from circa 1100, a market was granted in 1201 and a further market and fair in 1309.
LKH 151	MSF14211	Post Medieval	LIME KILN, CHALK PIT	MON	Football Ground		Lime kiln mapped in former chalk pit at Lakenheath (S1) at TL 7161 8297 in 1882 (S2).
LKH 130	MSF10314	Post Medieval	FAIR, ARTEFACT SCATTER	MON			?1950-1980s: Fieldwalking & metal detecting located scatter of various finds from Henry II (AD 1154-1189) through to George III (AD 1760-1820) including coins, seals, buttons, pipes etc - believed to be fairground site.



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LKH 143	MSF12972	Post Medieval	LODGE	MON	Warren Lodge; High Lodge 1813	Warren Lodge marked on an 1835 map of Lakenheath Warren (S1), one of three existing by 1649?
LKH 106	MSF16271	Post Medieval	FINDSPOT	MON	Gerald Palmers, Maids Cross	1993: Late Ely type (Rigold Series XI) groat size Boy Bishop token and unidentified lead token found metal detecting.
LKH 129	MSF9409	Post Medieval	WINDMILL, WINDMILL MOUND	MON	3 Wings Road	Windmill shown on Hodkinson 1783 map (S1), and on 1850 Tithe Map (S2).
LKH 180	MSF16274	Post Medieval	ARTEFACT SCATTER	MON	The 50 Field	1992 - November 1995: metal detector finds.
LKH 131	MSF10302	Post Medieval	WINDMILL	MON		Site of windmill.
LKH 181	MSF16280	Post Medieval	ARTEFACT SCATTER	MON	Pam Finchams; Bell Meadow	1989 - November 1995: PMed metal detector finds include various coins of C16-C19 and a series of 21 lead tokens, from Med to mainly C18.
LKH 315	MSF24259	Post Medieval	FARM, FARM BUILDING, WELL	MON	Churchgate Lakenheath Farm,	A small 17th-28th century farm on Lakenheath High Street, partially redeveloped in 2008.
LKH 323	MSF24590	Post Medieval	DITCH	MON	Lakenheath Playing Fields, Eriswell Road, Lakenheath, LKH 323	An archaeological evaluation identified three intercutting post-medieval ditches and a modern pit.
LKH 318	MSF24622	Post Medieval	POST HOLE, YARD	MON	The Cromwell Inn, 76 High Street, Lakenheath, LKH 318	Evaluation identified post-medieval use of the site with an occupation soil of 16th-18th century date being cut by later pits and sealed by a chalk yard.
LKH 230	MSF22072	Post Medieval	DITCH, PIT	MON	Lakenheath Hall	2004: Post-medieval pits and ditches found during evaluation.
LKH 163	MSF15164	17th century to 18th century	CAUSEWAY, BRIDGE	MON	Undley Causey; The Causeway; Church Patch; Babbridge	Causeway from Lakenheath High Street across Turf Fen to Babbridge (bridge), at circa 6990 8174, where diverts to SW to group of tofts S of Undley Hall, as shown on map of circa 1616 (S1).
LKH 161	MSF14981	18th century to 19th century	WINDMILL	MON		Windmill depicted on Hodkinson's 1783 map at this approximate location (S1).
lkh 339	MSF27501	First World War to Modern	HARDENED SHELTER, MILITARY AIRCRAFT AIRFIELD,	MON	Lakenheath Airfield	A military airfield used in both World Wars and post-war.



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			STRUCTURE, MILITARY AIRFIELD, BOMBING RANGE, MILITARY AIRFIELD, BOMBING DECOY, BOMBING RANGE, AIR RAID SHELTER, MILITARY AIRFIELD, AIRCRAFT HANGAR (TYPE B1), AIRCRAFT HANGAR (TYPE T2), MILITARY AIRFIELD, RUNW			
LKH 143	MSF27534	Modern	BUILDING	MON	RAF Lakenheath	Vacant USAF air base.
LKH 266	MSF23540	Unknown	DITCH	MON	Munitions Areas 1 and 2, RAF Lakenheath	Monitoring during the upgrading of the access roads to the Munitions Areas at RAF Lakenheath revealed occasional undated features and areas of buried soils.
LKH 266	MSF23540	Unknown	DITCH	MON	Munitions Areas 1 and 2, RAF Lakenheath	Monitoring during the upgrading of the access roads to the Munitions Areas at RAF Lakenheath revealed occasional undated features and areas of buried soils.
LKH 266	MSF23540	Unknown	DITCH	MON	Munitions Areas 1 and 2, RAF Lakenheath	Monitoring during the upgrading of the access roads to the Munitions Areas at RAF Lakenheath revealed occasional undated features and areas of buried soils.
LKH 266	MSF23540	Unknown	DITCH	MON	Munitions Areas 1 and 2, RAF Lakenheath	Monitoring during the upgrading of the access roads to the Munitions Areas at RAF Lakenheath revealed occasional undated features and areas of buried soils.
LKH 266	MSF23540	Unknown	DITCH	MON	Munitions Areas 1 and 2, RAF Lakenheath	Monitoring during the upgrading of the access roads to the Munitions Areas at RAF Lakenheath revealed occasional undated features and areas of buried soils.
LKH 322	MSF24137	Unknown	DITCH	MON	4 Back Street	Monitoring revealed a broad ditch parallel and immediately adjacent to the boundary graveyard wall, though undated it is thought to be the original churchyard boundary.
LKH 070	MSF9587	Undated	ARTEFACT SCATTER	MON	Sahara; No 1 field	Area of multiperiod sites: see LKH 003 & 013 - Neo, LKH 013 - BA, LKH 014 - IA, LKH 010 & 046 - Sax.



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LKH 072	MSF9589	Undated	ARTEFACT SCATTER	MON	Roman Field; Rearing Field; Sandy Drove; Turkey Farm; Home Farm	Area of multiperiod sites: see LKH 004, 044 - Neo; LKH 020, 029, 041 - IA; LKH 011, 012, 019, 061, 062, 074, Misc - Rom; LKH 016, 017, 041, 042 - Sax; LKH 045, Misc - Med.
LKH 195	MSF18891	Undated	ARTEFACT SCATTER	MON	Maids Cross Hill	Metal detector finds of four Med coins and other metalwork.
LKH 043	MSF9479	Unknown	ROUND BARROW	MON	Maids Cross Hill	`The base of a Med stone cross stands on a barrow on Maids Cross Hill' (S1)(R1-R4).
LKH 181	MSF19132	Undated	FINDSPOT	MON	Bell Meadow	Bronze narrow rapier blade fragment.
LKH 195	MSF18892	Undated	FINDSPOT	FS	Maids Cross Hill	Metal detected bronze tracer/awl, BA?

LISTED BUILDINGS

PREFERRED REFERENCE	DESIGATED ID	NAME	GRADE	CURATORIAL NOTES
275832	DSF3296	BREWERY HOUSE	II	Type and date: Late C18 HOUSE. Date: from 1767 to 1799 Type and date: Early C19 HOUSE. Date: from 1800 to 1832 Main material: brick Covering material: tile
275837	DSF3298		II	Type and date: c1800 HOUSE. Date: from 1780 to 1820 Main material: brick Covering material: tile



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275838	DSF3448		II	<p>Type and date: Mid C18 HOUSE. Date: from 1733 to 1766</p> <p>Type and date: Late C16 HOUSE. Date: from 1567 to 1599</p> <p>Type and date: Early C19 HOUSE. Date: from 1800 to 1832</p> <p>Main material: stucco</p> <p>Main material: brick</p> <p>Main material: timber</p> <p>Covering materi</p>
275836	DSF3505		II	<p>Type and date: Early C19 HOUSE. Date: from 1800 to 1832</p> <p>Main material: brick</p> <p>Covering material: tile</p>
275834	DSF3507	CHURCH OF ST MARY	I	<p>Type and date: Medieval CHURCH. Date: from 1066 to 1540</p> <p>Type and date: 1892 CHURCH. Date: 1892</p> <p>Type and date: 1904 CHURCH. Date: 1904</p> <p>Type and date: SCHOOLROOM.</p> <p>Type and date: C18 CHURCH. Date: from 1700 to 1799</p> <p>Type and date: Mid C13 TOWER.</p>
275835	DSF3554	CHALK FARMHOUSE	II	<p>Type and date: c1700 HOUSE. Date: from 1680 to 1720</p> <p>Type and date: C15 HOUSE. Date: from 1400 to 1499</p> <p>Type and date: C19 HOUSE. Date: from 1800 to 1899</p> <p>Type and date: Mid C20 HOUSE. Date: from 1933 to 1966</p> <p>Type and date: C18 HOUSE. Date: from 17</p>



APPENDIX 2 – OASIS SUMMARY SHEET (Copied from OASIS Page)

OASIS ID: britanni1-172682

Project details

Project name	Land North of Broom Road, Lakenheath, Suffolk - Desk-Based Assessment
Short description of the project	<p>Britannia Archaeology Ltd was commissioned by Ellis Drafting Services on behalf of the landowners to undertake an archaeological desk-based assessment of a site on land north of Broom Road, Lakenheath, Suffolk (NGR: 572400 282600). The assessment identified a high potential for Upper Palaeolithic deposits of potentially national significance on the proposed site. The wider area has also been a site of occupation activity since the Mesolithic period with significant settlement activity identified in the Roman, Saxon, medieval and post-medieval periods. The assessment site is situated at least 500m from the focus of much of this settlement activity, and a moderate potential for Bronze Age, Roman and medieval remains is suggested. The potential for all other periods is considered to be low and the historic maps show the site probably remained in agricultural use until the mid-19th century when quarrying first appears on the historic maps, evidence of this quarrying activity has also been identified by the aerial photography and LiDAR data. Two cartographic sources suggest the presence of an 'Old Church Yard' in the north-eastern corner of the site in 1836 and later sources show extensive damage to the centre of the site from levelling and farm building construction. The potential for later post-medieval and modern remains is therefore high. The impact on setting of existing heritage assets is likely to be low due to the surrounding topography and existing housing developments.</p>
Project dates	Start: 27-11-2013 End: 31-01-2014
Previous/future work	Yes / Yes
Any associated project reference codes	P1045 - Contracting Unit No.
Type of project	Desk based assessment
Site status	Area of Archaeological Importance (AAI)
Current Land use	Grassland Heathland 3 - Disturbed
Monument type	FLINT TOOLS Lower Palaeolithic
Monument type	BURIAL GROUND Post Medieval



Significant Finds	NONE None
Significant Finds	NONE None
Methods & techniques	"Aerial Photography - interpretation", "Aerial Photography - new", "Documentary Search", "Visual Inspection"
Development type	Rural residential
Prompt	General structure plan/local plan/minerals plan guidance

Project location

Country	England
Site location	SUFFOLK FOREST HEATH LAKENHEATH Land North of Broom Road
Postcode	IP27 9EX
Study area	4.60 Hectares
Site coordinates	TL 72400 82600 52.4137620234 0.535163776899 52 24 49 N 000 32 06 E Point
Height OD / Depth	Min: 23.00m Max: 31.00m

Project creators

Name of Organisation	Britannia Archaeology Ltd
Project brief originator	Local Authority Archaeologist and/or Planning Authority/advisory body
Project design originator	Matthew Adams
Project director/manager	Matthew Adams
Project supervisor	Matthew Adams
Type of sponsor/funding body	Landowner
Name of sponsor/funding body	Ellis Drafting Services

Project archives

Physical Archive Exists?	No
Digital Archive Exists?	No
Paper Archive	Suffolk HER



recipient

Paper Media available "Report"

Paper Archive notes Pre-planning report

Project bibliography

Publication type	Grey literature (unpublished document/manuscript)
Title	Land North of Broom Road, Lakenheath, Suffolk - Archaeological Desk-Based Assessment
Author(s)/Editor(s)	Adams, M
Other bibliographic details	R1045
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Description	A4 Thermal bound report with A3 figures
URL	http://www.britannia-archaeology.com



APPENDIX 3 – SPECIALIST REPORTS

1. GEOARCHAEOLOGICAL REPORT

By Dr C. P. Green

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MAIDSCROSS HILL, LAKENHEATH, SUFFOLK: INTERIM GEOARCHAEOLOGICAL DESK-BASED ASSESSMENT

C.P. Green

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INTRODUCTION

This report summarises the findings arising out of the geoarchaeological desk-based assessment undertaken by Quaternary Scientific (QUEST), University of Reading in advance of proposed development at Maids Cross Hill, Lakenheath, Suffolk (NGR: TL 724 826; SMR No. LKH 036 – MSF9471 Maids Cross Hill; The Broom; The Old Churchyard).

SITE CONTEXT

The site occupies part of the western half of the summit of Maids Cross Hill on the eastern edge of the village of Lakenheath, on the eastern margin of the East Anglian Fens. The site lies just to the west of the Maids Cross Hill Site of Scientific Interest (SSSI), designated on the basis of its ecological significance and also to the west of the location generally recorded as the site of archaeological interest, which is at TL 7263 8256 in the Suffolk SMR and is similarly recorded by both Roe (1968) and Wymer (1985). The summit of the hill, towards the eastern edge of the site, is at a level of c.31m OD with the ground falling away gently and fairly uniformly at first, to east and west. The British Geological Survey (BGS online) shows bedrock Chalk at the surface in the NW corner of the site, with the rest of the western half of the site occupied by 'Head' (clay, silt, sand and gravel). The eastern half is mapped as occupied by the pre-Anglian Ingham Sand and Gravel Formation. Satellite imagery (www.maps.google.com), aerial photographic and Lidar imagery (Deegan 2014) indicate disturbance of the ground surface across most of the northern half of the site, where extensive areas of bare ground are currently present. Visible disturbance in the northern half of the site probably relates in part at least to former shallow gravel workings, which may also extend into the wooded southern half. Gravel workings, including the remains of more substantial pits, extend south-eastward into the SSSI and across the location recorded in the Suffolk SMR as having Palaeolithic archaeological interest.

In the mid 19th century gravel diggings already occupied over 60 acres on Maids Cross Hill and Palaeolithic artefacts were first recorded there by Flower (1869). Roe (1968) records only 7 handaxes from the site and two 'miscellaneous worked fragments'. Wymer (1985) also describes the site briefly and suggests that a larger number of handaxes simply marked 'Lakenheath' in museum collections also come from the Maids Cross Hill gravels.

The gravels on the summit of Maids Cross Hill were regarded by Rose (1987, 1989) as having been deposited by the pre-Anglian Bytham River, and were subsequently examined by Lewis (1993) who assigned them to his Lakenheath Sand & Gravel Member forming part of the Shouldham Formation, thus making them part of the oldest deposits of the Bytham River in its Fen Margin reach.



Flower (1869) described the gravel on Maidscross Hill as 8-10 feet (2.4-3.0m) thick on Chalk, while the surviving deposits were estimated by Lewis (1993) to be only c.1.0m thick with the contact with the underlying Chalk at c.27.0m OD. There are no BGS archive boreholes within the site or on adjoining land at or near the same elevation OD. However, two test pits put down on the summit of the hill (Ashton & Lewis 2005) exposed sand and gravel at levels between 26m and 30m OD, without encountering bedrock Chalk. A third test pit 'just below the summit' exposed '... 3m of sand and gravel, overlying c.1m of probably non-glaciogenic chalky diamicton on disturbed Chalk at the base at 21m OD.' No archaeological material was recovered from any of these test pits, and no organic remains have ever been recorded from the gravels on Maidscross Hill.

Similar sand and gravel deposits are present at Warren Hill (TL 744 743), about 8km to the south of the Maidscross Hill site. They were described by Wymer *et al* (1991) and Bridgland *et al* (1995) and were considered by Lewis (1993) to represent a further occurrence of his Lakenheath Sand & Gravel. At Warren Hill c.6.5m of sand and gravel is preserved at levels between 13.6m and 20.1m OD. This sand and gravel overlies sands and silts which were recorded by Wymer *et al* (1991) down to levels below 9.0m OD without reaching bedrock Chalk.

The Warren Hill site has been a rich source of Palaeolithic artefacts (>2,000), which have been described by Roe (1968, 1981); Wymer (1985) and Hardaker (2012).

Also to the south of Lakenheath and close to Warren Hill is the important Palaeolithic site of High Lodge (TL 739 754) (comprehensively described by Ashton *et al* 1992). Here fine-grained glacially disturbed Bytham River sediments (sands and silts) are present at levels between 19m and 30m OD and in addition to Palaeolithic artefacts have yielded pollen and a few faunal remains, including the pre-Anglian rhinoceros *Dicerorhinus etruscus*.

RECOMMENDATIONS

It seems likely that the eastern part of the Maidscross Hill site is occupied by a remnant of the pre-Anglian Bytham River sand and gravel. This sand and gravel deposit is termed the Ingham Sand & Gravel Formation by the BGS and the Lakenheath Sand & Gravel Member of the Shouldham Formation by Lewis (1993, 1999). At Maidscross Hill and much more abundantly at Warren Hill, this stratigraphic unit has been a source of Palaeolithic artefacts which are of particular interest on account of their presumed pre-Anglian origin.

Undisturbed remnants of sand and gravel on Maidscross Hill may be up to 3.0m thick, and rest on bedrock Chalk, possibly on an uneven surface and apparently at levels around 26-27m OD. However much of the site has been affected by casual gravel digging and where this is the case, the surviving gravel is likely to be thin and disturbed. The western half of the site is more likely to be occupied by sands and gravels which have been displaced downslope by natural processes, but which have also been affected by gravel extraction.



Given the possible archaeological significance of the site, it will be important that:

1. In the interest of providing for future reference a more complete understanding of the Quaternary deposits on Maidscross Hill, it is recommended that a number of geoarchaeological sondages are put down from the base of the archaeological evaluation trenches until the bedrock Chalk is reached. This will enable the bedrock relief and complete overlying sediment sequence to be recorded. A minimum of nine sondages forming three north-south transects of three sondages each would give a broad indication of bedrock relief and the pattern of the overlying sediments. With regard to the exact location of the sondages, the eastern half of the site is mapped as *in situ* sand and gravel, whereas the western part is mapped as 'Head'. The eastern half ought therefore to be of greater interest. If the BGS mapping is correct and the Chalk is close to the surface beneath some of the western part of the site, evaluation trenches may reach the Chalk there, in which case, either fewer sondages could be put down, or, and more preferably, the north-south sondage transects could be placed closer together in the eastern half of the site. Additional sondages might be advantageous if a complex bedrock topography and/or overlying sedimentary sequence is recorded.

An initial stage of geoarchaeological boreholes is not recommended for the following reasons: (a) the whole site is mapped by the BGS as occupied by Sand and Gravel or Head. The Head is likely to be disturbed sand and gravel and will not be easy to distinguish in borehole samples from *in situ* sand and gravel; (b) a large amount of trenching is visualised during archaeological evaluation (5% proposed by Brudenell in email correspondence on 17th October 2010). This would provide a far better opportunity to map and understand the sub-surface stratigraphy than the information gained from geoarchaeological boreholes, and (c) trenching would be a much more efficient way of assessing the impact of gravel extraction. It would be much easier in section to recognise such features as spoil heaps or talus accumulations associated with old working faces and distinguish them from *in situ* sediments.

Depending on the outcome of the evaluation, it is recommended that either:

1. A more extensive strip, map and record programme is put in place; or
2. A watching brief is put in place to monitor all excavations undertaken at the site during all phases of the proposed building work.

REFERENCES

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APPENDIX 3 – SPECIALIST REPORTS

2. AIR PHOTO MAPPING & LiDAR REPORT

By Alison Deegan



AIR PHOTO MAPPING,
INTERPRETATION AND
ANALYSIS FOR ALL
ARCHAEOLOGICAL APPLICATIONS
www.alisondeegan.co.uk

Air Photo Mapping and Interpretation
for
Land North of Broom Road
Lakenheath
Suffolk

January 2014
Project number 1314013
Undertaken by Alison Deegan BSc MIFA

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Commissioned by

Britannia
Winnington House
2 Woodberry Grove
North Finchley
London
N12 0DR

Summary

This report concerns the results of interpretation and mapping of archaeological features from air photographs and LiDAR imagery for Land North of Broom Road, Lakenheath, Suffolk.

This survey has recorded the remains of post medieval quarrying activity on the proposed development site. In the surrounding area the remains of a medieval or post medieval headland, banks, two former building plots and extensive quarrying have been recorded. Second World War features including aircraft obstructions and barbed wire obstructions are visible on the historic air photographs. A Royal Observer Corps post lies just to the east of the proposed development site on Maidscross Hill. Within the wider survey area there are also several possible archaeological features of uncertain origin.

This work was commissioned from Alison Deegan , 6 Wain Close, South Milford, Leeds LS25 5AH by Britannia, Winnington House, 2 Woodberry Grove, North Finchley, London, N12 0DR. Licence to use this work is extended to Britannia and their client. This work is supplied in digital format as well as hard copy and the above named parties may manipulate and/or reproduce the work as they wish providing the archaeological integrity of the work is not compromised. All reproductions of the work either in part, whole or combined with other works should clearly identify Alison Deegan as the author of the air photo interpretation and mapping.

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Figure 1 Location plan of the air photo interpretation and mapping for Land North of Broom Lane, Lakenheath, Suffolk.

Figure 2 Overview of the 1m resolution LiDAR data (digital surface model) for TL7282.

Figure 3 Archaeological features from air photos on Land North of Broom Lane, Lakenheath, Suffolk.

1 Introduction

1.1 Client details

- 1.1.1 This survey was commissioned by Britannia, Winnington House, 2 Woodberry Grove, North Finchley, London, N12 0DR.

1.2 Specification

- 1.2.1 The client required the mapping of levelled and upstanding archaeological features that are visible on the available air photographs and on LiDAR imagery. The mapping is at a nominal scale of 1:2500.

1.3 The Survey Area (see Figure 1)

- 1.3.1 The air photo survey area (hereon the Survey Area) is centred on and around a proposed 5 hectare development site on Land North of Broom Road, which lies between the village of Lakenheath and Lakenheath Airfield in Suffolk.
- 1.3.2 The Survey Area covers approximately 1.3km² of land and is centred at TL724 826 (572430, 282600).
- 1.3.3 In 1999 the proposed development site contained several standing and roofed buildings (Google Earth 1999). These appear to have been of relatively recent origin as they are not present on the 1959 air photos (RAF/58/2688 F22 258). The more recent air photos suggest that most of these buildings were cleared from the site in 2008 and that the site is now a mix of low scrub cover, open grassland and some deciduous planting (Google Earth 2008 & Bing ND).
- 1.3.4 The remainder of the Survey Area is of mixed use with late 20th century housing development to the west, large arable fields to the north and south and an unploughed but disturbed heathland zone known as Lakenheath Warren in the east.
- 1.3.5 The Survey Area lies on chalk bedrock overlain with coversands and sand and gravel deposits (BGS Viewer). These are overlain with freely draining sandy Breckland soils and some freely draining slightly acid sandy soils along the eastern edge (Soilscapes).
- 1.3.6 The Survey Area lies close to the western edge of The Brecks National Character Area and is flanked by fenland to the west (Natural England).

- 1.3.7 Maids Cross Hill lies at the centre of the Survey Area and is its highest ground at approximately 31m OD. From here the land falls on all sides to below 20m OD (see Figure 2).

2 Methodology

2.1 Data sources

- 2.1.1 The air photo collections held by the English Heritage Archive (EHA) and Cambridge University Collection of Aerial Photography (CUCAP) were consulted for this survey. The photographic prints were systematically examined, using x2 magnification where necessary and stereoscopically where possible. Selected prints were then photographed with a hand-held digital camera, where permission to do so was granted. Where permission was not forthcoming the pertinent features were traced onto acetate overlay sheets which were then scanned.
- 2.1.2 Digital images delivered through the Google Earth and Bing portals were examined on screen and relevant views were captured.
- 2.1.3 Lists of the individual air photographs and image datasets consulted are provided in Appendix 3.
- 2.1.4 Environment Agency LiDAR data for the one kilometre square TL7282 was obtained via www.geomatics-group.co.uk. This data is a 1m resolution Digital Surface Model (DSM) data in ASCII format.

2.2 Image capture, rectification and mapping

- 2.2.1 The Bing portal delivers seamless georeferenced imagery direct into MAPINFO Professional 12 and so any visible archaeological information was digitised directly from this source.
- 2.2.2 The various digital captures from the air photographs, overlays and Google Earth were rectified to ground control points derived from the Ordnance Survey 1:2500 scale map supplied by Britannia.
- 2.2.3 Image transformation was undertaken using the Bradford Aerial Photographic Rectification Programme, AERIAL5.33. Archaeological features were mapped to a scale of 1:2500 in detail and accuracy. AERIAL5.33 gives error readings for each control point, where 5 or more control points are used. In all cases errors of within $\pm 3\text{m}$ were achieved for the control points. However this may not reflect the on-the-

ground positional accuracy of the features mapped since these tend to lie between rather than at the control points.

- 2.2.4 The 1m resolution DSM LiDAR data was imported into LandSerf 2.3 and examined as elevation and shaded relief surfaces. The viewing parameters were methodically adjusted to optimise the visual appearance of any upstanding archaeological earthworks. Then ARCGIS “Gridfloat” rasters from at least four different azimuthal angles were imported into MapInfo Professional 12.
- 2.2.5 All of the georeferenced photographs and images were then collated in MAPINFO Professional 12 where the archaeological features were digitised, with reference back to the original source material where possible.
- 2.2.6 Data pertaining to each feature was recorded in the MapInfo table.
- 2.2.7 The resulting dataset was then exported to the Autodesk .dwg format for the client. The structure and content of this digital map dataset is described in Appendix 4.

3 Results

3.1 The air photographs

- 3.1.1 The EHA holds 19 black and white air photographs from 9 different sorties flown between 1942 and 1971. Together these provide good cover the whole of the Survey Area for the 1940s, but sparser coverage for the 1950s and 1970. There are no vertical photographs taken in the 1960s or after 1971. These vertical photographs were taken by or for the Royal Air Force, the United States Air Force and the Ordnance Survey for military and cartographic purposes rather than to record archaeological sites. However earthwork and some soilmark archaeological features are visible on many of these photographs.
- 3.1.2 The EHA also holds 1 black and white oblique air photograph of the Survey Area in its specialist collection. This was taken in 1983 but is a fairly low level oblique taken from the west and so the Survey Area lies in the middle ground and background and little detail can be seen.
- 3.1.3 The CUCAP collection holds 6 vertical air photographs of the Survey Area taken in 1969 and 1972. These are a valuable complement to the earlier EHA vertical coverage.

- 3.1.4 Google Earth displays imagery attributed to 1999, 2006, 2007 and 2008. The aerial imagery provided on the Bing Maps website is not dated but appears to post date 2008. Together these images record the Survey Area at various times of year. They show some of the earthworks and are a valuable record of recent landuse.

3.2 **The archaeological features (Figure 3)**

- 3.2.1 The mapping is reproduced in Figure 3. This report is supplied in conjunction with a digital version of the map data, the recommended viewing scale is 1:2500 to 1:5000.
- 3.2.2 Details including type, period and sources for individual archaeological features can be accessed in the digital version of the mapping (see **Appendix 4**) and these are summarised with a description in **Appendix 5**.
- 3.2.3 In the absence of direct archaeological evidence all attributions of date and type are open to re-interpretation.

3.3 **Prehistoric and Roman activity**

- 3.3.1 That there was prehistoric and Roman activity within and around the Survey Area is well demonstrated by the rich finds spots and clusters and historic archaeological investigations recorded in the HER.
- 3.3.2 A cluster of Palaeolithic artefacts have been recovered in the Maids Cross Hill area (eg HER MSF9471). These came to light as a result of historic quarrying in this area. There may be more such discoveries to be made either in situ or already displaced by post medieval quarrying (ie **AP no. 4**) or late 20th groundworks.
- 3.3.3 The field to the east of Sandy Drove, known as Roman Field, has produced a wide range of artefacts dating from the Neolithic (MSF2244) through to the Medieval period (MSF9512) and including some structural elements such as kilns and hearths from the Roman period (MSF2252).
- 3.3.4 No features prehistoric or Roman date were positively identified on the air photos, though it is possible that some of the undated features discussed in Section 3.6 may have their origins in these periods.

3.4 **Saxon and Medieval period**

- 3.4.1 A Saxon cemetery and medieval artefact scatters have been identified in Roman Field and in the wider area between the Maids Cross Hill road and the B1112 (eg MSF9477 and MSF16273).

- 3.4.2 The sinuous bank in **AP no. 2**, which runs parallel the Maids Cross Hill road, may be a medieval plough headland. The other two possible banks in this field, which are straighter and less well defined may also be of this date. However a post medieval origin for all or any of these banks cannot be discounted.

3.5 **Post medieval period**

- 3.5.1 Most of the features identified from the air photographs are likely to date from the end of the post medieval period or later.
- 3.5.2 The Ordnance Survey map of 1882 depicts a small gravel pit within the proposed development site and a cluster of stone quarries to the immediate south-east. The site of the gravel pit is obscured by vegetation on the air photos and LiDAR imagery but the earliest air photos do suggest that a wider area had been disturbed (**AP no. 4**).
- 3.5.3 The stone quarries depicted on the 1882 map are more readily reconciled with earthworks that are visible on the air photos and LiDAR imagery but again a wider area that that depicted on the historic map appears to have been disturbed (**AP no. 5**).
- 3.5.4 Quarrying on the eastern edge of the Survey Area, which though relatively shallow and piecemeal was quite extensive by the late 20th century (**AP no. 10**). Some of these workings predated the earliest of the air photos and may have had their origins in the post medieval period.
- 3.5.5 The remains of two former building plots are visible on this historic air photos (**AP nos 9 & 16**). Both were depicted on the Ordnance Survey maps of 1836 and 1882 so are presumed to have been extant at these times. **AP no. 9**, a house and garden plot, stood next to the Maids Cross Hill road and was extant on the earliest air photos. It has now been levelled and replaced with a small car park. **AP no. 16**, which may have been a small farmstead set back from Eriswell Road, had been demolished by 1942 but the plot is still visible as a disturbance on the most recent air photos and on the LiDAR imagery.
- 3.5.6 The mutilated banks on the south side of the Maids Cross Hill road may also have their origins in the post medieval period (**AP no. 11**). However the purpose of these features within the wider context of Lakenheath Warren and historic routes and boundaries that extend beyond the Survey Area is not known.

- 3.5.7 As mentioned above (see Section 3.4.2) the banks in the field to the north of the Maids Cross Hill road (**AP no. 2**) may have their origins in this period.
- 3.5.8 **Second World War**
- 3.5.9 The airfield at Lakenheath had its origins in the First World War. In the early part of the Second World War it was used as a decoy airfield to RAF Feltwell but was subsequently developed and expanded into an operational airfield (MSF27501). Although the airfield lay just outside the Survey Area some peripheral features are to be found within it.
- 3.5.10 Just beyond the north-west boundary of the airfield a large area of the heathland was enclosed by some temporary boundary, possible bales or lines of barbed wire (**AP no. 13**). This was present in 1942 and in 1946 but had been removed by 1959.
- 3.5.11 Such defences would suggest the presence of potential targets within the enclosed area and indeed three V-shaped blast pens are visible within it (**AP nos 14 & 15** and a third beyond the Survey Area at TL7301 8220). These pens are similar in form to, though slightly smaller than, the V-shaped fighter pens at former RAF Catterick (Scheduled Monument No. 1020990). The RAF Catterick pens were built to camouflage and protect single-engine aircraft. Like the RAF Catterick examples the Lakenheath pens lie a little beyond the airfield and would have been easy to camouflage with the heathland vegetation.
- 3.5.12 The layout and extents of the barbed wire defence (**AP no. 13**) may suggest that there were other potential targets within the enclosure area that are not visible on the air photos, either because they were too small, too well-camouflaged or perhaps because they were built below ground.
- 3.5.13 There are two other structures visible on the air photos within the Survey Area that are likely to be associated with the airfield (**AP no. 12**). These small square structures are linked to the western side of the airfield by straight trackways. They were present in 1947 but cannot be detected on the earlier air photos.
- 3.5.14 During the Second World War the large flat fields on the north side of the Maids Cross Hill road were bisected with trenches (**AP no. 1**). These were aircraft obstructions designed to prevent the landing of enemy aircraft.
- 3.5.15 By 1942 a Royal Observer Corps (ROC) post and associated features had been established near the highest point on Maids Cross Hill (**AP no. 8**). This post appears

to have continued in use through most of the 20th century and is recorded as having closed in 1991 (Subterranea Britannica).

3.6 Undated features and other observations

- 3.6.1 A sinuous band of darker soils or slower ripening crop has been detected along the north edge of the Survey Area. It runs east to west towards the lower lying ground and fen in an area where the chalk is free from overlying sands and gravels. This feature is likely to be of natural origin, perhaps a dry valley.
- 3.6.2 The field known as 'Roman Field' on the north side of the Maids Cross Hill road has produced many artefacts with a broad range of dates (see 3.3 above). Some potential archaeological features are visible within this field but their origin is not known. A possible cropmarked-ditch (**AP no. 3**) runs near east to west across the field and parallel to the road. One set of air photos, taken in 1969, show a group of indistinct pale-tone earthworks in this field. It is not certain whether these are truncated archaeological remains or disturbances caused by archaeological excavations in the late 1940s. The ditch (**AP no. 3**) was not visible as a soilmark on these photos. Several of the HER records report patches of black sand or soil in this field with which the finds are associated but it is not clear if these are related to the pale-toned soilmarks that are visible on the air photos (eg MSF2253 & MSF9413).
- 3.6.3 On Maids Cross Hill the HER records part of a medieval stone cross erected in a modern mound but suggests that the mound may have been rebuilt from an older barrow in the vicinity (MSF9479). A small mound, approximately 6m in diameter, is visible as an earthwork on historic air photographs in this location (**AP no. 6**). On the earliest photographs the mound is surrounded by uneven hummocky ground that may have been disturbed by quarrying (see **AP no. 5**). It is only on later photographs, when the surrounding ground has been levelled by ploughing, that the mound becomes conspicuous.
- 3.6.4 Approximately 20m north-east of the mound there now stands a viewing area set within a small walled enclosure (**AP no. 7**). This has been attributed a catalogue number to avoid confusion with the mound (**AP no. 6**).

4 Concluding remarks.

- 4.1.1 Land on the proposed development site appears to have been disturbed by quarrying in the post medieval period and again by building construction and

Air Photo and LiDAR Mapping and Interpretation for Land North of Broom Road, Lakenheath, Suffolk
demolition in the late 20th century. However these factors would not necessarily preclude against the recovery of further Palaeolithic artefacts in this area.

- 4.1.2 The finds record suggests considerable archaeological activity in the Survey Area from the Neolithic period through to the medieval period. However this rich record is not matched with features on the air photographs, even in those areas to the north of the Maids Cross Hill road and to the south-west of the site that might be considered most conducive to cropmark formation. However the absence of evidence should not be taken as absence of presence of archaeologically significant remains.

Appendix 1 Archaeology from black and white and colour air photographs

Air photographs taken in appropriate conditions can record crop marks, soilmarks and earthworks of archaeological origin.

Crop marks result from variations in leaf and stalk colour and plant height and vigour. Crop marks occur where there are anomalies below the ground: in-filled hollows, palaeochannels, frost cracks, archaeological pits, ditches, surfaces and banks or modern disturbances such as land drains. Crop marks can also be created by variations in the treatment of the topsoil and ground cover, for example the uneven application of fertilizers, pesticides and herbicides or damage.

Crop marks that delineate buried and levelled archaeological features are the effect of differential growth and ripening between the vegetation on the archaeological deposits and that on surrounding undisturbed ground. Variations in growth and ripening are most visible when there is a significant difference in the water and nutrient availability between the archaeological and natural deposits. Crop marks can form at any stage from germination to ripening but the optimal conditions are during periods when precipitation is exceeded by transpiration. This results in potential soil moisture deficit (SMD) and water-stressed plants (Jones and Evans 1975). Prolonged periods of SMD halt plant growth and then cause wilting of the plant leaves, stem and finally root. Water-stress is exacerbated by free-draining sub-surface deposits such as archaeological walls or road surfaces but mitigated by rich and humic ditch and pit deposits. Even after ripening, differences in crop height and bulk can indicate the presence of buried features where there are no tonal differences. Crop marks can be seen most clearly in large areas of homogenous, fast-growing plants such as cereal crops and, less frequently, in root crops and grass. Crop marks produced in arable and grass at times of significant moisture stress, usually over buried structures or other highly permeable archaeological deposits, are often referred to as parchmarks.

Soilmarks are the colour and tonal differences between archaeological deposits and the plough or subsoil. The action of ploughing, which can penetrate the ground to a depth of 45cm, brings to the surface previously buried material. The rotation of the plough exposes the cut surface uppermost. Where the plough cuts buried and infilled archaeological features such as banks and ditches it brings to the surface slices of these deposits. If these slices are sufficiently differentiated from the natural plough or subsoil they can be visible from the air.

Archaeological earthworks that are visible on the ground can also be seen from the air. Detection and recording of earthworks from the air is determined by their survival and visibility. The survival of earthworks depends on past and present land use; natural erosion processes, deliberate destruction and ploughing can all reduce upstanding features to ground level. Earthworks can be revealed by the pattern of sunlight and shadow, differential frost or snow cover or the distribution of standing and flood water. Large and subtle variations in ground relief are further accentuated when viewed stereoscopically. Most stereo images are vertical photographs taken in long, regular sorties but stereo-overlapping can also be achieved from correctly set-up oblique views.

Appendix 2 Archaeology from LiDAR survey data

Airborne Light Detection and Ranging (LiDAR) is a data collection technique that uses a laser to measure certain variables. For archaeological purposes it is the distance between the aircraft and the ground that provides particular interest. During LiDAR flights up to 100,000 measurements per second are made of the ground, allowing highly detailed terrain models, including the details of surviving archaeological earthworks, to be generated at spatial resolutions of between 25cm and 2 metres.

The LiDAR data used for this survey was obtained from the Environment Agency as an ASCII Digital Surface Model. This data was derived from a combination of all of the EA data collected since 1998, which has been merged and re-sampled to give the best possible coverage.

Further information and guidance on the use of LiDAR for archaeological prospection can be found in Crutchley and Crow (2009).

Appendix 3 Sources consulted

English Heritage Archive

English Heritage, The Engine House, Fire Fly Avenue, Swindon, SN2 2EH. Enquiry reference no. AP 83402. The vertical and oblique air photographs listed below were consulted at the Archives on the 6th and 18th December 2013.

Vertical air photographs

Sortie & frame nos	Date	Scale 1:
RAF/3G/TUD/UK/59 5344	05-FEB-1946	9000
RAF/3G/TUD/UK/59 5345	05-FEB-1946	9000
RAF/3G/TUD/UK/59 5406	05-FEB-1946	9000
RAF/3G/TUD/UK/59 5407	05-FEB-1946	9000
RAF/106G/UK/1557 3020	07-JUN-1946	9800
RAF/106G/UK/1557 3021	07-JUN-1946	9800
RAF/106G/UK/1634 1405	09-JUL-1946	10000
RAF/106G/UK/1634 1406	09-JUL-1946	10000
RAF/106G/UK/1704 4105	28-AUG-1946	9800
RAF/106G/UK/1704 4106	28-AUG-1946	9800
RAF/CPE/UK/1952 1211	25-MAR-1947	10000
RAF/CPE/UK/1952 1212	25-MAR-1947	10000
RAF/CPE/UK/1952 1213	25-MAR-1947	10000
RAF/58/2688 F22 258	25-JAN-1959	9600
RAF/58/2688 F22 259	25-JAN-1959	9600
US/7PH/GP/LOC127 1004	29-DEC-1943	16000
RAF/HLA/500 6113	25-APR-1942	20000
RAF/HLA/500 6114	25-APR-1942	20000
OS/71216 142	14-MAY-1971	7500

RAF = Royal Air Force, OS = Ordnance Survey, US = United States Air Force

Specialist (oblique) air photographs

EHA reference no.	Date
TL 7283/1	05-JUL-1983

Cambridge University Collection of Aerial Photographs (CUCAP) Library

Department of Geography, University of Cambridge, Downing Place, Cambridge, CB2 3EN. The following vertical air photographs were examined at the library on 13th January 2013.

Reference no.	Date
RC8 H 135	03-APR-1969
RC8 H 136	03-APR-1969
RC8 H 137	03-APR-1969
RC8 EA 101	23-MAR-1982
RC8 EA 102	23-MAR-1982
RC8 EA 103	23-MAR-1982

Other imagery consulted

The following resources were consulted between 26th November 2013 and 10th December 2013.

Resource	Link/Source	Date	Description and comment
Google Earth	http://earth.google.com/	1999	Full coverage
		02-JUL-2006	Full coverage
		03-AUG-2007	Full coverage
		25-JUL-2008	Full coverage
Bing maps	http://www.bing.com/maps	No date	Full coverage
LiDAR (Digital Surface Model)	Environment Agency	1998 to NOV-2012	Coverage of km square TL7282 only

Appendix 4 Structure and content of digital map dataset

In the Autodesk drawing **AP & LiDAR Land North of Broom Rd, Lakenheath.dwg** the features in the layers APDITCH, APBANK, APTHACHURE, APEXTENTOFFEATURE & APSTRUCTURE are tagged with the following information

Data field	Description
APUID	Catalogue no.
TYPE	NMR Monument Type Thesaurus term
PERIOD	Period
LAYER	BANK, DITCH, EXTENT OF FEATURE, NATURAL FEATURE, THACHURE
PHOTO1	Photo/Map/Lidar reference number
DATE1	Date of PHOTO1
FORM1	Evidence (EARTHWORK, STRUCTURE, SOILMARK, PARCHMARK, CROPMARK)
SOURCE1	Source of PHOTO1 (EHA – English Heritage Archive, EA – Environment Agency, WWW – World Wide Web, CUCAP = Cambridge University Collection of Aerial Photographs)
PHOTO2	As above for additional images
DATE2	
FORM2	
SOURCE2	
PHOTO3	As above for additional images
DATE3	
FORM3	
SOURCE3	

Appendix 5 Archaeological features identified on air photos (see Figure 3)

APUID	Central NGR	Type(s)	Period(s)	Description of feature(s)
1	TL7256 8307	AIRCRAFT OBSTRUCTION	SECOND WORLD WAR	Traces of aircraft obstruction trenches are visible as soilmarks in the large flat fields on the north side of the Maids Cross Hill road on air photographs taken in 1942. (1) 1 RAF/HLA/500 6113 25-APR-1942
2	TL7236 8301	PLOUGH HEADLAND BANK (EARTHWORK)	MEDIEVAL POST MEDIEVAL	A possible medieval or post medieval plough headland or bank and traces of two further banks in a similar alignment are visible as soilmarks on historic air photos. (1-3) 1 RAF/3G/TUD/UK/59 5344 05-FEB-1946 2 RC8 EA 103 23-MAR-1982 3 RC8 H 136 03-APR-1969
3	TL7276 8286	DITCH	UNCERTAIN	A short ditch of uncertain date is visible as a cropmark on historic air photos. (1) 1 RAF/106G/UK/1704 4106 28-AUG-1946
4	TL7244 8258	GRAVEL PIT QUARRY	POST MEDIEVAL EARLY 20 TH CENTURY	A small gravel pit is depicted on the 1882 Ordnance Survey map at TL7244 2825. (1) The earliest photographs show that the surrounding area was hummocky and uneven, which may indicate further quarrying. On more recent air photos and on the LiDAR imagery this area is largely obscured by trees and did contain some late 20 th century structures that have now been removed. (2-3) 1 ORDNANCE SURVEY MAP 1882 2 RAF/3G/TUD/UK/59 5345 05-FEB-1946 3 LiDAR DSM TL7282 1998-2012

APUID	Central NGR	Type(s)	Period(s)	Description of feature(s)
5	TL7258 8260	STONE QUARRY QUARRY	POST MEDIEVAL	<p>The 1882 Ordnance Survey map depicts a cluster of “Stone Pits” just beyond the south-east corner of the proposed development site. (1)</p> <p>The earliest air photos show hummocky uneven ground across Maids Cross Hill with some distinct small pits, these are likely to be the remains of post medieval quarrying activities. (2-3)</p> <p>Most of this area was levelled for cultivation by 1959 but the more south-westerly pits appear to survive as earthworks. (4-5)</p> <p>1 ORDNANCE SURVEY MAP 1882 2 RAF/3G/TUD/UK/59 5407 05-FEB-1946 3 RAF/HLA/500 6113 25-APR-1942 4 RAF/58/2688 F22 258 25-JAN-1959 5 LiDAR DSM TL7282 1998-2012</p>
6	TL72508279	MOUND	UNCERTAIN	<p>A small mound, approximately 6m in diameter, is visible as an earthwork on historic air photographs. The HER record MSF9479 suggests this mounds is modern feature, though possibly rebuilt from an historic barrow. On the earliest photographs the mound is visible in an area of rough hummocky ground that is thought to be the remains of post medieval quarrying (see AP no. 5). (1)</p> <p>By 1959 the surrounding area had been levelled for cultivation but the mound was still visible as a low earthwork with different vegetation cover. (2)</p> <p>The current condition of this feature is not known because the area has been colonised by low shrubs. (3-4)</p> <p>1 RAF/HLA/500 6113 25-APR-1942 2 RAF/58/2688 F22 258 25-JAN-1959 3 BING ND 4 LiDAR DSM TL7282 1998-2012</p>

APUID	Central NGR	Type(s)	Period(s)	Description of feature(s)
7	TL7252 8280	ENCLOSURE	21ST CENTURY	<p>A small, circular walled enclosure, approximately 5m in diameter is visible on recent air photos (1)</p> <p>This feature was not visible on the 1999 Google Earth imagery or any earlier air photographs and so is presumed to be a 21st century construction. (2)</p> <p>1 BING ND</p> <p>2 GOOGLE EARTH 1999</p>
8	TL7265 8260	ROYAL OBSERVER CORPS SITE	SECOND WORLD WAR LATE 20TH CENTURY	<p>A Royal Observer Corps post and associated features are visible as structures and earthworks on historic air photos. These features were in place in 1942 and still extant, though relandscaped and fenced off on the most recent images. (1-4)</p> <p>1 RAF/HLA/500 6113 25-APR-1942</p> <p>2 RAF/3G/TUD/UK/59 5407 05-FEB-1946</p> <p>3 BING ND</p> <p>4 LiDAR DSM TL7282 1998-2012</p>
9	TL7277 8275	HOUSE GARDEN	POST MEDIEVAL	<p>A house and garden plot are depicted on the 1836 and 1882 Ordnance Survey maps and were extant on the earliest air photos. (1-2).</p> <p>These features were visible as earthworks in 1946 and the area appears to have been relandscaped as a car park on more recent images. (3-5)</p> <p>1 ORDNANCE SURVEY MAP 1836</p> <p>2 ORDNANCE SURVEY MAP 1882</p> <p>3 RAF/HLA/500 6113 25-APR-1942</p> <p>4 RAF/3G/TUD/UK/59 5407 05-FEB-1946</p> <p>5 LiDAR DSM TL7282 1998-2012</p>

APUID	Central NGR	Type(s)	Period(s)	Description of feature(s)
10	TL7282 8240	QUARRY	POST MEDIEVAL 20THCENTURY	Dispersed quarry pits are visible as earthworks on historic and recent air photos and on the LiDAR imagery. Some of these features appear to have been dug after the earliest photographs but some are earlier and may have pre-20 th century origins. (1-5) 1 RAF/HLA/500 6113 25-APR-1942 2 RAF/3G/TUD/UK/59 5406 05-FEB-1946 3 BING ND 4 RC8 H 136 03-APR-1969 5 LiDAR DSM TL7282 1998-2012
11	TL7286 8267	BANK (EARTHWORK)	POST MEDIEVAL	Three mutilated banks are visible as earthworks on historic air photos, these features may be of post medieval origin. Two of these lie parallel to the Maids Cross Hill road and continue eastward beyond the Survey Area. The third is oriented south-west to north-east and runs along the southern side of an extant drainage ditch. This latter feature is also visible on the LiDAR imagery. (1-4) 1 RAF/3G/TUD/UK/59 5406 05-FEB-1946 2 RC8 EA 103 23-MAR-1982 3 RC8 H 137 03-APR-1969 4 LiDAR DSM TL7282 1998-2012
12	TL7274 8209	MILITARY SITE TRACKAY	MID 20 TH CENTURY	Two small structures linked by trackways to the western side of the airfield are visible on historic air photos. The purpose of these structures is not known but given their position they are likely to associated with the airfield. These features do not appear to have been present in 1942 or 1946 but are visible in 1947. (1-2) Some earthwork traces of these features are visible on recent air photos and on the LiDAR imagery. (3-4) 1 RAF/CPE/UK/1952 1212 25-MAR-1947 2 BING ND 3 LiDAR DSM TL7282 1998-2012

APUID	Central NGR	Type(s)	Period(s)	Description of feature(s)
13	TL7282 8217	BARBED WIRE OBSTRUCTION	SECOND WORLD WAR (1942)	<p>A large area of the heath on the western side of the airfield was enclosed by barbed wire obstructions on the earliest air photos. These features are likely to be associated with protecting activities in this area in the Second World War. These defences extended beyond the limits of the Survey Area but within it two blast pens can be seen within the barbed wire circuit (see AP nos 14 & 15). Although they appear to have been removed by 1959 and little if any trace is visible on the more recent air photos or LiDAR imagery small remnants of these temporary structures may remain on the ground. (1-2)</p> <p>1 RAF/HLA/500 6113 25-APR-1942 2 RAF/58/2688 F22 258 25-JAN-1959</p>
14	TL7288 8215	BLAST PEN	SECOND WORLD WAR (1942)	<p>A Second World War blast pen is visible as an earthwork on air photographs taken in 1942. It appears to have been recently constructed at this time. A similar pen lies 150m to the NE of this one (see AP no. 15). (1)</p> <p>This pen was still upstanding in 1946 but the LiDAR imagery suggests it has now been levelled. (2-3)</p> <p>1 RAF/HLA/500 6113 25-APR-1942 2 RAF/3G/TUD/UK/59 5406 05-FEB-1946 3 LiDAR DSM TL7282 1998-2012</p>
15	TL7295 8229	BLAST PEN	SECOND WORLD WAR (1942)	<p>A Second World War blast pen is visible as an earthwork on air photographs taken in 1942. It appears to have been recently constructed at this time. A similar pen (AP no. 14) lies 150m to the SW of this one. (1)</p> <p>This pen was still upstanding in 1946 but the LiDAR imagery suggests it has now been levelled. (2-3)</p> <p>1 RAF/HLA/500 6113 25-APR-1942 2 RAF/3G/TUD/UK/59 5406 05-FEB-1946 3 LiDAR DSM TL7282 1998-2012</p>

APUID	Central NGR	Type(s)	Period(s)	Description of feature(s)
16	TL7220 8220	FARMSTEAD	POST MEDIEVAL	<p>A small building complex, possibly a farmstead is depicted on historic maps. (1-2)</p> <p>By 1942 the standing structures had been removed and the site was marked by earthworks. (3)</p> <p>The LiDAR imagery suggests low earthworks survive at this spot. (4)</p> <p>1 ORDNANCE SURVEY MAP 1882</p> <p>2 ORDNANCE SURVEY MAP 1836</p> <p>3 RAF/HLA/500 6113 25-APR-1942</p> <p>4 LiDAR DSM TL7282 1998-2012</p>
17	TL7280 8297	UNCERTAIN	UNCERTAIN	<p>Indistinct soilmarks in the field known as 'Roman Field' are visible on air photos taken in 1969. These pale-toned soilmarks have the zigzag appearance that indicates deposits have been dragged back and forth by modern ploughing. As such the apparent shape and even the position of these marks may be at some remove from the truncated remains from which they may have derived.</p> <p>Furthermore it is know that there were archaeological excavations in this area in the late 1940s, although their precise location is not available. It is possible that these soilmarks are in fact the backfill of those trenches. (1)</p> <p>1 RC8 H 136 03-APR-19691</p>

References and resources cited

Jones, R J A and Evans, R 1975. 'Soil and crop marks in the recognition of archaeological site by air photography' in Wilson, D (ed) *Aerial Reconnaissance for Archaeology*. CBA Research Report 12. 1-11

Soil Survey of England and Wales 1983 Soils of England and Wales, 1:250 000 scale map and legend. Sheet 3.

Digital resources

BGS Viewer <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> Accessed 03/01/2014

Natural England http://www.naturalengland.org.uk/Images/jca85_tcm6-5646.pdf Accessed 03/01/2014

Soilscales <https://www.landis.org.uk/soilscales/> Accessed 03/01/2014

Ordnance Survey First Series 1836 1:63360 Sheet 51
http://www.visionofbritain.org.uk/maps/sheet/first_edition/lm_51 . Accessed 03/01/2014

<http://www.old-maps.co.uk> for the Ordnance Survey map of 1882 (1:2500 scale). Accessed 03/01/2014

Subterranea Britannica <http://www.subbrit.org.uk/rsg/roc/db/988807445.026002.html> Accessed 03/01/2014

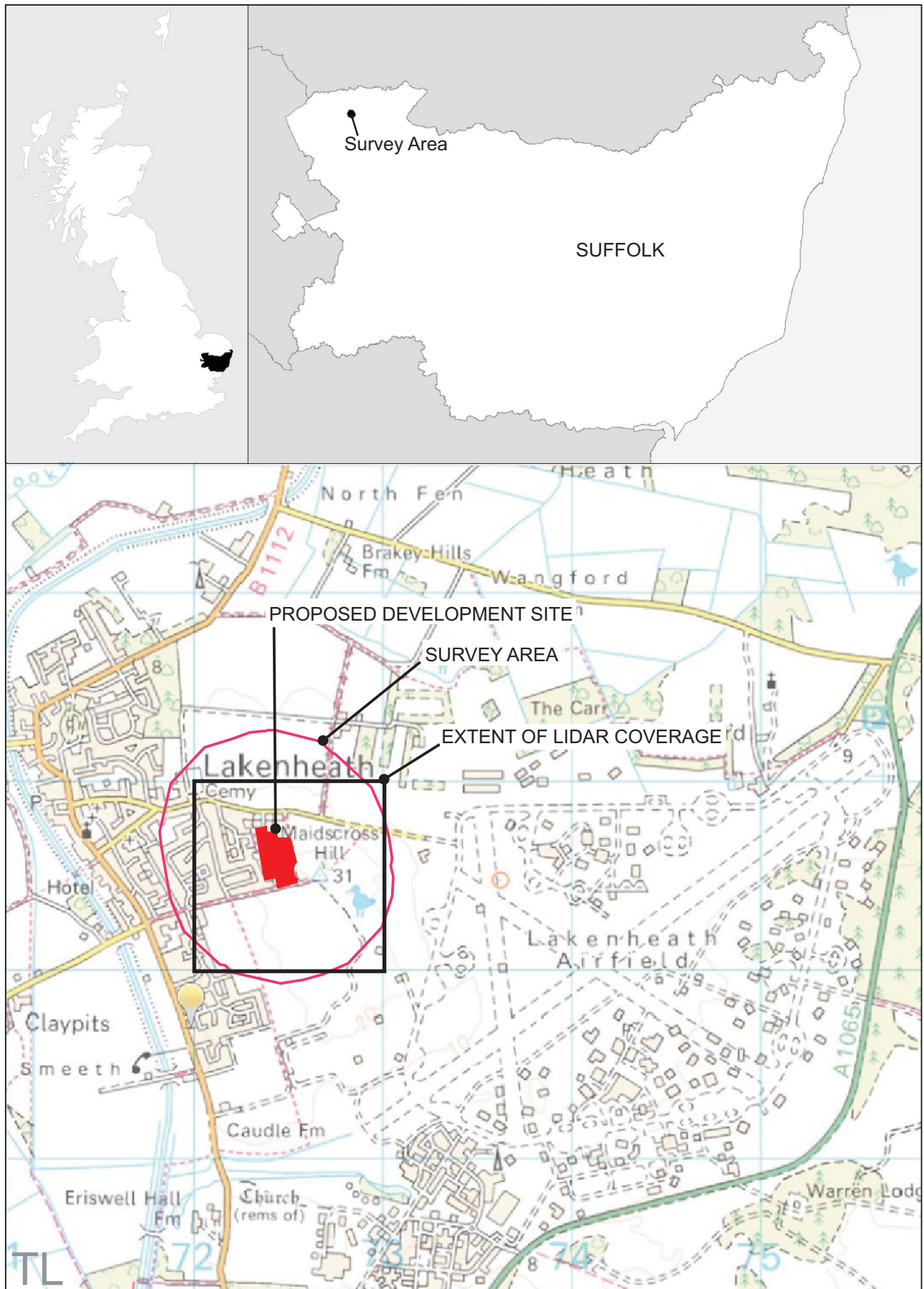


Figure 1. Location plan of the air photo interpretation and mapping for Land North of Broom Road, Lakenheath

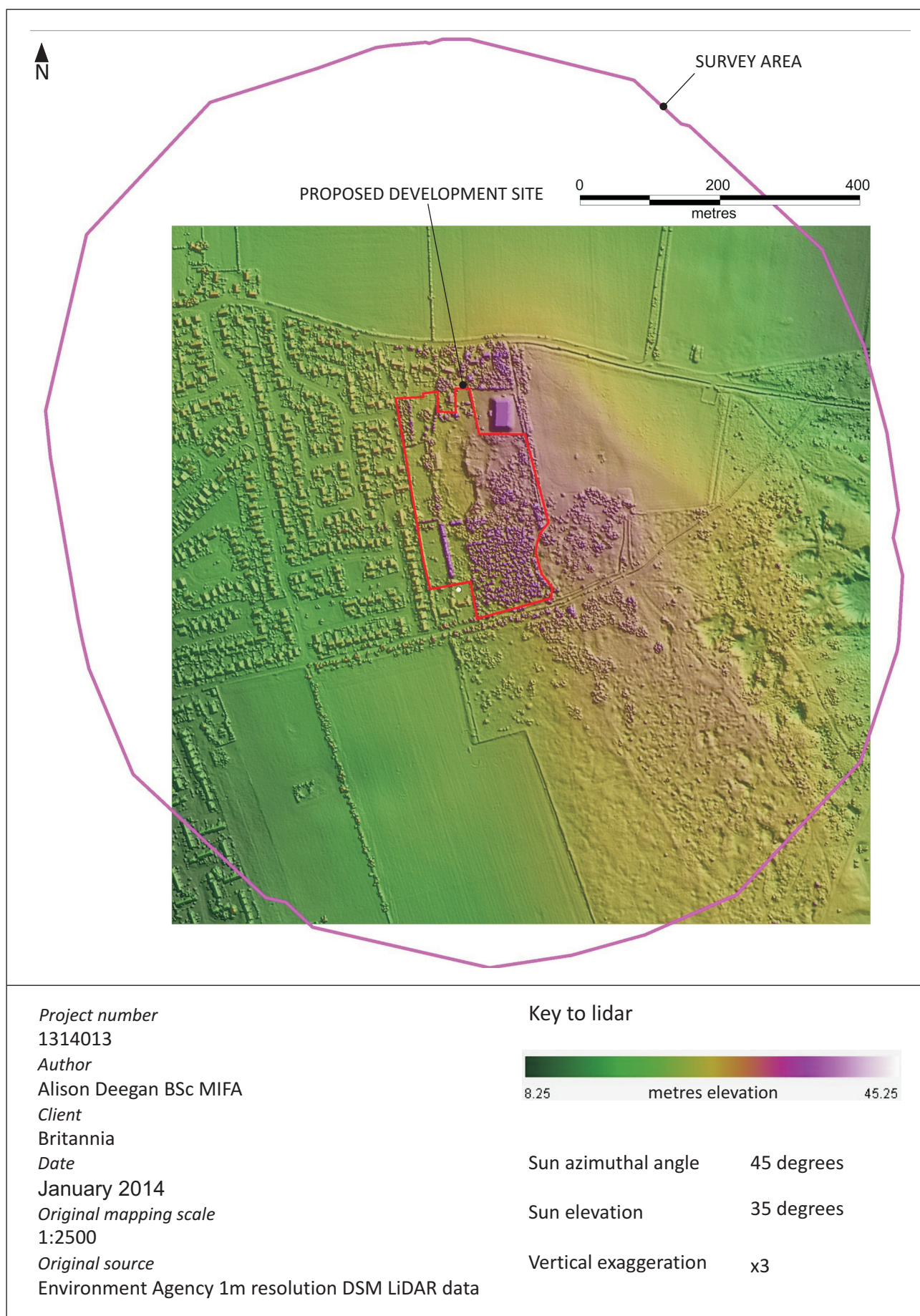


Figure 2. Overview of the 1m resolution LiDAR data (digital surface model) for TL7282.

Fig 3. Archaeological features from air photos and LiDAR for Land North of Broom Road, Lakenheath, Suffolk. (approx. 1:5000 scale)

Project number 1314013
Author Alison Deegan BSc MIFA
Client Britannia
Date January 2014
Original mapping scale 1:2500
Original sources EHA, CUCAP, Google Earth & Bing air photos & EA LiDAR

Air photo mapping and interpretation © Alison Deegan 2014

Key to features

<div></div>	Archaeological ditch
<div></div>	Archaeological bank
<div></div>	Area of large or poorly-defined archaeological features
<div></div>	Archaeological slope (schematic)
<div></div>	?Dry valley
1	AP catalogue number

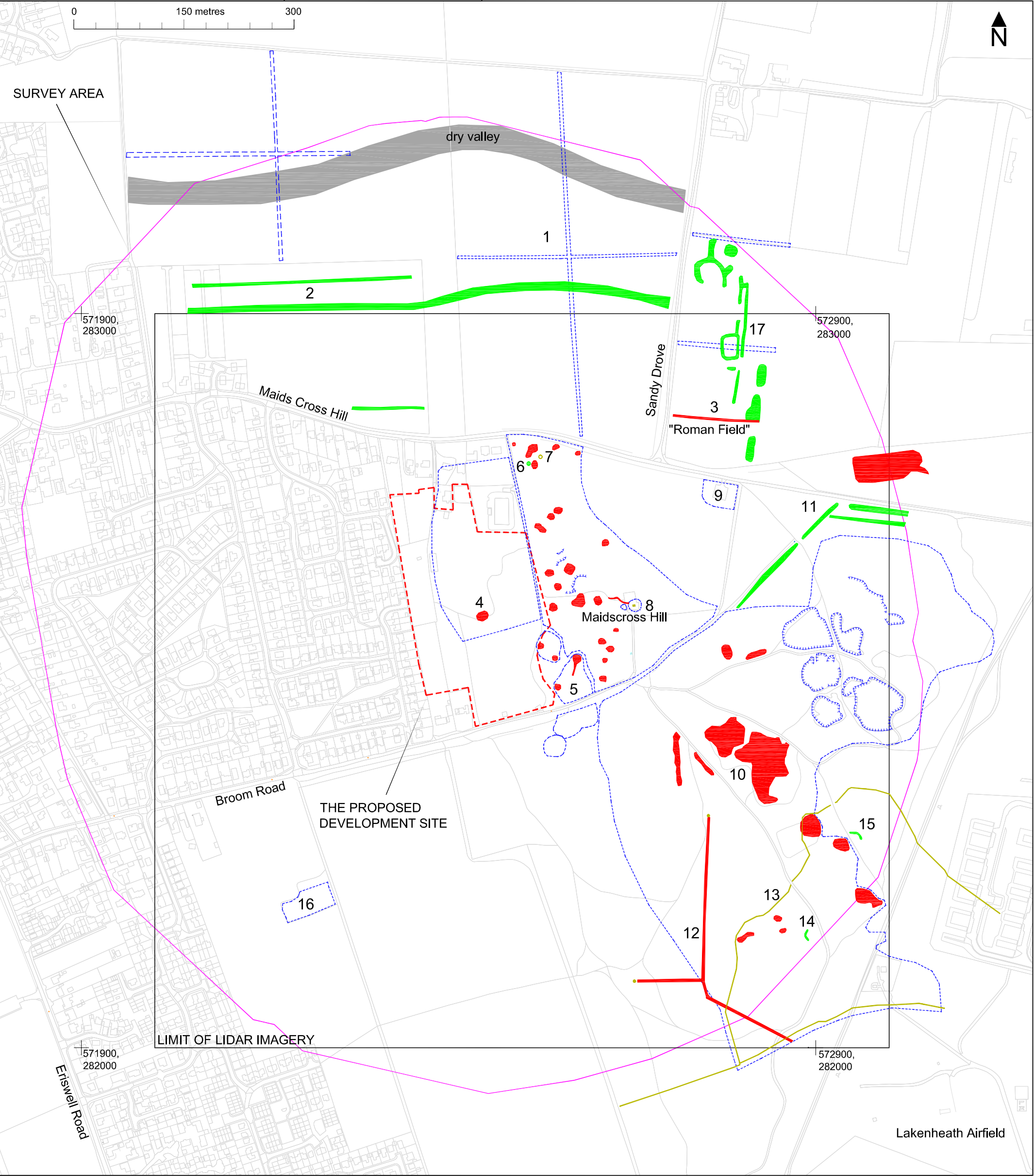
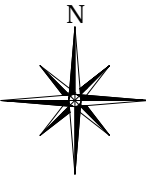


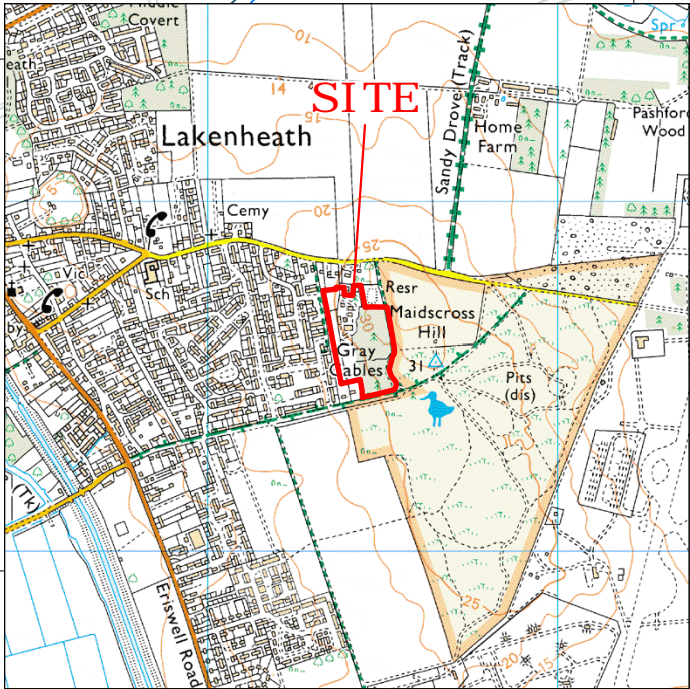
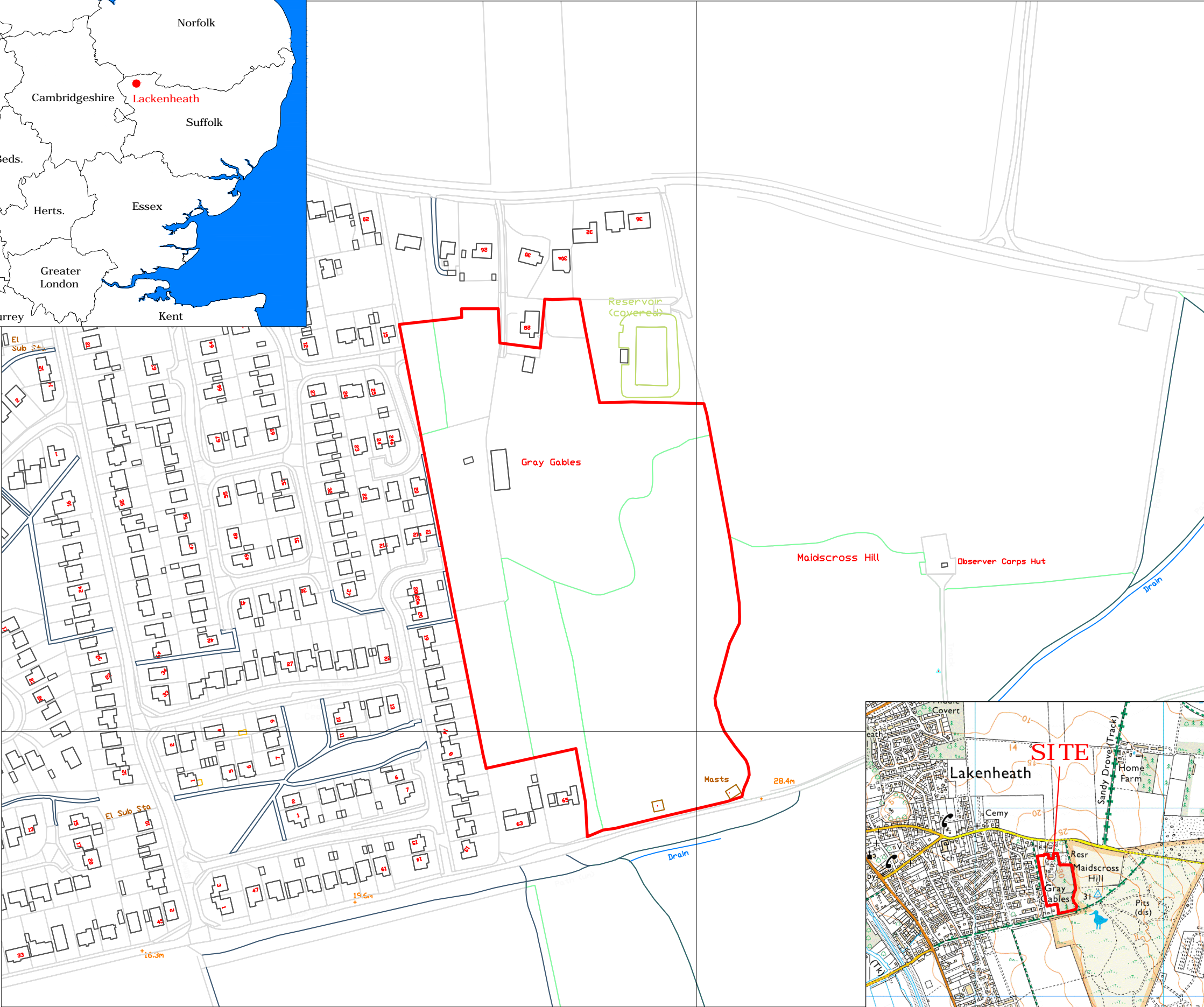
Figure 3. Archaeological features from air photos and LiDAR data for Land North of Broom Road, Lakenheath, Suffolk



282500

572500

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Site Boundary

NGR:	PROJECT NUMBER:
572430 282610	1046

PROJECT:
LAND NORTH OF BROOM HILL, LAKENHEATH, SUFFOLK

CLIENT:
ELLIS DRAFTING SERVICES

DESCRIPTION:
GENERAL LOCATION PLAN

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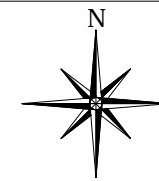
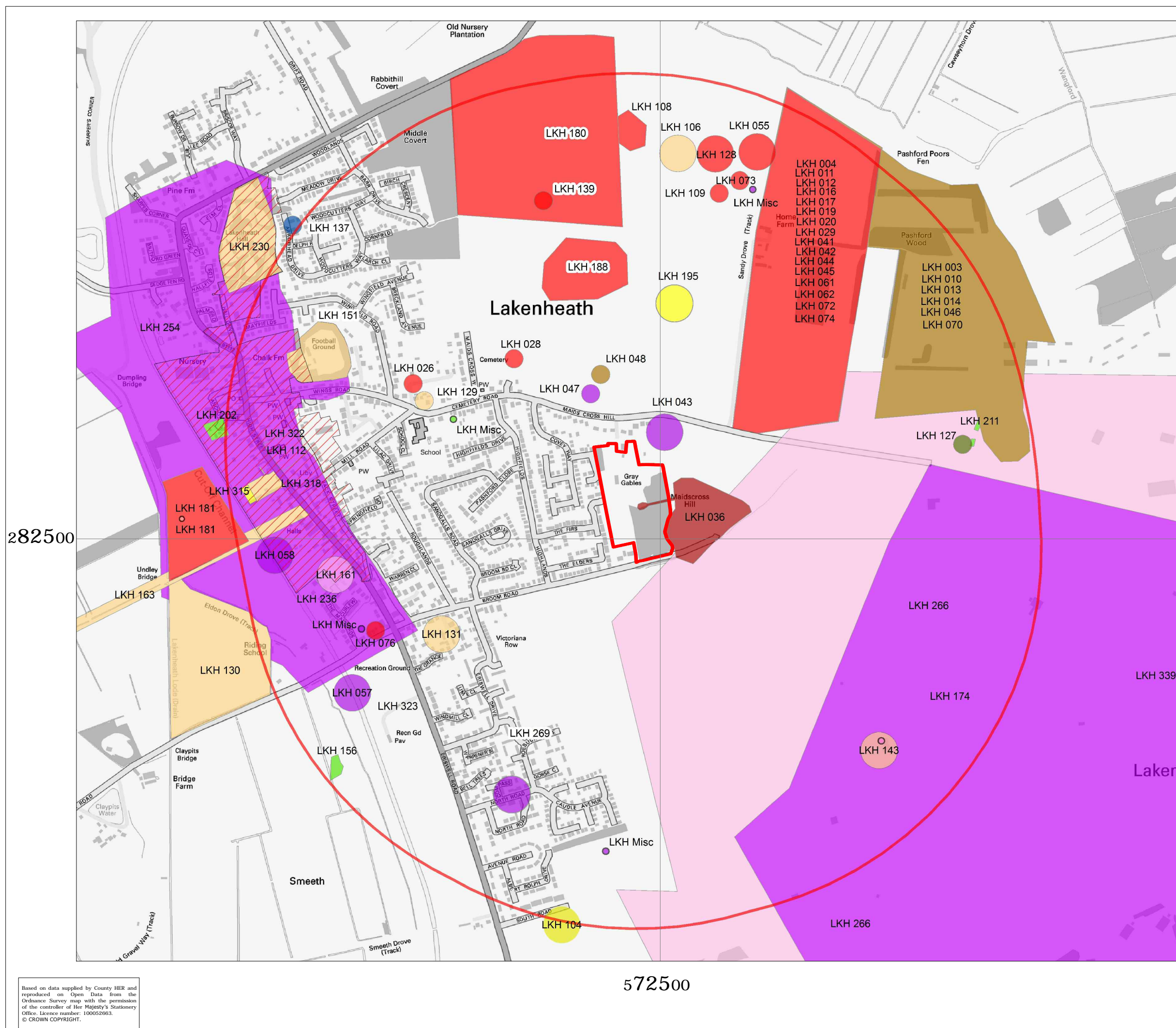






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SCALE:	0	200m
1: 5000		

PLOT:	APPROVED:	VERSION:
A3	TPS	01
DATE:	AUTHOR:	FIGURE:
JAN 2014	MCA	01



	HER Search Area
	Conservation Area
	Modern Monument Record
	Post-Medieval Monument Record
	Medieval Monument Record
	Anglo-Saxon Monument Record
	Roman Monument Record
	Iron Age Monument Record
	Bronze Age Monument Record
	Neolithic Monument Record
	Palaeolithic Monument Record
	Site Boundary

NGR:	PROJECT NUMBER:
572430 282610	1046

PROJECT:

LAND NORTH OF BROOM HILL,
LAKENHEATH, SUFFOLK

CLIENT: **ELLIS DRAFTING SERVICES**

DESCRIPTION:
HER DATA - MONUMENT RECORDS

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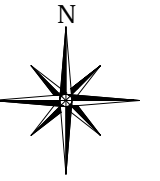
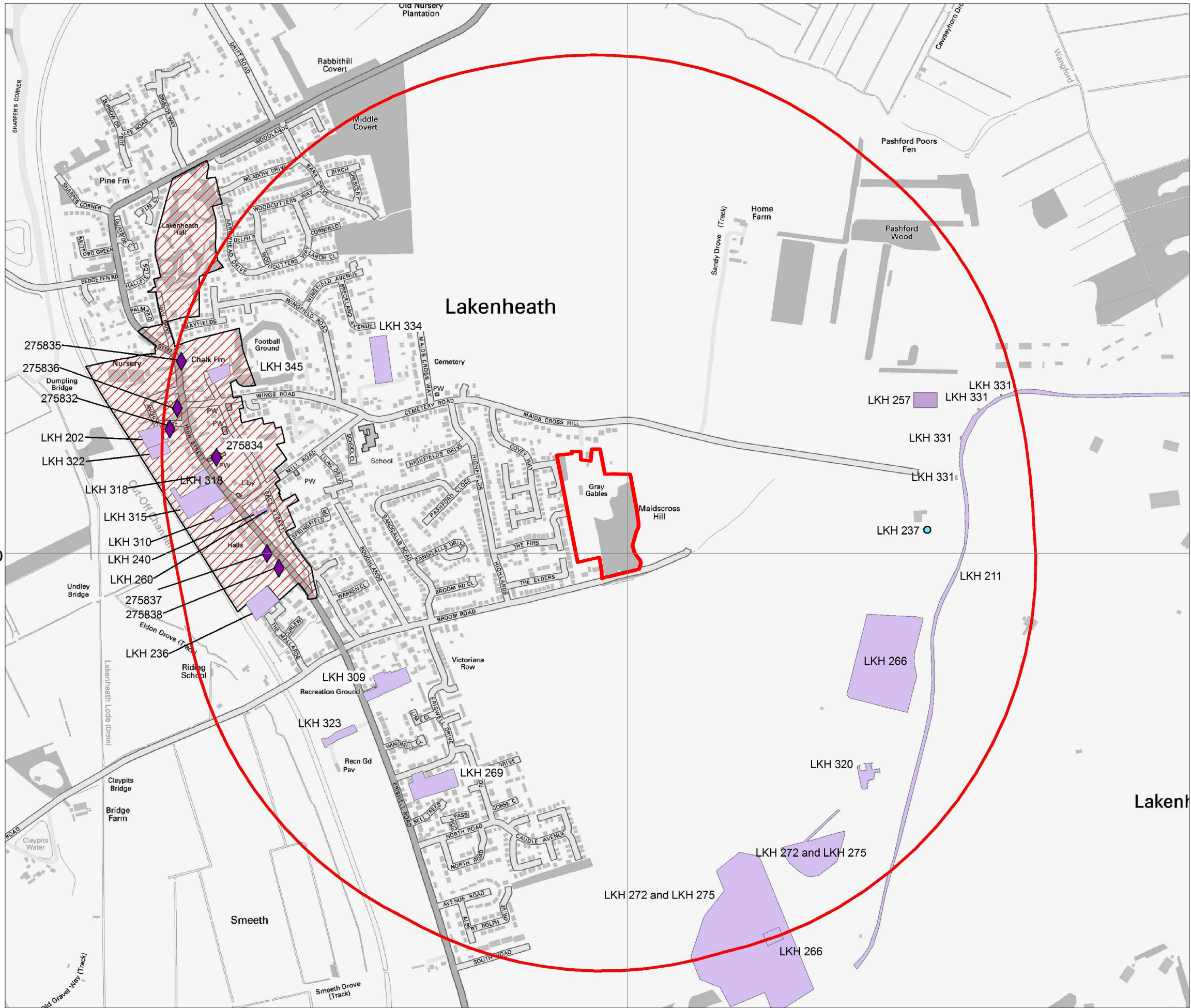
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PLOT: A3	APPROVED: TPS	VERSION: 01
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DATE: JAN 2014	AUTHOR: MCA	FIGURE: 02
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	HER Search Area
	Conservation Area
	Archaeology Event Point
	Archaeological Event
	Listed Building
	Site Boundary

NGR:	572430 282610	PROJECT NUMBER:	1046
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PROJECT:	LAND NORTH OF BROOM HILL, LAKENHEATH, SUFFOLK
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CLIENT:	ELLIS DRAFTING SERVICES
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DESCRIPTION:	HER DATA - ARCHAEOLOGICAL EVENTS & LISTED BUILDINGS
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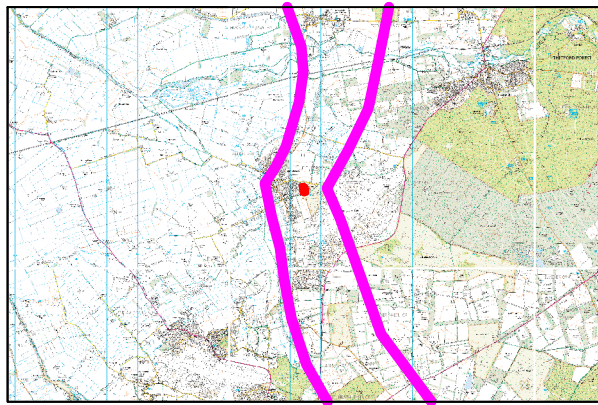
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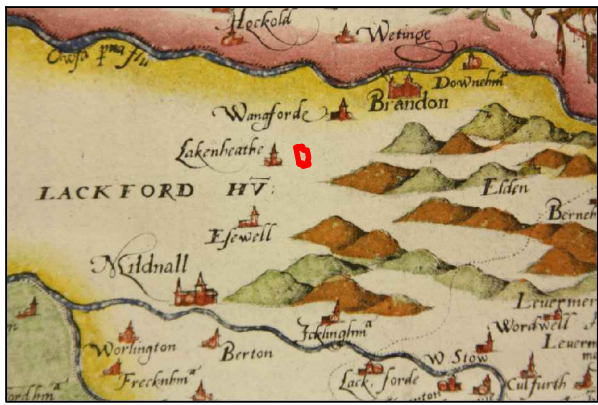
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DATE:	JAN 2014	AUTHOR:	MCA	FIGURE:	03

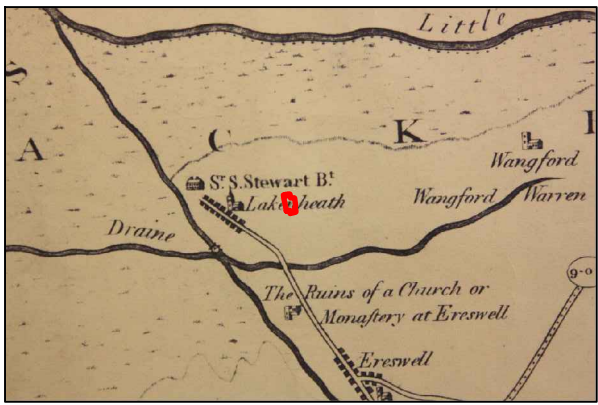
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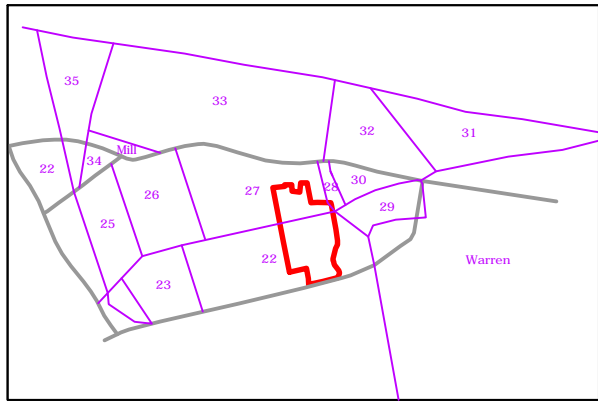
Bytham River Course



Saxton's Map - 1575



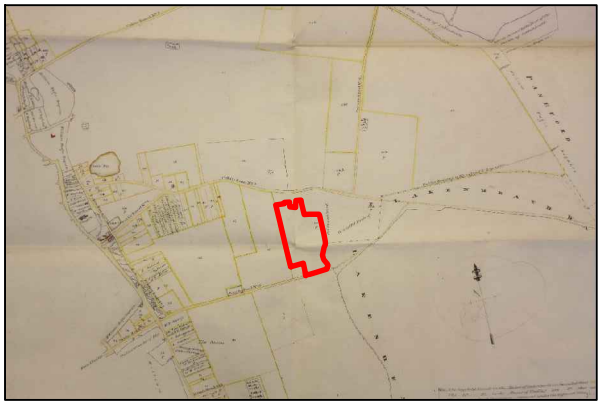
John Kirby - 1736



'Middle Field' Pre-Enclosure Field System - Furlong



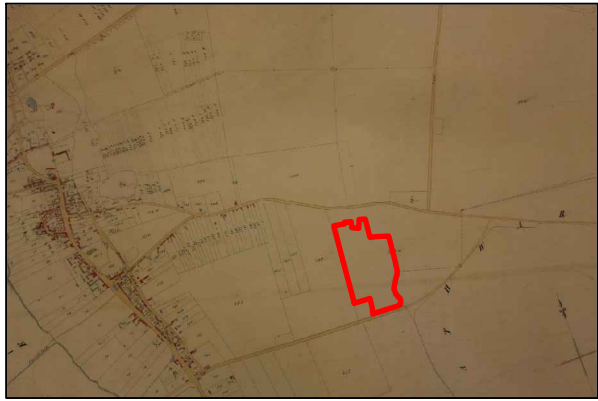
Lakenheath Hall Estate Map - 1811



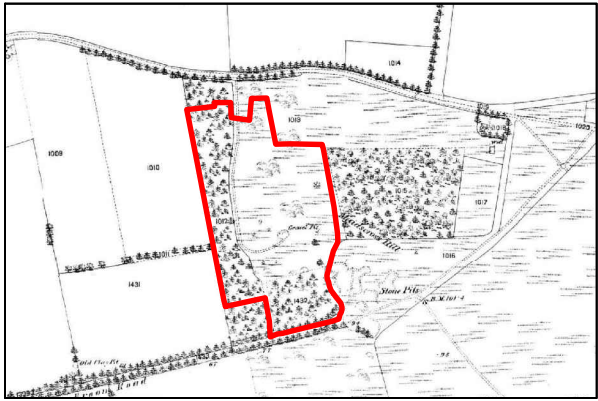
Enclosure Map - 1836



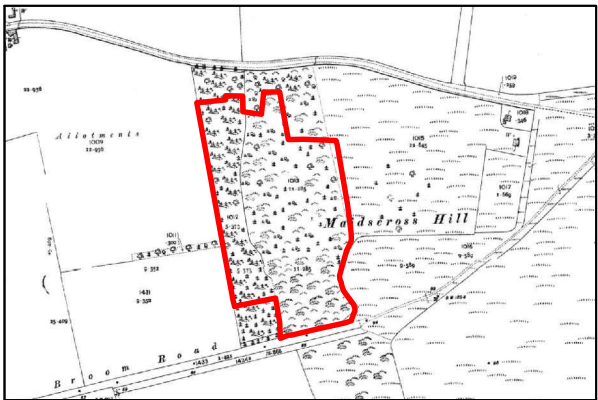
David & Charles Map - 1836



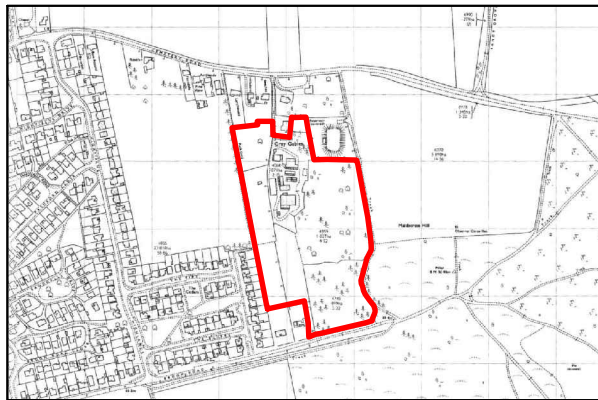
Tithe Map - 1853



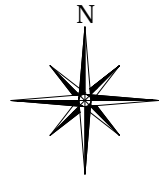
1st Edition Ordnance Survey Map - 1882



2nd Edition Ordnance Survey Map - 1905



Ordnance Survey Map - 1975-6



	Course & Extent of Bytham River
	Pre-Enclosure Furlong
	Site Location

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CLIENT: ELLIS DRAFTING SERVICES	
DESCRIPTION: CARTOGRAPHIC SOURCES	

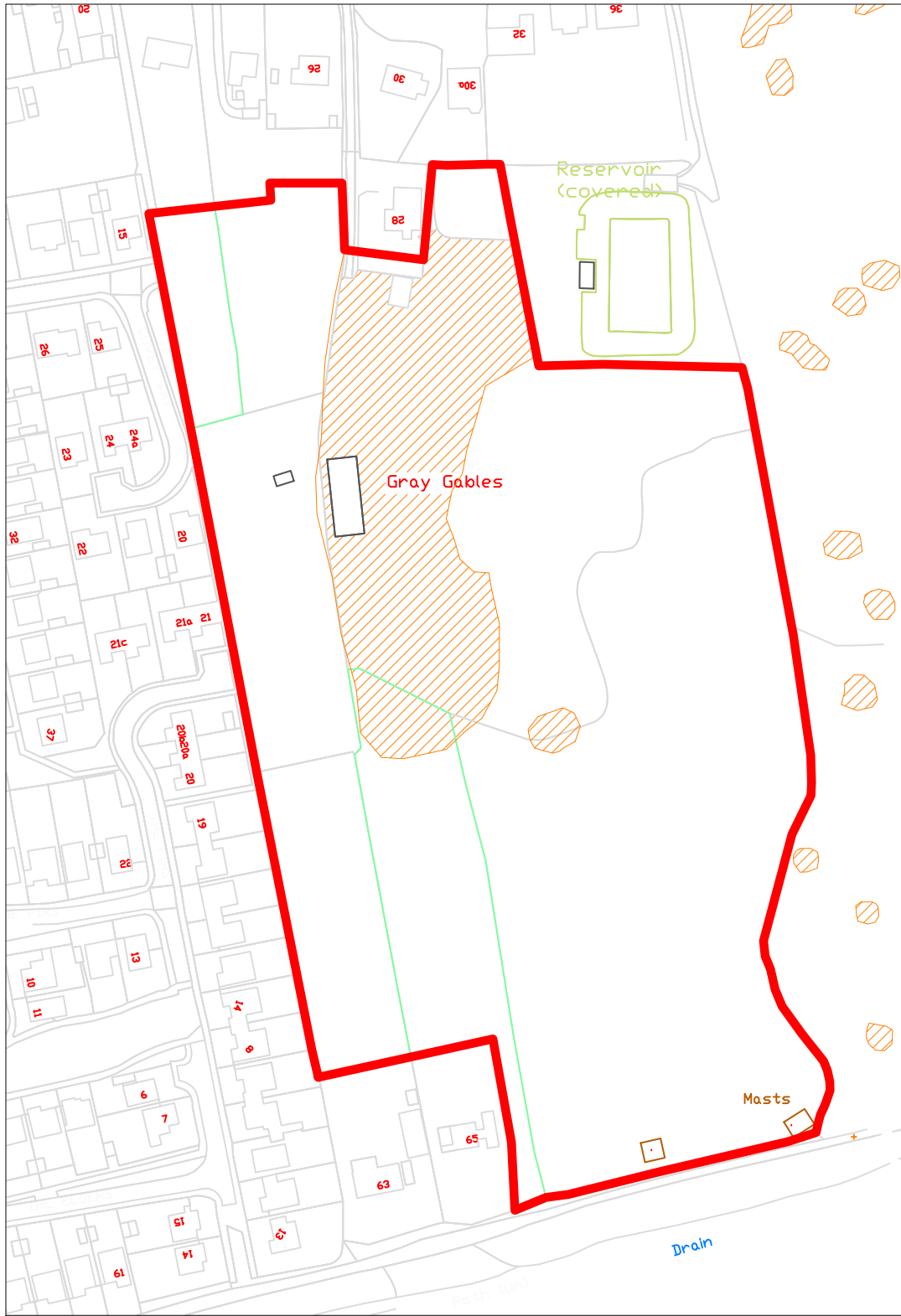
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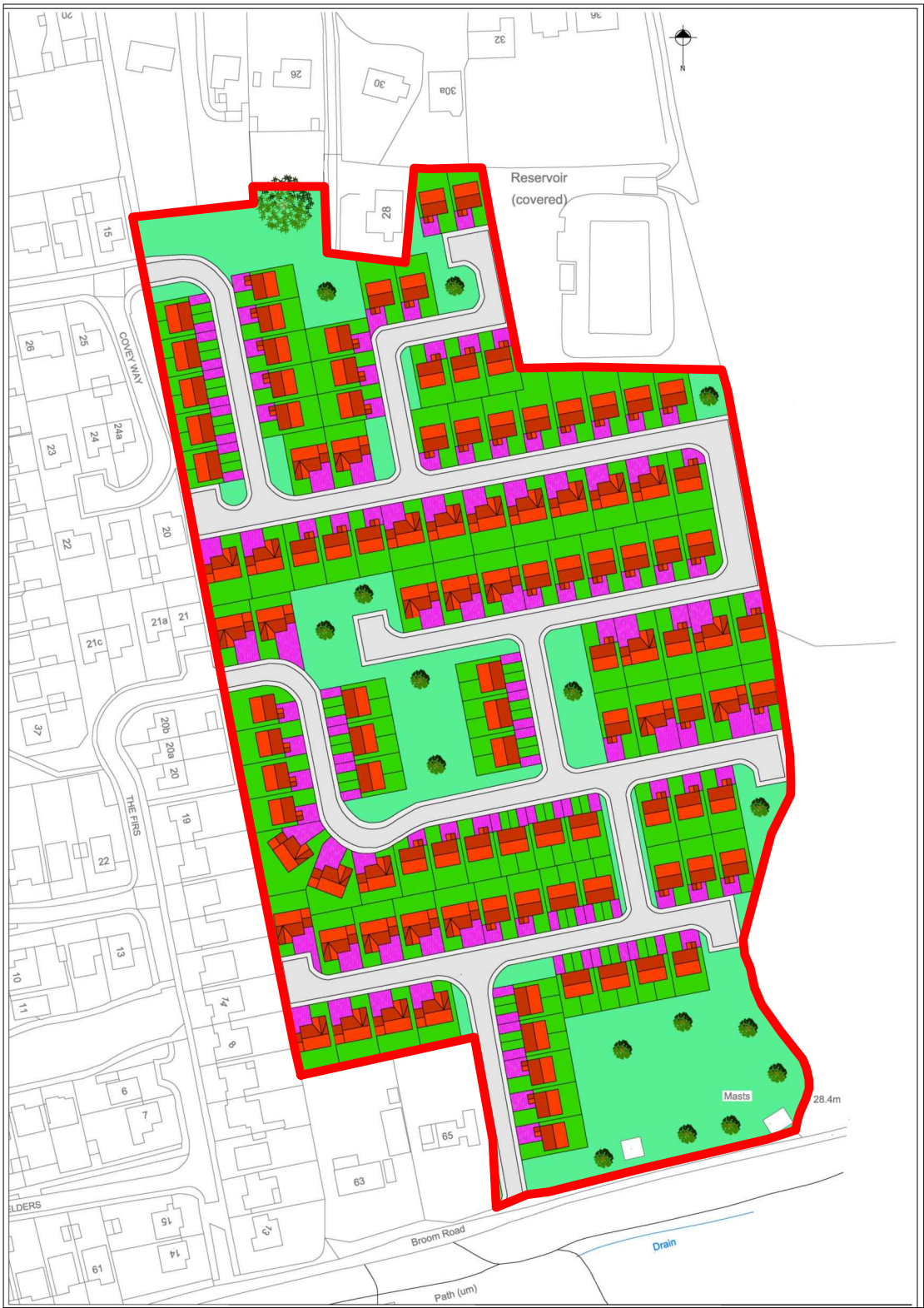
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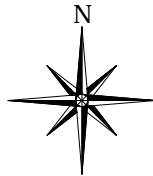
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DATE: JAN 2014	AUTHOR: MCA	FIGURE: 04



PREVIOUS IMPACT FROM QUARRYING AND DEVELOPMENT



PROPOSED DEVELOPMENT



	Area of Previous Truncation
	Proposed House
	Site Boundary

NGR:	572430 282610	PROJECT NUMBER:	1046
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PROJECT:	LAND NORTH OF BROOM HILL, LAKENHEATH, SUFFOLK
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CLIENT:	ELLIS DRAFTING SERVICES
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DESCRIPTION:	PROPOSED PLANS & PREVIOUS IMPACT
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SCALE:	1:2000	
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DATE:	JAN 2014	AUTHOR:	MCA	FIGURE:	05



DP1- South Boundary - Looking West



DP2- Southern Area - Looking North East



DP3- Central Area Showing Leveling - Looking North East



DP4- Central Area - Looking West



DP5- Eastern Area - Looking East



DP6- Gray Gable Barn - Looking South



DP7- North Western Plot - Looking South



DP8- Western Plot - Looking South-East



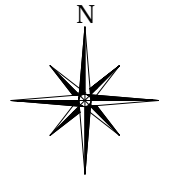
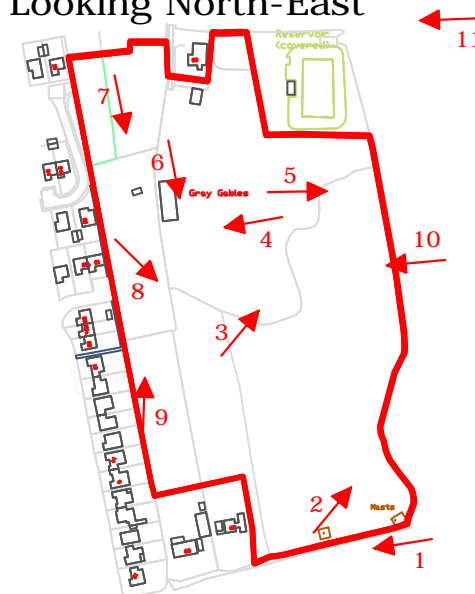
DP9- South-Western Plot - Looking North-East





DP10- Concrete Blocks, Possible Former Entrance - Looking West



DP11- Approximate Location of Barrow and Stone Cross - Looking West



	Photo Direction & Number
	Site Boundary

NGR: 572430 282610	PROJECT NUMBER: 1046
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