

1 SUMMARY

The following report summarises the results of an archaeological evaluation undertaken by AOC Archaeology from the 18th to 24th October 2004 at Knight Road, Strood in Kent, on behalf of SMC Gower Architects, representing Wm. Morrison Property & Development.

Twelve trenches were originally requested by Kent County Council although the heavily disturbed and undulating terrain of the site meant that it was only possible to excavate seven. The entire site had undergone significant disturbance and truncation since reclamation of the land during the Victorian period and more recently as a result of the construction and demolition of modern industrial premises and the activities of bottle diggers.

Below the levels of modern disturbance a sequence of alluvial deposits and peat were preserved. No archaeological features were present and no evidence of maritime activity was encountered at this level.

2 INTRODUCTION

2.1 Site location (Fig. 1)

The proposed development lay adjacent to Knight Road, Strood in Kent and was centred on National Grid Reference (NGR) TQ 573517 168927. The site lay between 4.0 and 5.0m AOD, approximately 220m to the north-west of the meandering River Medway and was located on ground previously occupied by industrial buildings. The demolition of these had left the ground very disturbed and uneven; more recently the digging of pits by bottle collectors had further added to the uneven nature of the terrain. It was bounded to the north-east by a Retail Park, a Railway line which traversed Jane's Creek to the south-east, by further industrial and residential premises to the south-west and Knight Road to the north-west. The site covered a total area of approximately 2.70 hectares.

2.2 Development Proposals

The development plan includes the construction of a proposed Wm Morrison Superstore, along with associated parking areas, services and associated landscaping.

2.3 Planning Background

Planning permission was granted for the redevelopment of the site. As a condition, an archaeological evaluation of the site prior to development was requested by the Heritage Conservation Group (HCG), Kent County Council (Adam Single, Archaeological Officer), in order to define the character, extent and survival of any archaeological remains on the site. The aim of this evaluation is to primarily identify potential options for minimising or avoiding damage to any archaeological remains. A *Written Scheme of Investigation* was prepared by AOC (February 2004) which outlined a scheme of works that would fulfil these criteria.

2.4 *Geological, Archaeological and Historical Background*

Geology

The underlying geology comprised Upper Chalk, covered by extensive areas of Alluvium and Head Brickearth. A geotechnical ground investigation (Serius Geotechnical Ltd 2004) was previously conducted on the site in September 2004. This revealed Victorian made ground overlying natural Roman flood deposits at a depth of approximately 2-3.5m below the existing ground level. This confirmed the results from a previous Environmental Assessment (Weeks 1998) that illustrated that the majority of the site had been heavily truncated by development and that a thick layer of made ground covered most of the area. However there were some isolated areas where the potential for maritime activity from the Roman period onwards was expected to have survived. It was suggested that these areas were primarily located around the periphery of the assessment area, around the banks of Jane's Creek and punning parallel to the eastern extent of the site, running parallel to along the nearby riverside (HCG 2004:2.2). As a result it was requested that the trenches were located within these areas (KCC).

Archaeological and Historical Background

Early map and Sites and Monuments Record (SMR) evidence recorded the presence of a Roman burial grounds within the far northern extent of the site, immediately west of Jane's Creek, and further to the southwest, within an area currently occupied by industrial units. The presence of Roman material was considered likely particularly in the form of maritime associated practices. Monitoring of the test pit survey in September 2004 confirmed the presence of alluvial encroachment onto the pre-existing marshland, evident at approximately 2-3m below the existing ground level. This deposit contained shallow pockets of peat suggesting the low energy inundation of the site was coupled with intermittent phases of vegetation growth. Although no finds were found to be associated with the flood clay, conversations with local residents within the area revealed that small Roman coins have been found, and subsequently removed from this deposit.

Cartographic evidence showed that the site had undergone relatively recent changes. The earliest Ordnance Survey Map, dated to 1863, shows that Jane's Creek, in association with the former Pelican Creek formed a large horse-shoe shape to the north of the site, presumably giving access to the coal yards formally situated on Commercial Road. Prior to this it is believed that the majority of the site comprised marshland that had been reclaimed during the Victorian period for the development of the North Kent Line railway (1850's). The reclamation of the assessment site is evident by the presence of extensive deposits of both Victorian and early 20th century ceramics and glass that up until this day are subjected to retrieval by local bottle diggers.

It was only in the 1930's when the actual assessment site itself underwent development. The construction of a paper works factory was visible within the southern extent of the site, with the northern areas being used as allotments (Ordnance Survey 1938). By 1954 the northern area immediately adjacent to Knight Road had

been developed with the construction of an engineering works which had expanded to incorporate the entire extent of the site by 1997. As mentioned above, demolition of these works in the late 1990's appeared to have ceased part way through and since then the site has been heavily grown over by shrubbery.

3 AIMS OF THE INVESTIGATION

3.1 The general and specific aims of the evaluation were laid out in the Written Scheme of Investigation (WSI) produced by AOC. In particular they included:

- To establish the presence/absence of archaeological remains within the site.
- To determine the extent, condition, nature, character, quality and date of any archaeological remains encountered.
- To assess the ecofactual and environmental potential of the archaeological features and deposits.
- To determine the presence of any prehistoric artefacts or deposits.
- To determine the presence and nature of Roman archaeological deposits on the site, particularly evidence for maritime structures, burials etc.
- To determine the presence of any medieval or post-medieval activity relating to land reclamation.
- To determine the presence and nature of any post-medieval remains on the site.
- To determine a topographic and environmental profile of the site, to further refine the predictive models of the site.
- To make available to interested parties the results of the investigation subject to any confidentiality restrictions.

4 STRATEGY

4.1 Research Design

A Written Scheme of Investigation was prepared by AOC Archaeology and agreed with Kent County Council on behalf of Wm Morrison Supermarkets plc. This involved the excavating up to twelve trenches (see Figure 2 for trench locations).

Site procedures followed were defined in the Written Scheme of Investigation (AOC 2004) which was subsequently approved by KCC. All practices were carried out in accordance with IFA Guidelines (1994). Provision was made for a report as defined in the Written Scheme of Investigation, following recommendations and standards set by KCC.

4.2 Methodology

Prior to commencing work a unique code for the project (KRS 04) was suggested and approved by KCC.

Where possible the trenches were located as shown in Figure 2. Following initial perambulation of the site it was clear that the site had been subjected to both local 'bottle digger' interest, as well as being left in a poor state following demolition of the pre-existing industrial structures. Particular attention had been given to early 20th century dumping along the northern stretch of the south-eastern side of the area of investigation. The ensuing level of truncation had left the ground very uneven and disturbed and led to several alterations to the trench locations. KCC was made aware of the situation and approved the relocating, shortening and, in some cases abandonment of some of the trenches. As a result it was not possible to dig Trenches 4 and 5 and, whilst the disturbance in the area of Trench 6 was not as marked on a topographical survey, it proved impossible to dig the whole trench and so two test pits (one at either end of the original trench location) were excavated. In addition to this, Trench 7 (Fig 2) was moved slightly east from its original position due to ground disturbance.

The trench locations were accurately plotted (shown in Figure 2) using an EDM, based on survey information provided by the previously carried out topographical survey. All machining was carried out under the constant supervision and observation of AOC Archaeology Group.

Standard AOC Archaeology techniques were employed throughout, involving the completion of written context records for each deposit with scale plans and/or section drawings recorded where appropriate and a photographic record produced. Levels for each context were established relative to Ordnance Datum, taken from two survey stations to the south-west of the area of investigation.

The work was carried out in accordance with the standard specified by the Institute of Field Archaeologists (1994) and was monitored by Adam Single (Kent County Council Archaeological Officer).

5 RESULTS

5.1 Trench 1

Surface of Trench 0.00m = 3.58m OD

- 0.00 – 1.06m (1/001). Made ground/demolition rubble. Loose to moderately compact. Comprised re-deposited top/sub soil, a dark grey brown silty clay, with frequent inclusions of brick and general building debris.
- 1.06 – 1.44m (1/002). Made ground, a light orange grey, sandy chalk with frequent modern inclusions including, fragments of modern brick and glass.
- 1.44 – 0.96m (1/003). Made ground. Loose to moderately compact. A dark grey brown, silty clay, with frequent inclusions of brick and general building debris.
- 0.96 – 1.22m (1/004). Made ground/levelling layer. A mid yellow orange sand with moderate small-medium sized stone inclusions.
- 1.22 – 1.58m (1/005). Levelling layer/construction backfill lying atop clay. Light white grey chalk with occasional modern brick inclusions.

- 1.58 – 2.10m (1/006). Alluvial clay deposit. A mid blue grey clay with a lens of darker brown organic material running through it.
- 2.10 – 2.28m (1/007). Alluvial clay deposit. A mid brown grey clay with a high frequency of organic matter.
- 2.28 – 2.48m (1/008). Dark black brown peat subsequently buried by deposition of alluvial clays.
- 2.28m+ (1/009). Alluvial clay deposits. A mid blue grey clay.

Trench 1 was situated to the north of the site, orientated NW-SE adjacent to the site boundary. The trench was positioned in order to target the possible presence of a Romano-British burial ground, as suggested by the SMR. Limited manoeuvring room for the machine caused by the presence of boundary 'security' banks meant that the trench was excavated 1m short of its total intended length.

At the base of the trench, which was excavated to a depth of 2.28m below the existing ground level, a series of alluvial deposits in the form of stiff cohesive blue grey clay, containing varying frequencies of organic matter, were observed. These were overlain by a layer of peat, possibly representing a former land surface, which was subsequently buried by further flood/alluvial deposits. A column sample (Sample <2>) was taken through this sequence (see Appendix B for assessment). Above the clay much modern disturbance was in evidence. Directly above the alluvial flood clay a layer of chalk (1/005) had been deliberately deposited in order to provide an impermeable layer prior to the reclamation of the floodplain, thus preventing ground water from rising to a higher level. Above the chalk were several layers of modern make up, totalling 1.60m in depth (1/001-1/004).

5.2 Trench 2

Surface of Trench 0.00m = 4.28mOD

- 0.00 – 2.40m+ (2/001). Made ground associated with reclamation of land. A series of very mixed/disturbed silts and clays with well defined tipping horizons containing high frequencies of modern construction debris including brick, glass and concrete.

Trench 2 was situated to the north of the site, orientated NE-SW, and positioned in order to further define the possible presence of the Romano-British burial ground. A finished concrete face, possibly part of a basement associated with the industrial buildings seen on the Ordnance Survey map 1997, was encountered at the southern end of the trench. The modern infilling described by (2/001) appeared to have taken place after the construction of the feature as tip lines were observed over the top of it. The presence of this feature, which represented heavy truncation both within this area and further to the south, meant that the trench was excavated 3m short of its total intended length.

5.3 Trench 3A

Surface of Trench 0.00m = 4.26mOD

- 0.00 – 1.20m (3A/001). Made ground/demolition rubble. Loose to moderately compact. Comprised re-deposited top/sub soil, a mid orange brown - dark brown black silty clay, with frequent inclusions of brick and general building debris.
- 1.20 – 2.50m (3A/002). Alluvial deposits. A mid grey brown – green grey silty clay laid down in numerous lens.
- 2.50 – 2.52m (3A/003). A very thin layer of dark black brown clayey silt soil laid down prior to alluvial deposits.
- 2.52 – 3.28m (3A/004). Mid blue grey alluvial clay.
- 3.28m+ (3A/005). Dark black brown peat subsequently buried by deposition of alluvial clays.

5.4 Trench 3B

Surface of Trench 0.00m = 3.92mOD

- 0.00 – 1.20m (3B/001). Made ground/demolition rubble. Loose to moderately compact. Comprised re-deposited top/sub soil, a mid orange brown - dark brown black silty clay, with frequent inclusions of brick and general building debris.
- 1.20+ (3B/002). Levelling layer/construction backfill lying atop clay. Light white grey chalk with occasional modern brick inclusions.

Trenches 3A & 3B were located at the proposed location of Trench 3. However, upon excavation of the eastern end of the trench groundwater began to flood into the cut as the chalk layer, underlying the modern made ground, was removed. This part of the trench was therefore abandoned due to health and safety issues, and as a result Trench 3B was excavated further to the northwest, in order to establish the deposit model for this part of the site. Excavation commenced approximately 2m northwest of the limit of Trench 3B in order to prevent inundation. This trench was labelled 3A. In this trench very similar deposits to those in Trench 1 were observed; alluvial clay (3A/004) overlying a band of peat (3A/005). A very thin layer of dark black brown clayey silt soil (3A/003) sealed the lower clay, which was overlain a latter alluvial phase of low energy flood clay (3A/002). The upper horizon of this late clay was sealed by modern levelling layers (3A/001)

5.5 Trench 4

Located within the far north-eastern corner of the site, and orientated NE-SW parallel with the site boundary, Trench 4 could not be excavated due to health and safety considerations. Extensive excavations caused by bottle diggers had resulted in a heavily truncated terrain, not safely accessible by the either staff or plant.

5.6 Trench 5

Located adjacent to the eastern extent of the site, and orientated NE-SW parallel with the site boundary, Trench 5 could not be excavated due to health and safety

considerations. Extensive excavations caused by bottle diggers had resulted in a heavily truncated terrain, not safely accessible by the either staff or plant.

5.7 Trench 6

Located adjacent to the eastern extent of the site, and orientated NE-SW parallel with the site boundary, Trench 6 could not be excavated due to health and safety considerations. Extensive excavations caused by bottle diggers had resulted in a heavily truncated terrain, not safely accessible by the either staff or plant. It was possible, however, to rapidly excavate two test pits within this area (see Fig. 2) which revealed modern truncation to a depth greater than 3m below the existing ground level. The frequent presence of brick hardcore within these areas resulted in the rapid inundation of each of the trenches, resulting in immediate backfilling.

5.8 Trench 7

Surface of Trench 0.00m = 3.38mOD

- 0.00 – 0.40m (7/001). Made ground/demolition rubble. Loose to moderately compact. Comprised re-deposited top/sub soil, a mid orange brown - dark brown black silty clay, with frequent inclusions of brick and general building debris.
- 0.40 – 0.56m (7/002). Made ground/demolition rubble. Loose to moderately compact. Comprised re-deposited top/sub soil, a dark grey brown silty clay, with frequent inclusions of brick and general building debris.
- 0.56 – 0.98m (7/003). Alluvial deposit. Mid orange brown clayey silt.
- 0.98 – 1.38m (7/004). Alluvial deposit. Mid orange brown clayey silt.
- 1.38 – 1.68m (7/005). Alluvial clay deposit. A mid blue grey clay with a lens of darker brown organic material and charcoal running through it.
- 1.68 – 1.78m (7/006). A mid grey brown, silty clay with a high frequency of organic matter.
- 1.78 – 1.94m (7/007). Alluvial clay deposit. A mid blue grey clay with frequent charcoal flecking running through it.
- 1.94 – 2.20m (7/008). Dark black brown peat subsequently buried by deposition of alluvial clays.
- 2.20m+ (7/009). Alluvial clay deposit. A mid blue grey clay .

The deposit model for this trench was very similar to that of Trench 1, with the exception that the upper layer of alluvium, in this case (7/003) & (7/004) was more silty than those encountered in Trenches 1 & 3. A column sample (Sample <5>) was taken through the alluvial and peat sequence (see Appendix B for assessment).

5.9 Trench 8

Surface of Trench 0.00m = 3.70mOD

- 0.00 – 0.50m (8/001). Made ground/demolition rubble. Loose to moderately compact. Comprised re-deposited top/sub soil, a dark grey brown silty clay, with frequent inclusions of brick and general building debris.

- 0.50 – 0.55m (8/002). Possible outdoor surface or levelling layer. A light grey yellow, chalky gravel.
- 0.55 – 0.94m (8/003). Hardcore make up layer composed of mid red orange brick rubble.
- 0.94 – 2.14m (8/004). Alluvial deposit. Mid grey brown silty clay, with orange brown lens running through it.
- 2.14 – 2.74m (8/005). Alluvial clay deposit. A mid blue grey clay with a lens of darker brown organic material running through it.
- 2.74 – 2.84m (8/006). Dark black brown peat subsequently buried by deposition of alluvial clays.
- 2.84m+ (8/007). Alluvial clay deposit. A mid blue grey clay.

The deposit model for Trench 8 confirmed that the clay/peat/clay sequence for the lower levels of the northern extent of the site continued further south, albeit slightly more truncated on the upper horizons. Two fragments of heat shattered flint were present within the peat (8/006), although no associated features were visible within either this or the underlying flood clay (8/007)

5.10 Trench 9

Surface of Trench 0.00m = 3.84mOD

- 0.00 – 1.60m (9/001). Made ground/demolition rubble. Loose to moderately compact. Comprised re-deposited top/sub soil, a dark black brown with frequent inclusions of brick, plastic, modern services, piles and general building debris.
- 1.60 – 2.60m (9/002). Alluvial deposits. A dark blue grey silty clay laid down in numerous lens with organic and charcoal inclusions.
- 1.60 – 2.60m (9/003). Alluvial deposits. A light grey white silty sand with rust coloured lens running laterally throughout.
- 1.80m+ (9/004). Alluvial deposits. A light orange light sand with gravelly lens.
- 1.60m+ (9/005). A mid brown orange silty sand/ flinty gravel, possible ballast at the edge of a former shore line.

The deposit model for this trench was slightly different to those observed further to the north and east. The eastern end of the trench appeared to follow the familiar pattern of alluvial clay deposits. However at approximately 5.5m from the trenches eastern limit these alluvial clays ceased and were replaced by a series of sandy silt bands with gravel inclusions that continued underneath the clay. Furthermore a layer of gravel (9/005), continuing beyond the limit of excavation at the base of the trench, was observed rising gently into the trench, approximately 11m from its western limit, to about 1.60m below the existing ground level. Also of note was that no peat layer was observed in Trench 9.

This rising bank of silty gravel might in fact have represented the edge of a channel, with the silty bands of sand forming primary channel fills. If this was the case then that part of the landscape would have remained underwater giving no chance for vegetation to grow and, subsequent to its burial by flood deposits, compress down to form a layer of peat.

5.11 Trench 10

Surface of Trench 0.00m = 4.31m OD

- 0.00 – 1.80m (10/001). Made ground/demolition rubble. Loose to moderately compact. Comprised re-deposited top/sub soil, a dark grey brown silty clay, with frequent inclusions of plastic, glass, metal and brick and general building debris.
- 0.00 – 1.34m (10/002). Made ground/demolition rubble. Loose to moderately compact. Comprised re-deposited top/sub soil, a mid orange brown - dark brown black silty clay, with frequent inclusions of brick and general building debris.
- 0.80 – 2.10m (10/003). Re-deposited alluvial clay. Mixed dark black brown –mid green grey silty clay with numerous lens of organic matter and brick and chalk inclusions.
- 0.76 – 2.30m (10/004). Re-deposited alluvial clay. Mixed dark black brown – dark blue grey silty clay with numerous lens of organic matter and brick and chalk inclusions.
- 2.10 – 2.34m (10/005). Levelling layer/construction backfill lying atop clay. Light white grey chalk with occasional modern brick inclusions.
- 2.30 – 2.34m (10/006). Levelling layer/construction backfill lying atop clay. Light white grey chalk with occasional modern brick inclusions.
- 2.34 – 2.70m (10/007). Alluvial clay deposit. A mid blue grey clay with a lens of darker brown organic material running through it.
- 2.34 – 2.84m (10/008). Alluvial clay deposit. A mid blue grey clay with a lens of darker brown organic material running through it.
- 2.70 – 2.92m (10/009). Alluvial clay deposit. A mid brown grey clay with a high frequency of organic matter.
- 2.84m+ (10/010). Alluvial clay deposit. A mid brown grey clay with a high frequency of organic matter.
- 2.92 – 3.12m (10/011). Dark black brown peat subsequently buried by deposition of alluvial clays.
- 3.21m+ (10/012). Alluvial clay deposits. A mid blue grey clay.

The deposit model for this trench was very similar to that of Trench 1. The only notable difference in the stratigraphic sequence was the presence of re-deposited alluvial clay (10/003) & (10/004) above the layer of chalk (10/005) & (10/006). Tip lines and lens of modern material in the make up of this layer suggest that the clay may have been removed in order to level the ground prior to laying down the chalk then tipped back in as part of the make up layer that raised the ground towards its current level.

6 FINDS

A piece of flint was recovered from the peat layer (1/008) in Trench 1 and two lumps of burnt flint were also recovered from the peat layer (7/007) in Trench 7.

7 CONCLUSIONS

Despite the archaeological potential of the site, no archaeological features were encountered. The vast majority of the site had undergone significant disturbance and truncation since reclamation of the land during the Victorian period and more recently as a result of the construction and demolition of modern industrial premises and the activities of bottle diggers

Below the levels of modern disturbance a sequence of alluvial deposits and peat were preserved that indicate that this area of the landscape was subject to periodic flooding, which inundated the covering of vegetation established during dry periods. Although no dates are yet available, comparison of the levels of the deposits and the stratigraphic sequence with those known from the Medway Tunnel/Chatham and A2/M2 Medway crossing areas (where geoarchaeological work has previously been undertaken) suggests that the deposits excavated and sampled are of late prehistoric and historic date. No evidence of maritime activity was found in these undisturbed layers. It is recommended that closer sedimentary analysis of the monolith samples from this sequence is undertaken. Subsequently pollen and diatom analysis and 14C (radiocarbon) dating should be undertaken on the monolith samples (targeting just one sequence, following the results of the more detailed monolith description). If previous geotechnical data exists for the site, this should be examined, to complete the stratigraphic sequence down to Pleistocene gravels and/ or bedrock, as a better knowledge of the underlying topography would help in understanding the formation processes of the deposits excavated and sampled (see Appendix B for further details).

It is the opinion of the author and of AOC Archaeology that no further work is required on the site, although the final decision must rest with Kent County Council Heritage Conservation Group.

8 BIBLIOGRAPHY

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Fig. 1 Site Location Plan

Fig. 2 Trench Location Plan

Fig. 3

Fig. 4

APPENDIX A – Context Register

Context No.	Context Description	Length	Width	Depth
1/001	Made ground/demolition rubble	Trench	Trench	1.06m
1/002	Made ground	Trench	Trench	0.38m
1/003	Made ground	Trench	Trench	0.18m
1/004	Made ground/levelling layer	Trench	Trench	0.26m
1/005	Levelling layer/construction backfill	Trench	Trench	0.36m
1/006	Alluvial clay	Trench	Trench	0.52m
1/007	Alluvial clay	Trench	Trench	0.18m
1/008	Peat	Trench	Trench	0.20m
1/009	Alluvial clay	Trench	Trench	NFE
2/001	Made ground associated with reclamation of land	Trench	Trench	Trench
3A/001	Made ground/demolition rubble	Trench	Trench	1.20m
3A/002	Alluvial clay	Trench	Trench	1.30m
3A/003	A very thin layer of dark black brown clayey silt soil	Trench	Trench	0.02m
3A/004	Alluvial clay	Trench	Trench	0.76m
3A/005	Peat	Trench	Trench	NFE
3B/001	Made ground/demolition rubble.	Trench	Trench	1.20m
3B/002	Levelling layer/construction backfill	Trench	Trench	NFE
7/001	Made ground/demolition rubble	Trench	Trench	0.40m
7/002	Made ground/demolition rubble	Trench	Trench	0.16m
7/003	Alluvial clay	Trench	Trench	0.42m
7/004	Alluvial clay	Trench	Trench	0.40m
7/005	Alluvial clay	Trench	Trench	0.30m
7/006	Alluvial clay	Trench	Trench	0.10m
7/007	Alluvial clay	Trench	Trench	0.16m
7/008	Peat	Trench	Trench	0.34m
7/009	Alluvial clay	Trench	Trench	NFE
8/001	Made ground/demolition rubble	Trench	Trench	0.50m
8/002	Possible outdoor surface or levelling layer	Trench	Trench	0.05m
8/003	Hardcore make up	Trench	Trench	0.39m

Context No.	Context Description	Length	Width	Depth
8/004	Alluvial clay	Trench	Trench	1.20m
8/005	Alluvial clay	Trench	Trench	0.60m
8/006	Peat	Trench	Trench	0.10m
8/007	Alluvial clay	Trench	Trench	NFE
9/001	Made ground/demolition rubble	Trench	Trench	1.60m
9/002	Alluvial clay	Trench	Trench	1.30m
9/003	Alluvial clay	Trench	Trench	1.00m
9/004	Alluvial clay	Trench	Trench	NFE
9/005	Gravel	Trench	Trench	NFE
10/001	Made ground/demolition rubble	Trench	Trench	1.80m
10/002	Made ground/demolition rubble	Trench	Trench	1.34m
10/003	Re-deposited clay	Trench	Trench	0.30m
10/004	Re-deposited clay	Trench	Trench	1.54m
10/005	Levelling layer/construction backfill	Trench	Trench	0.24m
10/006	Levelling layer/construction backfill	Trench	Trench	0.04m
10/007	Alluvial clay	Trench	Trench	0.36m
10/008	Alluvial clay	Trench	Trench	0.50m
10/009	Alluvial clay	Trench	Trench	0.22m
10/010	Alluvial clay	Trench	Trench	NFE
10/011	Peat	Trench	Trench	0.20m
10/012	Alluvial clay	Trench	Trench	NFE

APPENDIX B - A Geoarchaeological Assessment of Monolith Samples

Graham Spurr

Summary (Non-Technical)

This report presents the results of a geoarchaeological assessment of monolith and bulk peat samples from Knight Road, Strood, Kent. The report has been produced by MoLAS/MoLSS and was commissioned by AOC Archaeology Group.

The results provide a preliminary indication of the archaeo-environmental potential of the site, which is situated on the River Medway floodplain. Although no dates are yet available, comparison of the levels of the deposits and the stratigraphic sequence with those known from the Medway Tunnel/Chatham and A2/M2 Medway crossing areas (where geoarchaeological work has previously been undertaken) suggests that the deposits excavated and sampled are of late prehistoric and historic date. Pleistocene gravel was reached in only one trench (Trench 9) where its surface lay at about -0.5m OD. This is a relatively high level for floodplain gravel surface and suggests that the site is probably located close to the valley side, above soliflucted Pleistocene slope deposits (head). Such a position is likely to have received inputs of colluvial material (transported downslope) as well as silts and clays deposited by the river. Its location suggests that the site may have been relatively dry land above the wetland existing on the valley floor for much of the past.

Whilst such a position may have led to poorer organic preservation than further into the floodplain (owing to oxidation and weathering from episodic drying out) fairly good preservation of plant remains was noted in the peat. It has good potential for Holocene landscape reconstruction, based on its plant remain, insect and pollen inclusions. Furthermore, there is good potential for dating the peat using radiocarbon techniques, which would enable firmer correlations to be made with sequences up and down stream. The alluvium (silty and sandy clays) below and above the peat has potential for examining changes in river regime and obtaining indirect evidence of human activity up-slope and within the catchment. This information may come from diatoms, pollen and other microfossils, which may be preserved within it. It is likely, however, that both the peat and alluvium accumulated slowly and this may result in poor microfossil preservation.

It is recommended that the monoliths are examined in more detail than the brief scan undertaken for this report and sub-sampled for microfossil analysis and radiocarbon dating. In addition, if previous geotechnical data exists for the site, this should be examined geoarchaeologically, to complete the stratigraphic sequence down to Pleistocene gravels and/or bedrock, as a better knowledge of the underlying topography would help in understanding the formation processes of the deposits excavated and sampled. The information obtained from this further work should contribute to our understanding of the landscape of the later prehistoric and historic period and help to provide a geomorphological setting for the archaeological evidence already excavated from this area of the Medway River. Also, analysis of the

samples from this site may help to tie the Medway catchment into the sedimentary sequences of the Thames, thereby linking it to a much wider regional setting.

Introduction

As part of an archaeological evaluation carried out by AOC Archaeology, a total of five monolith samples and two associated bulk samples of peat taken from trench sections at the Knight Road site, Strood, Kent (KRS04) were assessed for their geoarchaeological and archaeo-environmental potential.

The site is situated on the floodplain of the Medway River and in such locations, biological remains, which can provide information about the nature of the palaeo-environmental conditions influencing the site through time, are often preserved. Such locations also act as sinks in the landscape, preserving environmental remains and indirect evidence of human activity that no longer exists in nearby parts of the landscape (such as the dry valley sides) where past human activity took place. The archaeo-environmental information that might be available from the site is therefore a valuable archaeological resource in its own right.

Methods

During the evaluation, monolith tins were placed vertically into excavated sections to retrieve continuous samples, providing undisturbed blocks of the stratigraphic sequence for off-site examination. Each monolith tin was plotted on the section drawing of the relevant trench and related to Ordnance Datum (OD) by the supervising archaeologist. The monolith tins were then sealed and, together with the bulk samples, were transported to the MoLAS Environmental laboratories.

For the purposes of this report the monolith samples were rapidly scanned alongside the section drawings to give a preliminary assessment of their potential for reconstructing the past environment of the site and its surroundings. The two sub-samples of peat were processed by wet-sieving through a 0.25mm mesh with the organic remains scanned using a binocular microscope.

Results of the Assessment

The Lithostratigraphy

In Trench 1, three overlapping monolith tins, designated as sample <2>, were sampled from the south facing section. The tins covered contexts (1/006) through to (1/009) inclusive. Trench 1 was situated at the most northerly point of the site and furthest from the river. The sampled profile covered a height range of 1.1m, from 2.02m OD to 0.92m OD.

In Trench 7, two overlapping monolith tins, designated as sample <5>, were taken covering contexts (7/004) through to (7/009) inclusive. Trench 7 was situated close

the most southerly point of the site. The sampled profile covered a height range of 0.94m, from 2.08m OD to 1.14m OD.

A relatively similar profile was recorded in both sampled sections. Although the sequences did not extend down to Pleistocene gravels, the surface of gravel reached in Trench 9 at 3.9m below ground level has been taken as a rough guide to its level on the site, which is likely to be about -0.5m OD.

Clays (contexts 1/009 and 7/009) were recorded below the peat – but were not bottomed. As the base of each trench lay at about 1m OD, there was potentially about 1.5m of alluvium between the base of the peat and the top of Pleistocene gravel.

The peat (context 1/008 and 7/008) appeared to have a diffuse / gradual interface with the underlying clay, suggesting a conformable transition (ie: no erosion / truncation event). The peat itself was black and crumbly in its middle part and was likely to be quite well humified and may have accumulated slowly. However, the plant remain assemblage appears fairly well preserved (see below). The peat was fairly thin, about 0.20m thick in Trench 1 and slightly thicker in Trench 7 (c 0.30m) suggesting it may thicken towards the river. At its interface with the overlying clay, the peat became browner and more minerogenic.

The silty clay above the peat was about 1.5m thick in Trench 7 and c 0.5m in Trench 1 (where it was likely to have been truncated). This upper clay comprised contexts 1/007 and 1/006, in Trench 1 and 7/007-7/003 in Trench 7. It was variably brownish grey and organic, blue-black and manganese speckled and orangish brown and iron-stained.

An Assessment of the Two Peat Samples

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Two small sub-samples of peat from contexts [1/008] and [7/008], taken alongside the two monolith column samples in Trenches 1 and 7 wet-sieved and scanned. The item frequency and species diversity of botanical and other biological remains were noted. The results are discussed by context.

Context 1/008, sample 1 (vol flot 50ml): this sample produced a moderately rich botanical assemblage with the 'waterlogged' plant remains consisting mainly of the remains of wetland plants, both aquatics, eg. pondweeds (*Potamogeton* spp.), bogbean (*Menyanthes trifoliata*), water-plantain (*Alisma* spp.), and bankside/marshland species, eg. sedges (*Carex* spp.), rushes (*Juncus* spp.), spike rush (*Eleocharis* spp.) and lesser spearwort (*Ranunculus flammula*). There were occasional shrub species, eg. brambles (*Rubus* spp.) and very occasional other plants that may grow in a range of habitats, eg. buttercups (*Ranunculus* spp.). Other botanical remains consisted of stem, root and wood fragments while other biological remains consisted of just a few insect fragments.

Context 7/008, sample 5 (vol flot 50ml): this sample produced a similar assemblage to sample 1 with the botanical assemblage consisting mainly of the remains of wetland

plants, with similar aquatics, eg. pondweeds, and bankside/marshland species, eg. sedges, rushes and spike rush, but with additional records for crowfoots (*Ranunculus Batrachium*) and branched bur-reed (*Sparganium erectum*). Again, there were stem, root and wood fragments although no other biological remains were present.

The preliminary assessment of these two peat samples has shown that preservation of plant remains is fairly good, with the material allowing a reconstruction of the local environment at the time of peat deposition. Initial indications suggest a marshy environment, possibly subjected to periodic flooding or the presence of standing bodies of water. There was very little indication of stable ground close-by except for occasional shrub species in sample 1. Virtually no insect remains were recovered from either sample. In the event that further work is carried out on this site, it is recommended that larger samples of the peats should be processed to potentially increase plant species diversity and thus the quality of information on the character of the local environment over time.

Discussion and comparison with other sites

Although the sampled sections do not extend down to Pleistocene gravel, which would help in understanding the landscape position and evolving environment of the site, the gravel was reached in Trench 9 and its surface, at -0.5m OD , suggests the site lies close to the edge of the floodplain. Such a landscape position would account for the relatively thin depth of alluvium on the site and its fairly high surface compared with nearby sites on the floodplain of the Medway.

Alluvial sequences have been found in a number of nearby sites on the floodplain of the Medway, such as the A2/M2 Crossing (Corcoran 2002) about 2km upriver; the Boilershop, Chatham Maritime (Morley 2003) and the area around the naval dockyards (Barham et al 1995), both at Chatham, about 3km downriver. On all these sites, however, both up and down stream, the alluvial sequence was thicker than at Knights Road, with about 10m of alluvium well within the floodplain and about 5m at its margins. The thickness of alluvium on the present site appears to lie between about -0.5 and 3m OD , suggesting it is no more than 3.5m thick.

At c 3m OD , the surface of the alluvium on the site is very high, considering that the present day landsurface on the Common Marsh, at the A2/M2 Crossing is only about 2m OD . This would suggest that the alluvium at Knights Road has received inputs of colluvium transported downslope, as might be expected at the floodplain edge and at the foot of the valley side. The BGS Sheet 272 (Chatham) shows that, although the site lies on alluvial deposits, it lies very close to exposures of 'head', which mantle the valley sides. Head deposits are derived from slope processes and for the most part represent soil and subsoil material sludged downslope towards the end of the last cold stage, when the upper layers of the ground surface thawed out and slid downslope over the still frozen subsoil. Slope processes are likely to have continued through the Holocene, especially if human activity and deforestation / cultivation took place on the hillside above the floodplain in the vicinity of the site. It is very likely that colluvium and alluvium inter-finger on the site. The alluvium on the Common Marsh at the A2/M2 Crossing was also found to have inputs of colluvium, which had moved

downslope through hillwash and soil creep processes from the Neolithic period onwards. The colluvial material contained evidence in the form of charred grain and pollen assemblages of human activity upslope. It is likely that similar evidence will be preserved within the silty clay deposits both below and above the peat on the present site.

A single peat bed, roughly between -2 and -3 m OD, which was broadly of Neolithic date, was found at the A2/M2 Crossing. It was thought to have developed earliest closest to the river, under conditions of falling water level and an increasingly dry environment. But as conditions subsequently became wetter it progressively developed across the floodplain away from the river. Neolithic peat was found at a correspondingly lower elevation in Chatham, between about -3 and -4.5 m OD, with peat dated to the Bronze age, which formed a number of thin beds, between about -2 and $+2$ m OD. Although the single peat bed at Knights Road resembles that at the A2/M2 Medway Crossing, its higher elevation is closer to the uppermost peats at Chatham. Without radiocarbon dating it is difficult to suggest a date for the peat found at Knights Road. However, the peat on the present site lies between about 1 and 1.5 m OD, considerably higher than the Neolithic peat at Chatham or the A2/M2 and is probably more likely to be of Bronze Age or later date.

Radiocarbon dating of the peat on the present site and examination of diatom assemblages from the minerogenic clayey deposits above and below it could provide useful information about the tidal nature of the river in the later prehistoric and historic period. The site appears to provide information that may differ from and supplement that previously found at Chatham and the A2/M2 Crossing and may provide more evidence that could help correlate the Medway sequence with that of the Lower Thames. In terms of RSL (relative sea level) fluctuations, the onset of peat formation at the Boilershop site, Chatham, at about 0 m OD, was thought to be compatible with the start of the 'Tilbury IV' (Bronze Age) peat formation recorded by Devoy (1979) upstream of Tilbury in the Thames estuary. The peat on the present site, which may also represent increasingly dry conditions, is at a rather higher elevation, but may have formed in response to the same 'event' in terms of relative sea level fluctuations, but slightly later and at a higher elevation, owing to its landscape position and location upstream of Chatham. A distinct Bronze Age peat unit was not recorded on the A2/M2 site, however and minerogenic deposits accumulated during this period, with diatom evidence that suggests tidal influence initially surged up the river and subsequently declined. Although the peat units within the alluvium of the Medway are likely to have formed in response to local factors, as well as RSL fluctuations, much more work needs to be done in correlating the peat beds across the floodplain and up and down stream.

The upper silty clay deposits on the Common Marsh (A2/M2 Crossing) were, like those on the present site, faintly bedded and variably humic, reduced and oxidised. They were thought to represent a mosaic of estuarine and relatively dryland environments (mudflats, saltmarsh and seasonally flooded meadowland) that existed on the floodplain during the historic period. The clayey deposits above the peat on the present site may be of similar origin and date. Though, as discussed above they are likely to have had a greater input from material washed / transported downslope.

Thus it appears that, in general, the pattern of the alluvial sequence at Knights Road is compatible with work done near Chatham (Barham et al 1995; Morley 2003), upstream at the A2/M2 Crossing (Corcoran 2002) and with the Lower Thames sequence. However, the complexity of the alluvium in both the Boilershop and Medway Tunnel sites is markedly different to Knight Road, as many discrete beds and lenses of organic deposits exist at these sites, as opposed to the distinct beds of distinguishable sediment seen at Knights Road. This difference is likely to be the result of the location of the Chatham sites, closer to the influence of the estuary and perhaps closer to the River Medway itself, which would have probably led to a greater sensitivity to fluctuations in river level and to a greater incidence of river scour, by tidal creeks. Its location at the floodplain edge suggests that the alluvium at Knights Road might be more continuous, however, it may also have poorer biological preservation as a result of slower sediment accumulation rates and episodic drying out.

Potential of the Data

Examination of the characteristics of the sequences sampled at Knights Road and comparison with similar sites in the area shows that there is good potential for the monolith and bulk samples taken from the site to contribute to our understanding of Holocene landscape and environment change in the Lower Medway Valley for the late prehistoric and historic periods. Knights Road lies within the floodplain of the Medway and such locations act as sinks in the landscape, preserving environmental remains and indirect evidence of human activity that no longer exists in the parts of the landscape (such as the dry valley sides) where past human activity took place. The archaeo-environmental information that might be available from the site is therefore a valuable archaeological resource in its own right.

The stratigraphic sequence at Knights Road is less complex than those recorded on sites further downstream, suggesting it lies further from the influence of the river and may, therefore provide a relatively continuous sequence of evidence for past environmental change without numerous gaps caused by truncation and river scour. Comparison with other sites suggests this sequence (as sampled in the monolith tins) may span the period from the Bronze Age onwards, but radiocarbon dating is needed to confirm this. The Knights Road site also lies close to the floodplain edge and may, like the A2/M2 Medway Crossing site upstream, provide useful information about episodes of past human activity on the adjacent valley side. Its location roughly midway between Chatham, where geoarchaeological work has previously been undertaken on several sites, and the A2/M2 crossing, is also likely to be of some interest in providing evidence for progressive upstream / downstream changes in the river regime.

More detailed monolith examination and sediment description, microfossil analysis and examination of plant remains and insects from the bulk samples would have potential, especially when compared with evidence already known from other sites further up and down stream to provide information about:

- The upstream migration of the tidal head (ie: estuarine influence) during the Holocene, particularly from the Bronze Age onwards;
- Vegetation change within the wider surrounding area and on the floodplain in the area of the site;
- Indirect evidence for human activity and especially deforestation and cultivation and in particular the relationship between episodes of human activity and soil erosion on the hillside adjacent to the site;
- The evolution of the floodplain environment in the Strood area;

This information would also enable the archaeology of the surrounding area to be placed in its contemporary landscape setting and hence provide a sounder basis for interpreting the archaeological distributions.

Significance of the Data

The archaeo-environmental information potentially obtainable from the Knight Road site samples is certainly of local significance, as it could contribute to the information previously collected from other sites located on the Medway floodplain. Furthermore, if this sequence can be successfully tied in with evidence of environmental change at a wider scale, in particular by providing a link between the Medway alluvium with the better known Thames sequence at least for the Bronze Age, then there is every reason to believe that the data available would be of regional significance.

Recommendations for further work

It is recommended that closer sedimentary analysis of the monolith samples is undertaken. This would enable the micro-structural changes within and between the sedimentary units that are not necessarily visible in the field to be examined. Sedimentological variations in the deposits such as presence or absence of laminations or grading of the silt/clay fraction throughout the sequence can permit local facies environments to be identified with precision and this would guide a sub-sampling strategy for microfossil analysis. Subsequently pollen and diatom analysis and ¹⁴C (radiocarbon) dating should be undertaken on the monolith samples (targeting just one sequence, following the results of the more detailed monolith description).

In addition, if previous geotechnical data exists for the site, this should be examined, to complete the stratigraphic sequence down to Pleistocene gravels and/ or bedrock, as a better knowledge of the underlying topography would help in understanding the formation processes of the deposits excavated and sampled.

It is suggested that the further work would involve:

Task
Monolith description, preliminary interpretation of deposit formation processes, selection of profile for analysis, sub-sampling for microfossils and radiocarbon and submission of sub-samples to external specialists

Pollen analysis of 12 samples
Diatom analysis of 12 samples
Radiocarbon dating of 2 samples
Processing and plant remain analysis of 2 bulk peat samples
Processing and insect analysis of 2 bulk peat samples
Preparation of text

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