



PADMAC Unit Working Paper

Geo-archaeological investigations at Arrewig Lane, near Chesham, Buckinghamshire – PADMAC Unit report.

Background

Important Palaeolithic finds have, in the past, been found on the deposits mapped as Clay-with-flints which cap the highest Chalk Downland hilltops and plateaux of southern England. The category ‘Clay-with-flints’ (as shown on maps for example), is in fact a ‘blanket-term’ which is used to include all the different components which make up these superficial deposits, for example Clay-with-flints *sensu stricto*; Clay-with-flints *sensu lato*; deposits which are also classified as Plateau Drift, waterlain and windblown Brickearths (see Scott-Jackson, J.E.; 2000:3)

Arrewig Lane, near Chesham, Buckinghamshire (NGR:SP9108 0580) (Fig.1) is situated at a high-level and on deposits mapped as Clay-with-flints (Fig.2). As the Arrewig Lane site was scheduled for extensive commercial Brickearth extraction, the area warranted geo-archaeological investigations. Consequently, the PADMAC Unit (University of Oxford), which has developed specific methodologies and techniques for investigating high-level sites on deposits mapped as Clay-with-flints, was invited by Archaeological Services & Consultancy Ltd (ASCL), to carry out a brief evaluation of the Arrewig Lane site prior to the Brickearth extraction. (The ACSL (2009) *Project Design for Archaeological Watching Brief on behalf of H.G. Matthews Ltd*, details the site; location; geology and planned extraction).

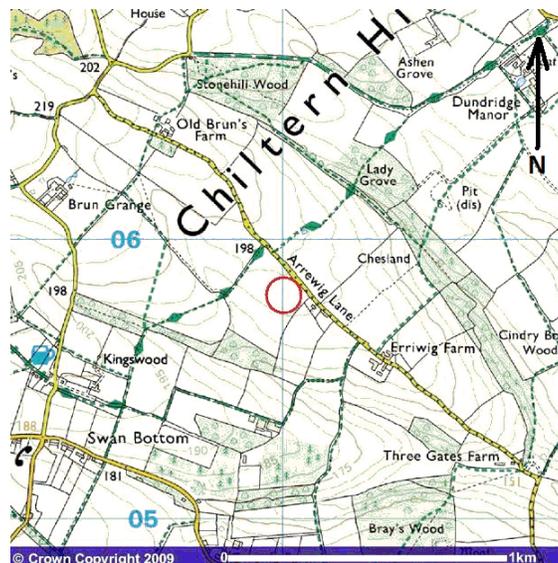


Fig 1: Map showing the site at Arrewig Lane, near Chesham, Buckinghamshire. (based on Ordnance Survey ‘Get a Map’ 2009)

Previous investigations by the PADMAC Unit have shown that topographically high-level Palaeolithic sites on deposits mapped as Clay-with-flints have the following general characteristics:

- Situated on the edges of plateaux and interfluvies;
- Combine long views (e.g. across flood plains) with short views down into nearby valleys;
- Occupy positions where knappable raw material is locally available;
- Sites (both surface-finds and embedded sites) on deposits mapped as Clay-with-flints are held in the deposits in pipes and 'basin-like' features formed by the process of dissolution of the underlying Chalk;
- Palaeolithic surface-finds on high-level sites may be indicative of an embedded site/s in that local.

'The hilltops and plateaux edges were important to Palaeolithic people. From these high places they could (safely?) watch the movements of animals (and perhaps other Palaeolithic groups) on both the hillsides and in the valleys below. They could also manufacture stone tools from flint or stone of knappable quality' (Scott-Jackson, J.E. 2000:170).

Interestingly therefore, the topographical positions of these high-level sites may reflect Palaeolithic hunting patterns, where migrating game could be observed from a distance and subsequently hunted as the nearby valleys 'funneled' the game into restricted routes or 'passes'.

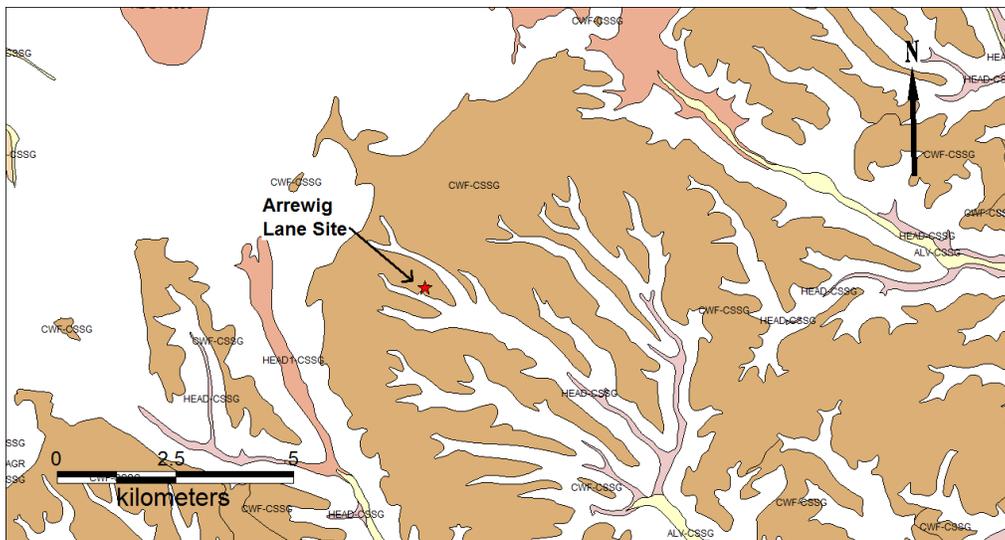


Fig 2: The Arrewig Lane site – Geological context (using Mapinfo after Edina Digimap).

The PADMAC Unit (2009) geo-archaeological investigations at the Arrewig Lane site.

In order to assess the Palaeolithic potential of the Arrewig Lane site, the PADMAC Unit undertook the geo-archaeological investigations set out below:

- Field survey - to investigate the existing Brickearth extraction pit and to fieldwalk for artefacts;
- Resistivity survey - to determine the sub-surface features, particularly the Clay/Chalk interface, and to characterize the deposits;
- GIS analysis - to investigate the site's topographic viewsheds;
- Surface-finds analysis – to identify the lithic material.

Field survey – report

The Arrewig Lane site is situated in an area well known for ‘Brickearth’ deposits. The existing ‘Brickearth’ extraction pit is situated the eastern corner of the field (see Fig. 3 and 4). Slumping of the deposits within the pit has now obscured the sections. As poor weather conditions during the field survey precluded close physical examination, it was not possible to identify flint strata or nodules in the sections. Furthermore, as slumping had redeposited plough soil and flints nodules onto the sides of the pit it was not possible to ascertain the presence or absence of Palaeolithic archaeology. Fieldwalking produced a number of surface-finds - none Palaeolithic (see Fieldwalking (Fig.9) below for details).



Fig 3: Arrewig Lane site showing ‘Brickearth’ extraction pit in the eastern corner of the field.



Fig 4: Detailed view of the ‘Brickearth’ extraction pit

Resistivity Survey - report

A deep resistivity survey of the Arrewig Lane site was carried out by the PADMAC Unit, using a Tigre 128 Wenner Array to determine the sub-surface features, particularly the Clay/Chalk interface, and to characterize the deposits. To achieve this, a 64m resistivity line with electrodes positioned at 1m intervals (point 0.0 at SP91041,05851, point 64.0 at SP90996,05812) was set out from East (point 0.0) to West (point 64.0) (Fig.5) across the field.

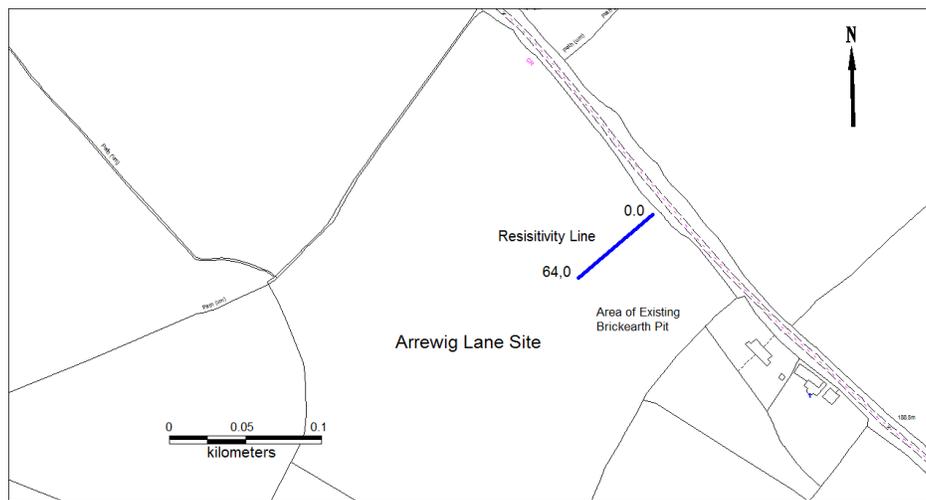


Fig. 5: Arrewig Lane site position of the Resistivity Survey line – Point 0.0 at SP91041, 05851, point 64.0 at SP90996 05812 set out from East (point 0.0) to West (point 64.0).

Resistivity survey – results

The three deep resistivity pseudo-sections are shown below (Fig.6).

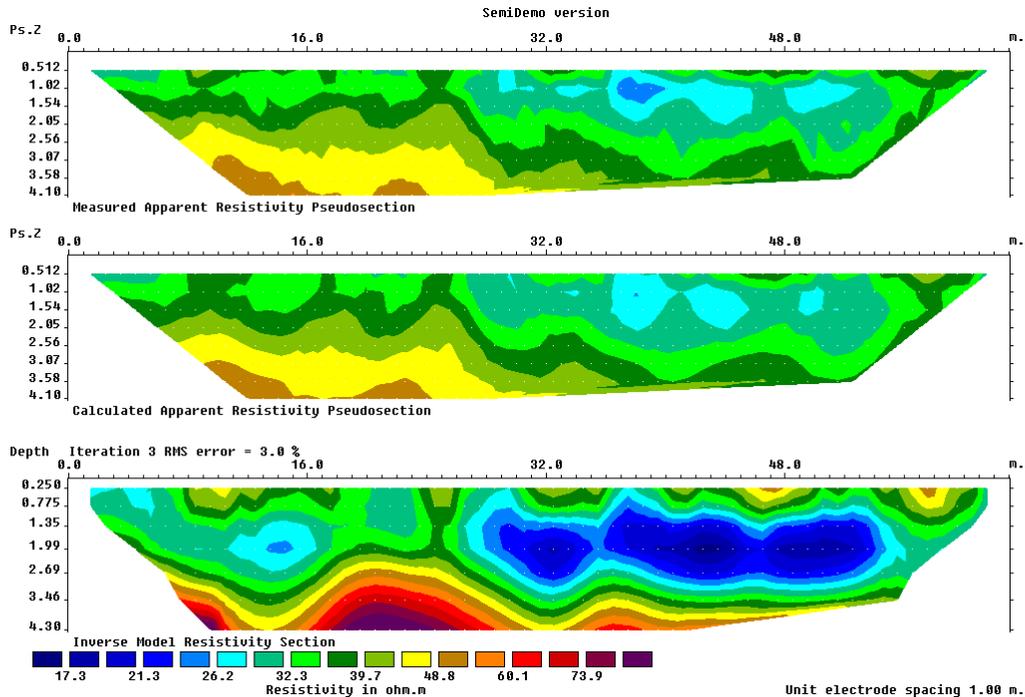


Fig.6: Resistivity pseudo-sections of the Arrewig Lane Site

The resistivity pseudo-sections interpretations indicate:

- A low resistance area to the West of the line (from electrode 30) down to a depth of at least 4m. The Ohm metres recorded here are consistent with an area of deposits (possibly brickearth) retained in a basin-like feature, perhaps in Clay-with-flints (*sensu stricto*) which in turn overlies a layer of Shattered/Weathered Chalk at the Chalk interface.
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GIS Analysis: topographic viewsheds- results

A GIS topographic viewshed analysis facilitates the calculation of zones of visibility, from and to a specific location and as such, has proved a useful tool in assessing the Palaeolithic potential of site locations on deposits mapped as Clay-with-flints.

Indisputably, there have been significant changes to much of the British landsurface since the Palaeolithic, however, ‘the Downlands of southern England, were above and beyond the reach of meltwater when the ice-sheets withdrew at the end of the Anglian and subsequent glacial maxima’ (Scott-Jackson 2000:8). Also,

‘Although the Downlands capped with deposits mapped as Clay-with-flints will certainly have the undergone the effects of both periglacial and temperate conditions, they may still be considered to be landsurfaces which have subject to only ‘restricted change’ – ‘since approximately the end of the Cromerian (a date of at least 500,000 kya)’ (*op.cit.*2000:5).

The Arrewig Lane site is situated on a high (OD ~195m) interfluvial plateau (see digital elevation map Fig. 7) with two major North/South trending river valleys (flowing southwards) > 5km to the East and West.

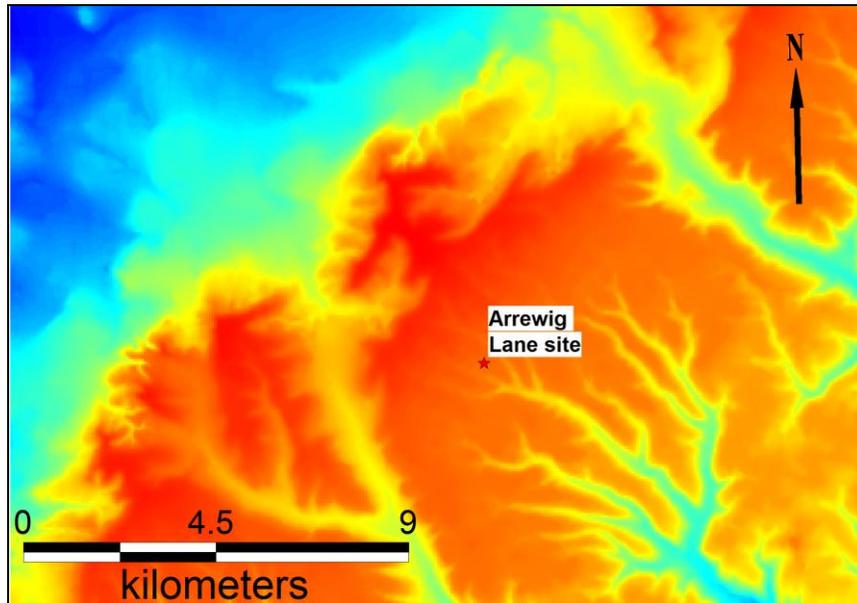


Fig. 7: Digital Elevation Map for the Arrewig Lane site (calculated using Mapinfo and Edina Digimap 2009)

The viewshed analysis of the Arrewig Lane site (Fig. 8) shows that the views from the site are mostly of adjacent high ground. There are very restricted views into nearby valleys and no views of either the major plain to the North or the two main 'passes' to the East and West.

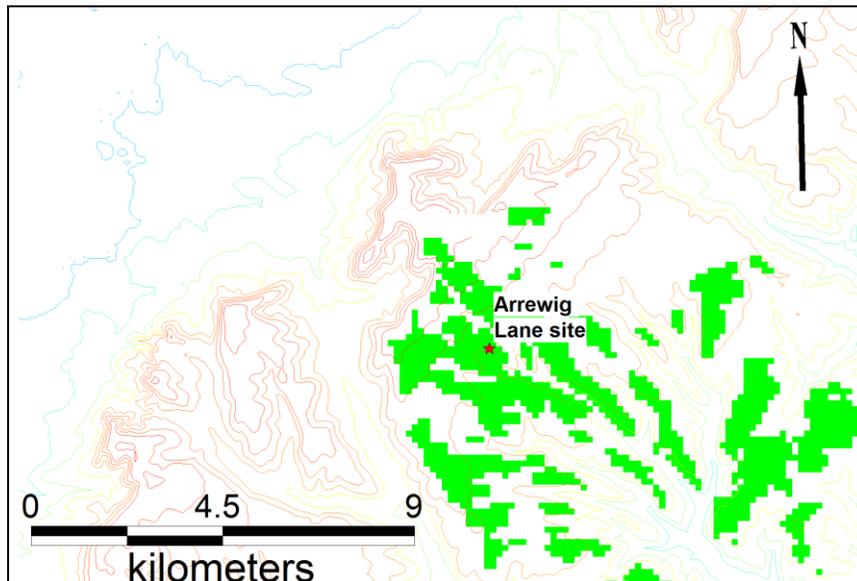


Fig 8: Viewshed analysis for the Arrewig Lane site (calculated using Vertical Mapper)

The viewshed analysis of the Arrewig Lane site suggests that although it is a high-level site it does not have a strong Palaeolithic potential.

Fieldwalking - report

Three hours fieldwalking by two experienced Palaeolithic fieldwalkers produced no identifiable Palaeolithic artefacts. But a number of Neolithic/Bronze age surface-finds (Fig. 9) were identified.



Fig 9: Artefacts recovered as surface-finds during Arrewik Lane field-walking.

Conclusion

Field investigations of the Arrewig Lane site by the PADMAC Unit found no evidence of Palaeolithic occupation in the specific area. However, as adverse site conditions precluded a detailed examination of the existing Brickearth pit, the report is inconclusive in this respect. Furthermore, although this site does not command a classic Palaeolithic site position (i.e. situated on the edges of plateaux or interfluves; combine long views (e.g. across flood plains) with short views down into nearby valleys) it should be closely monitored as high-level Palaeolithic sites away from the edges of plateaux or interfluves have yet to be found.

References

Scott-Jackson, J.E. 2000: *Lower and Middle Palaeolithic Artefacts from deposits mapped as Clay-with-flints*. Oxbow Books (Oxford).