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Eye, Suffolk:
A Palaeoenvironmental assessment of deposits encountered during archaeological investigations

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by

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Summary

A palaeoenvironmental assessment was undertaken at a site immediately west of Eye, Suffolk, located proximal to a tributary of the River Dove. The site was under active archaeological excavation prior to the development of playing fields for the local school. Sedimentary coring focussed on the southern border of the excavation site, adjacent to the floodplain of the River Dove tributary.

Deposits of limited palaeoenvironmental value were encountered. The stratigraphy associated with the site was typified by colluvial deposits, which would have accumulated as a result of hillwash and hillslope erosion from the excavation site to the north. Gully features developed as a result of erosive processes and were shown to contain abundant archaeological material. These topographic features subsequently became infilled by continued hillslope processes (colluviation). Anthropogenic activity on-site may explain the continued colluviation towards the tributary floodplain to the south. Occasional layers of well-sorted sands were also encountered within cores proximal to the floodplain-site boundary. These are likely to have been derived through channel migration and active fluvial sedimentation on the floodplain.

KEYWORDS: Eye, Suffolk, Colluviation, River Dove

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1. INTRODUCTION

Deposits of palaeoenvironmental potential were encountered during ground investigations at a site off Castleton Way, Eye, Suffolk (TM 137 739). The site was under archaeological investigation prior to the development of playing fields. The site is bordered by playing fields to the north and a floodplain of a River Dove tributary to the south. There is a relatively steep gradient across the site trending south towards the tributary floodplain.

Preliminary results of the archaeological excavation identified a multi-phase occupation site, with the features and artefacts dating as far back as the Bronze Age and as recent as the Anglo-Saxon period (CHECK). During excavations, organic remains were also been identified at the base of a trench towards the southeastern margin of the site. The spatial and temporal extent of these deposits however was poorly understood. As a consequence, Birmingham Archaeo-Environmental were subcontracted top undertake coring and palaeoenvironmental assessments across the area in question.

This report presents the results of the 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 organic deposits, encountered during previous geoarchaeological surveys.
- To assess this material for biological preservation (suitable for palaeoenvironmental assessments) and identify suitable samples for radiocarbon dating.
- To provide a detailed understanding of the subsurface stratigraphy of any organic-rich deposits and fine grained silts and clays, which might aid in the development of archaeological prospection strategies.

2. METHODS

2.1 Coring Survey

A site visit was undertaken on August 8th 2007, during which sedimentary coring was undertaken to assess the stratigraphic archive preserved on site (see Figure 1). Deposits of palaeoenvironmental potential had only previously been encountered on the southern site boundary, where the floodplain of the River Dove tributary was located. Trial trenching had identified wood remains preserved *in-situ* at a depth of *c*. 1.00m within a matrix of fine sands, silts and clays with occasional gravel (Figure 2). As a consequence, coring focussed along the southern site boundary. Core locations were chosen to ensure a clear spatial understanding of the stratigraphy was gained. This was

achieved through the positioning of the cores to create a single transect running approximately east-west proximal to the southern site boundary, with an additional core located on the tributary floodplain outside of the site boundary. Cores were extracted using a manual gauge 'Eijkelcamp' corer. Coring continued until bedrock or gravels were encountered.

During the initial site walkover, it became clear that the site was located on a relatively steep gradient, with the land surface sloping south towards the tributary floodplain. The southern site boundary was demarcated by a hedgerow of possible Medieval age. There appeared to be a build-up of sediment against this field boundary, due to a distinct drop in elevation evident onto the tributary floodplain to the south. The slope across the site and drop in surface elevation onto the floodplain are highlighted in Figures 3 and 4 respectively.

The site walkover also identified visible changes in coloration of the surface deposits. Occasional darker grey brown deposits were found to run south towards the field boundary (Figure 5), and commonly were associated with Medieval finds (Caruth, pers comm.).

2.2 Stratigraphic Analysis

The assessment of the sedimentary archive was made whilst onsite during fieldwork. Sediments were 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

Sedimentary coring across the site identified no further deposits of palaeoenvironmental potential. The majority of the sediments encountered during coring of the east-west transect consisted of yellow-brown and orange-brown sands, silts and clays with occasional angular and sub-angular gravel of quartz and flint. The depth at which coring ceased varied across the site and was dependent on the increased gravel content encountered. Cores extracted closer to the hedgerow however contained the thickest sedimentary sequences (e.g. Core 2). To the southwest of the site, coring encountered very well sorted orange-brown sands to a depth of *c*. 0.65m (Core 3), which contrasted to the poorly sorted sediments commonly present.

On the floodplain of the tributary of the River Dove, grey-brown clayey silts were found to overly grey-brown organic-rich silts and sands. There were therefore contrasting stratigraphic archives evident between the site and the floodplain.

4. CONCLUSIONS

It is concluded that the majority of the deposits encountered along the southern margin of the site were

derived through colluviation. Hillslope processes are likely to have transported the gravels, sands, silts and clays downslope, where they have gradually accumulated along the margin of the floodplain of the River Dove tributary. Whilst it is likely that much of the sediments have derived through natural processed (e.g. hillwash etc), it is likely that the evidence for maintained human activity across the site is a contributing factor. Human activity would have enhanced slope instability and encouraged soil erosion, resulting in the downslope movement of the colluvial material over time.

The variation in sediment coloration across the site further supports the evidence for colluviation. It is proposed that the darker grey-brown deposits that run downslope are infilled gully systems that developed naturally across the site. Hillwash processes would have focussed runoff, enhancing erosion and developing the gullies to transport runoff to the floodplain below. As hillslope processes would have been enhanced in such gully settings, eroded material would be introduced into the gully, only to become infilled over time with sediments of differing grain size and mineralogical properties to the surrounding material (explaining the variation in colour). Wood fragments were found at the base of the archaeological trench running through one such infilled gully. If dated, the wood could be used to indicate the potential timing of the onset of deposition within the gully.

There was a distinct drop in elevation to the south of the hedgerow field boundary. Whether the presence of the hedgerow explains this (acting as a sediment trap and preventing the movement of colluvial material further south) is unclear. Lateral channel migration across the floodplain may have resulted in the removal of excess colluvial material, with the hedgerow being planted at a later date. This is supported by the presence of the well-sorted sands onsite within Core 3, which suggests active channel deposition, was occurring proximal to this location. The tributary channel therefore may have been located very close to the site boundary although the date for this channel is not known.

5. RECOMMENDATIONS FOR FURTHER ANALYSIS

Except for the wood fragments encountered during trenching, no deposits of palaeoenvironmental potential were identified on site. Radiocarbon dating of the wood is therefore recommended. This would provide a *terminus post quem* for the onset of colluviation within the gully system in question. As hillslope processes are often initiated or exacerbated by human activity, such a date may be found to tie in with the archaeological sequences at the site. No other palaeoenvironmental assessments are recommended at this stage.

6. ARCHIVE

All data relating to the site investigation and related fieldwork are currently stored by Birmingham Archaeo-Environmental, University of Birmingham, Edgbaston, Birmingham, B15 2TT. Original core logs, site location plans, photographs and associated material are also stored within Birmingham Archaeo-Environmental.

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REFERENCES

Troels-Smith, J. (1955). Karakterisering af lose jordater (characterisation of unconsolidated sediments). *Denmarks Geologiske Undersogelse*, Series IV/3, 10, 73

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)

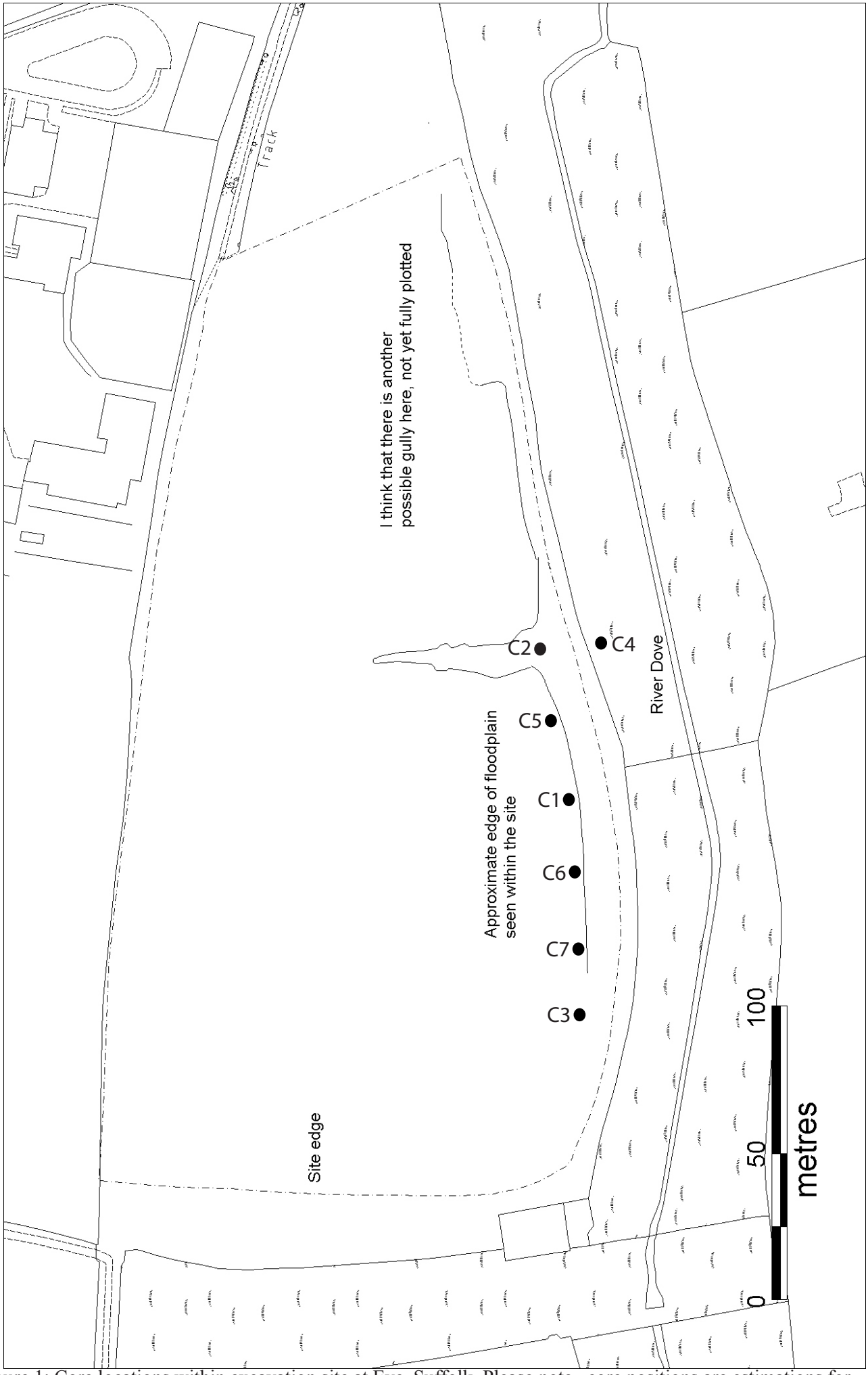

Figure 1: Core locations within excavation site at Eye, Suffolk. Please note, core positions are estimations for reference, grid references can be found in the Appendix for enhanced accuracy. Provided by Suffolk County Council.

Figure 2: Trial trench positioned proximal to the southern margin of the site at Eye, Suffolk. Trowel locates wooden fragments preserved within a matrix of fine sands, silts and clays. Gravel clasts of flint and quarts clearly visible within the trench face.

Figure 3: Sedimentary coring at Eye, Suffolk, looking northeast. The distinct gradient of the site to the south towards the hedgerow and floodplain is evident.

Figure 4: Sedimentary coring on the tributary floodplain of the River Dove, located immediately south of the excavation area. Photograph looking north. The excavation site is visible to the north, with the overall drop in elevation across the site and onto the floodplain evident.

Figure 5: Looking northwest across the site, with variations in surface coloration highlighted running south towards the southern field boundary.

APPENDIX I

Core Stratigraphy

Refer to Table 1 for summary of sedimentary classification scheme of Troels-Smith (1955)

Core 1 (TM 13792 73907)

0.00-0.60m	Da	St	El	Dr	UB
	2+	0	0	3	-
	Ga3, Ag1, Ggmin+, As+, Ggmaj+				
	Grey-brown gravely silty sand				
0.60-0.65m	Da	St	El	Dr	UB
	2	0	0	3	1
	Ga2, Ag2, Ggmin+, Ggmaj+, As+				
	Yellow-brown silty sand with abundant gravel of quartz and flint				

Core 2 (TM 13795 73885)

0.00-1.40m	Da	St	El	Dr	UB
	2+	0	0	2+	-
	Ga3, Ag1, As+, Ggmin+				
	Grey-brown silty sand with occasional gravel				
1.40-1.65m	Da	St	El	Dr	UB
	2	0	0	2	1
	Ga2, Ag2, Ggmin+, As+, Ggmaj+				
	Grey-brown sandy silt				

Core 3 (TM 13707 73879)

0.00-0.30m	Da	St	El	Dr	UB
	2	0	0	2	-
	Ga3, Ag1, As+, Ggmin+				
	Yellow-brown silty sand with occaswional gravel				
0.30-0.65m	Da	St	El	Dr	UB
	2	0	0	2+	1
	Ga4, Ag+, Ggmin+				
	Orange-brown sand				

Core 4 (TM 13797 73880)

0.00-0.60m	Da	St	El	Dr	UB
	2	0	0	3	-

Ag2, As2, Ga+, Sh+
Grey-brown clayey silt

0.60-1.20m	Da	St	El	Dr	UB
	3	0	1	2	2

Sh2, Ag1, Ga1, Dg+, Th+, Ggmin+
Grey-brown organic-rich silty sand

C5 (TM 13816 73897)

0.00-0.30m	Da	St	El	Dr	UB
	2+	0	0	2	-

Ga3, Ag1, Ggmin+, Ggmaj+, As+
Grey-brown silty sands with occasional gravel of sandstone, flint and quartz

0.30-0.65m	Da	St	El	Dr	UB
	2	0	0	2	1

Ag2, Ga1, Ggmin1, Ggmaj+, Ag+
Yellow-brown sandy silt with abundant gravel

C6 (TM 13767 73893)

0.00-0.30m	Da	St	El	Dr	UB
	2+	0	0	3	-

Ga2, Ag2. As+, Ggmin+, Ggmaj+
Grey-brown sandy silt with occasional gravel of sandstone, quarts and flint

0.30-0.55m	Da	St	El	Dr	UB
	2	0	0	3	1

Ag2, Ga1, Ggmin1, Ggjmaj+, As+
Yellow-brown sandy silt with abundant gravel

Core 7 (TM 13751 73886)

0.00-0.15m	Da	St	El	Dr	UB
	2+	0	0	3	-

Ga3, Ag1, Ggmin+, Ggmaj+
Grey-brown silty sand with occasional gravel

0.15-0.60m	Da	St	El	Dr	UB
	2+	0	0	3	1

Ag2, As1, Ga1, Ggmin+, Ggmaj+
Grey-brown sandy silt with occasional gravel