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by

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Summary

Sedimentary coring was undertaken at Ipswich Triangle West in order to understand the stratigraphic sequence associated with the site's archaeology. Coring was concentrated within two trenches running approximately north-south and east-west across the site. A think dark brown organic clayey-silt was encountered under the Made Ground across much of the central and western margins of the site. However, the organic content was very low and hence the deposit was deemed unsuitable for palaeoenvironmental assessment. Orange-brown sands and gravels were abundant along the western fringe of the site, whilst light grey-brown sands and gravels were encountered to the east.

Two separate phases of fluvial activity are proposed as being responsible for the development of these deposits. The orange-brown sands and gravels are likely to have developed during the late Devensian or Early Holocene and may form part of a river terrace sequence. In contrast, the grey-brown sands and gravels are likely to have been derived from a former tributary of the River Orwell which, according to historical records, is believed to have cut across the site in the 14th Century.

No deposits of palaeoenvironmental potential were encountered during this assessment, and consequently no recommendations for further analysis are proposed.

KEYWORDS: Ipswich Triangle West, Suffolk, fluvial sands and gravels.

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1. INTRODUCTION

Archaeological investigations were being undertaken at Ipswich Triangle West, proximal to the Ipswich Docks (TM 61660 24410). The site is located between College Street and Star Lane and overlooks Albion Wharf to the south (Figure 1). Two large trenches were excavated within the site: one running north-south along the western boundary of the site (Figure 2) and one running east-west in the centre of the site, parallel to Star Lane (Figure 3). Deposits containing some organic remains were identified under Made Ground from *c*. 0.90m below ground level (bgl). Birmingham Archaeo-Environmental were sub-contracted to undertake the coring and subsequent stratigraphic and palaeoenvironmental analysis.

This report presents the results of palaeoenvironmental investigations (manual coring, recording and palaeoenvironmental assessment) associated with this scheme of work.

The aim of the work was threefold:

- To identify, record, characterise and sample any organic-rich deposits, encountered during previous geoarchaeological surveys.
- To assess this material for biological preservation (beetles and pollen etc) and identify suitable samples (if any) for radiocarbon dating.
- To provide a detailed understanding of the subsurface stratigraphy of the deposits encountered, which might aid in the development of archaeological prospection strategies.

2. METHODS

2.1 Borehole Survey

At the time of the fieldwork, the site was derelict. No buildings were present on the land under development although the site was in its final phases of archaeological excavation. A site visit was undertaken on 19th July 2007, during which sedimentary coring was undertaken within the two excavated trenches (Figures 2 and 3). Made Ground was found to overlie the natural strata and varied in thickness to between 0.90m and 1.05m. An extra core was also taken from within the main archaeological excavation area (Figure 4). Cores were extracted using a manual gauge 'Eijkelcamp' corer. Coring continued until bedrock or basal gravels were encountered.

2.2 Stratigraphic Analysis

An assessment of the sedimentary archive was made on-site, with sediments being recorded using the Troels-Smith (1955) classification scheme. The scheme breaks down a sediment sample into four main components and allows the inclusion of extra components that are also present, but that are not dominant. Key physical properties of the sediment layers are also identified according to darkness (Da), stratification (St),

elasticity (El), dryness of the sediment (Dr) and the sharpness of the upper sediment boundary (UB). A summary of the sedimentary and physical properties classified by Troels-Smith (1955) and the nomenclature used is provided in Table 1. A full stratigraphic breakdown of the cores is provided in Appendix I.

3. PRELIMINARY RESULTS OF FIELDWORK

During coring it became apparent that deposits of palaeoenvironmental potential were not present within the stratigraphic archive at Ipswich Triangle West. Coring within Trench 1 (Figure 2) revealed a thin organic silt located below Mage Ground, which was commonly only 0.30m thick. This deposit capped horizons of orange-brown sands, silty sands and sands and gravels of varying thickness. Highly disarticulated shell fragments were common in the sand-rich horizons. Coring at the base of the trenches was commonly abandoned at c. 1.50m depth as either gravels were encountered (preventing further sampling), or the location of the water table prevented the extraction of unconsolidated coarse sands.

In Trench 2 (Figure 3), grey-brown sands and gravels were encountered below Made Ground, with the sand and gravel content varying considerably. Coring could also not be undertaken to a depth greater than *c*. 1.50m due to gravel content and/or the influence of the water table on sample extraction.

A final core was taken proximal to the foundations of a 14th century building (Figure 4). A *c*. 0.65m thick layer of dark brown organic-rich silts were present, underlain by well sorted light brown silty sands and fine sands. This was in turn underlain by sands and gravels.

4. CONCLUSIONS

Archaeological investigations at Ipswich Triangle West have suggested that settlement commenced on the site in the 14th Century and slowly expanded eastwards across the study area. Historical records also suggest a former river channel or tributary of the River Orwell flowed *c*. north-south through the eastern margin of the site, with settlement developing along the banks of the channel feature. The stratigraphic assessment of the deposits encountered at Ipswich Triangle West broadly supports this theory.

In Trench 1, orange-brown sand horizons and gravely sand horizons were commonly encountered below the thin organic silt layer. The overall well sorted nature of the sand deposits, combined with the presence of disarticulated shell fragments, suggests a fluvially-derived origin. In Trench 2, grey-brown sands with varying gravel content were encountered. The overall abundance of well sorted sands also is indicative of a fluvial depositional setting.

The distinct variation in coloration, however, suggests contrasting phases of fluvial activity were responsible for the accumulation of the deposits in Trench 1 and Trench 2. It is concluded that the orange-brown sands and gravels of Trench 1 (present across the western margin of the site) developed during an earlier period of fluvial activity. They are likely to date to the Late Devensian or Early Holocene period, during which the transition from the last glacial period encouraged enchanced fluvial sedimentation across

much of the lowlands and coastal margins of East Anglia. The orang-brown sands and gravels may even be part of a relict river terrace feature. In contrast, the grey-brown well sorted sands and gravels are likely to relate to the palaeochannel feature cited in historical records. The channel is likely to have originally been located proximal to the 14th Century buildings, only to have migrated eastwards over time. The dark brown organic silts encountered in Cores 1-5 would have then began to accumulate on the lowlands proximal to the tributary feature.

The presence of a relatively thin dark brown organic clayey silt layer across much of the central and western area of the site was initially believed to be palaeoenvironmentally significant. However, upon analysis, the relatively low organic content suggested the deposit was unlikely to provide useful environmental information. The preservation of palaeoenvironmental proxies such as pollen and beetles would have been very low, whilst radiocarbon dating of such a silt-rich deposit would have also been difficult, subsequently preventing reliable palaeoenvironmental interpretations. It is however suggested that the deposit is a mixture of water-lain sedimentation and fill deposits that accumulated across the site. This phase of deposition probably coincides with the human occupation during the 14th Century.

5. RECOMMENDATIONS FOR FURTHER ANALYSIS

As no deposits of palaeoenvironmental potential were discovered during the assessment at Ipswich Triangle West, no recommendations for further analysis are suggested.

6. ARCHIVE

All core logs, site location plans, photographs and associated material are stored within Birmingham Archaeo-Environmental, University of Birmingham, Edgbaston, Birmingham, B15 2TT.

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Figure 1: Ipswich triangle West, Ipswich. Looking southeast across the site, with Albions Wharf located to the south.

Figure 2: Trench 1, looking south, positioned along the western margin of the site. The Locations of cores 1-4 are highlighted.

Figure 3: Trench 2, looking west. The locations of cores 6-8 are highlighted. Trench 1 runs parallel with the white wall in the background.

Figure 4: Looking west across the site, with Trench 2 visible to the right. The position of Core 5, located proximal to the building foundations, is highlighted.

Degree of Darkness	
nig.4	black
nig.3	
nig.2	
nig.1	
nig.0	white

Degree of Stratification	
strf.4	well stratified
strf.3	
strf.2	
strf.1	
strf.0	no stratification

Degree of Elasticity	
elas.4	very elastic
elas.3	
elas.2	
elas.1	
elas.0	no elasticity

Degree of Dryness	
sicc.4	very dry
sicc.3	
sicc.2	
sicc.1	
sicc.0	water

	Sharpness of Upper Boundary
lim.4	< 0.5mm
lim.3	< 1.0 & > 0.5mm
lim.2	< 2.0 & > 1.0mm
lim.1	< 10.0 & > 2.0mm
lim.0	> 10.0mm

	Sh	*Substantia humosa*	Humous substance, homogeneous microscopic structure
I Turfa	*Tb*	*T. bryophytica*	Mosses +/- humous substance
	Tl	*T. lignosa*	Stumps, roots, intertwined rootlets, of ligneous plants
	Th	*T. herbacea*	Roots, intertwined rootlets, rhizomes of herbaceous plants
II Detritus	*Dl*	*D. lignosus*	Fragments of ligneous plants >2mm
	Dh	*D. herbosus*	Fragments of herbaceous plants >2mm
	Dg	*D. granosus*	Fragments of ligneous and herbaceous plants <2mm >0.1mm
III Limus	*Lf*	*L. ferrugineus*	Rust, non-hardened. Particles <0.1mm
IV Argilla	*As*	*A.steatodes*	Particles of clay
	Ag	*A. granosa*	Particles of silt
V Grana	*Ga*	*G. arenosa*	Mineral particles 0.6 to 0.2mm
	Gs	*G. saburralia*	Mineral particles 2.0 to 0.6mm
	Gg(min)	*G. glareosa minora*	Mineral particles 6.0 to 2.0mm
	Gg(maj)	*G. glareosa majora*	Mineral particles 20.0 to 6.0mm
	Ptm	*Particulae testae molloscorum*	Fragments of calcareous shells

Table 1 Physical and sedimentary properties of deposits according to Troels-Smith (1955)

Appendix I

Summary of coring stratigraphy from Ipswich Triangle West

Refer to Table 1 for summary of stratigraphic definitions

Core 1

0.00-0.95m Made Ground

0.95-1.29m

Da	St	El	Dr	UB
3+	0	1	3	-

Ag2, Sh1,As1, Dg+, Ga+, Ptm+, Ggmin+
Dark brown organic clayey silt with occasional gravel

1.29-1.63m

Da	St	El	Dr	UB
2	0	0	2+	1

Ga2, Ag1, Ggmin1, Gg+, Ggmaj+
Orange-brown gravely silty sand

1.63-2.05m

Da	St	El	Dr	UB
2	0	0	2	1

Ga2, Ggmin1, Ggmaj1, Gg+, Ag+
Orange-brown sands and gravels

2.05-2.72m

Da	St	El	Dr	UB
2	0	0	2	1

Ga4, Ag+, Ggmin+, Ptm+
Orange-brown sand

- 2.72m Gravels encountered

Core 2

0.00-0.90m Made Ground

0.90-1.25m

Da	St	El	Dr	UB
3+	0	1	3	-

Ag1, As1, Sh1, Dg1, Ga+, Ggmin+
Dark brown organic-rich clayey silt with occasional gravel

1.25-1.71m

Da	St	El	Dr	UB
2	0	0	2	1

Ga3, Ggmin1, Ag+, Ggmaj+
Orange-brown gravely sand

1.71-2.55m

Da	St	El	Dr	UB
2	0	0	2	1

Ga4, Ag+, Ggmin+, Ptm+
Orange-brown sands

- 2.55m No sediment extracted due to unconsolidated sands below water table

Core 3

0.00-1.05m Made Ground

1.05-1.40m

Da	St	El	Dr	UB
3+	0	0	3	-

Ag2, As1, Sh1, Dg+, Ggmin+, Ga+
Dark brown organic clayey silt

1.40-1.93m

Da	St	El	Dr	UB
2	0	0	2	1

Ga3, Ag1, Ggmin+
Orange-brown silty sand

1.93-2.09m

Da	St	El	Dr	UB
2	0	0	2	1

Ga3, Ggmin1, Ag+, Ggmaj+, Ptm+
Orange-brown gravely sand

2.09-2.55m

Da	St	El	Dr	UB
2	0	0	2	1

Ga4, Ag+, Ggmin+, Ptm+
Orange-brown sand

- 2.55m Gravels encountered

Core 4

0.00-0.95m Made ground

0.95-1.32m

Da	St	El	Dr	UB
3+	0	0	2+	-

Ag2, As1, Sh1, Dg+, Ga+
Dark brown organic clayey silt

1.32-1.95

Da	St	El	Dr	UB
2	0	0	2	1

Ga3, Ggmin1, Ag+
Orange-brown gravely sand

1.95-2.40m

Da	St	El	Dr	UB
2	0	0	2	1

Ga4, Ag+, Ggmin+, Ptm+
Orange-brown sand

- 2.40m Gravels encountered

Core 5 (located immediately west of building foundations)

0.00-0.65m	Da	St	El	Dr	UB
	3	0	0+	3	-
	Ag2, Sh1, Dg1, Ptm+, Ga+, Th+				
	Dark brown organic-rich silt				
0.65-0.76m	Da	St	El	Dr	UB
	2+	0	0	2	1
	Ga2, Ag2, Sh+, Dg+, As+				
	Medium brown sandy silt				
0.65-0.92m	Da	St	El	Dr	UB
	2	0	0	2	1
	Ga4, Ag+, Sh+				
	Light brown sand				
0.92-1.25m	Da	St	El	Dr	UB
	2	0	0	2	1
	Ga3, Ag1, Ggmin+				
	Light brown silty sand				
1.25-1.80m	Da	St	El	Dr	UB
	2	0	0	2	2
	Ga4, Ag+, Ggmin+, Ptm+				

- 1.80m Gravels encountered

Core 6

0.00-1.10m	Made Ground				
1.10-1.45m	Da	St	El	Dr	UB
	2	0	0	2+	-
	Ga2, Ggmin1, Ggmaj1, Ag+, Gg+				
	Grey-brown sands and gravels				
1.45-1.94m	Da	St	El	Dr	UB
	2	0	0	2	1
	Ga3, Ggmin1, Ggmaj+, Ag+				
	Grey-brown gravely sand				
1.94-2.32m	Da	St	El	Dr	UB
	2	0	0	2	1
	Ga2, Ggmin1, Ggmaj1, Ag+				
	Grey-brown sands and gravels				

- 2.32m Gravels encountered

Core 7

0.00-1.05m Made Ground

1.05-1.72m

Da	St	El	Dr	UB
2	0	0	2	-

Ga2, Ggmin1, Ggmaj1, Ag+, Gg+
Grey-brown sands and gravels

1.72-2.23m

Da	St	El	Dr	UB
2	0	0	2	1

Ga3, Ggmin1, Ggmaj+, Ag+
Grey-brown gravely sand

2.23-2.54m

Da	St	El	Dr	UB
2	0	0	2	1

Ga4, Ag+, Ggmin+, Ggmaj+
Grey-brown sand

2.54-2.76m

Da	St	El	Dr	UB
2	0	0	2	1

Ga3, Ggmin1, Ggmaj+, Ag+
Grey-brown gravely sand

- 2.76m Gravels encountered

Core 8

0.00-1.00m Made Ground

1.00-1.35m

Da	St	El	Dr	UB
1+	0	0	2	-

Ga4, Ag+, Ggmin+
Grey-white sand
**strong hydrocarbon odour*

1.35-1.45

Da	St	El	Dr	UB
2	0	0	2	1

Ga4, Ag+, Ggmaj+, Ggmin+
Grey-brown sand
**strong hydrocarbon odour*

- Obstacle at 1.45m (possible drain)