CHANNEL TUNNEL RAIL LINK
UNION RAILWAYS (SOUTH) LIMITED

Archaeological Evaluation at East Stour Diversion (ARC ESD98)

Environmental Statement Route Window 36

ALLUVIAL DEPOSIT REPORT

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

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 to the north of the East Stour River, between the M20 motorway and the Ashford to Folkestone railway (**Figure 1**).

1.1.2 The site is located to the east of the motorway/railway crossing over the A261 Ashford Road at Grove Bridge (centred on URL grid point 91100 17650; NGR grid point TR 11100 37650), and is known as **East Stour Diversion** (site code ARC ESD98; Environmental Statement Route Window 36).

1.1.3 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).

1.1.4 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.

1.1.5 The fieldwork was carried out on 22nd February 1999.

1.2 Topography, Geology and Hydrography

1.2.1 Topographically, the site slopes gently from north-east to south-west between heights of *c*. 65 m above Ordnance Datum (aOD) and *c*. 61 m aOD, and is 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 alluvial deposits 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, which springs as a series of converging streams from the base of the North Downs escarpment *c*. 4-5 km to the north-east, at the interface between the Gault Clay and overlying Lower Chalk. Tributaries feeding the East Stour River from the north pass close to the site, including Gibbin's Brook to the west.

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 geotechnic pit was machine-excavated at the south end of trench 3583TT (**Figure 3**) to enable a representative section of the alluvial sequence to be recorded and sampled.*
- *A series of four overlapping soil monoliths 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 3583TT (**Figure 4** and **Plate 1**) was described in the field, augmented by laboratory-based sedimentological descriptions made on a series of four overlapping soil monoliths. 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 358301 – 0.2 m thick mid brown friable silty clay loam with common small subangular and subrounded flint gravel. Clear boundary*

- *Made ground 358302 – 0.32 m thick mixed (redeposited) iron mottled greyish brown clayey loam with common small subrounded flint gravel. Clear boundary*

- *Alluvium 358303 – 0.35 m thick dark greyish brown silty clay loam (very fine sand) with 5% distinct, sandy strong brown (7.5YR 5/6) mottles; weak fine blocky subangular structure. Abrupt boundary.*

- *Alluvium 358304 – 0.44 m thick pale brown (10YR 6/3) silty clay loam (fine sand) with 20% yellowish red (5YR 5/6) sandy mottles. Mottling noticed within and around inter-ped voids and fine (hand lens) pore spaces. Clear to abrupt boundary.*

- *Alluvium 358305 – 0.09 m thick grey (7/5YR 5/0) clay with 5% distinct strong brown (7.5YR 5/6) mottles of blocky subangular structure. Becomes moist, plastic and structureless with depth, tending to a 0.35 m thick grey (7.5YR 5/0) moist and plastic clay with 1% fine strong brown (7.5YR 5/6) mottles, no structure, no laminations. Gradual boundary.*

- *Alluvium 358306 – 0.17 m thick grey (7.5YR 5/0) clay loam with weak small to medium sub-angular blocky structure, 2-5% fine distinct mottles and rare small flints. Gradual boundary.*

- *Alluvium 358307 – 0.25 m thick olive grey (5Y 5/2) to greenish grey (5G 5/1) silty clay with some fine sand occurring, very few mottles, but occurrences of black (5Y 2.5/1) very fine (hand lens) charcoal stains and fragments. Not all of these are necessarily charcoal. Gradual boundary.*

- *Alluvium 358308 – 0.23 m thick dark grey (5Y 4/1) wet clay with few mottles, very rare fine charcoal flecks (1mm), becoming sandier (clay loam) with depth and tending to a 0.11 m thick dark grey (5Y 4/1) clay loam with fine and medium sand. Sharp boundary.*

- *Fluvial gravel 358309 – 0.03 m thick lens of very small, small and medium flint gravel in a sandy clay matrix, some organic (roots) remains present. Abrupt boundary.*

- *Alluvium 358310 – 0.11 m thick olive green (5Y 5/2) clay loam with fine and medium sand, rare small flint gravel common fine organic inclusions; only roots (and possibly stems) noticed.*

- *Gravel 358311 – mixed subrounded flint gravel in a coarse to medium slightly silty sand matrix.*

2.1.3 Other than post-medieval brick and tile fragments from layers 358302 and 358303, no artefacts were recovered from manual cleaning and examination of the sequence. The upper ground surface of the sequence was at 61.95 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 (gravel 358311) appears to represent a deposit laid down under higher energy level conditions.

2.1.5 The basal deposit was anaerobic; containing preserved organic root remains, presumably representing a deposited surface or river bed that was inundated by later alluviation. No other plant macrofossils were observed (hand lens and x20 stereo-binocular microscope).

3 CONCLUSIONS

3.1 Deposit Interpretation

3.1.1 The majority of the alluvial sequence represents channel fill and/or overbank floodplain alluvium, with mottling and oxidation becoming more redolent towards the surface deposits where fluctuating water table occurs.

3.1.2 As noted above, the morphology and coarse matrix of the basal material is distinctly coarser, higher energy material (sands and medium gravel) typical of bed deposits; the sand probably being derived from the Folkestone and Sandgate beds upstream.

3.1.3 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 1998, 4), or a result of seasonal (spring) discharge during the Devensian.

3.1.4 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).

3.1.5 The preservation of waterlogged plant macrofossils within fluvial gravel 358309 is notable, and presumably represents the organic surface of a stream 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 probably represents the former course for the East Stour River.

3.1.6 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 distinctive 'marker events' identified at, for

example, West of Stone Street (ARC SST98) and other sites in Kent such as Chatham (Barham *et al.* 1995) and the North Kent marshes (Evans 1953) were not present.

4 RECOMMENDATIONS

4.1 Existing Data

4.1.1 The monoliths 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 The sequence of monoliths extracted from this site will satisfy any further analysis that may be considered appropriate (i.e. diatoms, forams, ostracods, pollen). It is recommended that an archaeological watching brief be conducted during construction of the CTRL. Atypical sequences noted during such a watching brief should be recorded and sampled appropriately.

4.2.2 As noted above, the sequence exposed remains essentially undated. 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. It is possible that such material may be recovered during the archaeological watching brief.

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