REFITTING PALAEOLITHIC ARTEFACTS FROM WANSUNT PIT

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ABSTRACT

Archaeological and geological investigations took place at Wansunt Pit SSSI, Dartford, Kent in advance of housing development. A full report of the results is in preparation; this interim report provides a summary of the Palaeolithic artefacts recovered, and in particular of the discovery of refitting artefacts from the Wansunt Loam.

INTRODUCTION

Archaeological and geological investigations took place at Wansunt Pit, Dartford, Kent in advance of housing development by Taywood Homes. The development is sited within the central quarried area of the Wansunt Pit, but construction of an access road necessitated destruction of a thin strip of unquarried land at the eastern edge of the quarry. The affected deposits were excavated, and sections in the adjacent areas of deposit were cleaned and the geological sequence recorded. Investigations took place from June to August 2000.

SITE LOCATION

Wansunt Pit (TQ 513738) is located at the western outskirts of Dartford, immediately to the south of Crayford, Kent (Figure 1). The area affected by the access road construction comprised a thin strip of deposits separating the eastern extension of the main quarry from Station Road (Figure 2). The standing sections around the eastern quarry extension are designated as a Site of Special Scientific Interest on Quaternary geological and Palaeolithic archaeological grounds (cf. Bridgland 1994: 185–193). The northern section (Figure 2, locations 1 and 3) shows exposures of Wansunt Loam overlying Dartford Heath Gravel. The southern section (Figure 2, location 2) shows only Dartford Heath Gravel, despite its much greater height and elevation OD. The Wansunt Loam produced abundant Palaeolithic artefacts early in the 20th century (Chandler & Leach 1912), and more recent investigations (White et al. 1995) confirmed the presence of artefacts in the part of the Wansunt Loam cleared at location 1.

PLEISTOCENE GEOLOGICAL BACKGROUND

The Wansunt Pit was mostly quarried in the early 20th century. It is sited on the northeastern edge of the spread of Pleistocene deposits that underlies most of Dartford and Dartford Heath. These form a plateau with a surface now varying between c. 35m and 45m OD. The original terrace surface is represented at the higher end of this range, and heights around the lower end are on clearly erosional areas. The deposits at Wansunt Pit form a variable sequence up to 15m deep in places, broadly consisting of three groups of deposits, from the base:

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**Figure 1: Site location**

*Dartford Heath Gravel* — fluvial gravels and gravelly sands with their base at c. 25m OD. The lower part is moderately loose sandy gravel 8–10m thick, cross-bedded and generally yellow; the upper part is 3–4m thick, firmer, reddish-brown, and with horizontal clayey/loamy lenses (Chandler & Leach 1911, 1912).

*Wansunt Loam* — fine-grained sand, silt and clay deposits. The basal part of the Wansunt Loam comprises a stiff, homogenous dark reddish-brown clay with thin layers of sandy gravel and scattered pebbles. The upper part is less stiff, with horizontally stratified clay/silt/fine sand laminations, and lacking pebbles. The Wansunt Loam was up to 4m thick in the northern parts of the Wansunt Pit, but thins and disappears to the south, banked against the rising underlying Dartford Heath Gravel and wedging out into narrow northward-draining channels in the gravel surface (Chandler & Leach 1912). Chandler and Leach reported the southern bank of the presumed channel containing the Wansunt Loam as extending at least 300m east–west, but did not find either an eastern or a northern boundary to the deposit. The 2000
investigations, however, established that the Wansunt Loam does not continue eastward as far as Station Road, but its base rises and wedges out to the east, c. 20m west of Station Road.

*Unstratified Loamy Gravel* — a sloping sheet of unstratified loamy gravel rested upon an irregular surface of the underlying laminated sands/silts/clays of the Wansunt Loam, and was also banked against the Dartford Heath Gravels to the south.

The dating of the Dartford Heath deposits, and their correlation with other deposits in the Lower and Middle Thames region, have long been, and continue to be, the subject of controversy (Bridgland 1994; Gibbard 1995; White *et al.* 1995). In essence, the debate concerns whether the thick deposits at Dartford Heath represent a single formation, equivalent to the Boyn Hill/Orsett Heath Formation prevalent as an east–west series of terrace patches in this part of northern Kent, including the Lower Middle and Upper Middle Gravels at Swanscombe, or whether two separate formations abut each other within the Dartford Heath deposits, the lower of them correlating with the Boyn Hill/Orsett Heath formation and the upper of earlier date.

In either case the Boyn Hill/Orsett Heath formation is represented within the Dartford Heath gravels. This formation consists of a sequence of predominantly fluviatile loam, sand and gravel units laid down by the ancient Thames in the post-Anglian interglacial period between c. 450,000 and 350,000 BP (late Oxygen Isotope Stage 12 to early Oxygen Isotope Stage 10).
Dating of the Wansunt Loam itself depends upon a number of issues, in particular (i) whether it is regarded as following the underlying gravel closely in time, or as following a major depositional hiatus, and (ii) what date is attributed to the underlying gravel.

**ARCHAEOLOGICAL BACKGROUND**

The deposits at Wansunt Pit have produced important Palaeolithic archaeological evidence (Chandler & Leach 1912; Leach 1913; Smith & Dewey 1914). Occasional abraded handaxes and flakes have been found in the Dartford Heath Gravel underlying the Wansunt Loam, but the most significant finds have come from the Wansunt Loam itself, which has produced over 60 handaxes and several hundred flakes since it was first recognised. Most of the artefacts are in mint condition and several ‘nests’ of undisturbed débitage were reported by Chandler and Leach (1912), including one group of five refitting flakes. According to Chandler and Leach, artefacts were most frequent in the upper part of the Wansunt Loam (horizontally stratified clay/silt), but were also present in the lower part (reddish-brown clay with gravel trails). Artefacts were also present in the overlying unstratified loamy gravel, although these were thought most likely derived from the underlying Wansunt Loam. The handaxes from the site are mostly bluntly pointed ovate or cordate forms, several with twisted profiles and/or tranchet sharpening. At least two pointed specimens were also reported, as well as a number of small discoidal and asymmetric forms.

Faunal remains were also mentioned in early reports on the Wansunt Pit deposits, albeit very sparsely occurring. Elephant (*Palaeoloxodon antiquus*), mammoth (*Mammuthus primigenius*), red deer (*Cervus elaphus*), horse (*Equus caballus*) and bovid (*Bos* sp.) were reported from the Dartford Heath Gravel, and fragments of horse and bovid teeth in poor condition were on one occasion recovered from the upper stratified part of the Wansunt Loam (Chandler & Leach 1907; Leach 1913). Mammoth is unlikely to have been present in genuine Dartford Heath Gravel. The report of mammoth is possibly an erroneous identification of elephant leg bones, or may refer to mammoth remains from a younger deposit overlying, or adjacent to, the Dartford Heath Gravel, and mistakenly attributed to it. No faunal remains have been recorded from either the Dartford Heath Gravel or the Wansunt Loam since the early 20th century, and recent evaluations for pollen (1995 fieldwork, R. Scaife, pers. comm.) and small vertebrate evidence (during 2000 fieldwork) have had entirely negative results.

Fieldwork in 1995 at Wansunt Pit (White *et al.* 1995) demonstrated the survival of undisturbed Pleistocene deposits around the edge of the eastern quarry extension and extending under housing to the north. Several flint artefacts were recovered from the section cleared at location 1 (Figure 2), which showed Wansunt Loam overlying Dartford Heath Gravel. One waste flake was recovered from the top 10cm of the Dartford Heath Gravel, and seven artefacts were recovered from the Wansunt Loam, including one handaxe and two cores. This location (Geo Section 1) was re-examined in the 2000 fieldwork, and this interim report focuses on the Palaeolithic material recovered. A full report on the 2000 excavation covering the wider geological results, and discussion of the dating and correlation of the Wansunt Loam and the Dartford Heath Gravel, is also currently in preparation (Allen *et al.* in prep.).

**LITHIC ARTEFACTS**

The majority of the lithic artefacts found during the project (Table 1) were later prehistoric artefacts from the basal Holocene deposits in the excavation in the access road area (Figure
2). Their various conditions and the lack of concentrated débitage scatters suggest that they are not from an undisturbed horizon, but were subject to some transport and disturbance, and are of low stratigraphic integrity. As well as cores and débitage, the Holocene collection contains a leaf-shaped arrowhead and several scrapers, including a small convex thumbnail form and a broadly discoidal convex scraper with an acutely retouched scraping edge. The collection probably represents mostly Neolithic and Bronze Age occupation, although possibly also contains elements from Mesolithic to Iron Age periods, and is reported on in more detail elsewhere (Oxford Archaeology 2003).

A reasonable number of Palaeolithic flint artefacts were also found. Four were found by sieving the upper parts of the Dartford Heath Gravel at the main excavation, and thirteen were found in the Wansunt Loam at Geo Section 1 — a relatively high number, considering they are from a light clean of a small area of section (c. 1.5m wide by 4.5m high). Six out-of-context artefacts were also found, five from Geo Section 1 and one from Geo Section 6; these also probably originated from the Wansunt Loam at the respective locations.

<table>
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<th>Site Area</th>
<th>Holocene Contexts</th>
<th>Dartford Heath Gravel</th>
<th>Wansunt Loam</th>
<th>Not in situ</th>
<th>Total</th>
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<td>5</td>
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<td>1</td>
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<tr>
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<td><strong>173</strong></td>
<td><strong>4</strong></td>
<td><strong>13</strong></td>
<td><strong>14</strong></td>
<td><strong>204</strong></td>
</tr>
</tbody>
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*Table 1: Recovery of lithic artefacts by area and context group*

**Dartford Heath Gravel**
The four artefacts from the Dartford Heath Gravel are all small (2–5cm) and technologically undiagnostic flint waste flakes. They were recovered during sieving of samples from the top part of the gravel at the base of the main excavation area. The largest of them is well-rolled and light bluish-gray patinated, suggesting substantial transport, and possibly derivation from other sediments. The other, smaller flakes are in quite fresh condition and unpatinated — although slightly yellowish olive stained — suggesting that, while they have probably been transported a small amount, there was local hominid presence and knapping activity contemporary with formation of the part of the gravel in which they were found.

**Wansunt Loam**
The thirteen artefacts from the Wansunt Loam came from three distinct horizons within the 3m thickness of the deposit (Figure 3). Five (Group A) came from a part of the deposit with only occasional fine pebbles c. 2.10m above the base, close to a marked wavy sub-horizontal iron-stained band c. 1cm thick. Three (Group B) came from just above a thin gravel trail c. 1.10m above the base. The other five (Group C) came from a gravel-rich band c. 50cm above its base.

The artefacts from the uppermost level (Group A) are all in mint condition, and made of good quality glossy flint with moderately frequent small pale cherty specks and inclusions. They are unpatinated and coloured mid-gray with a slightly yellowish olive tint. All of the artefacts are small waste flakes. Three of them are recognisable as from handaxe manufacture, and two of these (nos. 183 and 184) refit together (Figure 4.i–ii). The precise position of one of the refitting flakes (no. 184) is uncertain due to its recovery during mattocking, but without doubt it comes from the same horizontal horizon and probably within 50cm laterally of flake no.
Figure 3: Section at Geo Section 1 showing artefact locations
183. All five flakes have such similar raw material characteristics, including small uneven cortical hollows, that it is likely they all belong to the same nodule, and relate to the manufacture of a single handaxe. The only flake to retain its striking platform (no. 184) lacks the lip characteristic of soft hammer percussion, and although this absence is not definitive, the high incidence of platform breakage and thickness in relation to length in the other flakes also suggest hard rather than soft hammer percussion. Too little external cortex remains to
identify whether the raw material was collected from a primary or secondary source.

The artefacts from the middle level (Group B) comprise two medium sized (6–8cm) technologically undiagnostic waste flakes and one small handaxe-thinning flake. One of the undiagnostic flakes is in quite fresh condition and patinated blue-gray, and the other (Figure 4. iii) is heavily abraded and stained strong brown. The handaxe-thinning flake is moderately abraded and unpatinated. The flakes clearly come from different reduction sequences, and the percussion features do not reflect whether hard or soft hammers were used. Cortex is present on the larger undiagnostic flake, but it is impossible to say whether the raw material source was primary or secondary, since the cortex has been affected by the post-depositional abrasion that the whole flake has undergone.

The artefacts from the lowest level (Group C) comprise three small technologically undiagnostic waste flakes (Figure 4.iv), one medium sized handaxe-manufacturing flake (Figure 4.v) and one large handaxe-manufacturing flake (Figure 4.vi). All of the flakes are made on good quality glossy gray/brown flint, three of them slightly orange-stained. Minor variations in colour, cortex and flint texture between the flakes suggest that all are from different reduction sequences. Two of them — the large handaxe-manufacturing flake and one of the technologically undiagnostic flakes — are moderately fresh with some minor abrasion of the sharp edges, and the other flakes are in mint or very fresh condition. Both handaxe-manufacturing flakes have a well-developed lip and lack a clear point of percussion (e.g. Figure 4.vi), indicating soft hammer manufacture. Conversely, two of the technologically undiagnostic flakes have no lip and well-defined points of percussion (e.g. Figure 4.iv), indicating hard hammer percussion. Three of the flakes — the large handaxe-manufacturing flake and two of the technologically undiagnostic flakes — have well-worn cortex. The relatively fresh condition of the flake edges indicates that the flint nodules were not collected freshly derived from Chalk, and had been subject to fluvial or solifluction transport and exposure before collection for knapping.

DISCUSSION

Unfortunately it is not possible to study the material in conjunction with that from the 1995 excavation, since all artefacts (bar the two handaxes) from the 1995 work cannot presently be located. Nonetheless, certain conclusions can be drawn. The three levels at which the artefacts were found correspond well with the levels at which artefacts were found in 1995 (White et al. 1995: 123, Figure 2), suggesting that, at least in this small remnant part of the Wansunt Loam, artefacts are concentrated in specific horizontal horizons, and that three distinct horizons can provisionally be identified.

The presence of mint condition and refitting flakes in the upper horizon suggests that this may represent an undisturbed landsurface, developed on a temporarily exposed surface within the alluvial build-up of the Wansunt Loam. It is, however, also possible that the material has been introduced into the alluvial sediment from a nearby river bank by colluvial processes or bank undercutting, and that, while essentially an in situ point-sample of local knapping, it does not represent a truly undisturbed landsurface. In total, eight artefacts are present from this horizon, including material (nos. 3–5) from the 1995 work. These consist of one handaxe, four handaxe-thinning flakes and three undiagnostic flakes, two of which probably come from the same reduction sequence as three of the thinning flakes. This evidence reflects exclusively handaxe manufacture, without any indication of core flaking.
For the middle horizon, the degree of abrasion and relatively large size of one of the flakes (Figure 4.iii) suggest that it has not been abraded by processes associated with incorporation within the fine-grained Wansunt Loam. Therefore it must have undergone abrasion before incorporation, and has probably been introduced by colluvial input, alongside the associated pebble layer at this horizon. The degree of abrasion suggests a history of exposure and transport, and possibly derivation from a pre-existing sediment body, such as the adjacent Dartford Heath Gravel. The presence of even this single abraded artefact is indicative that artefacts from the Wansunt Loam, and particularly historic collections from the deposit, may include older derived and transported material, and cannot be regarded as a high integrity sample without consideration of condition. Combined with the material from the 1995 work (nos. 6, 8 and 10), six artefacts are present at this level. These consist of a partly worked globular core, two handaxe-thinning flakes and three undiagnostic flakes, reflecting a combination of handaxe manufacture and core flaking at this horizon.

In the lower artefact horizon, all the five extant artefacts (from the 2000 fieldwork) are in mint or fresh condition, but all are from different reduction sequences. The artefact from the 1995 work (no. 7) consists of a hard-hammer struck core with large areas of remnant cortex. Those from the 2000 project include a hard hammer struck waste flake with over 50% dorsal cortex (Figure 4.iv), and it is tempting to consider that this may have been part of the same reduction sequence as the 1995 core, although in the absence of the 1995 material this cannot be confirmed. In either case, despite the fresh condition of the material, the number of different reduction sequences present in such a small assemblage does not suggest a single temporary landsurface, but either a palimpsest accumulation, slightly disturbed by low energy fluvial activity, or colluvially introduced material from nearby. Technologically, the evidence from the lower horizon reflects a combination of handaxe manufacture and core flaking.

CONCLUSIONS

The recent work confirms early records of the presence of sparse Palaeolithic material in the Dartford Heath Gravel, and abundant material in the Wansunt Loam. The discovery of refitting material in the Wansunt Loam confirms the report of Chandler and Leach (1912), and suggests that much of the material from the site is undisturbed or, at worst, minimally transported, although at certain levels there is additional abraded material that has probably been introduced by colluvial processes. Contrary to the early records, which only record handaxes and some flake tools from the deposit, the recent investigations suggest that there is also a reasonable element of core flaking alongside the handaxe manufacture. The presence of both handaxes and débitage indicates that some handaxe manufacture and discard were taking place at the site. The amount of débitage recovered in the recent work is low in relation to the two handaxes found, and the, admittedly small, débitage sample available for study is disproportionately lacking in primary débitage. These observations give a tentative indication that primary roughing out of handaxes may usually have taken place away from the site, and that many handaxes were brought to the site wholly or partly made before discard, and possibly some resharpening.

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BIBLIOGRAPHY


