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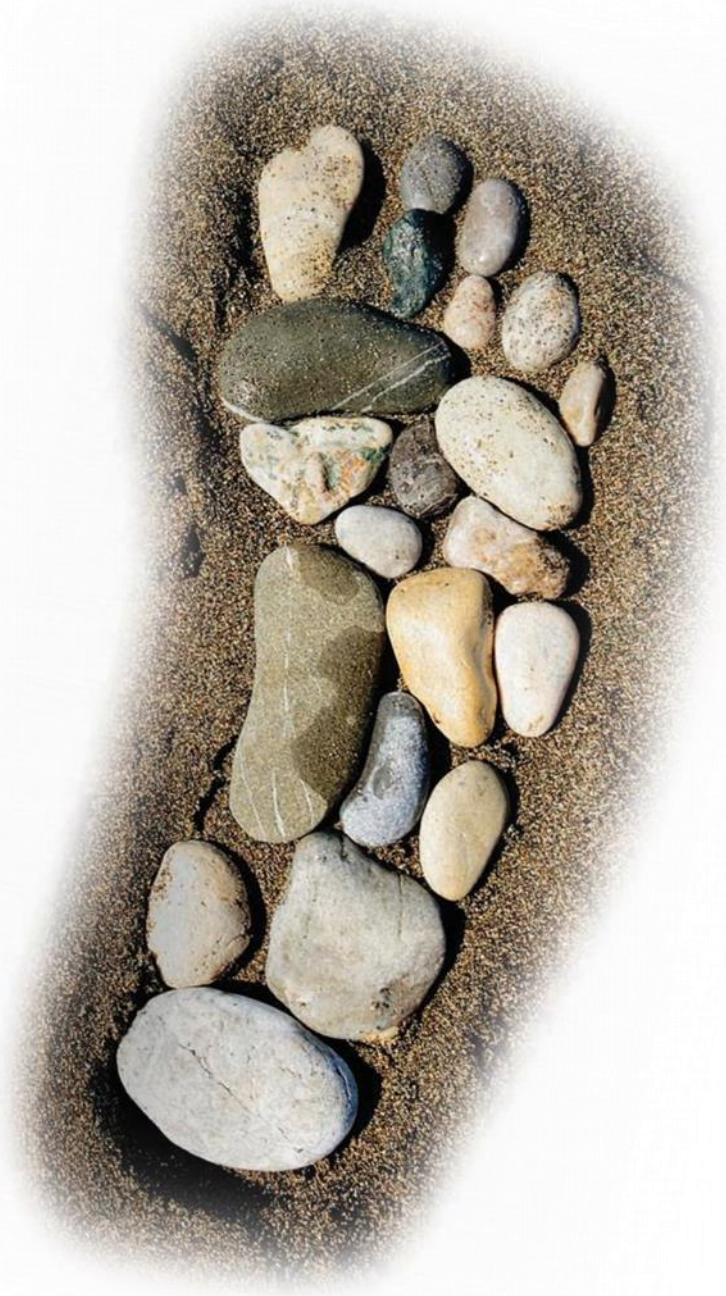
LAND OFF GILDEN WAY, HARLOW, ESSEX

Geoarchaeological Fieldwork Report



NGR: TL 4815 1225

Date: 5th February 2019

Site Code: HAGW16

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1. NON-TECHNICAL SUMMARY

A programme of geoarchaeological field investigations was undertaken at the Gilden Way site in order to: (1) clarify the nature of the sub-surface stratigraphy; (2) clarify the nature, depth, extent and possible date of any alluvium and organic/peat deposits infilling the palaeochannel recorded in the area of archaeological Trenches 115, 116, 131 and 136; and (3) make recommendations for any further environmental archaeological assessment. In order to address these aims, a total of four geoarchaeological boreholes were put down, targeting the sequence adjacent to Trenches 115 and 116, where the deposits infilling the palaeochannel were likely to be less disturbed by the previous archaeological trenching at the site.

The results of the geoarchaeological investigations indicate that the sediments infilling the palaeochannel in this area of the site are inorganic, comprised of sandy or silty sediments, overlain by silty clay. The palaeoenvironmental potential of the new sequences is considered negligible, and therefore no further assessment is recommended. The discrepancy between the archaeological description of the sediments in Trench 136 (which included thin units of 'organic' or 'peaty' clay) may be a result of the different descriptive terms and level of recorded detail used in the different investigations, or an indication that the organic sediments within the palaeochannel are highly localised in their extent.

2. INTRODUCTION

2.1 Site context

This report summarises the findings arising out of the geoarchaeological field investigations undertaken by Quaternary Scientific (University of Reading) in connection with the proposed development of Land off Gilden Way, Harlow, Essex (National Grid Reference (NGR); TL 4815 1225; Figures 1 and 2). Quaternary Scientific were commissioned by CgMs Heritage to undertake the geoarchaeological investigations. The site lies on a spur of slightly higher ground between the valleys of the Harlowbury Brook to the west, and the valley of the Pincey Brook to the east, both draining in to the River Stort which here flows broadly northeast-southwest about 400m to the north of the site. The British Geological Survey (BGS) shows the superficial geology across the majority of the site as Head - Clay, Silt, Sand and Gravel, with the glacial deposits of the Lowestoft Formation (Diamicton) recorded in the southeastern area of the site. The bedrock geology is shown as Lewes Nodular/Seaford Chalk Formation, or the Thanet Group/Lambeth Group (http://mapapps.bgs.ac.uk/geologyofbritain/home.html).

During September and October 2017, an archaeological trench evaluation was undertaken at the site by Oxford Archaeology East, identifying various features of Neolithic, Early Iron Age and Roman date, including a Neolithic Causewayed Enclosure and a Roman settlement (Oxford Archaeology East, 2018). The sedimentary sequence was described during the investigations as fairly uniform, with the natural geology (presumably Head) overlain by a thin subsoil, which in turn was overlain by topsoil (Oxford Archaeology East, 2018), to maximum depths in the trenches of between *ca*. 0.1 and 0.6m below ground level (bgl). Significantly, sediments associated with a possible former channel (palaeochannel) were identified in four trenches just to the east of Harlowbury Brook (Trenches 115, 116, 131 and 135; extent highlighted yellow in Figure 2), including sediments identified as 'organic' and 'peaty'.

2.2 Geoarchaeological, Palaeoenvironmental and Archaeological potential

The available records from the site therefore indicate some variation in the height of the underlying deposits, and the type, thickness and age of the subsequent Holocene sedimentary sequence. Such variations are significant as they represent different environmental conditions that would have existed in a given location. For example: (1) the varying surface of the underlying glacial deposits and Head may represent the location of former channels and bars; (2) the presence of peat or organic sediments represents former terrestrial or semi-terrestrial land-surfaces, and (3) variations in the surface of the Head or the alluvium might represents periods of channel activity or changing hydrological conditions. Thus by studying the sub-surface stratigraphy across the site and wider area in more detail, it will be possible to build our understanding of the former landscapes and environmental changes that took place across space and time.

Organic-rich sediments (in particular peat) also have high potential to provide a detailed reconstruction of past environments on both the wetland and dryland. In particular, they provide the potential to increase knowledge and understanding of the interactions between hydrology, human activity, vegetation succession and climate. Significant vegetation changes include the

Mesolithic/Neolithic decline of elm woodland, the Neolithic colonisation and decline of yew woodland; the Late Neolithic/Early Bronze Age growth of elm on peat, and the general decline of wetland and dryland woodland during the Bronze Age.

Finally, areas of high gravel topography, soils and peat represent potential areas that might have been utilised or even occupied by prehistoric people, evidence of which may be preserved in the archaeological (e.g. features and structures) and palaeoenvironmental record (e.g. changes in vegetation composition).

2.3 Aims & Objectives

Further records were required in order to enhance our understanding of the sub-surface stratigraphy at the Gilden Way site, and to assess its palaeoenvironmental and geoarchaeological potential. The area of interest of the site here is the former channel identified in Trenches 115, 116, 131 and 136 (Oxford Archaeology East, 2018). Five significant research aims relevant to these geoarchaeological investigations were outlined within the Written Scheme of Investigation for the site (Young, 2018):

1. To clarify the nature of the sub-surface stratigraphy across the area of the former channel;
2. To clarify the nature, depth, extent and possible date of any alluvium and organic/peat deposits infilling the channel;
3. To investigate whether the sequences contain any artefact or ecofact evidence for prehistoric or historic human activity;
4. To investigate whether the sequences contain any evidence for natural and/or anthropogenic changes to the landscape (wetland and dryland);
5. To integrate the new geoarchaeological record with other recent work in the local area for publication (if appropriate, pending the results of the investigations).

In order to address the first two of these aims, the following objectives were undertaken:

1. To put down a minimum of two boreholes adjacent to the palaeochannel identified in Trenches 115 and 116;
2. To describe the lithostratigraphy of the new boreholes;
3. To use the stratigraphic data from new and existing records to produce a basic deposit model of the major depositional units within the channel, and to characterise the depositional sequence in more detail;
4. To make recommendations for any further palaeoenvironmental assessment.

Figure 1: Location of the site at Land off Gilden Way, Harlow, Essex showing distribution of the archaeological trenches (figure adapted from Oxford Archaeology East, 2018).

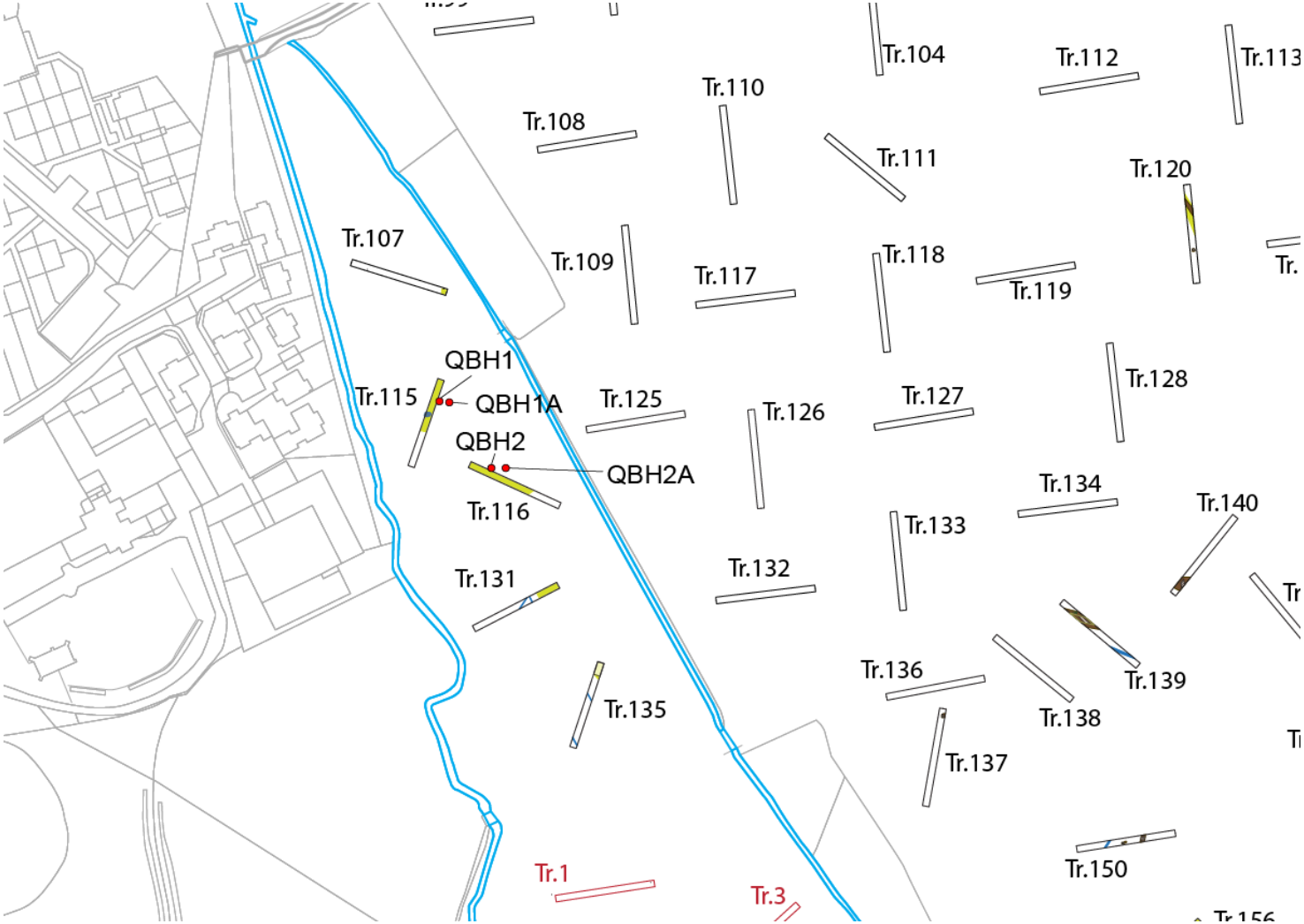

Figure 2: Location of the new geoarchaeological boreholes at Land off Gilden Way, Harlow, Essex (Figure provided by Oxford Archaeology East). Extent of the possible former channel highlighted in yellow in Trenches 115, 116, 131 and 135.

3. METHODS

3.1 Field investigations

A total of four geoarchaeological boreholes (QBH1/1A and QBH2/2A) were put down at the site by Quaternary Scientific (University of Reading) in December 2018 (see Table 1 and Figure 2). These boreholes targeted the sequence adjacent to Trenches 115 and 116, where the deposits infilling the palaeochannel were likely to be less disturbed by the previous archaeological trenching at the site. The borehole core samples were recovered using an Eijkelkamp window sampler and gouge set using an Atlas Copco TT 2-stroke percussion engine. This coring technique is a suitable method for the recovery of continuous, undisturbed core samples and provides sub-samples suitable for not only sedimentary and microfossil assessment and analysis, but also macrofossil analysis. The spatial data for the new geoarchaeological boreholes is displayed in Table 1.

Table 1: Spatial data for the new geoarchaeological boreholes at Land off Gilden Way, Harlow, Essex.

Name	Easting	Northing	Elevation (m OD)
QBH1	547842.62	212134.45	46.45
QBH1A	547844.63	212134.65	46.47
QBH2	547857.74	212114.43	46.55
QBH2A	547859.64	212114.49	46.55

3.2 Lithostratigraphic description

Field-based lithostratigraphic description of the boreholes was carried out using standard procedures for recording unconsolidated sediment and peat, noting the physical properties (colour), composition (gravel, sand, clay, silt and organic matter) and inclusions (e.g. artefacts). The procedure involved: (1) cleaning the samples with a spatula or scalpel blade and distilled water to remove surface contaminants; (2) recording the physical properties, most notably colour; (3) recording the composition e.g. gravel, fine sand, silt and clay; (4) recording the degree of peat humification, and (5) recording the unit boundaries e.g. sharp or diffuse. The descriptions are displayed in Tables 2 to 5.

4. RESULTS, INTERPRETATION & DISCUSSION OF THE LITHOSTRATIGRAPHIC DESCRIPTIONS

The results of the lithostratigraphic descriptions of the new geoarchaeological boreholes are shown in Tables 2 to 5. The full sequence of sediments recorded in all four boreholes was very similar, and comprised a variously sandy, silty or clayey and largely inorganic alluvium, overlying a unit of silty sand and gravel.

4.1 Gravel

A horizon of silty and sandy gravel was recorded at the base of the sequence in all four boreholes, forming the basal unit in the palaeochannel identified in Trenches 115, 116, 131 and 135. This unit is considered likely to have been deposited during the Devensian Late Glacial (15,000 to 10,000 years before present), and comprises the sands and gravels of a high-energy braided river system which, while it was active would have been characterised by longitudinal gravel bars and intervening low-water channels in which finer-grained sediments might have been deposited. Such a relief pattern would have been present on the floor of the valley of the River Stort at the beginning of the Holocene when a lower-energy fluvial regime was being established.

The surface of the Gravel is recorded at between 44.15 (QBH1) and 45.11m OD (QBH2), its surface rising slightly eastwards and potentially demonstrating the shape of the former channel.

4.2 Alluvium

Overlying the gravel at the site, and infilling the paleochannel identified in Trenches 115, 116, 131 and 135, was a unit of sandy silt, fining upwards to a silty clay. The sandy sediments towards the base of the Holocene alluvial sequence are indicative of deposition during the Early to Mid-Holocene, when the main course of the river was probably confined to a single meandering channel. During this period, the surface of the Gravel was progressively buried beneath the sandy and silty flood deposits of the river. The surface of this sandy unit lies at 45.35m OD in boreholes QBH2 and QBH2A; in boreholes QBH1 and QBH1A it is comprised of a clayey silty, the upper surface of this unit recorded at between 44.75 and 44.82m OD.

Overlying the sandy or silt-rich unit is a clay-rich alluvium, indicative of deposition within low energy fluvial and/or semi-aquatic conditions on the floodplain during the Mid- to Late Holocene. The high mineral content of the sediments may reflect increased sediment loads resulting from intensification of agricultural land use from the later prehistoric period onward. The surface of this unit represents the modern land surface (forming the parent material for the modern soil) and lies at between 46.45 and 46.55m OD.

Table 2: Lithostratigraphy of borehole QBH1; Land off Gilden Way, Harlow, Essex.

Depth (m)	Depth (m OD)	Lithostratigraphy	Stratigraphic Unit
0.00 to 1.00	46.45 to 45.45	As3 Ag1 Gg+; firm grey silty clay with occasional gravel clasts. Orange mottling. Diffuse contact in to:	ALLUVIUM
1.00 to 1.70	45.45 to 44.75	As3 Ag1; firm brown silty clay with orange mottling, Diffuse contact in to:	
1.70 to 2.30	44.75 to 44.15	Ag2 As2; blueish grey soft clay and silt. Sharp contact in to:	
2.30 to 3.00	44.15 to 43.45	Gg2 Ga1 Ag1; grey sandy silty gravel. Clasts are flint and chalk, average diameter 40mm. angular to rounded.	GRAVEL

Table 2: Lithostratigraphy of borehole QBH1A; Land off Gilden Way, Harlow, Essex.

Depth (m)	Depth (m OD)	Lithostratigraphy	Stratigraphic Unit
0.00 to 1.00	46.47 to 45.47	As3 Ag1; firm grey silty clay with orange mottling. Diffuse contact in to:	ALLUVIUM
1.00 to 1.65	45.47 to 44.82	As3 Ag1; firm brown silty clay with orange mottling, Diffuse contact in to:	
1.70 to 2.35	44.82 to 44.22	Ag2 As2 Gg+; blueish grey soft clay and silt with occasional gravel clasts. Sharp contact in to:	
2.35 to 3.00	44.22 to 43.47	Gg2 Ga1 Ag1; grey sandy silty gravel. Clasts are flint and chalk, average diameter 40mm. angular to rounded.	GRAVEL

Table 3: Lithostratigraphy of borehole QBH2; Land off Gilden Way, Harlow, Essex.

Depth (m)	Depth (m OD)	Lithostratigraphy	Stratigraphic Unit
0.00 to 0.40	46.55 to 46.15	As3 Ag1; firm greyish brown silty clay with orange mottling. Diffuse contact in to:	ALLUVIUM
0.40 to 0.80	46.15 to 45.75	As3 Ag1; grey silty clay. Sharp contact in to:	
0.80 to 1.20	45.75 to 45.35	As2 Ag2 Sh+ Ga+; brown silt and clay with traces of organic matter and sand. Sharp contact in to:	
1.20 to 1.44	45.35 to 45.11	Ga2 Ag2 Gg+ Dl+; dark grey sand and silt with occasional gravel clasts and detrital wood. Sharp contact in to:	
1.44 to 2.00	45.11 to 44.55	Gg2 Ga1 Ag1; dark grey silty candy gravel. Clasts are flint, average diameter 30mm, angular to rounded.	GRAVEL

Table 3: Lithostratigraphy of borehole QBH2A; Land off Gilden Way, Harlow, Essex.

Depth (m)	Depth (m OD)	Lithostratigraphy	Stratigraphic Unit
0.00 to 0.40	46.55 to 46.15	As3 Ag1; firm greyish brown silty clay with orange mottling. Diffuse contact in to:	ALLUVIUM
0.40 to 0.90	46.15 to 45.65	As3 Ag1 Gg+; grey silty clay with occasional gravel clasts. Sharp contact in to:	
0.90 to 1.20	45.65 to 45.35	As2 Ag2 Sh+ Ga+; brown silt and clay with traces of organic matter and sand. Sharp contact in to:	
1.20 to 1.50	45.35 to 45.05	Ga2 Ag2 Gg+ Dl+; dark grey sand and silt with occasional gravel clasts and detrital wood. Sharp contact in to:	
1.50 to 2.00	45.05 to 44.55	Gg2 Ga1 Ag1; dark grey silty candy gravel. Clasts are flint, average diameter	GRAVEL

Depth (m)	Depth (m OD)	Lithostratigraphy	Stratigraphic Unit
		30mm, angular to rounded.	

5. CONCLUSIONS & RECOMMENDATIONS

A programme of geoarchaeological field investigations was undertaken at the Gilden Way site in order to: (1) clarify the nature of the sub-surface stratigraphy; (2) clarify the nature, depth, extent and possible date of any alluvium and organic/peat deposits infilling the palaeochannel recorded in the area of Trenches 115, 116, 131 and 136; and (3) make recommendations for any further environmental archaeological assessment. In order to address these aims, a total of four geoarchaeological boreholes were put down, targeting the sequence adjacent to Trenches 115 and 116, where the deposits infilling the palaeochannel were likely to be less disturbed by the previous archaeological trenching at the site.

The results of the geoarchaeological investigations indicate that the Holocene alluvium infilling the palaeochannel in this area of the site is inorganic, comprised of sandy or silty sediments, overlain by silty clay. The palaeoenvironmental potential of the new sequences is considered negligible, and therefore no further assessment is recommended. The discrepancy between the archaeological description of the sediments in Trench 136 (which included thin units of 'organic' or 'peaty' clay (see Figure 3) may be a result of the different descriptive terms and level of recorded detail used in the different investigations, or an indication that the organic sediments within the palaeochannel are highly localised in their extent.

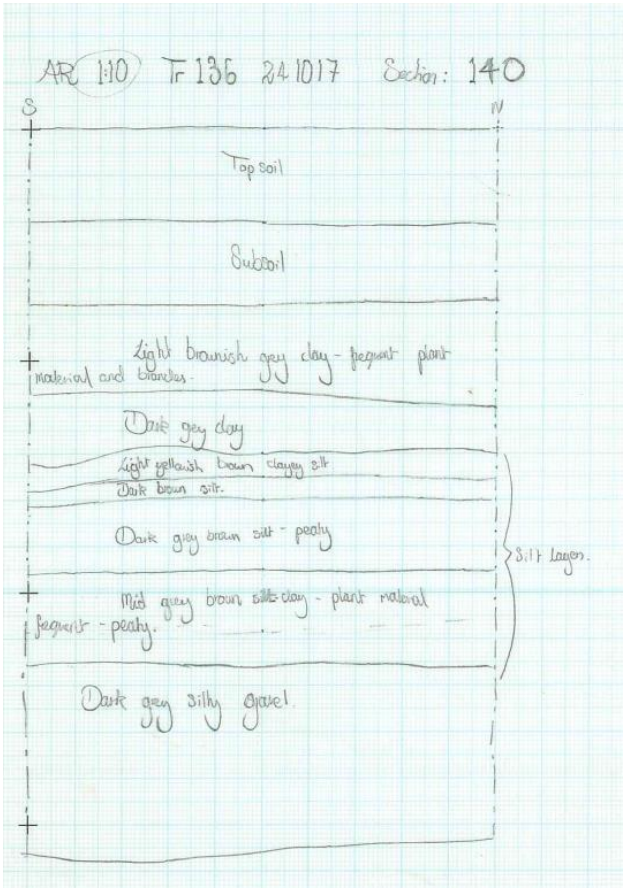

Figure 3: Archaeological description of the sediments infilling the palaeochannel in the area of Section 140 (Trench 136) at Land off Gilden Way, Harlow, Essex (provided by Oxford Archaeology East).

6. REFERENCES

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Young, D.S. (2018) Land off Gilden Way, Harlow, Essex Geoarchaeological Written Scheme of Investigation. *Quaternary Scientific (QUEST) Unpublished Report November 2018; Project Number 114/18*.

7. APPENDIX 1: OASIS

OASIS ID: quaterna1-341828

Project details

Project name	Land off Gilden Way, Harlow, Essex
Short description of the project	A programme of geoarchaeological investigations was undertaken at the Gilden Way site in order to: (1) clarify the nature of the sub-surface stratigraphy; (2) clarify the nature, depth, extent and possible date of any alluvium and organic/peat deposits infilling the palaeochannel recorded in the area of Trenches 115, 116, 131 and 136; and (3) make recommendations for any further environmental archaeological assessment. In order to address these aims, a total of four geoarchaeological boreholes were put down, targeting the sequence adjacent to Trenches 115 and 116, where the deposits infilling the palaeochannel were likely to be less disturbed by the previous archaeological trenching at the site. The results of the geoarchaeological investigations indicate that the sediments infilling the palaeochannel in this area of the site are largely inorganic, comprised of sandy or silty sediments, overlain by silty clay. The palaeoenvironmental potential of the new sequences is considered negligible, and therefore no further assessment is recommended. The discrepancy between the archaeological description of the sediments in Trench 136 (which included thin units of 'organic' or 'peaty' clay) may be a result of the different descriptive terms and level of recorded detail used in the different investigations, or an indication that the organic sediments within the palaeochannel are highly localised in their extent.
Project dates	Start: 01-08-2018 End: 05-02-2019
Previous/future work	Yes / No
Any associated project reference codes	HAGW16 - Sitecode

Project location

Country	England
Site location	ESSEX HARLOW HARLOW Land off Gilden Way
Postcode	CM17 0JF
Site coordinates	TL 4815 1225 51.788786346923 0.14826294576 51 47 19 N 000 08 53 E

	Point

Project creators

Name of Organisation	Quaternary Scientific (QUEST)
Project brief originator	CgMs Consulting
Project design originator	D.S. Young
Project director/manager	D.S. Young
Project supervisor	D.S. Young

Project archives

Physical Archive Exists?	No
Digital Archive Exists?	No
Paper Archive recipient	Essex HER
Paper Contents	''Environmental'',''Stratigraphic''
Paper Media available	''Report''

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