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Junior School
Swanscombe
Kent



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Sweyne County Junior School, Kent

Archaeological Evaluation Report

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illustrated by Julia Moxham*

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Summary

During September and October 2008 Oxford Archaeology (OA) undertook an evaluation by trial trenching and test pitting at Sweyne County Junior School, Kent (centred NGR 560670 173860). The work represented Phase 2 of the archaeological investigation conducted prior to development on the site.

The test pit evaluation confirmed that the site is underlain by Pleistocene deposits equivalent to phases II and III of the classic Swanscombe Barnfield Pit sequence. The majority of the site is underlain by a thick deposit of silty clay equivalent to the Upper Loam. This deposit is not known to have produced any Palaeolithic remains; however its date and mode of formation are uncertain, and further recording of any major exposures created during development is recommended to try and address these problems.

At the northern end of the site, the Lower Middle Gravel is present closer to the current ground surface, with its upper surface at c. 28.5 m OD. This deposit is rich in Palaeolithic flint artefacts. It also contains occasional fossil animal bone remains, including, on one occasion, an early hominin skull (recovered from Barnfield Pit, c. 1 km to the northwest). Any development impact upon this deposit will require mitigating work, involving both controlled sieving for lithic artefacts and monitoring for recovery of faunal remains and further lithic artefacts.

The trial trenching revealed a single NE-SW orientated ditch which was seen in Trenches 6 and 8 and a small pit in Trench 3, both of which are post-medieval in date.



1 INTRODUCTION

1.1 Location and scope of work

- 1.1.1 Oxford Archaeology (OA) was commissioned by Kent County Council (KCC) to organise an archaeological evaluation at Sweyne County Junior School, Keary Lane, Swanscombe, Kent, centred at NGR 560670 173860.
- 1.1.2 The evaluation works comprised eight evaluation trenches and nine Palaeolithic test pits. This Report sets out the results of the evaluation and also incorporates the Palaeolithic test pit results, with associated appendices.
- 1.1.3 This work formed the second phase of the archaeological field investigation of the Site. It follows:
- a preliminary desk-based assessment, in which it was established that the site had high archaeological potential, in particular for Romano-British, medieval and Lower Palaeolithic remains (Short and Wenban-Smith 2008); and
 - a window sample investigation carried out by Canterbury Archaeological Trust (CAT) in conjunction with Campbell Reith Hill LLP Consulting Engineers (Wenban-Smith & Allison 2008).
- 1.1.4 The trial trenching fieldwork took place from the 22nd to the 25th of September and the Palaeolithic testpitting took place from the 6th to the 10th of October, 2008. The testpitting work was supported by the attendance of Dr Francis Wenban-Smith (Department of Archaeology, University of Southampton) as a combined Palaeolithic and Pleistocene geoarchaeological specialist.

1.2 Site location and topography

- 1.2.1 The Site is on the south-east outskirts of the built-up centre of Swanscombe, Kent, immediately to the west of the larger Swan Valley Community School (site centre c. NGR 560670 173860) (Figure 1). It is situated high up on the western side of the Ebbsfleet Valley, a small tributary draining north into the Thames. It occupies an elongated plot of land c. 300 m long by 100 m wide, trending broadly north–south.
- 1.2.2 The ground surface at the site slopes down to the north-east from c. 40 m at the south-west corner to c. 30 m at the north-east corner. Much of the site is covered by the existing school buildings, but in the southern part there is substantial area of undisturbed ground in use as playing fields, and other parts of the site are merely covered by a shallow layer of asphalt and in use as play-areas. The ground falls off sharply to the east of the site, marked by steep banks and almost vertical faces, where the ground has been severely cut down in the last 50 years, creating a level platform for the adjacent Swan Valley Community School buildings and grounds.

1.3 Archaeological and geological background

Palaeolithic Geology

- 1.3.1 The geology of the site is mapped as Tertiary Thanet Sand by the British Geological Survey Sheet 271 (1998). However it has been clear since the fieldwork in the late 1990s at the adjacent Swan Valley Community School site (Wenban-Smith & Bridgland 2001); and to the south of the site in Eastern Quarry since 2001 (Wessex Archaeology 2006) that the BGS mapping is incorrect, The site is in fact mostly (if not wholly) underlain by Pleistocene deposits of the Boyn Hill/Orsett Heath Formation. This



Formation is preserved on the south side of the Lower Thames as an intermittent east–west trending band of deposits from Dartford Heath through Dartford, Stone, Greenhithe and Swanscombe to Northfleet. The deposits consist of a sequence of predominantly fluviatile loam, sand and gravel units laid down by the ancient Thames in the post-Anglian interglacial period (the Hoxnian interglacial) between 450,000 and 350,000 BP, late Marine Isotope Stage 12 to early Stage 10 (Bridgland 1994). These deposits overlie chalk bedrock at the northern end of the site, but across the majority of the site the Pleistocene sequence overlies Thanet Sand.

1.3.2 The full sequence of the Swanscombe Boyn Hill/Orsett Heath deposits, represented at the key site of Barnfield Pit, Swanscombe, c. 1 km to the north-west of the Site, includes three phases I–III (Table 1). However the fieldwork at Swan Valley Community School and Eastern Quarry has established that the Phase I deposits are absent at the Site, and only deposits of Phases II and III are present. The Phase II deposits (Lower Middle Gravel and Upper Middle Gravel) were laid down by a deep and strongly flowing river, which was flowing in an east-south-east direction as it crossed the site. The valley-side boundary is probably within, or very close to, the southern part of the site, as field investigations a short distance further to the south-west in Eastern Quarry have confirmed an absence of Pleistocene deposits and the presence of Tertiary sand and clay. It is uncertain how the Phase III deposits (Upper Sand, Upper Loam and Upper Gravel) formed. The Upper Sand (only known from Waechter's excavations — Conway et al. 1996) is probably a fluvial upper facies of the Upper Middle Gravel, although with some cold climate characteristics. The Upper Loam is generally regarded as also fluvial, representing overbank alluvial sedimentation (eg. Bridgland 1994), but it has also been suggested that there may have been an estuarine influence (Bridgland pers. comm.). The Upper Gravel is almost certainly a solifluction deposit.

Table 1. Stratigraphic and archaeological summary of Barnfield Pit sequence, Swanscombe

This Phase	MI Stage	Stratigraphic unit	Height OD	Palaeolithic archaeology
III	10–8?	Upper Gravel	c. 33–34m	Report of Levalloisian-like flakes at base of Upper Gravel (Smith & Dewey 1914)
	11–10	Upper Loam	c. 32–33m	Occasional ovate handaxes, often with twisted profiles and tranchet sharpening, debitage — "Acheulian"
	11–10	Upper Sand	c. 29.5–32m	None known
II	11	Upper Middle Gravel	c. 28.5–32m	Mostly pointed handaxes with thick partly trimmed butts, often large and well-made but also small and crude, cores, debitage and ad hoc flake-tools — "Acheulian" (Swanscombe Skull level)
		Lower Middle Gravel	c. 26.5–28.5m	
I	11	Lower Loam	c. 25–26.5m	Cores, debitage, ad hoc flake tools, and very occasional crude proto-handaxes — "Clactonian"

**Palaeolithic finds**

- 1.3.3 The stretch of the Boyn Hill/Orsett Heath Formation preserved between Dartford Heath and Northfleet is rich in Lower Palaeolithic archaeological remains, representing hominin occupation in the Hoxnian interglacial between c. 425,000 and 350,000 BP. Flint artefacts, faunal remains and other biological evidence relating to climate and environment have been recovered from numerous sites, often revealed by quarrying (Wymer 1968; Wessex Archaeology 1993).
- 1.3.4 The best-investigated site is Barnfield Pit, Swanscombe (Ovey, ed. 1964; Conway et al. 1996), c. 1 km northwest of the site. The deposits contained lithic artefacts, mammalian remains and other biological palaeoenvironmental evidence incorporated in stratified fluvial sand and gravel units of the three major depositional phases I, II and III (cf Table 1). Undisturbed horizons preserving intact evidence of hominin activity were present in the Phase I deposits (in the Lower Loam). One horizon within Phase II of the sequence — at the base of the Upper Middle Gravel — produced an early human fossil skull (the Swanscombe Skull), as well as copious artefacts, making it one of only two sites in Britain with Lower Palaeolithic hominid skeletal evidence.

Previous work at the Site

- 1.3.5 In 1997 a new classroom was constructed in the south-west corner of the Sweyne Junior School building complex. The bulk ground excavation was monitored for Palaeolithic remains and a geological section was drawn, and subsequently published (Wenban-Smith & Bridgland 2001). This section showed that this part of the school is sited on several metres of stiff brown clay, regarded then as equivalent to the Upper Loam of the Barnfield Pit and Swan Valley School sequences. There was also a contorted gravel deposit between 0.50–0.80 m thick overlying the clay and immediately beneath the topsoil, regarded as equivalent to the Upper Gravel. No artefacts were found in the brown clay, and it did not appear likely to have any potential for faunal or other palaeo-environmental preservation. A small fresh condition humanly worked flint flake was found in the Upper Gravel, but it was technologically undiagnostic, and the nature of the deposit also makes its age very uncertain.
- 1.3.6 Between 1997 and 2001, the Swan Valley Community School and Swanscombe Surgery were built immediately to the east of the Site. This work exposed sediment sequences at various locations along the Site's eastern boundary. These confirmed the continuation of the Lower Middle Gravel (here a cross-bedded, sandy gravel) the Upper Middle Gravel (here a cross-bedded and ripple-laminated sand, occasionally slightly gravelly) and the Upper Loam (here a stiff silty clay with occasional sand lenses and fine gravel trails) broadly horizontally to the west under the Site. Numerous Palaeolithic artefacts were recovered from the Lower Middle Gravel, comprising pointed handaxes, occasional cores and abundant debitage. Some large mammalian remains were also recovered from the upper parts of the Lower Middle Gravel. Faunal preservation appeared to be better in the western side of the Swan Valley School site (towards the Sweyne Junior School and Swanscombe Infants School plots), where the Lower Middle Gravel was more thickly buried by clayey Upper Loam. There was also sparse pollen preservation in the clayey silt lenses within the bottom part of the Upper Middle Gravel.
- 1.3.7 In 2005, investigations in Eastern Quarry, immediately to the south of the Site, discovered a range of important Palaeolithic remains including:

- continuation of the Lower Middle Gravel;



- a new deposit of uncertain correlation containing a thick sequence comprising apparently a series of undisturbed palaeo-land surfaces;
- a range of other deposits, also of uncertain correlation with the main Swanscombe sequence (Wessex Archaeology 2006). Large mammalian remains were also present.

1.3.8 In May 2008, the window sample evaluation by CAT confirmed that the majority of the Site was overlaid by a thick Pleistocene sequence, dominated by at least 5 m of brown silty clay equivalent to the Upper Loam. This was shown to be underlain by Lower Middle Gravel with its upper surface at c. 28.5 m OD in the northern part of the Site. Investigations did not reach down to this depth in the remainder of the Site, so the deeper Pleistocene sequence remains uncertain in its central and southern parts.

Overview of Palaeolithic potential

1.3.9 The Site is mostly (if not wholly) underlain by Pleistocene deposits rich in Lower Palaeolithic archaeological remains, particularly flint handaxes and debitage from their manufacture. At the northern end of the Site, the richest archaeological horizon (equivalent to the Lower Middle Gravel from the key Barnfield Pit sequence) is closer to the ground surface, where however it is unlikely to have good faunal preservation. The deposits of highest potential importance (the southward continuation of the Lower Middle Gravel, and the overlying Upper Middle Gravel), likely to also contain good mammalian, small vertebrate, molluscan and perhaps also pollen evidence, are deeply buried (beneath the clay-silty Upper Loam) in the central and southern parts of the site.

Later Prehistoric and historic (Holocene)

- 1.3.10 The archaeological and historic background of the site has been subject to a separate desk-based assessment carried out by Archaeology South East (ASE) (Short and Wenban-Smith, 2008) those results which are not described above are summarised below.
- 1.3.11 Excavations at Swan Valley School in 1997 and 2000 have produced evidence for Romano-British activity, this evidence includes a masonry building and a Roman burial.
- 1.3.12 The Church of St Peter and Paul to the north-west is considered to be of medieval or earlier date and associated with a possible medieval settlement.
- 1.3.13 The Swanscombe Manor complex, an 18th century manor reputedly built on the foundations of a medieval manor, lies to the north-west.
- 1.3.14 Swanscombe itself is located immediately to the west of the Ebbsfleet Valley, an area of known prehistoric and Roman archaeological potential.

1.4 Acknowledgements

1.4.1 Oxford Archaeology would like to express their thanks to Kent County Council and Francis Wenban-Smith for contributions to this report. OA would also like to acknowledge Rebecca Peacock who ran the fieldwork and Sarah Lane who worked on the site.



2 EVALUATION AIMS AND METHODOLOGY

2.1 General aims

- 2.1.1 The general aim of the evaluation was to determine and / or confirm the general nature of any remains present on the site. In addition to this, the primary aims of the second phase of field evaluation were to provide further information on the nature of the Pleistocene sequence, and the presence of, and potential for, Lower Palaeolithic remains. This would make it possible to identify significant deposits vulnerable to the impact of the proposed development, and inform mitigation measures for the archaeological resource, whether by designing the development to preserve important remains in situ, or to carry out appropriate mitigating recording in advance of development.
- 2.1.2 These general aims are to be investigated alongside the specific aims of this phase set out in the KCC Specification, listed below:
- The identification of buried archaeology close to the present ground surface ranging from prehistoric to post medieval archaeology; and
 - the evaluation of Palaeolithic archaeology where the deposits with potential, based on the Archaeology South East (ASE) desk-based assessment (DBA) and first phase evaluation report (CAT and Wenban-Smith), rise towards the northern end of the site and may be impacted upon by the development groundworks.

2.2 Objectives

- 2.2.1 In addition to these aims, a further set of specific objectives were set out for the Palaeolithic remains:
- To determine the sequence, depth, character and potential of stratified deposits beneath the site;
 - To determine whether archaeological remains are present, or are likely to be present in the deposits;
 - To clarify the nature of the impact of the proposed development on the deposits beneath the site, so that appropriate mitigation measures can be instituted;
 - To determine the presence/absence and potential of any lithic artefact and vertebrate remains;
 - To determine the presence/absence and potential of any other biological/palaeoenvironmental remains;
 - To determine the presence/absence of, or potential for, undisturbed primary context in situ Palaeolithic occupation surfaces;
 - To interpret the mode of formation of any Pleistocene deposits;
 - To develop an understanding of the distribution, sequence, sedimentological character and 3-dimensional geometry of any Pleistocene deposits;
 - To interpret the depositional and post-depositional history of any artefactual or biological remains found;
 - To establish chrono-stratigraphic correlations of any Pleistocene deposits with regional sequences (particularly that at Barnfield Pit, cf. Table 1) and national frameworks; and



- To assess in local, regional and national terms, the significance of any Pleistocene deposits and Palaeolithic remains encountered, and their potential to fulfil current research objectives, including their potential for dating.

2.3 Methodology

Trial trenching

- 2.3.1 The trial trenches were excavated with a mechanical excavator fitted with a toothless ditching bucket. Where surface tarmac was encountered a breaker was used to weaken the surface for removal by the ditching bucket to minimise impact on any underlying deposits.
- 2.3.2 Trenches were machined down to the uppermost undisturbed geological layer or the top of any significant archaeological remains. This was carried out under the supervision of a suitably experienced archaeologist.
- 2.3.3 All recording was carried out in accordance with the specification issued by Kent County Council and the Oxford Archaeology Fieldwork Manual (OA, 1992).
- 2.3.4 Trenches 4, 9 and 10 could not be excavated due to access and health and safety reasons. However, test pits were excavated within the footprint of the northern end of trench 9 and to the west of the southern end of trench 10.

Palaeolithic test pits

- 2.3.5 Nine deep test pits (TPs 2–3, and 5–11) were excavated across the site (Figure 2), following the distribution provided in the KCC specification. Two of the proposed test pits (TPs 1, 4) were not excavated due to the inaccessibility of the proposed location. Test pits were focused in a north-south oriented line along the north-west of the site (TPs 5, 7, and 9–11), and were distributed more evenly across the central southern part of the site (TPs 2–3, and 5–8).
- 2.3.6 Each test pit was excavated using a mechanical excavator with an extendable 180° digging arm fitted with a 1 m wide toothless bucket. Each test pit was 1 m wide, 3–4 m long and up to c. 5 m deep. Pre-Quaternary deposits were not reached in any test pit. Digging ceased at 3 m below ground surface in most test pits, due to the difficulty of digging any deeper through the tough silty clay encountered, and the knowledge gained from the window samples that any potentially significant deposits (such as the Lower Middle Gravel) were substantially deeper and beyond digging range.
- 2.3.7 Each test pit was taken down in horizontal spits of 0.05–0.10 m, respecting the interface between sedimentary units when changes were encountered. The work was directed by a recognised specialist in Palaeolithic archaeology, with experience in the recording and interpretation of Pleistocene sediments. The specialist was responsible for recording the sequence of sedimentary units and determining sampling requirements as excavation progressed following standard descriptive practices. Test pits were entered at the maximum safe depth (usually c. 1.2 m, but less when loose sands/gravel were present) to record the upper stratigraphy. After excavation progressed beyond this depth, recording took place without entering the trench. One representative section from each test pit was drawn at a scale of 1:20 and photographed once excavation reached its full depth, and at appropriate stages in the course of excavation if features of interest were revealed. Other sections were also drawn and/or photographed as appropriate. A photographic record was maintained during the course of the fieldwork.



- 2.3.8 Pleistocene sediments suitable for on-site sieving were only encountered at the base of TP 11. One bulk sample of 250 litres was taken and dry-sieved on site through a c. 10 mm mesh for the recovery of lithic artefacts and faunal remains. Otherwise, when the sediment was not suitable for dry sieving (ie. too clayey), excavation proceeded more slowly and in shallower spits of 50 mm, looking carefully for the presence of any archaeological evidence.
- 2.3.9 No sediment samples were retained for off-site processing for small vertebrates, pollen, ostracods or molluscs, as no potentially suitable sediments were encountered. Nor were any samples taken for optically stimulated luminescence (OSL) dating or clast lithological analysis.



3 RESULTS

3.1 Introduction and presentation of results

- 3.1.1 The results from this report are described by the two main periods outlined in the aims of the evaluation. The Palaeolithic (Pleistocene) evidence is described first followed by the Later prehistoric and historic (Holocene) evidence.
- 3.1.2 Trial trench summaries with individual context inventories can be found in Appendix A and test pit summaries are contained in Appendix B. Trench locations showing the distribution of archaeological features are shown in Figure 2 and sections detailing the stratigraphy of the site are illustrated in Figure 3.

3.2 Palaeolithic results

Stratigraphy and distribution of sediments

- 3.2.1 Five main groups (I-II, II/III, III, and V) of Pleistocene sediment were encountered (Table 2), as well as modern made ground (M), sometimes capped by topsoil/subsoil. Two sediment groups (IV and VI), encountered in the Phase 1 window sample investigations were not seen in the test pit evaluation. An additional transitional group (II/III) was added, to reflect the transitional zone between sediment groups II and III. Stratigraphic diagrams of two cross-sections ABC (north-south) and DE (east-west) are also provided (Figures 2a, and 2b). These show the sequences of deposits in the evaluation test pits, integrated with sequences from:
- (i) the previous archaeological window samples A1-A5 (Wenban-Smith and Allison, 2008);
 - (ii) the geotechnical window samples G2-G5 (Wenban-Smith and Allison, 2008); and
 - (iii) from an adjacent location (SCS log 26) recorded in 1997 at the western edge of the Swan Valley Community School site.
- 3.2.2 In summary, the majority of the site is covered by c. 1 m thickness of made ground (M). This is underlain by 2–4 m thickness of sandy clay-silt (III and II/III), the depth of the deposits thickening as the ground rises to the south. These deposits in turn are underlain by c. 2–3 m thickness of soft sand (II), only encountered in this phase of work in the northerly test pits TP 10 and TP 11, but which was shown to continue under the majority of the site by the Phase 1 window sample investigations. And finally, the sand is underlain by sandy gravel (I), encountered five metres below the ground surface in the northern part of the site (TP 11 and window sample A1).
- 3.2.3 This latter deposit, equivalent to the Lower Middle Gravel (cf Section 4.3), is known to be broadly horizontal, and so is likely to continue under the majority of the site, progressively more deeply buried as the ground surface rises to the south. Conversely, it is likely to be present closer to the surface in the extreme north-east quadrant of the site, where the ground surface is lowest.
- 3.2.4 More details are given, in Table 2 below, on the occurrence and distribution of each of these main sediment groups in the Phase 1 window sample and Phase 2 test pit investigations.



Table 2. Major sediment groups (stratigraphic order, from base), integrated with results from Phase 1 window sample investigations

Sed. Group	Period	Deposit	Description	Interpretive notes	Ph 1 window sample	Ph 2 test pit
M	Modern	Made ground, topsoil	Brown stony clay-silty sand with occ. pieces of chalk, brick, charcoal and organic material; sometimes capped by asphalt; other times by a topsoil and turf;	Probably all 20th century	A1-A5	TP 3, 5-11
VI	Pleistocene	Shelly clay	Silty clay with very common, densely packed Tertiary shell fragments	Slopewash/solifluction	A5	-
V	Pleistocene	Clayey/silty gravel	Moderately consolidated silty/sandy flint gravel	Slopewash/solifluction; prob. equivalent to Upper Gravel	- [seen in 1997, Wenban-Smith & Bridgland 2001]	TP 2
IV	Tertiary ? Pleistocene?	Silty clay	Very solid silty clay	Possibly continuation of Upper Loam (III); alternatively in situ Tertiary bedrock	A5	-
III	Pleistocene	Clay/silt/sand	Cohesive yellowish-brown sandy (very fine to fine) clay-silt	In situ Pleistocene deposits, equivalent to Upper Loam; possibly estuarine/alluvial	A1-A4	TP 2-3, 5-11
II/III	Pleistocene	Alternate beds of sand and clay-silt	Alternate and horizontal beds of clay-silt and sand; with clay-silt beds increasingly thin and sand beds increasingly thick downward	In situ Pleistocene deposits, equivalent to transitional zone between Upper Middle Gravel and Upper Loam; possibly estuarine/alluvial	-	TP 10-11
II	Pleistocene	Sand, clay/silt - laminated	Mod. soft sand; generally pale brown/pale yellowish-brown/ with darker thin wavy clay/silt beds	In situ Pleistocene fluvial deposits, equivalent to Upper Middle Gravel	A1-A4	TP 10-11
I	Pleistocene	Sandy gravel	Soft and loose, sandy flint gravel	In situ Pleistocene fluvial deposits, equivalent to Lower Middle Gravel	A1	TP 11



3.3 Sediment group descriptions

I — Sandy gravel

- 3.3.1 This deposit was stratigraphically the lowest (and earliest) of the Pleistocene sediments seen. It was only encountered in the northern part of the site, at the base of TP 11, where its upper surface was reached 5 m below the ground surface at approximately 28.5 m OD; its base was not reached. This level is consistent with the surface of the Lower Middle Gravel, extensively recorded within the adjacent Swan Valley Community School site, where the deposit was shown to be consistently between 2 m and 3 m thick, broadly horizontal, with its base between 26 and 27 m OD.

II — Sand, clay/silt-laminated

- 3.3.2 This deposit directly overlay the sandy gravel (I) in test pit TP 11. It was also encountered a bit further south in test pit TP 10, where its base was not reached. It was approximately 2.5 m thick, with its upper surface at c. 31 m OD, where clay-silt beds became markedly thicker and well-developed, and the sequence was thus attributed to the transitional group of deposits II/III (cf below). The deposit was only encountered in test pits in the northern part of the site, although the previous work has confirmed its presence across the majority of the site, the sediment having been identified in archaeological boreholes A1–A4 and in all of the geotechnical boreholes (Figure 3a, 3b). The deposit represents a continuation of the Upper Middle Gravel, extensively recorded between approximately these levels within the adjacent Swan Valley Community School site (Wenban-Smith & Bridgland 2001).
- 3.3.3 The deposit was not located in the southern-most window sample A5 of the previous work. However, the base of this window sample (at c. 35 m OD) did not reach down to the level where the deposit would have occurred, if present. Furthermore, it is uncertain whether the basal clay deposit (cf IV, below) in this borehole is Pleistocene or much earlier. It is therefore uncertain whether the deposit extends into the southern part of the Site. If the basal deposit is Pleistocene, it is likely that the deposit is present between c. 8 and 12 m below the ground surface in the southern part of the Site.

II/III — Alternate beds of sand and clay-silt

- 3.3.4 This deposit was encountered in TP 10–11 in the northern part of the site. It overlies the sand (II), and comprises alternating, horizontal beds of clay-silt and sand, with the clay-silt beds increasingly thin and sand beds increasingly thick downward. The deposit is approximately 1 m thick, and its upper surface occurs between c. 2 m and 3 m below the present ground surface, at an altitude of c. 32 m OD. The deposit represents a transitional zone between the sand (II) and the clay-silt (III). The deposit is likely to continue broadly horizontally across the majority of the site between c. 31 and 32 m OD, being progressively more deeply buried as the ground surface rises to the south.

III — Clay/silt/sand

- 3.3.5 This deposit directly overlies the transitional bedded sand/clay-silt (II/III), the junction occurring at c. 32.5 m OD. The deposit is present across most of the site, and was encountered in all of the evaluation test pits, as well as in archaeological boreholes A1–A4 and in all of the geotechnical boreholes (Fig 2). The deposit is quite thin (less than two metres thick) in the northern part of the site, between TP 9 and TP 11, being truncated by modern made ground; and it probably thins out further, and perhaps disappears altogether, further to the north as the ground dips in the northernmost part of the Site.



- 3.3.6 However, the deposit thickens southwards with its upper surface reaching 36 m OD in TP 2 and 36.5 m OD in borehole A4, giving it a thickness of between 3 m and 4 m across the majority of the Site. The upper boundary is truncated by modern activity, so the true original maximum level of this deposit remains uncertain.
- 3.3.7 The deposit represents a continuation of the Upper Loam, extensively recorded within the adjacent western side of the Swan Valley Community School site.

IV — Silty clay

- 3.3.8 This deposit was not seen in the Phase 2 test pit evaluation. It occurs at the southern end of the Site, only being present in borehole A5, between 39 m and 35 m OD (with its base not reached), although also previously seen in 1997 in the foundation trench for the classroom extension (Wenban Smith & Bridgland 2001). At that time it was regarded as part of the Upper Loam, and hence equivalent to deposit III above. However, it is much more clayey; and also much more firmly consolidated. These differences could indicate a different unit, perhaps Tertiary clay, or could merely demonstrate that the uppermost levels of the Upper Loam (which are nowhere else preserved at this level) are in fact tougher and more clayey. In the absence of sedimentary data from further down below the ground surface, it is presently impossible to resolve this.

V — Clayey/silty gravel

- 3.3.9 This deposit also only occurs at the southern end of the Site, overlying the sandy clay-silt (III) in TP 2, and also seen overlying the silty clay (IV) in the 1997 work. In TP 2, the deposit formed a shallow layer c. 0.10–0.25 m thick, with a very contorted base, filling shallow channels trending downslope in a NNE direction. In the 1997 section, the deposit was of variable thickness, between 0.25 m and 0.80 m, also with a very contorted base, forming in places gravel-filled pockets into the underlying silty clay (IV). As in TP 2, the deposit dipped downslope to the north. This dip, and the downslope channelling observed in TP 2, both suggest a colluvial/solifluction origin.

VI — Shelly clay

- 3.3.10 This deposit also was not seen in the Phase 2 test pit evaluation. It only occurs at the southern end of the Site, overlying the silty clay (IV), only being present in borehole A5 between 39.0 m and 38.5 m OD. The deposit is pale in colour due to the densely packed fragments of crushed Tertiary shell. It is most likely a Pleistocene deposit incorporating derived Tertiary remains from sediments (now quarried away) that previously capped high ground further to the south within Eastern Quarry.

3.4 Sieve-sampling and Palaeolithic finds

- 3.4.1 Gravel suitable for sieving was only encountered in one location, at the base of TP 11. One sample of the sandy gravel (I) of 250 litres was sieved (Table 3). Six flint artefacts were found in the sieved sample, comprising five small– medium flakes and one broken knapped chunk (Table 4). No other artefacts were found in any of the other deposits encountered, although a careful watch was kept during excavation.



Table 3. Sieve-sampling summary and finds recovery

Test pit	Context	Deposit	Sed Grp	Sample/s	Vol. (lit.)	Finds
11	1106	Sandy Gravel [=Lower Middle Gravel]	I	<1>	250	Five flakes; one knapped chunk (broken)

Table 4. Palaeolithic artefact details

TP	Sed Grp	Context	Sample	Artefact/s	Appearance	Condition	Notes
11	I	1106	<1>	Knapped chunk	Unpatinated dark grey flint; slightly brown stained in places	Moderately fresh	Technologically undiagnostic; has incipient cone from hard hammer percussion
				Flake (med.)	Unpatinated dark grey flint	Moderately abraded	Technologically undiagnostic; made on Bullhead Bed flint
				Flake (med.)	Very slightly blueish-grey patinated and brownish stained	Very abraded; very scratch marks on ventral surface	Technologically undiagnostic;
				Flake (small)	Unpatinated dark grey flint	Moderately abraded	Technologically undiagnostic;
				Flake (small)	Unpatinated grey flint; slightly brown stained in places	Fresh	Technologically undiagnostic;
				Flake (small)	Pale opaque brownish grey	Moderately abraded	Technologically undiagnostic; broken distal end of larger flake

Biological/palaeo-environmental remains

3.4.2 No visible biological remains such as animal bones or molluscs were found, nor were any sediments encountered with potential for micro-palaeontological remains such as pollen or ostracods.

Clast lithological analysis

3.4.3 Only one gravel deposit potentially suitable for clast lithological analysis was encountered, context 1106 (sediment group I) at the base of TP 11. No samples were taken for clast lithological analysis. As is discussed below (Section 4.3), this deposit can confidently be attributed to the Swanscombe Lower Middle Gravel; previously subject to clast lithological analysis when investigated as part of the archaeological investigation programme associated with construction of the neighbouring Swan Valley School (Wenban-Smith & Bridgland 2001).



Dating and optically stimulated luminescence (OSL) sampling

- 3.4.4 No direct dating evidence was recovered; nor were any samples taken for OSL dating. As is discussed below (Section 4.3), the Pleistocene sequence at the site can confidently be attributed to the Boyn Hill/Orsett Heath Formation. As such, its age is also known (c. 400,000 BP), which is beyond the range of accurate OSL dating.

3.5 Trial trenching results

- 3.5.1 Archaeological features were identified in Trenches 3, 5, 6 and 8, located in the southern area of the site (Figs 3 and 4) within the footprint of the proposed building. The ditches were cut into the natural sandy clay deposit and the pit was cut into a disturbed subsoil. All of the identified features were sealed by a layer of buried topsoil. They contained artefacts dated to the late medieval or post medieval period. Trenches 1, 2, 7 and 11 produced no archaeological remains.

3.6 Trench 3

- 3.6.1 Trench 3 (Fig. 4) contained a shallow semi-circular feature [300], 1.50 m in length and 0.38 m wide. It was cut into a layer of disturbed natural (502) and sealed by (503), a layer of buried modern topsoil. This suggests that this feature is probably post medieval or later. The pit fill (301) produced no dating evidence.

3.7 Trench 5

- 3.7.1 Trench 5 (Fig. 4) contained a shallow feature, which measured approximately 0.40 m wide and 0.45 m deep. It continued east to the end of the trench. The base of the cut was diffuse and it may represent a silted up natural hollow. The feature produced no finds or charcoal.

3.8 Trenches 6 and 8

- 3.8.1 Trenches 6 and 8 (Fig. 4) contained parts of the same ditch running NE-SW. This feature measured approximately 0.75 m wide and 0.30 m deep. An intervention into the ditch fill in Trench 8, produced a limited quantity of late medieval or early post medieval peg-tile, and 3 pieces of struck flint including two secondary debitage flakes and one possible primary flake from context 802.
- 3.8.2 In Trench 6, the same ditch (607) produced a piece of 20th century pottery, coal fragments, a piece of very fragmented flint tempered prehistoric pottery and a retouched flint flake. The prehistoric finds are likely to be residual, but could indicate prehistoric activity in the wider area.
- 3.8.3 There is also evidence in Trench 6 that this ditch (607) truncates an earlier ditch (608). The fill (609) of this earlier ditch produced a piece of glazed pottery, provisionally dated to the late post medieval period.

3.9 Finds summary

- 3.9.1 The finds assemblage from the site included a series of residual and in situ flint flakes, most notably a secondary blade fragment from Trench 6, a small quantity of late medieval or early post-medieval peg tiles and a number of sherds of 18th and 19th century pottery. Detailed descriptions of all finds can be found in Appendix D.



4 DISCUSSION

4.1.1 This evaluation revealed low archaeological potential for deposits of Holocene date within the development footprint. The low-levels of features found may be due in part to the construction of the present school.

4.2 Reliability of field investigation

4.2.1 Overall the results of the evaluation can be seen to be reliable, however there is a possibility that features may survive between the trenches (Hey & Lacey, 2001).

4.2.2 There is evidence for a degree of vertical truncation across the Site caused by topsoil and subsoil stripping, which is likely to have had an effect on the presence and recovery of artefactual evidence.

4.3 Interpretation

Palaeolithic (Pleistocene)

4.3.1 Most of the Pleistocene deposits can be correlated with similar deposits observed at similar heights OD during the archaeological investigations in 1997 and 1998 at the adjacent Swan Valley Community School. As discussed in the publication arising from these investigations (Wenban-Smith & Bridgland 2001), the deposits can confidently be correlated with the main Swanscombe sequence known from Barnfield Pit, as indicated above (Table 2); and the correlations of these deposits with the Marine Isotope sequence are also provided above (Table 1).

4.3.2 The gravel at the base of the sequence (I) is a fluvial gravel, equivalent to the Swanscombe Lower Middle Gravel, laid down by an ancient course of the Thames c. 400,000 BP in the Hoxnian interglacial. The sand (II) overlying this gravel is also fluvially deposited, equivalent to the Swanscombe Upper Middle Gravel, and laid down between c. 400,000 and 380,000 BP, later in the same interglacial. The overlying clay-silt (III) is equivalent to the Swanscombe Upper Loam. It is uncertain how this deposit formed, although most experts (eg. Bridgland 1994) favour a fluvial alluvial or estuarine origin, towards the end of the Hoxnian interglacial between c. 380,000 and 350,000 BP. Finally, the intermittently overlying gravel (IV) is probably equivalent to the Swanscombe Upper Gravel, associated with the subsequent cold stage of MIS 10.

4.3.3 The only uncertainty concerns the major body of silty clay (IV) in the southernmost part of the Site. It is uncertain whether this deposit is a continuation of the clay/silt/sand (III), and hence attributable to the Upper Loam; or whether it is a wholly different deposit, perhaps an in situ Tertiary clay.

4.3.4 The only deposit containing lithic artefacts was the sandy gravel (I) at the base of TP 11, equivalent to the Lower Middle Gravel (Table 5). The lithic artefacts are in a range of conditions, from fresh to very abraded. The fresh artefacts are unlikely to have moved far from their original point of deposition, and can confidently be regarded as contemporary with deposition of the gravel. The more abraded artefacts may have been subject to more substantial fluvial transport, but it is still likely they are contemporary with deposition of the gravel.

Table 5. Palaeolithic artefact recovery summary

Test pit	Context	Deposit	Artefacts
11	1106	I - Sandy gravel [= Lower Middle Gravel]	Five technologically undiagnostic waste flakes; one knapped chunk (broken)



4.3.5 No biological/palaeoenvironmental remains were identified, nor were any sediments with likely potential for their preservation. It remains possible, as suggested in the desk-based assessment (Short & Wenban-Smith 2008), that small vertebrate, molluscan, ostracod and/or pollen remains may be present in deeply buried parts of deposit II in the southern part of the site, if the deposit continues there.

4.3.6 No horizons were identified with potential for undisturbed Palaeolithic remains.

Later archaeological remains (Holocene)

4.3.7 The features revealed in the trial trenching consisted of a relatively shallow ditch and a heavily truncated ditch. Both of these features seem to be either modern or late post medieval. Given the level of truncation observed in the higher subsoils resulting in redeposited topsoil, and the lack of other features in the vicinity, it is difficult to give a firm interpretation to the features discovered.

4.4 Significance

4.4.1 The trenches revealed significant evidence for topsoil and subsoil stripping on the site with significantly deep disturbance being recorded in Trenches 3, 6 and 8. There is also evidence of made ground deposits overlying modern topsoil in Trench 3 and at the southern end of Trench 6 meaning that any archaeological deposits may already have suffered significant disturbance. The later archaeological remains at the site do not indicate the survival of significant features.

4.4.2 The Palaeolithic remains at the Site consist of, in essence, a deep sedimentary sequence directly equivalent to those investigated at the adjacent Swan Valley Community School site (Wenban-Smith & Bridgland 2001), and correlated with phases II and III of the Swanscombe Barnfield Pit sequence.

4.4.3 The most significant part of the sequence, of medium-high Palaeolithic importance, present at the Site is the continuation of the Lower Middle Gravel, which is rich in moderately to minimally disturbed/transported flint artefacts, and is also known to contain occasional faunal remains (ibid), as well as, at Barnfield Pit, producing Britain's only early hominin skull (Ovey et al. 1964);

4.4.4 The Site also includes, of low-medium Palaeolithic importance, a continuation of the Upper Loam, to a higher known level than at any other location; this is a deposit about which there remain many questions about how it formed and when.

4.4.5 The national Palaeolithic research framework embraces fifteen core framework priorities N 1–15 (Appendix 2). Within the context of this framework, these remains can contribute to addressing a number of more specific regional and site-specific archaeological research objectives R 1–5 (Table 6; Table 7).

Table 6. Regional and site-specific Palaeolithic research objectives

Regional objective	Details	National framework objective/s
R 1	Characterising cultural activity contemporary with formation of the Lower Middle Gravel (as reflected in lithic artefact production)	N 1
R 2	Improving understanding of the distribution of concentrations of lithic remains within the Lower Middle Gravel	N 4 N 5 N 7 N 15



Regional objective	Details	National framework objective/s
R 3	Improving understanding of the geomorphological geometry, internal sedimentary structures and formation process of the Upper Loam	N 3
R 4	Improving understanding of the climate and local environment contemporary with formation of the Lower Middle Gravel	N 9
R5	There is also a low possibility of recovery of early hominin skeletal material, as the Upper/Lower Middle Gravel junction, present at the Site, is the horizon from which the Swanscombe skull was recovered at Barnfield pit	N 11

Table 7. Aspects of significance and research potential/priorities

Nature of evidence	Palaeolithic significance	Framework objectives		Priorities for investigation
		National	Local/Regional	
Continuation of Lower Middle Gravel	Medium-high	N 1 N 4–5 N 7 N 9 N 11 N 15	R 1 R 2 R 4 R 5	<ul style="list-style-type: none"> Monitoring for, and recovery of, faunal remains and lithic artefacts Controlled sieving for flint artefacts
Continuation of Upper Loam	Low-medium	N 3	R 3	<ul style="list-style-type: none"> Recording of height OD and internal sedimentary structures

Development impact and approaches to mitigation

- 4.4.6 Archaeological evidence dating to the Holocene on the site was very limited and consisted of either post medieval or modern features of little significance. Despite this, due to some limitations in the access for trenching, it is possible that isolated remains from this period may still survive on the site.
- 4.4.7 If there will be any development impact below 28.5 m OD in any part of the site, this will affect the archaeologically rich Lower Middle Gravel. This should be mitigated by sieving of the affected deposit, to recover a representative sample of lithic artefactual evidence and large mammalian remains, if present. Sieving should be focus on controlled recovery of material from known volumes of gravel in a vertically contiguous series at not more than c. 20 cm intervals.
- 4.4.8 If there will be any substantial exposures created through the Upper Loam (deposit III) during development of the Site, it is recommended that these are recorded and drawn by a Pleistocene geologist, locating the section in relation to the OS grid and ordnance datum, and concentrating on the recording and interpretation of any internal sedimentary structures.
- 4.4.9 It is also recommended that at least one, and preferably two or more, cable/percussion U4 boreholes are carried out in the southern part of the site, perhaps at locations A5, A4 and half way between, with continuous U4 recovery down to 26 m OD (c. 14 m below the present ground surface at location A5) to resolve the present uncertainty over: (a) the date and correlation of the silty clay (IV); and (b) the nature, date and palaeo-environmental potential of any deeper lying sediments.



APPENDIX A. TRENCH DESCRIPTIONS AND CONTEXT INVENTORY

Trench 1						
General description					Orientation	NW-SE
Trench devoid of archaeology. Trench consisted of tarmac and make-up layer overlying a layer of made ground. This overlay an orange silty clay natural.					Avg. depth (m)	0.68
					Width (m)	1.65
					Length (m)	3.9
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
100	Layer	-	0.05	Tarmac	-	-
101	Layer	-	0.20	Make-up for tarmac	-	-
102	Layer	-	0.49	Made-ground	-	-
103	Layer	-	-	Natural	-	-
Trench 2						
General description					Orientation	N-S
Trench devoid of archaeology. Trench consisted of topsoil and a make-up layer of subsoil mixed with brick and concrete fragments. This overlay an orange clay natural with patches of flint gravel.					Avg. depth (m)	0.65
					Width (m)	1.65
					Length (m)	3.9
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
200	Layer	-	0.22	Topsoil	-	-
201	Layer	-	0.48	Subsoil	-	-
202	Layer	-	-	Natural	-	-
Trench 3						
General description					Orientation	N-S
Trench contained one small pit which was devoid of finds. It was cut through a layer of subsoil derived from the natural and sealed by a buried modern topsoil. This was overlain by a thick layer of made-ground and sealed by tarmac.					Avg. depth (m)	1.2
					Width (m)	1.65
					Length (m)	14.6
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
300	Cut	1.5	0.38	Cut of pit	-	-
301	Fill	1.5	0.38	Fill of pit	-	-
302	Layer	14.6	0.32	Disturbed natural	-	-
303	Layer	10.3	0.16	Buried modern topsoil	-	-
304	Layer	2.5	0.04	Made ground	-	-
305	Layer	7.45	0.23	Made ground	-	-
306	Layer	14.6	0.51	Rubble make-up layer	-	-



307	Layer	-	0.1	Tarmac	-	-
308	Layer	-	-	Natural	-	-
Trench 5						
General description					Orientation	E-W
Trench contained a possible shallow linear running e-w at the east end of the trench. It was deeper at the eastern end and had a diffuse boundary with the natural and could be a natural hollow that has silted slowly. It had a sterile fill.					Avg. depth (m)	0.60
					Width (m)	1.65
					Length (m)	13.10
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
500	Layer	-	0.05	Tarmac	-	-
501	Layer	-	0.24	Make-up for tarmac	-	-
502	Layer	-	0.48	Made ground	-	-
503	Layer	-	-	Natural	-	-
504	Cut	0.34	0.09	Ditch	-	-
505	Fill	0.34	0.09	Ditch fill	-	-
Trench 6						
General description					Orientation	N-S
Trench contained a linear, 607, which has possibly been truncated or re-cut by shallower ditch 608. The ditch was sealed by the disturbed subsoil. This was overlain by a buried modern topsoil which was overlain by made ground layers for a tarmac surface. The natural was pale orange sandy clay.					Avg. depth (m)	0.65
					Width (m)	1.65
					Length (m)	11.42
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
600	Layer	-	0.1	Tarmac	-	-
601	Layer	-	0.2	Make-up for tarmac	-	-
602	Layer	7.02	0.05-0.25	Made ground	-	-
603	Layer	3.5	0.07	Made ground	-	-
604	Layer	-	0.2	Buried modern topsoil	-	-
605	Layer	-	0.22	Disturbed subsoil	Pot, clay pipe	-
606	Layer	-	-	Natural	-	-
607	Cut	0.74	0.32	Cut of ditch	-	-
608	Cut	0.5	0.2	Cut of ditch	-	-
609	Fill	0.5	0.2	Fill of ditch 608	Pot	-
610	Fill	0.74	0.32	Fill of ditch 607	Pot, struck flint, coal fragment	-



Trench 7						
General description				Orientation	N-S	
Trench devoid of archaeology. Trench consisted of an orange sandy clay natural with grey-green mottling				Avg. depth (m)	0.65	
				Width (m)	1.65	
				Length (m)	3.9	
Contexts						
context no	type	Width (m)	Depth (m)	comment	finds	date
200	Layer	-	0.22	Topsoil	-	-
201	Layer	-	0.48	Subsoil	-	-
202	Layer	-	-	Natural	-	-



APPENDIX B. PALAEOLITHIC TEST PIT SUMMARIES

Site	Sweyne Junior School			Test-pit	2		
Site-code	SWSCJS 08 [OA Code]/ CC-027-C [FFWS Code]						
Site sub-div	-						
Dimensions	Length (m)	4.00	Co-ords (NGR)	X	-	Ground level — m OD	36.60
	Width (m)	1.00		Y	-		
	Depth (m)	3.00					

Sed group	Context	Description	Depth - top	Depth - base	<> Samples	(lit.) Vol.	Lithic finds	Enviro remains
	200	TOPSOIL. Dark yellowish-brown humic soil with flint pebbles and tree roots.	0.0 0	0.20	-	-	-	-
	201	SUBSOIL.	0.2 0	0.30	-	-	-	-
V	202	GRAVEL. Moderately well-sorted fine to medium flint gravel in very firm yellowish-brown silty clay matrix; clasts angular to well-rounded (derived Tertiary pebbles), often quite fresh, although also well-abraded; fills elongated shallow pockets trending down slope to North.	0.3 0	0.50	-	-	-	-
III	203a	SILTY/ SANDY CLAY. Very firm yellowish-brown silty clay.	0.5 0	0.80	-	-	-	-
III	203b	SILTY/ SANDY CLAY. Moderately firm, yellowish-brown silty and sandy (very fine to fine) clay; generally siltier and sandier downward.	0.8 0	3.00	-	-	-	-



Site Sweyne Junior School		Test-pit 3	
Site-code SWSCJS 08 [OA Code]/ CC-027-C [FFWS Code]			
Site sub-div -			
Dimensions	Length (m) 4.00	Co-ords (NGR)	X -
	Width (m) 1.00		Y -
	Depth (m) 3.15		
			Ground level — m OD 35.61

Sed group	Context	Description	Depth - top	Depth - base	<> Samples	(lit.) Vol.	Lithic finds	Enviro remains
M	307	ASPHALT.	0.0 0	0.08	-	-	-	-
M	306	SANDY/ CLAY-SILTY HARDCORE.	0.0 8	0.52	-	-	-	-
III	305	GRAVELLY CLAY-SILT. Firm, brown, sandy (very fine to fine) silty clay with moderately common fine to medium flint pebbles, sub-angular to well-rounded.	0.5 2	0.81	-	-	-	-
III	308	SANDY/ SILTY CLAY. Firm, yellowish-brown, slightly sandy (very fine) and silty clay; cohesive and pliable; contains occasional sandy lenses of medium to very coarse flint pebbles, moderately to well-abraded, sub-angular to well-rounded and very occasionally isolated very coarse flint pebbles, angular to moderately rounded, moderately to well-abraded; contains horizontal bed of sandy (very fine to medium) silty clay towards base [start of transition down into top of upper middle ground].	0.8 1	3.15	-	-	-	-



Site		Sweyne Junior School		Test-pit	5
Site-code		SWSCJS 08 [OA Code]/ CC-027-C [FFWS Code]			
Site sub-div		-			
Dimensions	Length (m)	4.00	Co-ords (NGR)	X	-
	Width (m)	1.00		Y	-
	Depth (m)	2.90			
				Ground level – m OD	36.84

Sed group	Context	Description	Depth - top	Depth - base	<> Samples	(lit.) Vol.	Lithic finds	Enviro remains
M	500	ASPHALT.	0.0 0	0.10	-	-	-	-
M	501	HARDCORE. Yellow bricks with silt/sand. [MADE GROUND]	0.1 0	0.25	-	-	-	-
M	502a	SAND/ SILT. Dark brownish-grey silt/very fine sand with charcoal and brick fragments. [MADE GROUND]	0.2 5	0.50	-	-	-	-
M	502b	GRAVELLY/ SANDY CLAY-SILT. Silty/ sandy clay with yellow brick fragments and medium to very coarse flint pebbles. [MADE GROUND]	0.5 0	0.65	-	-	-	-
III	503	SILTY/ SANDY CLAY. Firm, cohesive and pliable, yellowish-brown silty and sandy (very fine to fine) clay.	0.6 5	2.90	-	-	-	-



Site Sweyne Junior School		Test-pit 6	
Site-code SWSCJS 08 [OA Code]/ CC-027-C [FFWS Code]			
Site sub-div -			
Dimensions	Length (m) 4.00	Co-ords (NGR)	X -
	Width (m) 1.00		Y -
	Depth (m) 3.00		
			Ground level 35.55 — m OD

Sed group	Context	Description	Depth - top	Depth - base	<> Samples	(lit.) Vol.	Lithic finds	Enviro remains
M	600	ASPHALT.	0.0 0	0.06	-	-	-	-
M	601	HARDCORE. [MADE GROUND]	0.0 6	0.20	-	-	-	-
M	602	SILTY/ SANDY GRAVEL. [MADE GROUND]	0.2 0	0.43	-	-	-	-
M	603	HARDCORE. [MADE GROUND]	0.4 3	0.54	-	-	-	-
M	604	SILT/ SAND. [MADE GROUND]	0.5 4	0.85	-	-	-	-
M	605	GRAVELLY/ SANDY CLAY. [MADE GROUND]	0.8 5	1.30	-	-	-	-
III	606	SILTY/ SANDY CLAY. Moderately firm silty/ sandy clay, more greyish than in other nearby trenches (7 and 8); below c.2m very firm, very slightly sandy silty clay, becoming more usual yellowish-brown/ strong brown in colour.	1.3 0	3.00	-	-	-	-



Site Sweyne Junior School		Test-pit 7		
Site-code SWSCJS 08 [OA Code]/ CC-027-C [FFWS Code]				
Site sub-div -				
Dimensions	Length (m) 4.00	Co-ords (NGR)	X -	Ground level – m OD 35.74
	Width (m) 1.00		Y -	
	Depth (m) 3.05			

Sed group	Context	Description	Depth - top	Depth - base	<> Samples	(lit.) Vol.	Lithic finds	Enviro remains
M	700	ASPHALT.	0.0 0	0.09	-	-	-	-
M	701	HARDCORE.	0.0 9	0.20	-	-	-	-
M	702a	SILT/ SAND. Dark brownish-grey silt/ sand with brick and charcoal fragments. [MADE GROUND]	0.2 0	0.32	-	-	-	-
M	702b	SANDY GRAVELLY CLAY. Greyish-brown moderately firm sandy/ silty clay with brick and flint pebbles. [MADE GROUND]	0.3 2	0.60	-	-	-	-
III	703	SANDY/ SILTY CLAY. Firm, pliable and cohesive, yellowish-brown silty/ sandy (very fine to fine) clay; increasingly firm downward, especially in bottom 30cm of test-pit.	0.6 0	3.05	-	-	-	-



Site		Sweyne Junior School		Test-pit	8
Site-code		SWSCJS 08 [OA Code]/ CC-027-C [FFWS Code]			
Site sub-div		-			
Dimensions	Length (m)	4.00	Co-ords (NGR)	X	-
	Width (m)	1.00		Y	-
	Depth (m)	3.00			
				Ground level — m OD	35.18

Sed group	Context	Description	Depth - top	Depth - base	<> Samples	(lit.) Vol.	Lithic finds	Enviro remains
	808	TURF/ TOPSOIL.	0.0 0	0.15	-	-	-	-
M	805	MADE GROUND. See OA context records – generally dark greyish-brown silt/ sand with CBM, charcoal, chalk and flint pebbles.	0.1 5	0.85	-	-	-	-
M	806	MADE GROUND. Brown sandy/ silty clay with CBM, chalk and charcoal fragments	0.8 5	1.00	-	-	-	-
III	812	SANDY/ SILTY CLAY. Firm, cohesive and pliable yellowish-brown silty/ sandy (very fine to medium) clay; contains very occasional medium to very coarse flint pebbles, scattered intermittently throughout, slightly more common in top 1.5m of deposit seen; flint pebble clasts are sub-angular to well-rounded, moderately to well-abraded	1.0 0	3.00	-	-	-	-



Site		Sweyne Junior School		Test-pit	9
Site-code		SWSCJS 08 [OA Code]/ CC-027-C [FFWS Code]			
Site sub-div		-			
Dimensions	Length (m)	4.00	Co-ords (NGR)	X	-
	Width (m)	1.00		Y	-
	Depth (m)	2.65			
				Ground level – m OD	35.39

Sed group	Context	Description	Depth - top	Depth - base	<> Samples	(lit.) Vol.	Lithic finds	Enviro remains
M	900	ASPHALT. And base.	0.00	0.09	-	-	-	-
M	901	HARDCORE. Yellow bricks.	0.09	0.20	-	-	-	-
M	902	SILT/ SAND.	0.20	0.46	-	-	-	-
M	903	GRAVELLY CLAY-SILT/ SAND.	0.46	0.86	-	-	-	-
III	904	SANDY/ SILTY CLAY. Very firm, mottled yellowish-brown/ grey slightly sandy (very fine) silty clay with very occasional flint pebbles (fine to coarse, sub-angular to well-rounded, slightly to well-abraded); slightly brecciated in upper 80cm.	0.86	2.65	-	-	-	-



Site		Sweyne Junior School		Test-pit	10
Site-code		SWSCJS 08 [OA Code]/ CC-027-C [FFWS Code]			
Site sub-div		-			
Dimensions	Length (m)	4.00	Co-ords (NGR)	X	-
	Width (m)	1.00		Y	-
	Depth (m)	3.75			
				Ground level – m OD	34.65

Sed group	Context	Description	Depth - top	Depth - base	<> Samples	(lit.) Vol.	Lithic finds	Enviro remains
	1000	TOPSOIL/ TURF.	0.0 0	0.20	-	-	-	-
M	1001	SANDY/ CLAY-SILT HARDCORE. Unconsolidated sand/ clay-silt with common flint pebbles, bricks and lumps of concrete. [MADE GROUND]	0.2 0	1.00				
III	1002	CLAYEY GRAVEL. Well-consolidated, moderately poorly sorted fine to coarse flint gravel in slightly sandy (very fine to fine) silty clay matrix; clasts angular to well-rounded, slightly to well-abraded; general colour yellowish-brown.	1.0 0	1.10	-	-	-	-
III	1003	SANDY/ SILTY CLAY. Very firm sandy (very fine to fine)/ silty clay, yellowish-brown.	1.1 0	2.40	-	-	-	-
II/III	1004	SAND WITH CLAY-SILTY BEDS. Pale yellowish-brown/ brownish-yellow very fine to fine sand, moderately soft, with intermittent firm clay-silt beds 5-10cm thick.	2.4 0	3.25	-	-	-	-
II	1005	SAND. Soft, brownish-yellow fine to medium sand, orange-stained in upper 10-15cm.	3.2 5	3.75	-	-	-	-



Site		Sweyne Junior School		Test-pit	11
Site-code		SWSCJS 08 [OA Code]/ CC-027-C [FFWS Code]			
Site sub-div		-			
Dimensions	Length (m)	4.00	Co-ords (NGR)	X	-
	Width (m)	1.00		Y	-
	Depth (m)	5.40			
				Ground level – m OD	33.75

Sed group	Context	Description	Depth - top	Depth - base	<> Samples	(lit.) Vol.	Lithic finds	Enviro remains
	1100	TURF/ TOPSOIL.	0.00	0.25	-	-	-	-
M	1101	HARDCORE. Bricks and pieces of concrete in greyish-brown sand/ clay-silt matrix with flint pebbles.	0.25	0.36	-	-	-	-
M	1102	MADE GROUND. Dark greyish-brown sand/ clayey silt with very common medium to very coarse flint pebbles and occasional CBM and charcoal.	0.36	0.85	-	-	-	-
III	1103	SANDY/ SILTY CLAY. Very firm yellowish-brown sandy (very fine to fine) silty clay with gravelly patches in top 5-10cm, with flint clasts medium to very coarse, angular to well-rounded, slightly to well-abraded.	0.85	1.15	-	-	-	-
II/III	1104	SAND/ CLAY-SILT. Brownish-yellow horizontally bedded sand/ clay-silt in alternating bands (10-30cm thick); sand beds thicken and clay-silt beds diminish down through deposit.	1.15	2.90	-	-	-	-
II	1105	SAND. Soft, brownish-yellow fine sand, with occasional orange staining.	2.90	5.25	-	-	-	-
I	1106	SANDY GRAVEL. Soft and loose, moderately well-sorted, medium to very coarse flint gravel with occasional small cobbles, in medium to very coarse sand matrix; clasts sub-angular to well-rounded (derived Tertiary pebbles), moderately to well-abraded; generally brownish-yellow with reddish staining in places. [Swanscombe Lower Middle Gravel]	5.25	5.40	<1>	25 0	1 chunk 5 flint flakes	-

**APPENDIX C. NATIONAL PALAEOLITHIC RESEARCH FRAMEWORK**

Aim	Details
N 1	Documentation of regional sequences of material cultural change
N 2	Dating of artefact-bearing deposits within regional, national and international Quaternary frameworks
N 3	Developing understanding and dating of regional Pleistocene environmental, climatic and litho-stratigraphic frameworks
N 4	Explanation of diachronic and synchronic patterns of material cultural variability
N 5	Behaviour of Archaic (pre-anatomically modern) hominids (a) at specific sites, (b) across the wider landscape
N 6	Behaviour of anatomically modern hominids (a) at specific sites, (b) across the wider landscape
N 7	Extent of contrasts in Archaic and anatomically modern human behaviour and adaptations, and in fundamental cognitive capacities
N 8	Patterns of colonisation, settlement and abandonment through the Pleistocene
N 9	The climatic and environmental context of Archaic settlement, and the relationship between climate/environment and colonisation
N 10	The history of isolation/connection between Britain and the continental mainland, and the relationship/implications for Palaeolithic settlement and cultural development/expression
N 11	Improved documentation and understanding of hominid physiological evolution
N 12	Investigation of the relationship between evolutionary, behavioural and material cultural change
N 13	Social organisation, behaviour and belief systems
N 14	Models for cultural transmission and learning
N 15	Improving models of Palaeolithic site formation and post-depositional modification



APPENDIX D. FINDS REPORTS

D.1 Pottery

By John Cotter.

D.1.1 Pottery was recovered from four contexts as follows:

Table D.1 – Pottery by context

Context	Period	No of sherds	Weight in grams	Description
201	c1825/50-1900	3	23	WHEW (Staffs white earthenware) blue transfer dish rim. English bone china dish rim. Red flowerpot rim
605	c1780-1830	1	3	Bs Creamware
609	c1780-1830	1	16	Footring base Creamware hemispherical bowl
610	18-19C	4	11	Post-medieval glazed red earthenware dish/bowl rim. 3x small PREHISTORIC sherds (3g) including 2 flint tempered & 1 black reduced fine sandy possibly with organic inclusions.

D.2 Ceramic Building Material

By Cynthia Poole

D.2.1 Ceramic building material was recovered from two contexts. The fragment from context 605 is too small to identify, though the fabric is similar to that frequently used for post-medieval brick.

D.2.2 Context 802 produced fragments of flat roof tile, probably peg tile, though no peg holes survived. All were similar in character, though some of slightly cruder manufacture are of probably slightly earlier date than the majority. They are similar to tiles made in the Springhead area. They would fit in a date range of late medieval to early post-medieval.

Table D.2 – CBM finds by context

Ctxt	No s	Wt (g)	MFW	Th	Form	Obj date	Fabric	Description
605	1	2	2	~	Unid	Undated	sandy	amorphous
802	10	340	34	11-13 mm	Roof tile	Late med-early Pmed	Fine sandy micaceous clay, laminated, with occasional Fe ox grits	Flat roof tile, probably peg tile, but no peg holes. Generally flat smooth even surfaces & edges. A few pieces slightly rougher & cruder. 1 corner.



D.3 The Clay Pipe

By Geraldine Crann

Table D.3 – Clay pipes by context

Context number.	Material.
601	50mm length of stem, fractured 3mm into step. Stem bore, c.1.5mm diameter, still contains tobacco and tar residues throughout its length.

Recommendations

D.3.1 The assemblage is generally of low potential and requires no further work.

D.4 The Flint

By Geraldine Crann

D.4.1 A total of five pieces of struck flint were recovered from two contexts from the site.

Table D.4 – Flint by context

Context No.	Description
610	Secondary debitage fragment, 2 dorsal scars. Cortex 15%, mid grey-brown flint with occasional inclusions, condition fresh.
610	Secondary blade fragment, 4 dorsal scars, possible retouch / usewear along both lateral margins. Cortex 15%, mid grey-brown flint with occasional inclusions, condition fresh.
802	Secondary debitage flake, 4 dorsal scars. Cortex 15%, dark grey-brown flint with occasional inclusions, condition fresh.
802	Secondary debitage flake, rough hinge termination, bipolar cortex-removal flaking. Cortex 25%, dark grey-brown flint with occasional inclusions, condition fresh.
802	Possible primary flake from river cobble. Negative bulb of percussion. Condition - smooth.

Technology and Dating

D.4.2 The material recovered from the excavations consists of one retouched piece, three debitage flakes and one possible primary debitage flake. The material indicates that the early stages of raw material reduction were taking place locally.

Discussion

D.4.3 The small quantities of worked flint recovered limits the interpretation of the material beyond illustrating a human presence in the local area during the earlier prehistoric period.

Recommendations

D.4.4 The assemblage is generally of low potential and requires no further work.



D.5 The Iron

Ian Scott

D.5.1 A modern galvanised bolt was recovered from context 601 on the site.

Table D.5 – Iron finds by context

Context No.	Description
601	Modern galvanised bolt, weighing 57g.

D.5.2 It is recommended that the bolt be discarded.



APPENDIX E. BIBLIOGRAPHY AND REFERENCES

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APPENDIX F. SUMMARY OF SITE DETAILS

Site name: Sweyne Junior School

Site code: SWSWS08

Grid reference: NGR 560670 173860

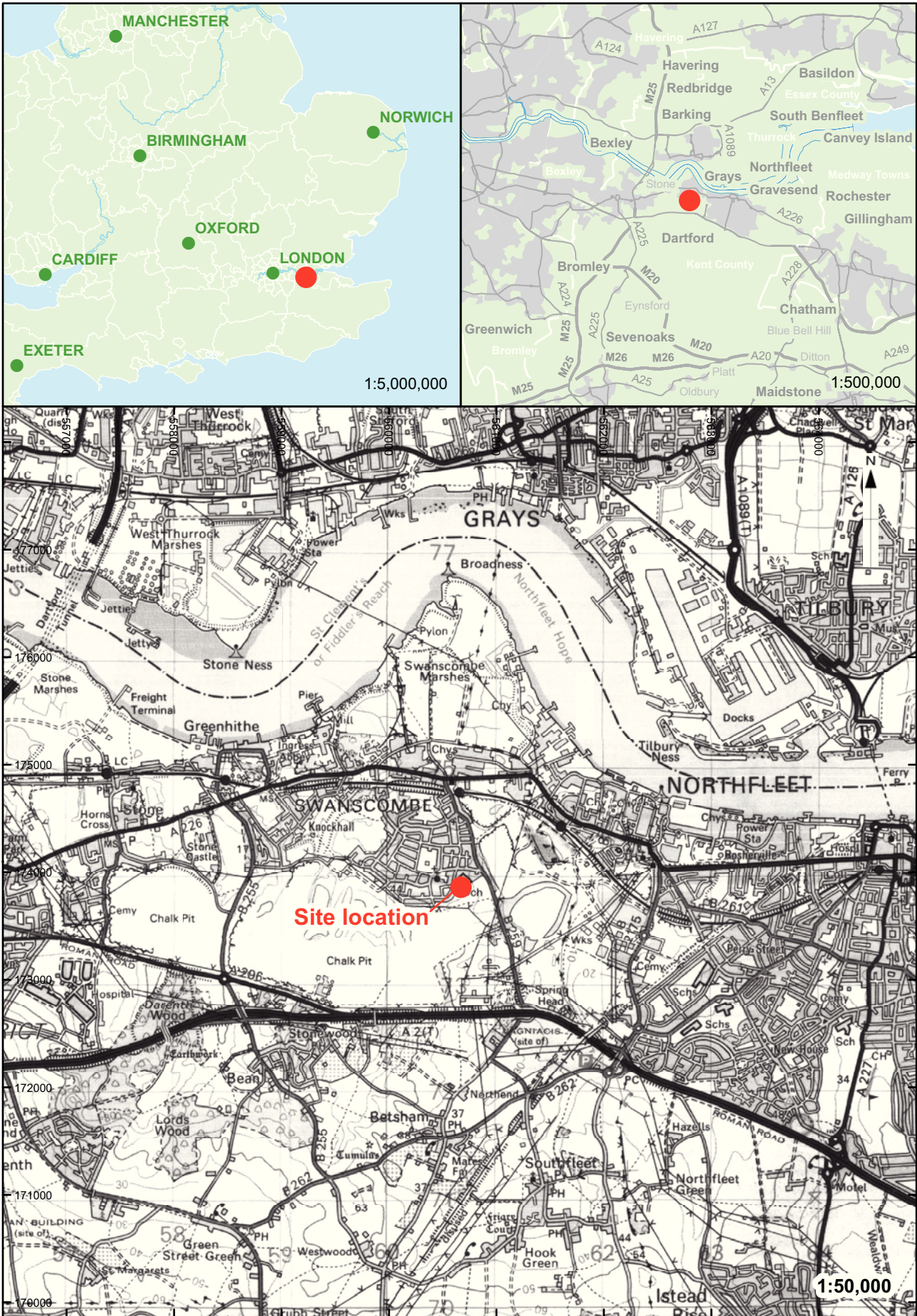
Type: Evaluation

Date and duration: 6-10 October 2008

Area of site: Approximately 2 ha

Summary of results: Two ditches and one pit were identified and a series of palaeolithic flint flakes recovered. Furthermore, gravels rich in Palaeolithic artefacts, and of high Palaeolithic importance were encountered 5.25 below the ground surface in the northernmost test pit (TP 11). These are equivalent to the Swanscombe Lower Middle Gravel, and their upper surface level was at 28.5 m OD.

Location of archive: The archive is currently held at OA, Janus House, Osney Mead, Oxford, OX2 0ES.



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Figure 1: Site location

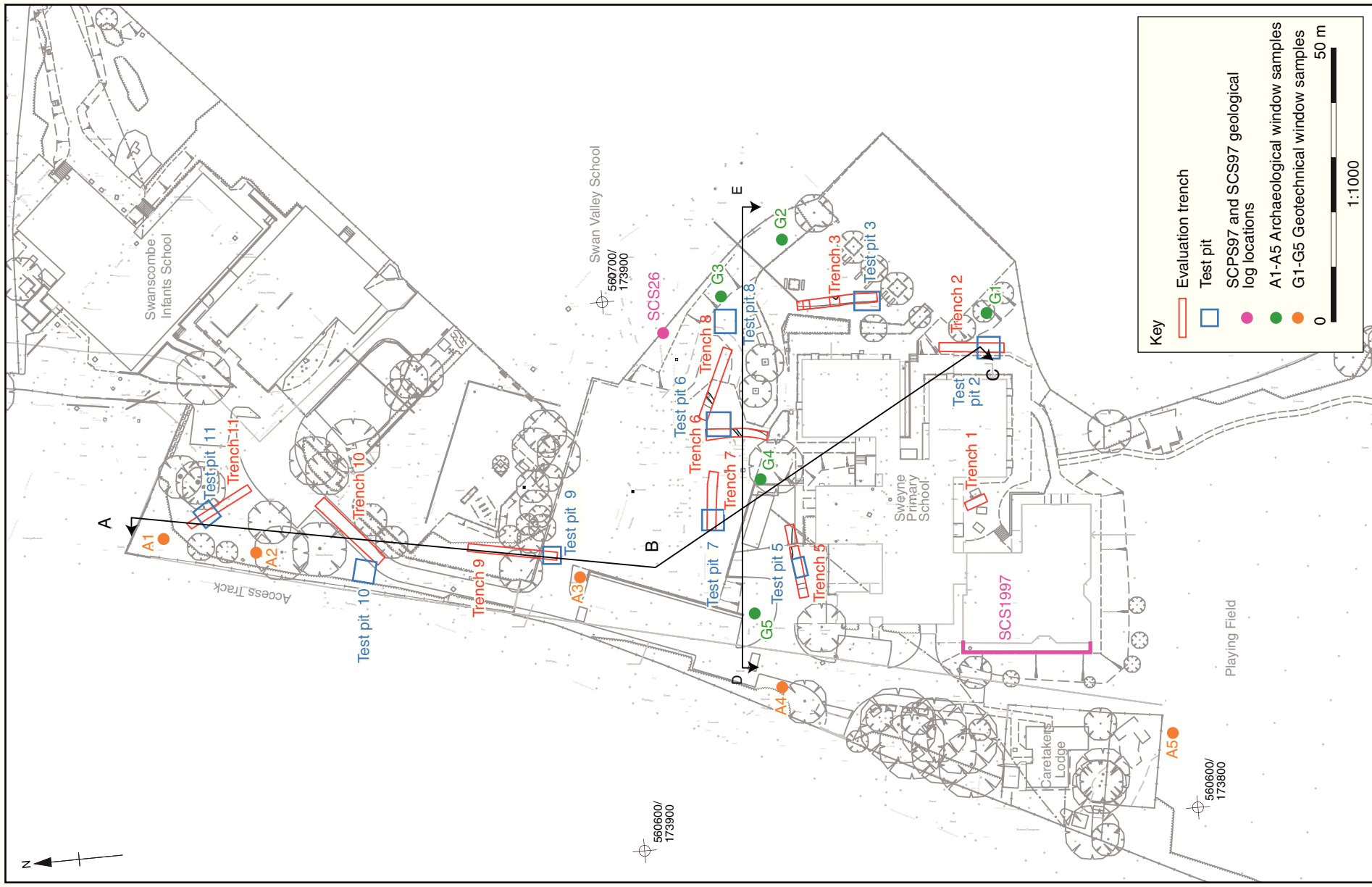


Figure 2: Trench and test pit location plan

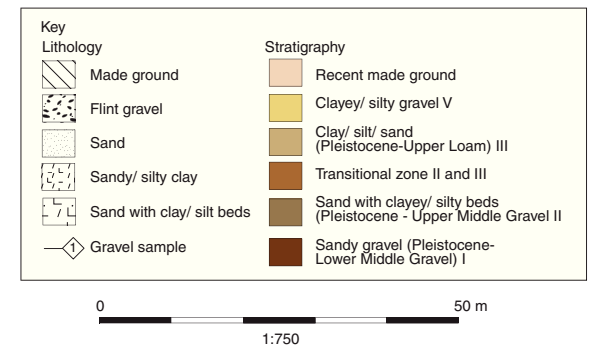
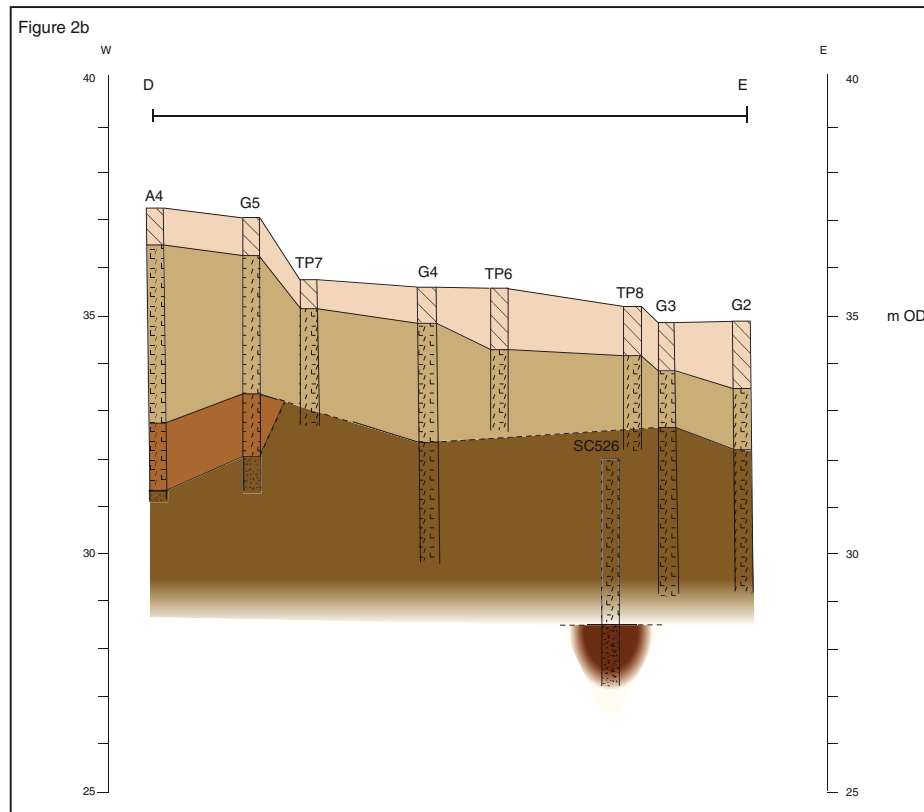
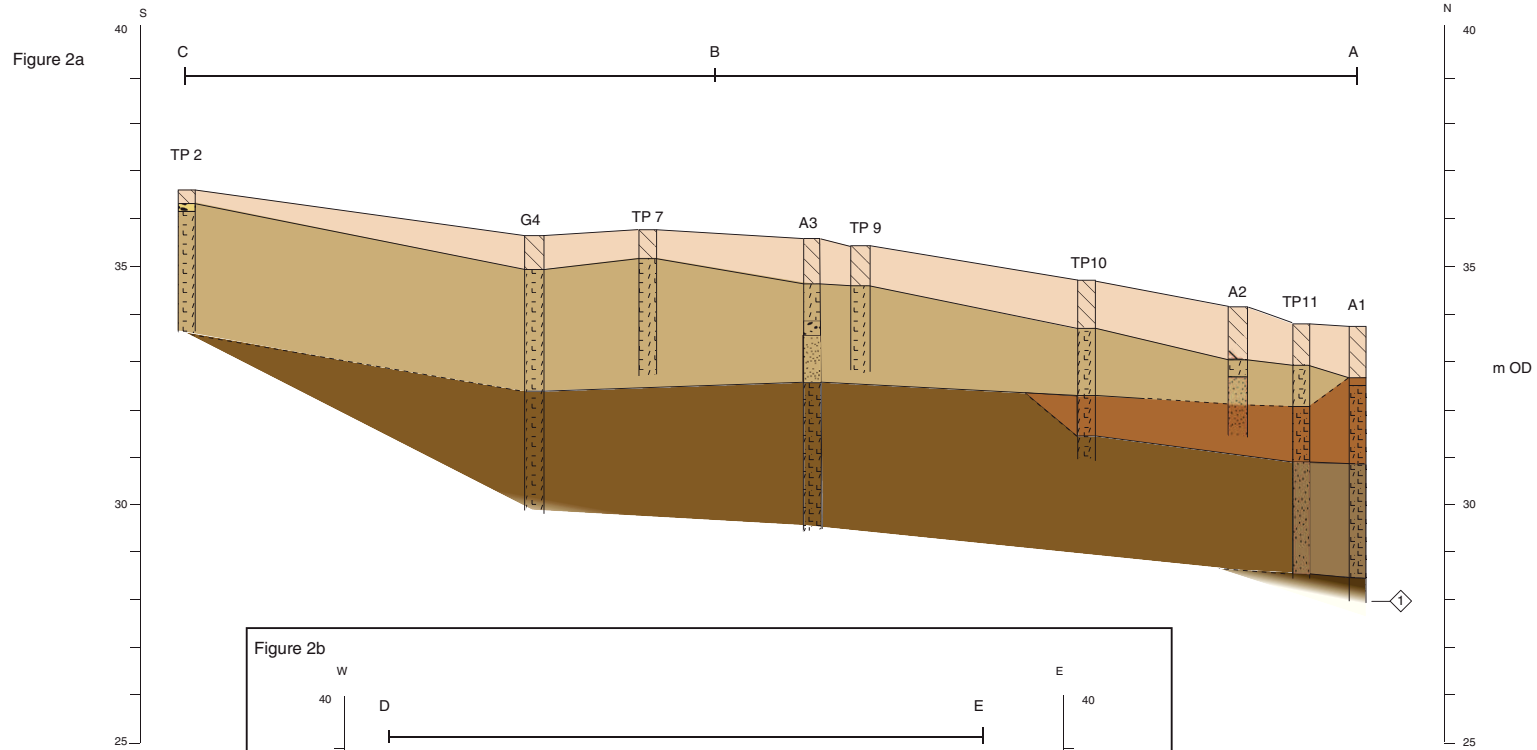


Figure 3: Stratigraphical cross sections: (a) ABC (north-south; (b) DE (east-west)

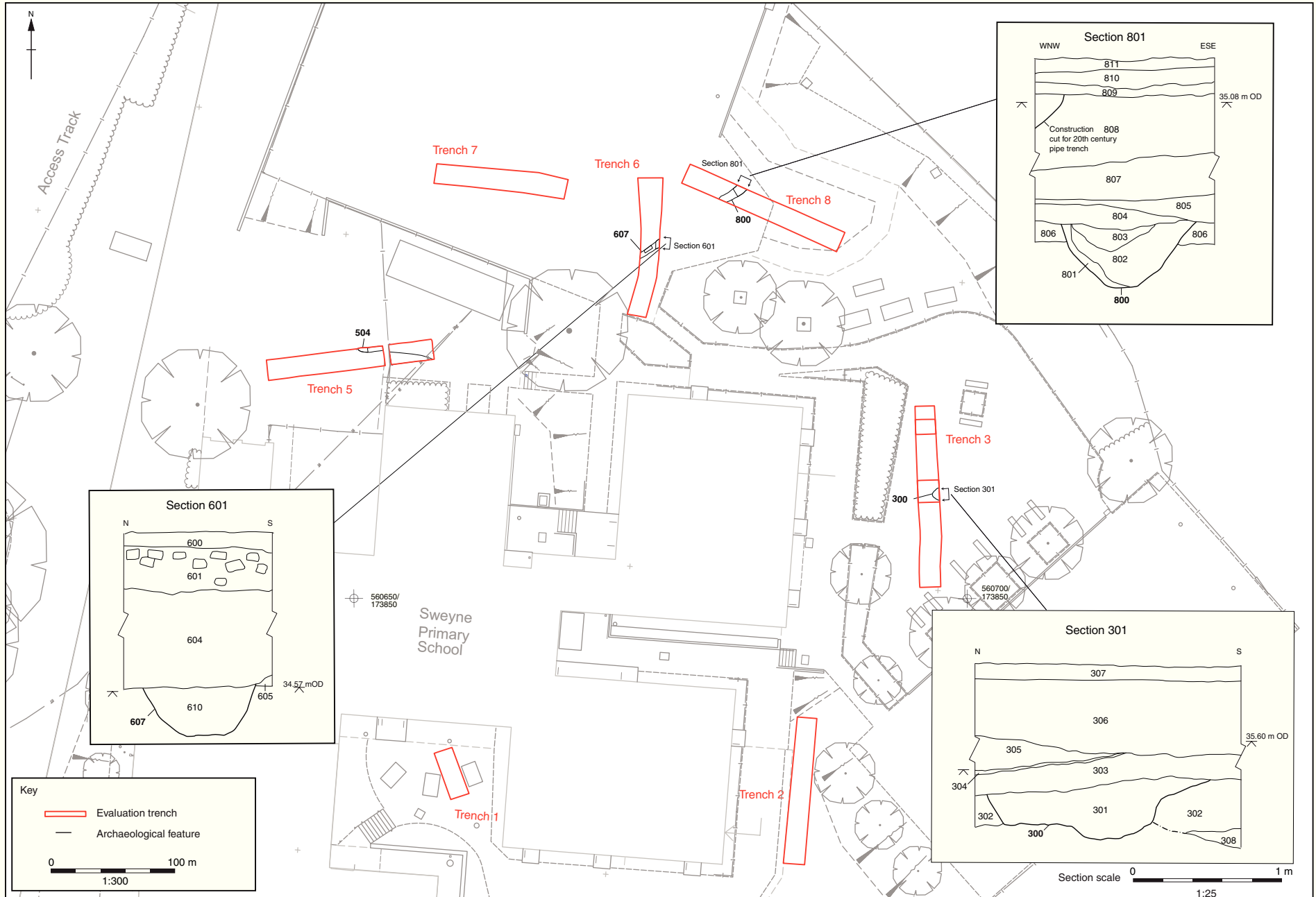


Figure 4: Close up of Trenches 1-8 and Sections 301, 601 and 801



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