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QUATERNARY SCIENTIFIC

RUSKIN FIELDS
OXFORD
OXFORDSHIRE

Geoarchaeological Fieldwork Report

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CONTENTS

1. NON-TECHNICAL SUMMARY 1
2. INTRODUCTION 2
2.1. Site context 2
2.2. Geoarchaeological, palaeoenvironmental and archaeological significance 3
2.3. Aims and objectives 4
3. METHODS 8
3.1. Field investigations, lithostratigraphic descriptions and deposit modelling) 8
4. RESULTS & INTERPRETATION OF THE GEOARCHAEOLOGICAL FIELDWORK 9
4.1. Bedrock 9
4.2. Alluvium 9
4.3. Head Deposits 9
4.4. Topsoil 9
5. DISCUSSION & CONCLUSIONS 16
6. REFERENCES 16

1. NON-TECHNICAL SUMMARY

The palaeoenvironmental fieldwork at Ruskin Fields aimed to identify the nature, depth, and extent of fine-grained alluvial or organic-rich deposits above the bedrock using geoarchaeological boreholes and deposit modelling. The results showed that the bedrock slopes from the southeast to the northwest. A small area of alluvium was identified in one borehole, likely deposited within a local hollow. Above the bedrock or alluvium are Head deposits consisting of poorly sorted clayey hillwash, overlain by organic-rich topsoil of varying thickness. No peat or other organic-rich sediment layers were found in any of the six boreholes.

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2. INTRODUCTION

2.1. Site context

This report summarises the findings of palaeoenvironmental fieldwork undertaken by Quaternary Scientific (University of Reading) in connection with the proposed development of land at Ruskin Fields, Oxford (NGR: centred on SP 54319 07995; Figures 1-2). The work was required based on the brief for a geo-archaeological borehole/test pit survey (Radford, 2025) as defined by Oxford City Council and is being undertaken in relation to pre-planning application reference 25/02793/PAC.

The site is located within Old Headington and is ca. 3.5km northeast of Oxford City Centre. The site is formed of a series of irregular fields, currently defined as vacant pasture, with a total size of 3.5ha. The site slopes from south to north from a high of 87m OD to 75m OD and is bounded by the A40 dual carriageway to the north, Ruskin College to the south, Dunstan Park to the west and Old Headington to the East (Figure 1). The site is situated on the boundary of three geological formations, with the silty sandstone of the Temple Cowley Member running across the south of the site. This transitions northwards into mudstones of the West Walton Formation and the Weymouth Member. Overlying these bedrock deposits are superficial deposits of Head (clay, silts, sands and gravel) which run south to north along the boundary of the central and eastern fields, following a small drainage channel (Figure 2). Peat is recorded in Dunstan's Park, approximately 200m west of the current site.

Limited palaeoenvironmental work exists in the immediate area surrounding Ruskins Field. A palaeoenvironmental sequence form Sidlings Copse, 2km northeast of Ruskin Fields, has provided a record of environmental change from the past 10,000 years. This sequence comprised of a 1.3m basal tufa, overlain by 1.3m of organic sediment, including detritus mud and fen peat. Tufa formation began at about 10,500 cal BP as *Corylus* woodland, with some *Ulmus* and *Quercus*, which began to fill a previously *Pinus* and grassland dominated open landscape (Preece and Day, 1994). At 8000 cal BP *Tilia*, slightly preceded by *Alnus*, spread into the area. *Tilia* and *Ulmus* declined at 6000 cal. BP and is thought to represent the well documented elm decline as seen at many sites across the British Isles (Parker et al. 2002). During the Bronze Age, woodland declines and there is a rise in grassland species, and open ground and wetland species including sedges and ferns, likely indicating human impact across the environment as ground was cleared for farming (Day, 1991).

On the south side of Oxford City centre, work was undertaken across Plot 27 at the Oxford Science Park (Simmonds et al. 2022) as well as at Northfield Brook, two sites at Minchery Farm (Parker and Anderson, 1996; Parker and Preston, 2012; Griffiths & Harrison, 2020) and other plots on the Oxford Science Park (Moore, 1991). Peat deposits were identified at Minchery Farm, and radiocarbon dates on this sequence (1.20m in length) indicate that the peat deposition began during the Late Glacial

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Dimlington Stadial, where there were low levels of tree pollen, with a dominance of grasses and sedges, likely representative of a tundra environment at this time. Vegetation development through the Late Glacial Interstadial indicates an increase in woodland and naturally derived forest fires. Open steppe-grassland replaces the interstadial woodland as the climate deteriorates into the Younger Dryas. The record extends just into the Early Holocene, prior to a hiatus until the Bronze Age, when alluvium began to be redeposited at the site (Parker and Preston, 2012).

Work at the Plot 27 site resulted in a greater understanding of the sediments in this region, with multiple peat units identified above the bedrock material (Simmonds et al. 2022). Both the Lower Peat and an upper peat date to the Neolithic period (5290 - 4980 cal BP, 5900-5660 cal. BP, 5590-5460 cal. BP), suggesting the peat units are contemporaneous and the alluvial deposits in between the Lower and Upper Peats relate to shifting channels across the floodplain. In parts of the site, formation began somewhat later, in the Bronze Age (3450-3250 cal BP), thought likely to be related to the topography of the site, with the peat initially infilling deeper hollows before expanding across the site.

The site of Cothill Fen, a calcareous valley fen approximately 7km to the southwest of Oxford city centre and 11km to the southwest of the site, has provided a 4m sequence of peat and marl deposits dating from the start of the Holocene period and covering the Mesolithic period (Day, 1991). Evidence from Cothill Fen shows a mixed *Pinus* and *Betula* woodland, with *Salix* present on the margins of lakes and river channels. *Corylus* began to colonise soon after the *Betula* and *Pinus* woodland took hold. As climatic conditions continued to ameliorate, mixed deciduous woodland began to develop, primarily to the detriment of *Betula*, and then subsequently outcompeting *Pinus*. At Cothill, this deciduous matrix was present by 9900-9740 cal. BP. Cothill showed evidence for prolonged presence of *Pinus* until 8300-8180 cal. BP, attributed to the repetitive clearing of woodland by humans, which was recolonized by *Pinus*. *Tilia* and *Alnus* then joined this mixed woodland later, dated to ~7600 cal. BP (Day, 1991).

The archaeological desk-based assessment has shown that the site has a moderate potential to contain prehistoric and Roman finds and features. There is a low potential for Saxon archaeology. It is expected any archaeological finds would be of local significance, unless it relates to surrounding evidence, where it might become regionally significant. Low potential for medieval and post medieval archaeology is observed. Further information pertaining to the archaeological background of the site can be found in the archaeological desk-based assessment (Orion Heritage Ltd, 2024).

2.2. Geoarchaeological, palaeoenvironmental and archaeological significance

Through studying the sub-surface stratigraphy across the site in greater detail, it is possible to build an understanding of the former landscapes and environmental changes that took place across space and

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time. Variations in the elevation and thickness of individual stratigraphic units can be significant as they represent different environmental conditions that would have existed in a given location. If organic-rich sediments are preserved, they have high potential to provide a detailed reconstruction of past environments on both the wetland and dryland. They provide the potential to increase knowledge and understanding of the interactions between hydrology, human activity, vegetation succession and climate. Such investigations are carried out through the assessment/analysis of palaeoecological remains (e.g. pollen, plant macrofossils & insects) and radiocarbon dating. Given that it has been suggested that up to 1.67m of peat is present in the local site of Dunstan Park, alongside organic-rich sediments at the Sidlings Copse site, and more widely afield around Oxford, there is a possibility that similar organic rich sediments may be present at Ruskin Fields.

2.3. Aims and objectives

Stratigraphic records are required to increase our knowledge of the geoarchaeological nature of the site and potential for organic deposits, including peat, in the area of the site. Four research aims relevant to the geoarchaeological investigations at the site are outlined here:

1. To clarify the nature, depth and extent of any fine-grained alluvium or organic-rich units overlying bedrock;
2. To investigate whether the sequences contain any artefact or ecofact evidence for prehistoric or historic human activity;
3. To investigate whether the sequences contain any evidence for natural and/or anthropogenic changes to the landscape (wetland and dryland);
4. To integrate the new geoarchaeological record with other work in the local area for publication in an academic journal if relevant. The journal will vary depending on the nature of the findings at the site and their level of significance.

In order to address the first of these aims, and establish the potential for addressing aims 2 to 4, the following objectives are proposed:

1. Complete a borehole/test pit survey of six boreholes focused on the southern downslope location of the spring head.
2. Undertake a geoarchaeological assessment to establish the extent, character, date, state of preservation and depth and significance of any peat deposits present.
3. If significant peat deposits are present, then:
    a. Complete a Tier 1 Water Environment Assessment of the site hydrology and the presence/absence/character of any waterlogged remains.

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b. Complete a further 14 boreholes or test pits to map the extent of the peat fan across the West Field, Central Field and East Field and use this to form the basis of a geo-archaeological assessment of the potential of the site.
c. Assess (and analyse if relevant) the boreholes for suitable palaeoenvironmental proxies and radiocarbon dating (if relevant).

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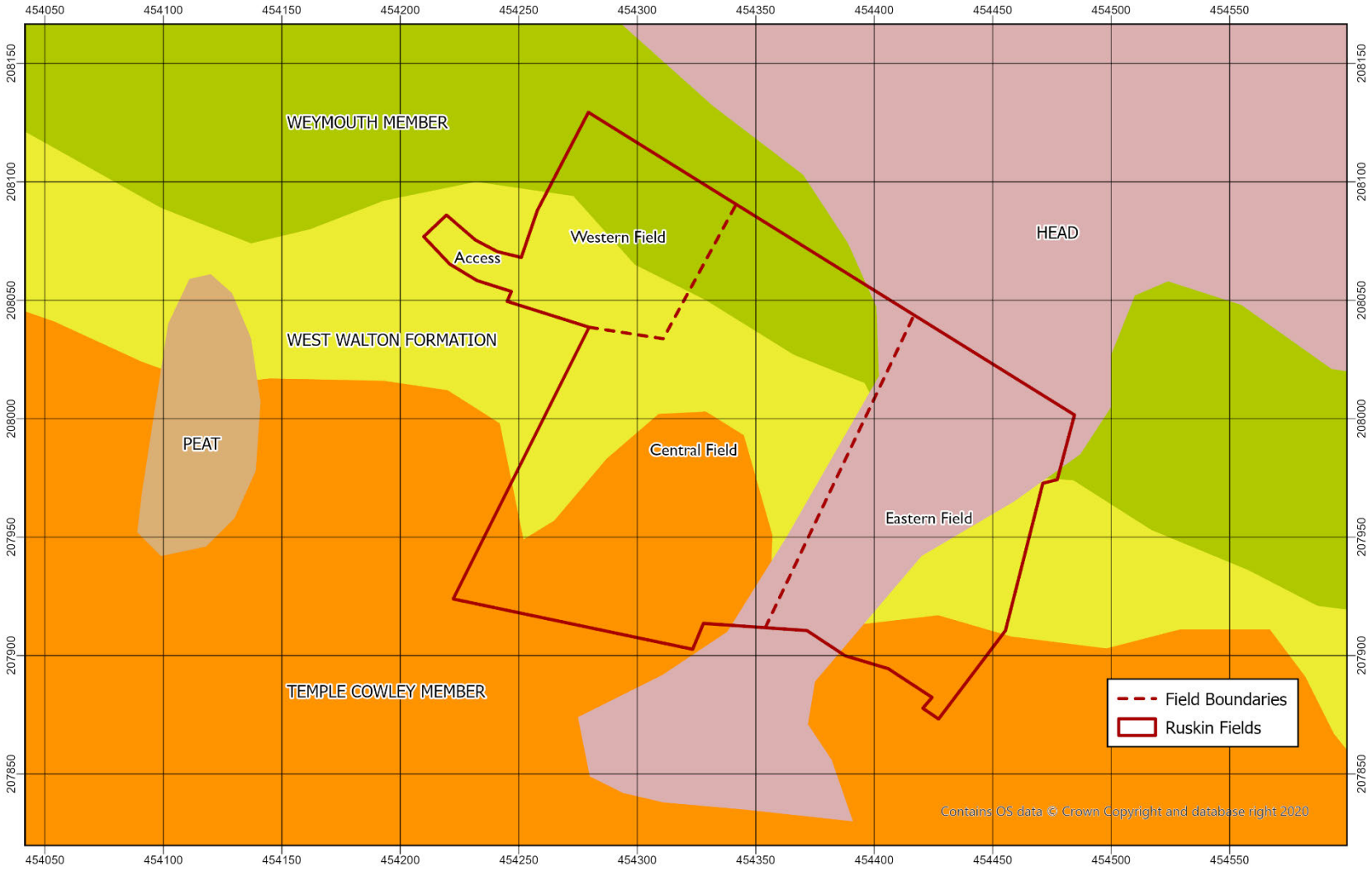


Figure 1. Location of the site showing the local superficial geology.

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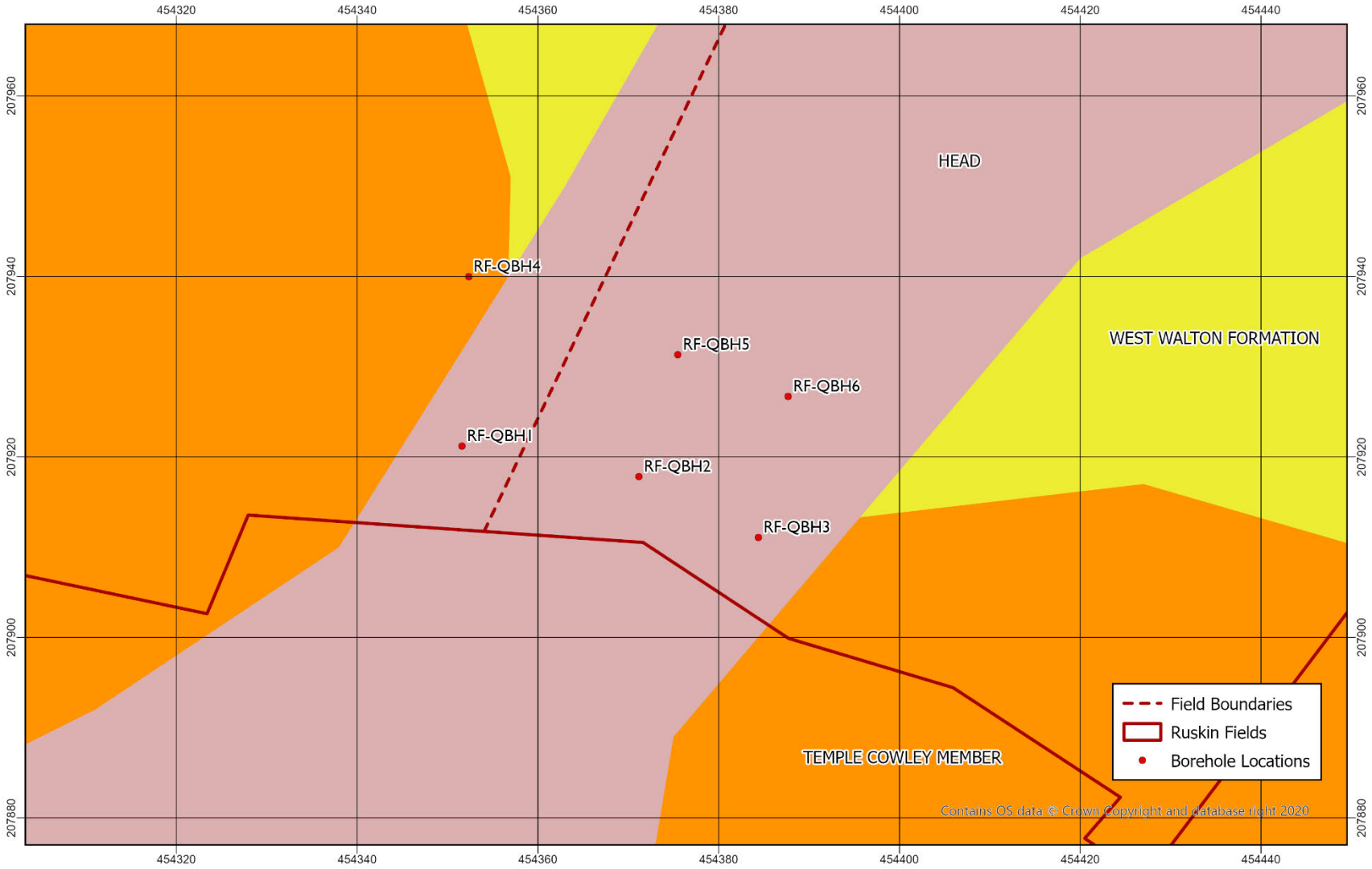


Figure 2: Location of the six borehole records.

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3. METHODS

3.1. Field investigations, lithostratigraphic descriptions and deposit modelling)

Six boreholes (Table 1 and Figures 2-8) were put down over the two sites for geoarchaeological purposes. The exploratory boreholes were put down using a soil auger. The spatial attributes for each borehole are shown in Table 1.

Table 1: Spatial co-ordinates of the geoarchaeological boreholes

Borehole name	Easting	Northing	Elevation	Total Depth
RF-QBH1	454351.611	207921.219	79.308	2.20
RF-QBH2	454371.190	207917.825	80.071	1.50
RF-QBH3	454384.404	207911.088	81.074	1.80
RF-QBH4	454352.336	207939.979	79.027	1.60
RF-QBH5	454375.493	207931.326	79.175	1.40
RF-QBH6	454387.694	207926.703	79.895	1.60

The field samples were described on-site, described using standard procedures for recording unconsolidated sediments and organic remains, noting the physical properties (colour), composition (particle size, organic content and sorting), and any archaeological inclusions (Tröels-Smith, 1955). The procedure involved: (1) cleaning the sample using a scalpel; (2) recording the physical properties, most notably colour using a Munsell Soil Colour Chart; (3) recording the composition; gravel (Grana glareosa; Gg), fine sand (Grana arenosa; Ga), silt (Argilla granosa; Ag) and clay (Argilla steatoides; As); (4) recording the degree of peat humification and (5) recording the unit boundaries e.g. sharp or diffuse. The results of the lithostratigraphic descriptions are presented in Tables 2-7 and section 4.

The term 'deposit modelling' describes any method used to depict the sub-surface arrangement of geological deposits, but particularly the use of computer software to create transect diagrams, contoured maps or three-dimensional representations of contacts between stratigraphic units. Transect map modelling was undertaken using RockWorks20 geological utilities software and outputs displayed using Adobe Illustrator. Sedimentary units from the boreholes were classified into four main groups: (1) Bedrock, (2) Head, (3) Alluvium and (4) Topsoil with a transect across the sites shown in Figure 9.

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4. RESULTS & INTERPRETATION OF THE GEOARCHAEOLOGICAL FIELDWORK

The tabulated descriptions of the 6 geoarchaeological records are displayed in Tables 2-7. Overlying the bedrock, the full sequence of sediments recorded in the boreholes comprises:

Bedrock – reached in all 6 interventions.

Alluvium – present only in QBH01.

Head Deposits – widely present.

Topsoil – widely present.

4.1. Bedrock

Bedrock was identified at the base of all six boreholes and comprises of a firm, sandy sediment. This represents either the West Walton Formation or the overlying Temple Cowley Member. The surface of the bedrock drops from a high of 79.3m OD in the south-west of the site to 77.1-77.4m OD across the north and west of the site.

4.2. Alluvium

A single unit of clay-rich Alluvium, resting immediately on the Bedrock surface, was identified in one of the geoarchaeological boreholes (Figure 8). The deposits of the Alluvium are described as predominantly silty or clayey, with occasional mollusca and gravel clasts. The surface of this unit is recorded at 78.2m. These Alluvial sediments are thought to be indicative of deposition within low energy fluvial and/or semi-aquatic conditions, and at Ruskin Fields, may be present in a small waterlogged hollow within the landscape, which allowed finer grained sediments to settle.

4.3. Head Deposits

Head Deposits were identified in all boreholes and comprise the majority of the superficial sequence. These deposits represent poorly sorted and poorly stratified clayey and gravelly hill wash and/or soil creep, likely formed through the downslope flow of waterlogged soil and other unsorted superficial deposits.

4.4. Topsoil

A clay rich, often with varying amounts of organic matter, topsoil was identified capping all the borehole records. Based on the nature of this unit, it is not thought that it will have truncated any underlying deposits.

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Table 2: Lithostratigraphic description of borehole RF-QBH01

Depth (m OD)	Depth (m bgl)	Description	Interpretation
79.308 to 79.108	0.00 to 0.20	10YR 3/2; Ga2 As1 Ag1; Soft very dark greyish brown silty clayey sand with abundant fine to large roots; clear transition into:	TOPSOIL
79.108 to 78.708	0.20 to 0.60	10YR 3/2; As3 Ga1; Firm very dark greyish brown sandy clay with common fine to large roots; clear transition into:	HEAD
78.708 to 78.208	0.60 to 1.10	10YR 4/1; As2 Ga2; Firm dark grey fine sandy clay; diffuse transition into:	HEAD
78.208 to 77.958	1.10 to 1.35	10YR 4/1; As2 Ga2 Gg+; Firm dark grey sandy clay with occasional fine angular gravel; clear transition into:	ALLUVIUM
77.958 to 77.558	1.35 to 1.75	10YR 4/1; As3 Ga1 Gg+; Firm dark grey fine sandy clay with occasional fine angular gravel; clear transition into:	ALLUVIUM
77.558 to 77.108	1.75 to 2.20	10YR 4/1; As2 Ga2 Gg+; Soft dark grey fine sandy clay with occasional fine angular gravel and very occasional shell fragments <10mm. Occasional patches of blue-grey clay from 1.90m.	ALLUVIUM
77.108	2.20	Very firm material - end of sequence	BEDROCK

Table 3: Lithostratigraphic description of borehole RF-QBH02

Depth (m OD)	Depth (m bgl)	Description	Interpretation
80.071 to 79.821	0.00 to 0.25	10YR 3/1; As2 Ag1 Ga1; Firm very dark grey sandy silty clay; clear transition into:	TOPSOIL
79.821 to 79.371	0.25 to 0.70	2.5Y 4/2; As4 Ga+ Gg+; Firm olive brown sandy clay with common angular gravel that looks like weathered sandstone; clear transition into:	HEAD
79.371 to 78.571	0.70 to 1.50	2.5 Y 4/2; As4 Gg+; Firm olive brown clay with occasional fine gravel.	HEAD
78.571	1.50	Very firm material - end of sequence	BEDROCK

Table 4: Lithostratigraphic description of borehole RF-QBH03

Depth (m OD)	Depth (m bgl)	Description	Interpretation
81.074 to 80.974	0.00 to 0.10	10YR 3/3; As3 Ga1; Firm dark brown sandy clay with common fine roots; clear transition into:	TOPSOIL
80.974 to 80.774	0.10 to 0.30	10YR 3/2; As3 Ga1; Firm very dark greyish brown sandy clay with common fine roots; diffuse transition into:	TOPSOIL
80.774 to 80.524	0.30 to 0.55	10YR 4/2; As4 Ga+; Firm dark greyish brown sandy clay; clear transition into:	HEAD
80.524 to 79.274	0.55 to 1.80	10YR 5/2; As4 Ga+; Firm greyish brown sandy clay	HEAD
79.274	1.80	Very firm material - end of sequence	BEDROCK

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Table 5: Lithostratigraphic description of borehole RF-QBH04

Depth (m OD)	Depth (m bgl)	Description	Interpretation
79.027 to 78.827	0.00 to 0.20	7.5 YR 4/3; As2 Ga2; Friable brown sandy clay with common fine roots: clear transition into:	TOPSOIL
78.827 to 78.327	0.20 to 0.70	7.5 YR 4/3; As2 Ga2; Firm sandy clay with occasional fine roots; clear transition into:	HEAD
78.327 to 77.427	0.70 to 1.60	10YR 5/4; As3 Ga1; Firm yellowish brown sandy clay.	HEAD
77.427	1.60	Very firm material - end of sequence	BEDROCK

Table 6: Lithostratigraphic description of borehole RF-QBH05

Depth (m OD)	Depth (m bgl)	Description	Interpretation
79.175 to 79.075	0.00 to 0.10	10YR 3/2; As2 Ga2; Friable very dark greyish brown sandy clay with abundant roots; clear transition into:	TOPSOIL
79.075 to 78.875	0.10 to 0.30	10YR 4/2; As4 Ga+; Firm dark greyish brown sandy clay with occasional iron oxide mottling and common roots; diffuse transition into:	HEAD
78.875 to 78.475	0.30 to 0.70	10YR 4/2;As4 Ga+; Firm dark greyish brown sandy clay with occasional roots to ~0.5m; clear transition into:	HEAD
78.475 to 77.975	0.70 to 1.20	2.5Y 4/4; As4 Ga+; Firm olive brown clay with occasional coarse sand/fine gravel; diffuse transition into:	HEAD
77.975 to 77.775	1.20 to 1.40	2.5 Y 4/4; As4 Gg+; Firm olive grey clay with occasional fine angular gravel	HEAD
77.775	1.40	Very firm material - end of sequence	BEDROCK

Table 7: Lithostratigraphic description of borehole RF-QBH06

Depth (m OD)	Depth (m bgl)	Description	Interpretation
79.895 to 79.695	0.00 to 0.20	10YR 3/2; As2 Ga2; Friable very dark greyish brown sandy clay with abundant roots; clear transition into:	TOPSOIL
79.695 to 79.445	0.20 to 0.45	10YR 4/2; As4 Ga+; Firm dark greyish brown sandy clay with occasional fine roots; clear transition into:	HEAD
79.445 to 79.195	0.45 to 0.70	10YR 4/2; As4 Ga+; Firm dark greyish brown sandy clay; diffuse transition into:	HEAD
79.195 to 78.595	0.70 to 1.30	10YR 4/2; As4 Ga+; Firm dark greyish brown sandy clay; diffuse transition into:	HEAD
78.595 to 78.295	1.30 to 1.60	2.5Y 4/4; As4 Gg+; Firm olive brown clay with occasional fine angular gravel	HEAD
78.295	1.60	Very firm material - end of sequence	BEDROCK

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Figure 3: RF-QBH01



Figure 4: RF-QBH02

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Figure 5: RF-QBH03



Figure 6: RF-QBH04

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Figure 7: RF-QBH05



Figure 8: RF-QBH06

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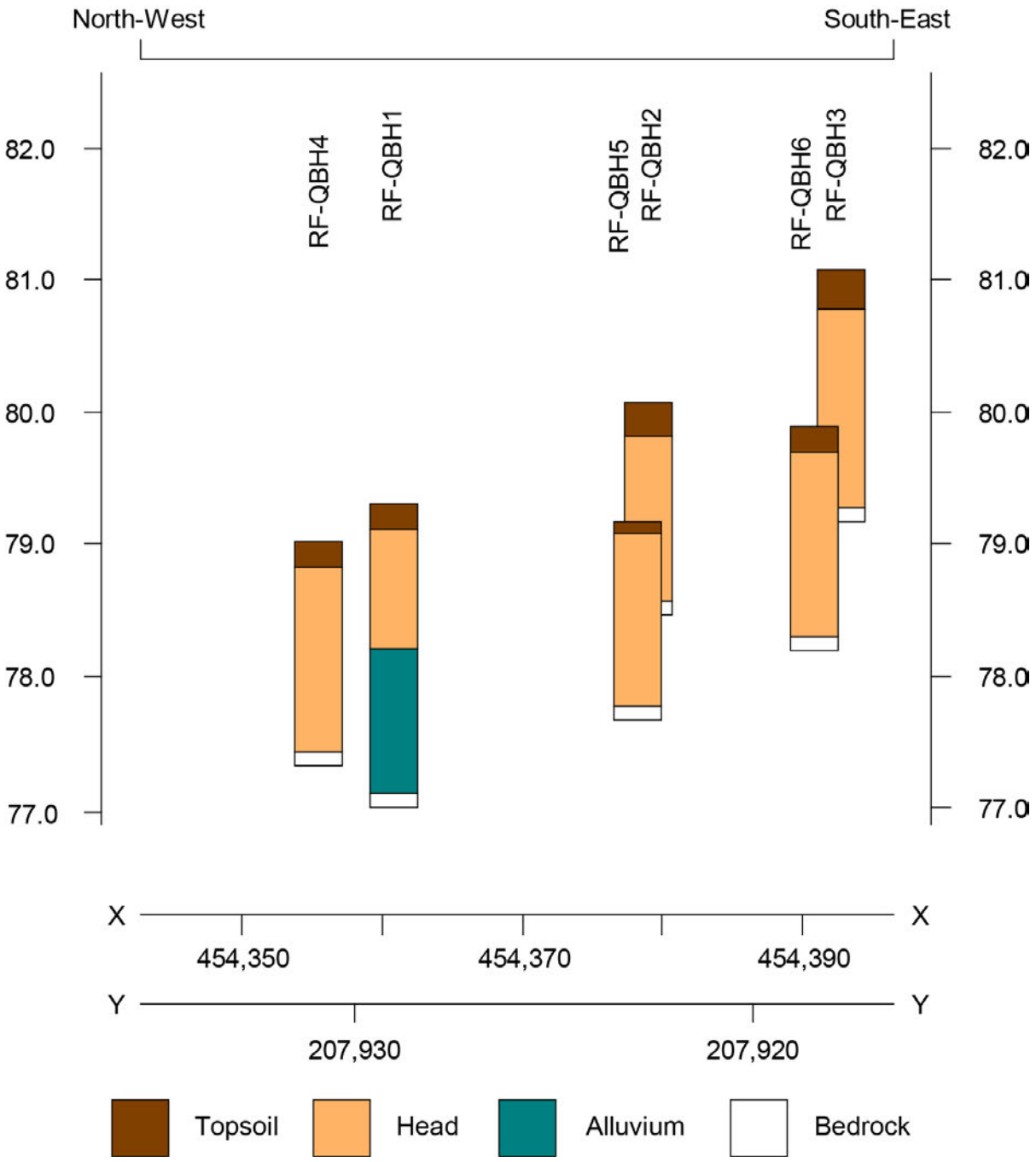


Figure 9: Transect of boreholes from the Ruskin Fields site from North-west to South-east.

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5. DISCUSSION & CONCLUSIONS

The aims of the palaeoenvironmental fieldwork at the Ruskin Fields site were to (1) clarify the nature, depth and extent of any fine-grained alluvium or organic-rich units overlying bedrock. In order to achieve this aim, a series of geoarchaeological boreholes were completed, and then modelled using Rockworks 20 to understand the nature of the deposits present across the site.

The results of the geoarchaeological deposit modelling have contributed to our understanding of the Holocene stratigraphic sequence in this area of Ruskin Fields. The Bedrock (West Walton Formation and Temple Cowley Member) drops from the south-east towards the north-west. Overlying this in one borehole is a sequence of Alluvium, thought to have been deposited within a small hollow in the landscape. Overlying the Bedrock or this alluvial unit are Head deposits, comprising of poorly sorted and stratified clayey hillwash. This is overlain by a variable thickness of organic clay rich topsoil. No organic rich sediments or peat suitable for palaeoenvironmental investigation were identified in any of the six geoarchaeological boreholes undertaken.

6. REFERENCES

Day, S. P. (1991) Post-Glacial vegetational history of the Oxford region. *New Phytol.* 119. 445-470.

Griffiths, D & Harrison, J. (2020*). The Archaeology of East Oxford Archeox: the development of a community*. Thames Valley Landscapes Monograph 43. Oxford University Department for Continuing Education.

Moore, J. (2001) Excavations at Oxford Science Park, Littlemore, Oxford. *Oxonesia. LXVI 163-220.*

Orion Heritage Ltd (2024). Land at Ruskin Fields, Oxford. Historic Environment Desk-Based Assessment. *Orion Heritage Ltd Unpublished Report December 2024.*

Parker, A.G. and Anderson, D.E. (1996) A note on the peat deposits at Minchery Farm, Littlemore, Oxford, and their implications for palaeoenvironmental reconstruction. *Proceedings of the Cotteswold Naturalists' Field Club*, XLI (I): 129-138

Parker, A.G. & Preston, G.W. (2012) *Minchery Farm, Littlemore, Oxford – Geoarchaeology and Palaeoenvironments.* Unpublished Report.

Parker, A.G., Goudie, A.S., Anderson, D.E., Robinson, M.A., & Bonsall, C. (2002) A review of the mid-Holocene elm decline in the British Isles. *Progress in Physical Geography: Earth and Environment*, 26, 1. 1-45.

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Preece, R.C. & Day, S.P. (1994) Comparison of Post-Glacial Molluscan and Vegetational Successions from a Radiocarbon-Dated Tufa Sequence in Oxfordshire. *Journal of Biogeography*. 21, 5. 463-478.

Radford, D. (2025). Oxford City Council Urban Design and Heritage Team Brief for a Geo-archaeological Borehole/Test pit survey and assessment and if required a Tier 1 Water Environment Assessment. *Oxford City Council Unpublished Report December 2025*.

Simmonds, M., Batchelor, C.R. & Timms, R. (2022) *Thames Water Pumping Station & Plot 27, Oxford Science Park, Oxford, Oxfordshire. Geoarchaeological Deposit Model & Palaeoenvironmental Assessment Report.* Quaternary Scientific (QUEST) Unpublished Report October 22; Project Number 059/22.

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