CHANNEL TUNNEL RAIL LINK
UNION RAILWAYS (SOUTH) LIMITED

Archaeological Evaluation at West of Stone Street (ARC SST98)

Environmental Statement Route Window 36

ALLUVIAL DEPOSIT REPORT

Contract no. URS/400/ARC/0001
WA Report no. 45994a

Wessex Archaeology

24th May 1999

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Volume 1 of 1

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FACTUAL STATEMENT

1 INTRODUCTION

1.1 Project Background

1.1.1 Wessex Archaeology was commissioned by Union Railways Limited (URL) to investigate alluvial deposits encountered during evaluation work at Fairmead Farm, Westenhanger (centred on URL grid point 92750 17350; NGR grid point TR 12750 37350; **Figure 1**). The site is known as **West of Stone Street** (site code ARC SST98: Environmental Statement Route Window 36).

1.1.2 The evaluation, conducted by Canterbury Archaeological Trust, forms part of a programme of archaeological investigation along the proposed route of the Channel Tunnel Rail Link (CTRL), and was preceded by an Environmental Assessment (URL 1994).

1.1.3 The fieldwork was conducted in accordance with a written *Agreement for the Provision of Archaeological Investigations* (URL 1997), which defined the scope, aims and methods for the project.

1.1.4 The fieldwork was carried out on 17th February 1999.

1.2 Topography, Geology and Hydrography

1.2.1 Topographically, the site is level at a height of *c*. 71 – 72 m above Ordnance Datum (aOD), located on the north side of the East Stour River floodplain.

1.2.2 The mapped drift geology for the site is relatively complex (**Figure 2**), dominated by Pleistocene Head Brickearth, with more recent alluvium associated with the course of the East Stour River mapped along its course. These drift deposits overly solid geology that comprises Cretaceous Lower Greensand Folkestone and Sandgate Beds (Ordnance Survey 1974).

1.2.3 As noted above, the site is located on the north side of the East Stour River. The river springs as a series of converging streams from the base of the North Downs escarpment *c*. 2.5 km to the north-east, at the interface between the Gault Clay and overlying Lower Chalk.

1.3 Methods

1.3.1 As noted above (paragraph 1.1.3), the fieldwork was conducted in accordance with the *Agreement for the Provision of Archaeological Investigations* (URL 1997), which contains a detailed methodology for all aspects of the evaluation fieldwork. This methodology will not be repeated in full here, although a brief summary is reiterated below:

- *All trenches were visually inspected to characterise the alluvial sequence exposed.*
- *A representative section of trench 3617TT (**Figure 3**) was cleaned by hand to record the stratigraphic sequence in detail.*
- *A geotechnic pit was machine-excavated adjacent to the cleaned section to record deeper deposits, although for safety reasons it was not considered advisable to enter the stepped deeper section of trench.*
- *An appropriate column of spot and bulk samples was taken to enable laboratory-based detailed sedimentological descriptions to be made.*
- *All trenches were backfilled on completion of this work.*

2 RESULTS

2.1 Stratigraphy

2.1.1 The stratigraphic sequence within trench 3617TT (**Figure 4** and **Plate 1**) was described in the field, augmented by laboratory-based sedimentological descriptions made on a series (sample series 10) of nine undisturbed samples. At least one sample was taken from each context or stratigraphic unit, and descriptions follow the terminology outlined by Hodgson (1976).

2.1.2 The descriptions below incorporate both archaeological field notation and the sediment descriptions, and comprise the following:

- *Topsoil (A horizon) 361701 – a 0.26 m thick deposit of dark brown (10YR 4/3) virtually stonefree humic silty clay, with rare small to medium subangular flint gravel, many fine fleshy roots, 0.5-2% fine macropores (hand lens). Sharp smooth boundary.*
- *Gleyed (?) overbank alluvium 361702 – a 0.2 - 0.25 m thick deposit of gleyed stone-free greenish brown (2.5Y 5/2) clay with common (10%) yellowish brown (10YR 6/6) mottles and common fine fleshy roots. Well-preserved vertically fissured prismatic/ columnar structure, with*

Fe-staining on ped faces contributing to the overall mottling effect. Diffuse boundary.

- *Gleyed (?) overbank alluvium 361703 – a 0.26 m thick deposit of gleyed grey (10YR 5/1) clay with common reddish yellow (5YR 6/8) to yellowish red (5YR 4/6) mottles and similar medium/ coarse structure to 361702. Clear boundary.*

- *Stabilisation horizon (?) 361704 – a 0.13 m thick deposit of dark grey (10YR 4/1) possibly humic clay to silty clay with common yellowish brown (10YR 5/6) mottling and rare manganese flecks/ nodules. Clear boundary.*

- *Alluvium 361705 – a variable thickness (0.2 - 0.5 m) light grey (5Y 6/1) clay loam with very fine bleached sand, frequent strong distinct brown (7.5YR 5/8) mottles and rare small and medium subangular flint gravel. Convoluted clear boundary.*

- *Fluvial gravel 361706 – a variable thickness (0.2 - 0.6 m) mixed deposit of small, medium and large predominantly water-worn subrounded flint gravel in a yellowish red (7.5YR 6/6) sand loam matrix. Basal 0.1 - 0.15 m of this deposit comprises breciatted flint gravel in an olive grey (5Y 5/2) silty sand matrix containing examples of waterlogged organic matter. Clear boundary.*

- *Alluvium 361707 – a 1 m+ thick deposit of mixed interdigitated sands, very dark grey (anaerobic?) sandy clays and mixed flint gravels.*

2.1.3 No artefacts were recovered from manual cleaning and examination of the sequence, the upper ground surface of which was at 71.27 m aOD.

2.1.4 In summary the trench revealed a sequence of stratified alluvial and fluvial deposits. Although generally deposited through low energy means (i.e. seasonal overbank flooding etc.), the mixed basal layer 361707 appears to represent a deposit laid down under higher energy level conditions.

2.1.5 Three zones of darker, possibly anaerobic (humic?) deposits were identified; within alluvium 361707, at the base of fluvial gravel 361706 and the marker event 361704.

3 CONCLUSIONS

3.1 Deposit Interpretation

3.1.1 As noted above, the morphology and coarse matrix of the basal mixed deposits (fluvial gravels and sands 361707) may be considered indicative of high energy water action, scouring and mixing deposits from various parent materials prior to deposition (i.e. stream bed deposits).

3.1.2 Higher energy levels are generally associated with glacial retreat and lowered sea levels, and as such it is possible that this deposit either originates following the Devensian glaciation (i.e. *c*. 18,000 BP), when sea levels were *c*. 100-120 m lower than present day (WA 1998c, 4), or a result of seasonal (spring) discharge during the Devensian.

3.1.3 However, there is also evidence to suggest that the Late Boreal/Early Atlantic period (i.e. *c*. 11 – 9,000 BP) witnessed a significant rise in watertables, associated with a series of 'cut and fill' phases within alluvial zones. It is suggested that this may be due to increased rainfall associated with the sea level rises occurring at this time (Brown 1997, 210).

3.1.4 The preservation of waterlogged plant macrofossils within fluvial gravel 361706 is notable, and presumably represents the organic surface of the river bed with plant growth which was sealed (and possibly truncated) by high energy fluvially rolled flint pebbles and nodules. Although undated, the organic deposit is unlikely to predate the early Holocene period (i.e. Mesolithic), and is perhaps more likely to be relatively recent (i.e. Neolithic/ Bronze Age). The deposit represents either a former course for the East Stour River, or a principal tributary feeding in from the north-east.

3.1.5 The general sequence of alluvium sealing this fluvial gravel is a typical unremarkable sequence of fine-grained alluvial deposits representing channel fill and/or overbank floodplain alluvium, with mottling and oxidation becoming more redolent towards the surface deposits where a fluctuating water table occurs. The dark grey possibly humic nature of layer 361704, is of note. Coupled with its well-defined upper and lower horizons it may be suggested that this represents a stabilisation horizon, and was evident in all trenches examined at West of Stone Street. This may represent a more rapidly buried, rather than gradually inundated, surface.

3.1.6 Similar sequences containing two, three or more distinct anaerobic horizons have been recorded elsewhere in Kent, such as Chatham (Barham *et al.* 1995), the North Kent marshes (Evans 1953), Motney Hill (WA 1996; WA 1998a) and Gravesend (WA 1998b). Generally the stabilisation horizons are associated with the Mesolithic, Late Neolithic/Early Bronze Age, Late Bronze Age and Roman periods (Devoy 1982). At Chatham the prehistoric stabilisation horizons have been radiocarbon dated to *c*. 5,000 BC, 2820-2710 BC and 1530-600 BC respectively.

3.1.7 Within this context, if the marker event at West of Stone Street is related to the sequences recorded elsewhere in Kent, then it is most likely to represent either the Late Bronze Age or Romano-British horizons, and perhaps the former.

4 RECOMMENDATIONS

4.1 Existing Data

4.1.1 The spot samples retrieved have been used to characterise the nature of the deposits present at the site. As previous work has already demonstrated that pollen, diatoms, forams and ostracods all survive within such alluvial material, further analysis to determine preservation of such from these samples is not considered necessary.

4.2 Further Work

4.2.1 Although the spot samples satisfy the initial aim of the fieldwork, they cannot be used for detailed analysis of *in situ* horizons. It is therefore considered preferable that a clean, stepped section face is exposed relatively close to the sequence already examined and recorded, and that a continuous monolith sample be extracted from this face to at least the base of the fluvial gravel.

4.2.2 As noted above, the sequence exposed remains essentially undated, although parallels can suggest very broad chronological divisions. It is therefore desirable that securely stratified dating evidence is obtained, either as diagnostic artefacts or material capable of providing radiocarbon determinations, to place the sequence into a secure chronological framework.

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