



Northamptonshire Archaeology

Geological investigation of North Farm Borrow Pit Barnham, Suffolk



Northamptonshire Archaeology

2 Bolton House
Wootton Hall Park
Northampton NN4 8BE
t. 01604 700493 f. 01604 702822
e. sparry@northamptonshire.gov.uk
w. www.northantsarchaeology.co.uk



Northamptonshire
County Council

W A Boismier

Report 13/94

May 2013

BNH069



**Geological Investigation of North Farm
Borrow Pit, Barnham, Suffolk**

By

WA Boismier

Prepared for
CgMs Consulting
140 London Wall
London
EC2Y 5DN

OASIS REPORT FORM

| PROJECT DETAILS | | OASIS NO: 151578 |
|---|---|---|
| Project name | Geological investigation of North Farm Borrow Pit, Barnham, Suffolk | |
| Short description | A series of nine (9) test pits were excavated across the site of a proposed borrow pit at North Farm, Barnham, Suffolk to assess whether any of the geological deposits present within the application site contained or had the potential to contain Palaeolithic archaeological remains. Recorded sediments for the test pits comprise <i>in situ</i> and reworked glaciofluvial sand and gravel, Chalky Lowestoff Till, colluvial sediment and probable palaeosols. Sediments containing <i>in situ</i> and reworked archaeological materials similar to those recorded at the Lower Palaeolithic archaeological sites of East Farm, Barnham, and Brickyard Pit, Elveden, were not found within the area of the site. In addition, no artefacts were recovered from any of the test pits. These results indicate that deposits containing or having the potential to contain Palaeolithic artefacts and other materials are not present within the application area. Sand and gravel extraction will therefore have no impact on Palaeolithic heritage assets. | |
| Project type | Evaluation | |
| Site status | None | |
| Previous work | DBA (Collings 2012); evaluation (Muldowney and Jones 2012) | |
| Current land use | Arable | |
| Future work | None | |
| Monument type/ period | None | |
| Significant finds | None | |
| PROJECT LOCATION | | |
| County | Suffolk | |
| Site address | North Farm Borrow Pit, Barnham | |
| Study area (sq metres) | 15ha | |
| OS Easting & Northing | TL 8460 7930 | |
| Height OD | 17-23m | |
| PROJECT CREATORS | | |
| Organisation | Northamptonshire Archaeology | |
| Project brief originator | CgMs Consulting | |
| Project Design originator | Northamptonshire Archaeology | |
| Director/Supervisor | W A Boismier | |
| Project Manager | Ian Meadows | |
| Sponsor or funding body | CgMs Consulting | |
| PROJECT DATE | | |
| Start date | 3-9-2012 | |
| End date | 4-9-2012 | |
| ARCHIVES | Location (Accession no.) | Content (eg pottery, animal bone etc) |
| Physical | BNH069 | |
| Paper | | Report text and figures Test pit log forms |
| Digital | | |
| BIBLIOGRAPHY | | |
| Journal/monograph, published or forthcoming, or unpublished client report (NA report) | | |
| Title | Geological investigation of North Farm Borrow Pit, Barnham, Suffolk | |
| Serial title | Northamptonshire Archaeology report, 13/94 | |
| Author | W A Boismier | |

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**GEOLOGICAL INVESTIGATION OF
NORTH FARM BORROW PIT
BARNHAM
SUFFOLK**

Abstract

A series of nine (9) test pits were excavated across the site of a proposed borrow pit at North Farm, Barnham, Suffolk to assess whether any of the geological deposits present within the application site contained or had the potential to contain Palaeolithic archaeological remains. Recorded sediments for the test pits comprise in situ and reworked glaciofluvial sand and gravel, Chalky Lowestoff Till, colluvial sediment and probable palaeosols. Sediments containing in situ and reworked archaeological materials similar to those recorded at the Lower Palaeolithic archaeological sites of East Farm, Barnham, and Brickyard Pit, Elveden, were not found within the area of the site. In addition, no artefacts were recovered from any of the test pits. These results indicate that deposits containing or having the potential to contain Palaeolithic artefacts and other materials are not present within the application area. Sand and gravel extraction will therefore have no impact on Palaeolithic heritage assets.

1 INTRODUCTION

Northamptonshire Archaeology was commissioned by CgMs Consulting to undertake a field evaluation within a c. 15ha area of arable land proposed for mineral extraction at North Farm, Barnham, Suffolk (centred at NGR TL 8460 7930, Fig 1). The application area is to act as a borrow pit to provide sand and gravel for the A11 Fiveways to Thetford Road Improvement Scheme.

A preliminary stage of archaeological work comprised a desk-based assessment prepared by CgMs Consulting on behalf of Elveden Farms Limited (Collings 2012). This assessment found that the application area was situated between the two Lower Palaeolithic sites recorded at East Farm, Barnham (Ashton *et al.* 1998) and Brickyard Pit (Elveden Warren), Elveden (Ashton *et al.* 2005) and had some limited potential to include Pleistocene sediments containing archaeological materials.

A written scheme of investigation (WSI) for the trial trenching of the application area was prepared by Northamptonshire Archaeology (Meadows 2012). This document outlined the aims of the evaluation and detailed the methodology by which the aims were to be achieved. The WSI also specified that a series of geotechnical test pits be excavated across the site to determine the presence or absence of Pleistocene sediments containing Lower Palaeolithic artefactual materials. The trial trenching was carried out by Northamptonshire Archaeology in August and November 2012 (Muldowney and Jones 2012).

This report describes the results of the geological investigation of the application site and discusses the sediments found across the area, their stratigraphic succession and provisional correlations to similar sediments recorded for the area surrounding the site. Sediments similar to those recorded at East Farm, Barnham and Elveden containing Lower Palaeolithic artefacts do not appear to be present within the application area.

2 SITE LOCATION, TOPOGRAPHY AND GEOLOGY

The application site is located within the Breckland area of north-western Suffolk and south-western Norfolk that is characterised by a low plateau (30-50m aOD) and dissected by a number of rivers (Rivers Lark, Little Ouse and the Wissey) which drain the area westwards into the Fen basin. The locality lies to the south of Thetford Heath near Barnham and comprises a wedge-shaped area of arable land approximately 15ha in extent. It is bordered to the north by the Elveden Road, to the south by Hunwellspring Plantation and to the east and west by arable fields and overhead power lines.

The site is situated within a broad shallow valley with elevations in the north rising to c.23m aod along the Elveden Road and in the south to c. 21m aOD within the Triangle Plantation. This valley gently slopes towards the east from an elevation of c. 22m aOD along the application site's western boundary to c. 17m aOD at its eastern boundary.

The underlying geology of the site is recorded as Upper Chalk of Cretaceous Age overlain by Quaternary glaciofluvial sand and gravel (Soil Survey of England and Wales 1983, 1:250,000 Series, Soils of Eastern England). Soils are argillic brown sands of the Worlington Association (Hodge *et al.* 1984, 368). To the north of the application site along both sides of the Elvedon Road patterned ground is visible on aerial photographs, possibly reflecting cryoturbation and other cold climate processes.

3 ARCHAEOLOGICAL BACKGROUND

The application area is situated between two Lower Palaeolithic archaeological sites, one c. 3km to the east at East Farm, Barnham (Ashton *et al.* 1998) and the other c. 4km to the north-west at Brickyard Pit (Elveden Warren), Elveden (Ashton *et al.* 2005). The two archaeological sites are dated to the temperate Hoxnian Interglacial (MIS 11) and possess stratigraphic sequences reflecting similar palaeoenvironmental and depositional conditions during the early part of the interglacial following deglaciation (Ashton *et al.* 2005, 54-55). Artefacts occur in a number of sediment types and stratigraphic units at both sites and include marginal 'shoreline' lag deposits, colluvial slope and sediment gravity flow deposits and palaeosol sediments (Table 1) with *in situ* and reworked material occurring in different areas within the same stratigraphic unit. Overall, the sedimentary evidence for the two sites summarised in Table 1 points to 'shoreline' lag-type deposits and palaeosol sediments as the most likely deposits to contain *in situ* Palaeolithic archaeological materials.

In 1998 and 1999 RMC Aggregates (UK) Limited undertook a geotechnical investigation of the site employing 34 boreholes randomly distributed across the application area and its surroundings (Collins 2013 Appendix 1). In addition a further nine trial pits were excavated across the area in January 2012 (Collings 2012 Appendix 2). The results of these surveys revealed substantial variation in sand and gravel across the application area ranging from coarse gravel and sand to pebbly sand and sand with little or no gravel fraction. No sediments similar to those containing artefacts recorded for East Farm, Barnham and Brickyard Pit, Elveden were found within the overall area investigated.

4 AIMS AND OBJECTIVES

The principal aim of the investigation was to determine whether any of the geological deposits present within the application site contained or had the potential to contain Palaeolithic archaeological remains.

The specific objectives of the work were to provide further information on:

- The location, extent, character and potential date of any geological deposits or features containing Palaeolithic archaeological remains;
- The integrity and state of preservation of these deposits or features and any associated archaeological or palaeontological materials;
- The recovery of a sample of any Palaeolithic artefacts or materials present.

5 METHODS

Nine test pits were excavated across the area of the application site on the 3rd and 4th of September 2012. Test pits were laid out in a rough cruciform pattern with five (5) located on an east-west transect and four (4) along a north-south line. Each test pit was placed at the end of a trial trench (Fig 2) and excavated in a series of 0.3m-0.4m thick spits using a 21-ton tracked 360° excavator fitted with a 2m-wide toothless ditching bucket (4mx2m test pit area). All excavation was carried out under archaeological supervision and continued until chalk bedrock was exposed at the base of the test pit. Fissured Chalk bedrock was reached in all nine test pits. Test pits were backfilled on the completion of recording.

Sediments from individual test pits were inspected *ex situ* and a representative section measured, photographed and recorded on proforma test pit record sheets. The work was carried out in accordance with the Institute for Archaeologists' *Standard and guidance for archaeological field evaluation* (IfA 2008). All records have been compiled in a structured archive in accordance with the guidelines of Appendix 3 in the English Heritage procedural document *Management of Archaeological Projects* (EH 1991).

Excavated sediments were scanned for archaeological and paleontological materials prior to test pit backfilling. A 20-litre sediment sample from selected deposits was also sieved on-site for the retrieval of artefacts and to assess the clast lithology for the recorded test pit sediments. No artefacts were recovered from any of the sediments sampled across the site.

Borehole and trial pit co-ordinate values for previous geotechnical investigations were generated from survey maps (Collins 2013 Appendices 1 & 2). Ordnance Survey elevations for these borehole and trial pit locations were recorded during the evaluation using differential GPS. Borehole and trial pit sediment logs were not utilised for stratigraphic and descriptive purposes due to a number of ambiguities and recording inconsistencies between the different surveys carried out across the site. Five boreholes and four trial pits, however, were selected to increase the number of data points used to map the surface of the chalk bedrock across the application area.

Post-excavation procedures included the use of the geological computer package RockWorks 2002 to generate sediment strip logs for the test pits across the application area. The SURFER® computer graphics package was employed to produce contour and wire frame maps of the surface of the Chalk bedrock.

6 SEDIMENTS AND STRATIGRAPHIC SEQUENCE

6.1 Introduction

Test pit data indicate that a reasonably complex stratigraphic sequence is present both vertically and laterally across the area of the application site (Figs 3 & 4). The sequence varies from test pit to test pit and the complete stratigraphy cannot be observed in any one pit. It is, however, possible to recognise six principal units within the area. These are:

- Unit 6 Ploughsoil
- Unit 5 Humic sand
- Unit 4 Orange-brown sand and gravel
- Unit 3 Brown sand
- Unit 2 Chalky diamicton
- Unit 1 Sand and gravel

This sequence is best conceptualised as provisional and subject to confirmation or revisions and amendments derived from any further stratigraphical work carried out at the site during extraction. The exact relationship between the two lowest units, the chalky diamicton (Unit 2) and the sand and gravel (Unit 1) remains problematic as the chalky diamicton occurs in only one test pit and lies directly on the Chalk. Further investigation during extraction has the potential to resolve this stratigraphic problem.

6.2 The Chalk surface

The Chalk bedrock across the application area is extensively weathered or degraded with a surface composed of fissured sandy chalk, flint nodules and rounded pebbles, and patches of pale brown clay (dissolved chalk). Thin deposits of Chalky drift-like sediments made up of chalk fragments, medium sand and rounded flint pebbles are also present across the site (TPs 01, 02, 04, 06) and indicate that a substantial proportion of the Chalk surface for application area and its immediate surroundings are covered by thin deposits of Chalky drift (Curtis *et al.* 1976,169-178; Hodge *et al.* 1984,17).

Borehole, trial and test pit data show that the Chalk surface forms a wide shallow depression that is aligned west to east with elevations sloping from 19.02m aOD on the western edge of the application area to 14.18m aOD at its eastern boundary (Fig 5 a & b). These elevations are within or below those recorded at East Farm Barnham (Lewis 1998, 30) and suggest the possibility that the depression may form part of the large channel feature identified at East Farm (*ibid*: 65, 74-77, fig 4.3). Available data, however, are unable to resolve this question.

6.3 Unit 1: Sand and gravel

The sand and gravel of Unit 1 forms the basal Pleistocene stratum and has been recorded in eight (8) of the test pits (TPs 1-8). This unit is typically between 1.50m-3.15m in thickness with the sand and gravel displaying considerable variability across the area and resting directly on the underlying surface of the Chalk bedrock. Recorded sediments range from beds of medium to coarse gravel typically 0.20-0.40m in thickness with little interstitial sand separated vertically by thinner beds of medium-coarse sand to pebbly sand and sand facies with or without isolated, often thin, beds of fine-medium or coarse gravel (Figs 6 and 7). Fine silty clay and silty sand laminae characteristic of fluvial deposition also occur in the more sandy facies (TPs 04, 07).

Clast lithology for the 20-litre sieve samples is predominately flint with other lithologies represented only by the rare occurrence of small-medium quartzite pebbles in some of the samples. No artefacts were recovered from the sediments of Unit 1 in any of the test pits.

The sand and gravel of this unit are interpreted as glaciofluvial outwash material (Russell and Marren 1999). Sediment characteristics are similar to those recorded at East Farm, Barnham for the sand and gravel infilling the large channel feature although lithologically less diverse (Lewis 1998, 30-32). Unit 1 sediments also occupy the west-east depression in the Chalk bedrock identified for the application area and indicate a similar pattern of infilling by outwash material to that identified for East Farm.

6.4 Unit 2: Chalky diamiction

Chalky diamiction occurs in only one (1) test pit (TP09) and was seen to rest on the Chalk bedrock at an elevation of 20.02m aOD (Figs 8 and 9). It is 1.0m in thickness and consists of a poorly sorted mixture of chalk pebbles and flint in an olive brown sandy silt/clay matrix. Clast lithology is dominated by non-durable chalk pebbles with flint pebbles and nodules much less common. No other lithologies were observed in excavated sediments from this Unit and no artefacts were recovered.

The chalky diamiction is interpreted as a glacial deposit, most likely formed at the base of a glacier. It is similar in character and composition to the chalky diamiction units identified as glaciogenic deposits at both East Farm, Barnham (Lewis 1998, 37-41) and Brickyard Pit Elveden (Lewis 2005, 7-8), and, like them, correlated to the regionally extensive Lowestoff Till Member of MIS 12 (Lewis 1999).

6.5 Unit 3: Brown sand

This unit also occurs in only one (1) test pit (TP09) where it overlies the chalky diamiction of Unit 2 (Fig 8). The unit attains a thickness of 0.40m and comprises brown fine-medium sand and slightly gravelly silty sand. Clast lithology for the 20 litre sieve sample is exclusively flint with no other lithologies present in the sample. No artefacts were found in this sample.

No sedimentary structures particularly diagnostic of its origin have been recorded for this unit. However, the sediment characteristics are similar to facies interpreted as colluvial deposits (French 1976, 141-143; Goldberg and Macphail 2006, 76-84) and suggest that Unit 3 was probably formed by the deposition of fine-grained sediment and flint clasts as a result of slope wash from nearby slopes.

6.6 Unit 4: Orange-brown sand and gravel

This unit is reasonably widespread across the application area and has been recorded in seven (7) test pits (TPs 01, 03-08). It is typically between 0.20m and 1.20m in thickness with the sand and gravel displaying a degree of variability across the site and resting directly on Unit 1 (Fig 6). Recorded sediments range from a gravelly fine-medium sand to a slightly gravelly sand and a predominately massive, largely stoneless, fine-medium sand. The clast lithology for the 20-litre sieve samples is flint and the rare occurrence of small-medium quartzite pebbles. No other lithologies appear to be present in the samples and no artefacts were found in any of the samples.

Unit 4 is interpreted as reworked Unit 1 sediments. Variation in the character and lithological composition of this unit closely reflects that for the underlying sand and gravel of Unit 1 and clearly indicates derivation from these glaciofluvial deposits. The conditions under which the reworking of Unit 4 sediments took place cannot be determined due to the absence of diagnostic sedimentary structures and truncation of the deposit by arable ploughing. However, it is likely that cryoturbation and solifluction as well as other cold climate processes (Sparks and West 1972; French 1976; Ballantyne and Harris 1994) could have contributed to the reworking of Unit 1 sediments. Whether this reworking correlates with the formation of patterned ground within the surrounding area during the Devensian cold stage (MIS 2) or is earlier in age cannot be ascertained with available data.

6.7 Unit 5: Humic sand

Deposits of humic sand have been recorded in two (2) test pits (TPs 02, 09) where they rest on reworked sand and gravel (Unit 4), and colluvial sediment (Unit 3) and are covered by colluvial sediment. These deposits are 0.06m (TP 01) and 0.20m (TP 09) in thickness and consist of black-very dark grey slightly gravelly fine-medium humic sand (Fig 8). Both are massive (structureless) in character and possess a clast lithology composed exclusively flint. No artefacts were recovered from these deposits.

The sediments for this unit are interpreted as probable fragments of palaeosols surviving within the application area (Curtis *et al.* 1976, 69-178; Goldberg and Macphail 2006, 42-71). The humic sand recorded for the deposits representing the remains of organic, most likely, vegetable material that was subsequently buried by colluvial sedimentation (Limbrey 1975, 205-208; Bell 1983; Goldberg and Macphail 2006, 76-84). These sediments are undated and could equally be of Hoxnian or Holocene in age, although the latter is most likely the case.

6.8 Unit 6: Ploughsoil

This unit is the modern ploughsoil occurring across the area. It is typically between 0.25m and 0.50m in thickness and composed of light brown-greyish brown gravelly fine-medium sand. Recorded clast lithology comprises flint and the occasional quartzite pebble. The unit is essentially an anthropogenic soil that is reworked on an annual basis for arable crop production (Davies *et al.* 1993). As such it is not considered any further.

7 DISCUSSION

The nine (9) test pits were excavated across the area of the application site to determine whether any of the geological deposits present within the area contained or had the potential to contain Palaeolithic archaeological remains. Recorded sediments for the test pits comprise *in situ* and reworked glaciofluvial sand and gravel (Units 1 and 4), Chalky Lowestoff Till (Unit 2), colluvial sediment (Unit 3) and probable palaeosols (Unit 5). The glaciofluvial sand and gravel of Unit 1 and the chalky till of Unit 2 can be correlated to similar facies at East Farm, Barnham and Brickyard Pit, Elveden, with the remaining sediments largely local in origin. Marginal 'shoreline' lag deposits, colluvial slope and sediment gravity flow deposits and palaeosol sediments with *in situ* and reworked archaeological material that have been recorded for both archaeological sites do not appear to be present within the area of the application site. In addition, no artefacts were recovered from recorded sediments in any of the test pits.

It would appear that deposits containing or having the potential to contain Palaeolithic artefacts and other materials are not present within the application area. This finding provides support to an earlier assessment made largely on the basis of borehole and trial pit logs regarding the low potential of the site to contain Palaeolithic remains (Collings 2012, 8). These data combined with that for the test pits provide reasonably conclusive evidence that no *in situ* or reworked archaeological materials occur within the proposed extraction area. The extraction of sand and gravel at the site will, therefore, have no impact on the Palaeolithic archaeological record for the area.

8 CONCLUSIONS

Nine (9) test pits were excavated across the area of the proposed borrow pit to assess the potential for geological deposits containing Palaeolithic archaeological materials. Facies recorded in the test pits comprise undisturbed and reworked glaciofluvial sand and gravel, chalky Lowestoff Till and sediments of local origin. Sediments containing *in situ* and reworked archaeological materials similar to those recorded at the Lower Palaeolithic archaeological sites of East Farm, Barnham, and Brickyard Pit, Elveden, were not found within the application area. Lithic artefacts were also not recovered from recorded sediments in any of the test pits.

These results together with the borehole and trial pit logs for the site document that deposits with *in situ* and/or reworked Palaeolithic archaeological materials do not occur within the application area. Mineral extraction from the site as a result, will have no impact on Palaeolithic heritage assets.

9 ACKNOWLEDGEMENTS

Many thanks are due to Ian Meadows, Liz Muldowney, Charlotte Walker and Steve Parry, Northamptonshire Archaeology (NA) for all their support and to Simon Lewis for his assistance and advice during the test pitting. Special thanks are also due to Charlotte Leaning for providing a legible trial pit plan and to Paul Chadwick of CgMs Consulting. Finally, a debt of gratitude is owed to Amir Bassir (NA) for preparing the illustrations.

BIBLIOGRAPHY

Ashton, N, Lewis, S G, and Parfitt, S, 1998 *Excavations at the Lower Palaeolithic Site at East Farm, Barnham, Suffolk 1989-94*, British Museum Occasional Paper, **125**

Ashton, N, Lewis, S, Parfitt, S, Candy, I, Keen, D, Kemp, R, Penkman, K, Thomas, G, Whittaker, J, and White, M, 2005 Excavations at the Lower Palaeolithic site at Elveden, Suffolk, UK, *Proceedings of the Prehistoric Society*, **71**,1-61

Ballantyne, C K, and Harris, C, 1994 *The Periglaciation of Great Britain*, Cambridge University Press, Cambridge

Bell, M G, 1983 Valley sediments as evidence of prehistoric land-use on the South Downs, *Proceedings of the Prehistoric Society*, **49**,119-150

Bowen, D Q, (ed) 1999 *A Revised Correlation of Quaternary Deposits in the British Isles*, Geological Society Special Report, **23**

Collings, M, 2012 *Archaeological Desk Based Assessment: Barnham, Borrow Pit, Barnham, Suffolk*, CgMs Consulting Report, **MC/13685**, March 2012

Curtis, L F, Courtney, F M, and Trudgill, S, 1976 *Soils in the British Isles*, Longman, London

Davies, B, Eagle, D, and Finney, B, 1993 *Soil Management* 5th edition, Farming Press, Ipswich

English Heritage (EH), 1991 *Management of Archaeological Projects*, English Heritage

French, H M, 1976 *The Periglacial Environment*, Longman, London

Goldberg, P, and Macphail, R I, 2006 *Practical and Theoretical Geoarchaeology*, Blackwell, Oxford

Hodge, C A H, Burton, R G O, Corbett, W M, Evans, R, and Seal, R S, 1984 *Soils and their use in Eastern England*, Soil Survey of England and Wales, Bulletin, **13**

Institute for Archaeologists, 2008 *Standard and guidance for archaeological field evaluation*, Institute for Archaeologists

Jones, A P, Tucker, M E, and Hart, J, (eds) 1999 *The Description and Analysis of Quaternary Stratigraphic Field Sections*, Quaternary Research Association Technical Guide, **7**

Lewis, S G, 1998 Quaternary Geology of East Farm Brick Pit, Barnham and the Surrounding Area, in N Ashton *et al.* 1998, 23-78

Lewis, S G, 1999 Eastern England, in D Q Bowen (ed) 1999, 10-27

Lewis, S G, 2005 Stratigraphy of the Site, in N Ashton *et al.* 2005, 5-15

Limbrey, S, 1975 *Soil Science and Archaeology*, Academic Press, London

Meadows, I, 2012 *An Archaeological Trial Trench Evaluation at Proposed Borrow Pit, North Farm, Barnham, Suffolk: Project Design*, Northamptonshire Archaeology, August 2012

Muldowney, L, and Jones, C, 2012 *Archaeological Evaluation of Proposed Borrow Pit, North Farm, Barnham, Suffolk August and November 2012*, Northamptonshire Archaeology report, **12/192**

Russell, A J, and Marren, P M, 1999 Proglacial Fluvial Sedimentary Sequences in Greenland and Iceland: A case study from active proglacial environments subject to Jökulhlaups, in A P Jones *et al.* (eds) 1999, 171-208

Soil Survey of England and Wales, 1983 *Soils of Eastern England 1:250,000 Map*

Sparks, B W, and West, R G, 1972 *The Ice Age in Britain*, Methuen, Norwich

EAST FARM, BARNHAM*

| Unit | Description | Subunit | description | Interpretation | Artefacts |
|------|---------------------|---------|-----------------------|---|-----------|
| 7 | brown silt and clay | | | Colluvial slopewash accumulation(s) & incipient soil formation ('brickearth') | X |
| 6 | black clay | | | Palaeosol | X |
| | | 5e | yellow silty sand | No diagnostic sedimentary structures indicative of origin: likely low energy water conditions formed as Unit 4 periodically inundated whose flow strength sufficient to rework small flakes from Unit 4 | X |
| | | 5d | grey/brown stony clay | Channel infill: silt & reworked flint gravel deposited at channel-edge | X |
| 5 | silt and clay | 5c | grey silt and clay | Channel infill: still water/very low energy water conditions | X |
| | | 5b | grey chalky clay | Sediment gravity flow(s): mass-movement & reworking of materials downslope | - |
| | | 5a | brown silt and clay | Channel infill: still water/very low energy water conditions (poss. lacustrine conditions) & periodic higher energy fluvial regimes | - |
| 4 | cobble layer | | | Lag: coarse flint gravel accumulation at channel-edge periodically inundated & fine sediments winnowed by slow flowing water | X |
| 3 | brown diamicton | | | Sediment gravity flow(s): mass-movement & reworking of materials downslope | X |
| 2 | chalky diamicton | | | Glacial lodgement till (Lowestoft till) | - |
| 1 | sand and gravel | | | Glaciofluvial outwash | - |

* source Lewis 1998

BRICKYARD PIT, ELVEDEN*

| Bed | Description | Subunit | description | Interpretation | Artefacts |
|-----|---------------------|---------|-------------|---|-----------|
| 6 | coversands | | | Windblown sand and periglacial involutions | - |
| 5 | brown silt and clay | | | Colluvial slopewash accumulation(s) & soil formation ('brickearth') | X |
| 4 | black clay | | | Palaeosol | X |
| 3 | gravel | | | Lag: coarse flint gravel accumulation periodically inundated by flowing water | X |
| 2 | grey silt and clay | | | Infill: still water/slow flowing water conditions (poss. lacustrine conditions) | - |
| 1 | chalky diamicton | | | Glacial till (Lowestoft till) | - |

* source Lewis 2005

Table 1: Sediments, stratigraphic succession and artefact occurrence for East Farm Barnham and Brickyard Pit, Elveden

Appendix: Test Pit Logs

TEST PIT 01
 Easting 584601.80
 Northing 279194.50
 Elevation 19.81m aod
 Total Depth 4.75m

| Depth (m) | OD Heights (m) | Thick. (m) | Description |
|-----------|----------------|------------|--|
| 0.00-0.40 | 19.81-19.47 | 0.40 | Ploughsoil |
| 0.40-0.60 | 19.47-18.87 | 0.20 | Orange Brown gravelly fine sand |
| 0.60-3.75 | 18.87-15.12 | 3.15 | Brown-Pale Brown fine, medium sand to coarse sand and fine, medium coarse flint gravel with rare small, medium rounded quartzite pebbles |
| 3.75+ | 15.12 | - | Pale Grey pebbly (flint) sandy chalk |
| 4.75 | 10.37 | - | End of test pit |

TEST PIT 02
 Easting 584667.60
 Northing 279263.70
 Elevation 18.83m aod
 Total Depth 3.60m

| Depth (m) | OD Heights (m) | Thick. (m) | Description |
|-----------|----------------|------------|---|
| 0.00-0.43 | 18.83-18.40 | 0.43 | Ploughsoil |
| 0.43-0.49 | 18.40-18.34 | 0.06 | Light Grey fine sand |
| 0.49-0.55 | 18.34-18.28 | 0.06 | Dark Grey fine sand (humic) |
| 0.55-3.40 | 18.28-15.43 | 2.85 | Brown-Pale Brown fine, medium sand to coarse sand and fine, medium, coarse gravel with rare small, medium rounded quartzite pebbles |
| 3.40+ | 15.43 | - | Pale Grey pebbly (flint) sandy chalk |
| 3.60 | 15.23 | - | End of test pit |

TEST PIT 03
 Easting 584758.20
 Northing 279302.50
 Elevation 18.46m aod
 Total Depth 3.80m

| Depth (m) | OD Heights (m) | Thick. (m) | Description |
|-----------|----------------|------------|---|
| 0.00-0.40 | 18.46-18.06 | 0.40 | Ploughsoil |
| 0.40-0.70 | 18.06-17.76 | 0.30 | Orange Brown gravelly fine, medium sand |
| 0.70-3.20 | 17.76-15.26 | 2.50 | Brown-Pale Brown fine, medium sand to coarse sand and fine, medium, coarse flint gravel |
| 3.20+ | 15.43 | - | Pale Grey flinty sandy chalk |
| 3.80 | 14.66 | - | End of test pit |

TEST PIT 04
 Easting 584872.90
 Northing 279296.60
 Elevation 17.83m aod
 Total Depth 3.80m

| Depth (m) | OD Heights (m) | Thick. (m) | Description |
|-----------|----------------|------------|---|
| 0.00-0.45 | 17.83-17.38 | 0.45 | Ploughsoil |
| 0.45-1.20 | 17.38-16.63 | 0.75 | Orange Brown fine, medium sand to slightly gravelly fine, medium sand |
| 1.20-1.65 | 16.63-16.18 | 0.45 | Orange Brown gravelly fine sand |
| 1.65-3.65 | 16.18-14.18 | 2.00 | Brown-Pale Brown fine, medium sand to coarse sand and fine, medium, coarse flint gravel |
| 3.65+ | 14.18 | - | Pale Grey flinty sandy chalk |
| 3.80 | 14.03 | - | End of test pit |

TEST PIT 05
 Easting 584592.60
 Northing 279327.40
 Elevation 19.72m aod
 Total Depth 3.80m

| Depth (m) | OD Heights (m) | Thick. (m) | Description |
|-----------|----------------|------------|---|
| 0.00-0.50 | 19.72-19.22 | 0.50 | Ploughsoil |
| 0.50-1.20 | 19.22-18.52 | 0.70 | Orange Brown gravelly fine sand |
| 1.20-3.50 | 18.52-16.22 | 2.30 | Brown-Pale Brown fine, medium sand to coarse sand and fine, medium, coarse flint gravel |
| 3.50+ | 16.22 | - | Pale Grey flinty sandy chalk |
| 3.80 | 15.92 | - | End of test pit |

TEST PIT 06
 Easting 584591.90
 Northing 279420.40
 Elevation 19.06m aod
 Total Depth 2.60m

| Depth (m) | OD Heights (m) | Thick. (m) | Description |
|-----------|----------------|------------|--|
| 0.00-0.25 | 19.06-18.81 | 0.25 | Ploughsoil |
| 0.25-0.60 | 18.81-18.46 | 0.35 | Orange Brown fine, medium sand to slightly gravelly fine, medium sand |
| 0.60-0.90 | 18.46-18.16 | 0.30 | Orange Brown gravelly fine sand |
| 0.90-2.40 | 18.16-16.66 | 1.50 | Brown-Pale Brown fine, medium sand to coarse sand and fine medium, coarse flint gravel |
| 2.40+ | 16.66 | - | Pale Grey flinty and pebbly (flint & chalk) sandy chalk |
| 2.60 | 16.46 | - | End of test pit |

TEST PIT 07
 Easting 584575.60
 Northing 279378.70
 Elevation 19.58m aod
 Total Depth 4.10m

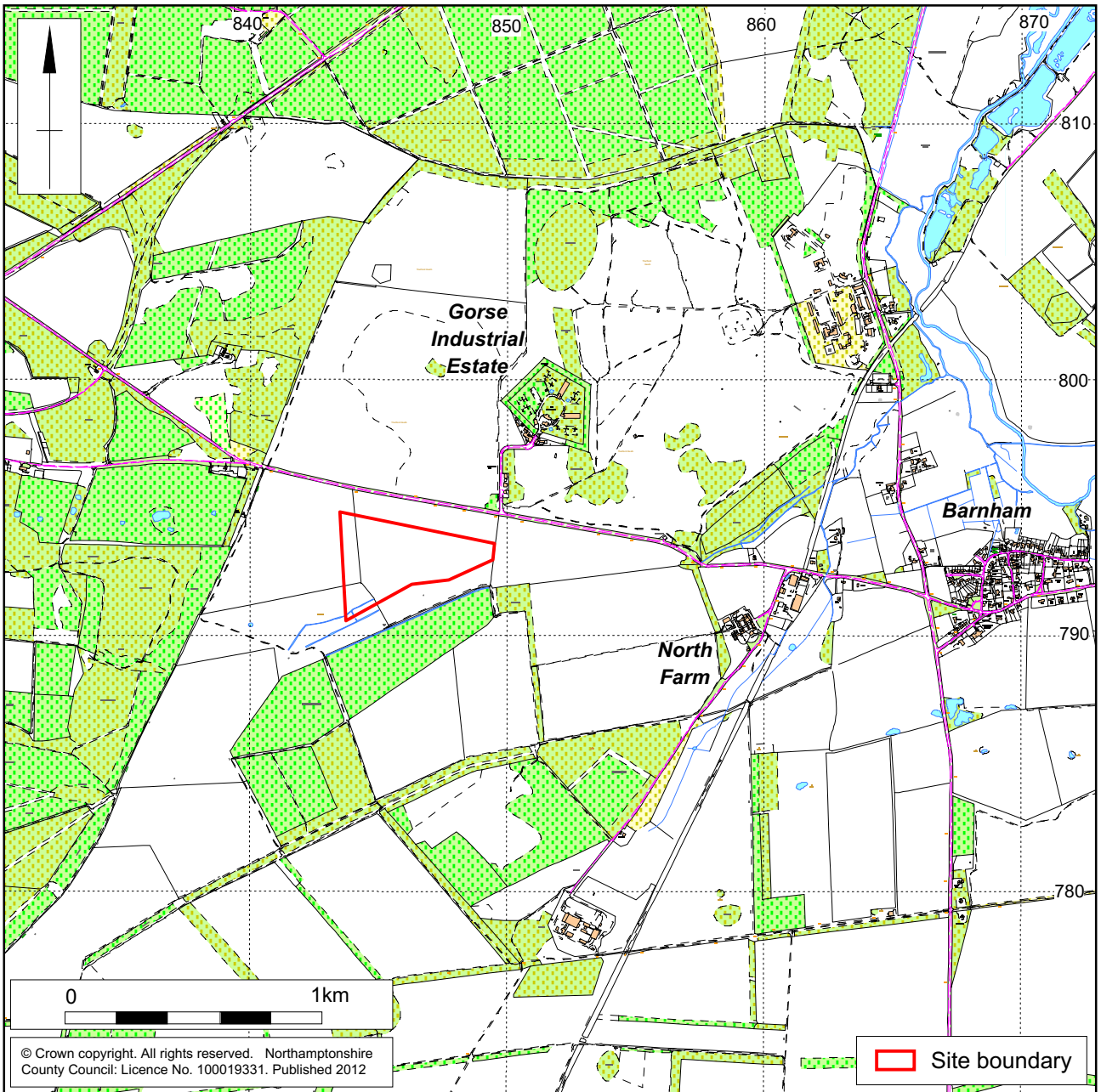
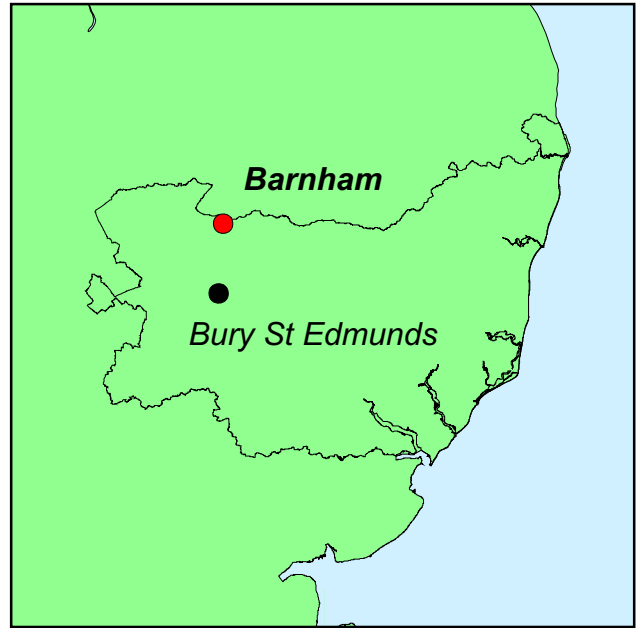
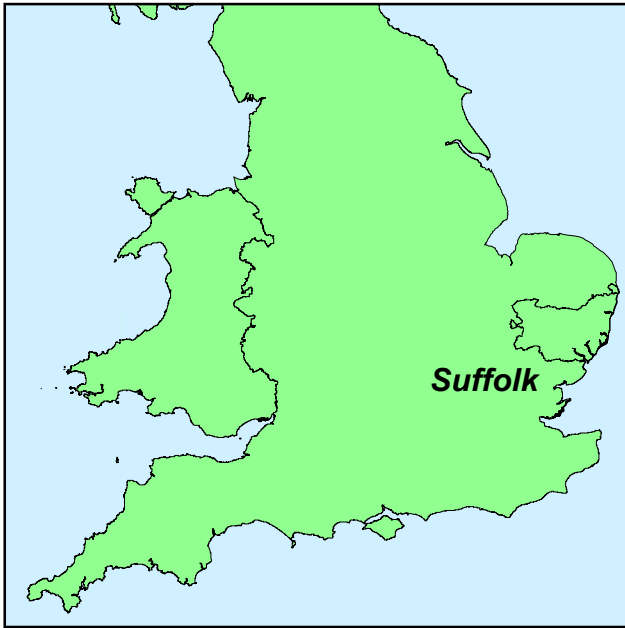
| Depth (m) | OD Heights (m) | Thick. (m) | Description |
|-----------|----------------|------------|---|
| 0.00-0.45 | 19.58-19.13 | 0.45 | Ploughsoil |
| 0.45-0.60 | 19.13-18.98 | 0.15 | Orange Brown fine, medium sand to slightly gravelly fine, medium sand |
| 0.60-1.10 | 18.98-18.48 | 0.50 | Orange Brown gravelly fine sand |
| 1.10-3.90 | 18.48-15.68 | 2.80 | Brown-Pale Brown fine sand to slightly gravelly fine sand |
| 3.90+ | 15.68 | - | Pale Grey flinty sandy chalk |
| 4.10 | 15.48 | - | End of test pit |

TEST PIT 08
 Easting 584538.70
 Northing 279272.60
 Elevation 19.91m aod
 Total Depth 3.00m

| Depth (m) | OD Heights (m) | Thick. (m) | Description |
|-----------|----------------|------------|---|
| 0.00-0.50 | 19.91-19.41 | 0.50 | Ploughsoil |
| 0.50-0.75 | 19.41-19.16 | 0.25 | Orange Brown fine, medium sand to slightly gravelly fine, medium sand |
| 0.75-2.70 | 19.16-17.21 | 1.95 | Brown-Pale Brown fine, medium sand to coarse sand and fine, medium, coarse flint gravel |
| 2.70+ | 17.21 | - | Pale Grey flinty sandy chalk |
| 3.0 | 16.91 | - | End of test pit |

TEST PIT 09
 Easting 584435.20
 Northing 279250.40
 Elevation 21.52m aod
 Total Depth 2.90m

| Depth (m) | OD Heights (m) | Thick. (m) | Description |
|-----------|----------------|------------|--|
| 0.00-0.50 | 21.52-21.02 | 0.50 | Ploughsoil |
| 0.50-0.90 | 21.02-20.62 | 0.40 | Grey Brown fine sand to slightly gravelly fine sand |
| 0.90-1.10 | 20.62-20.42 | 0.20 | Black-Dark Grey fine, medium slightly gravelly sand (humic) |
| 1.10-1.50 | 20.42-20.02 | 0.40 | Brown fine, medium sand to slightly gravelly fine, medium silty sand |
| 1.50-2.50 | 20.02-19.02 | 1.00 | Olive Brown chalky & flinty sandy silt/clay (till) |
| 2.50+ | 19.02 | - | Pale Grey flinty sandy chalk |
| 2.90 | 18.62 | - | End of test pit |

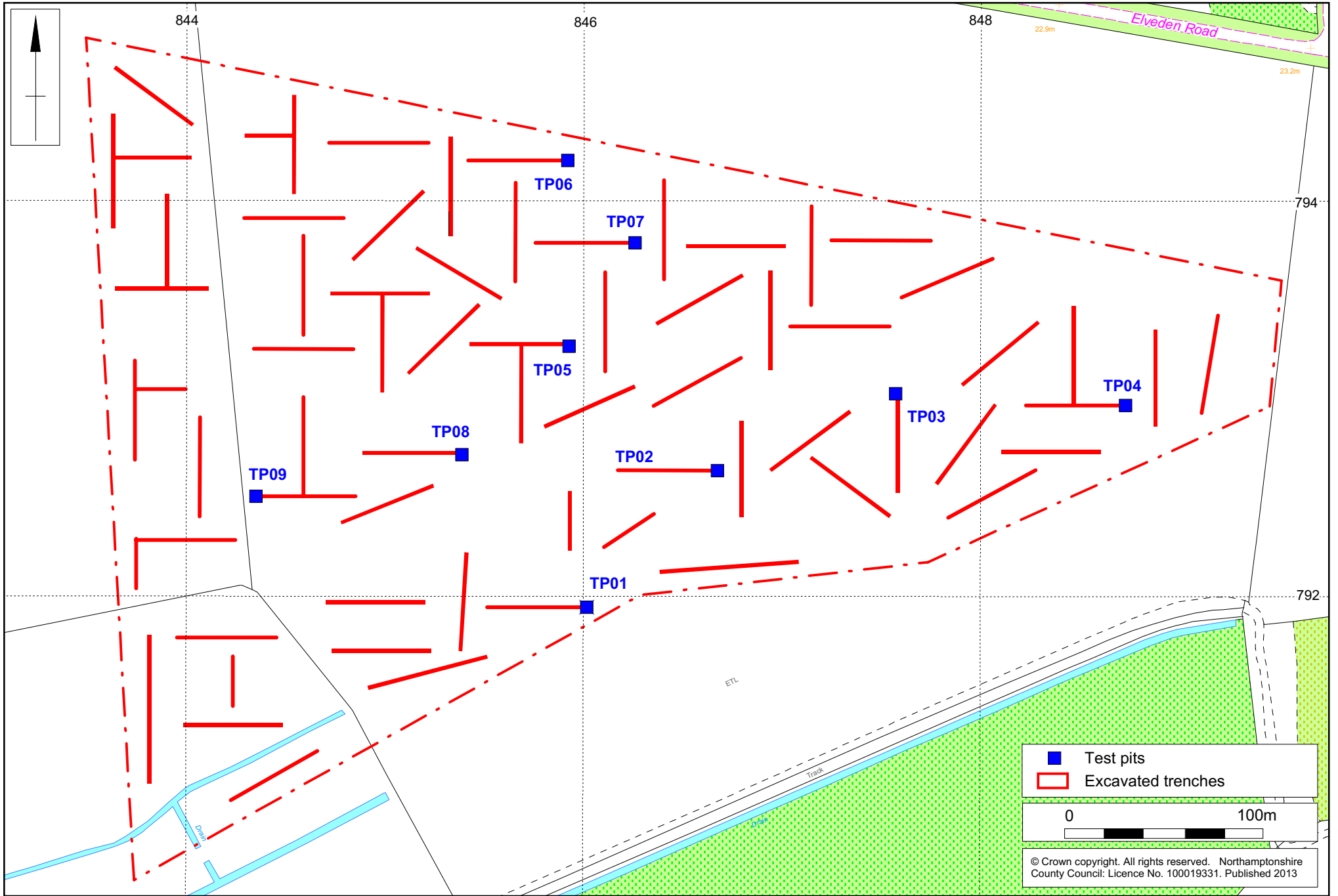


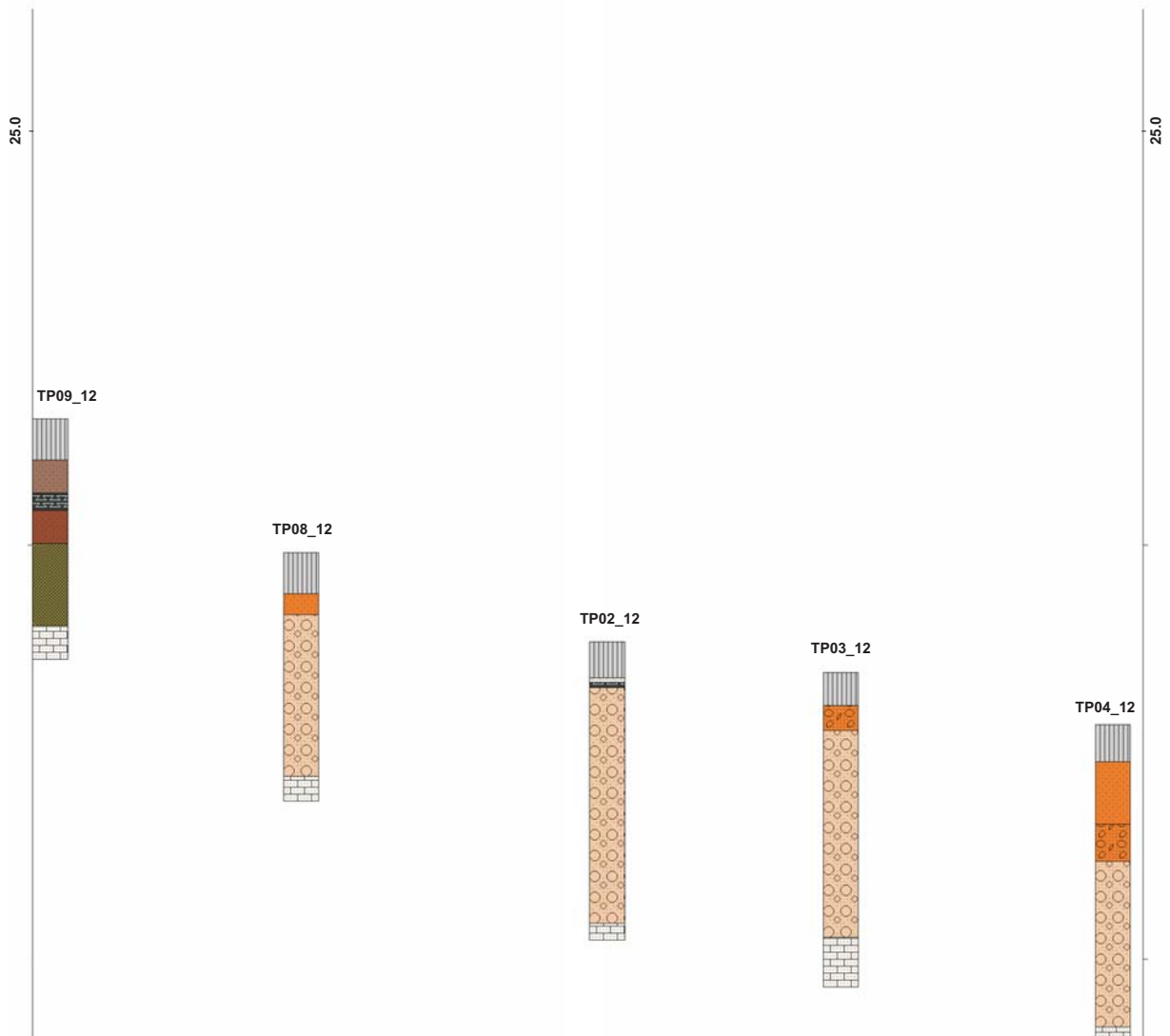
Scale 1:25,000










Site location Fig 1

Scale 1:2500 (A4)

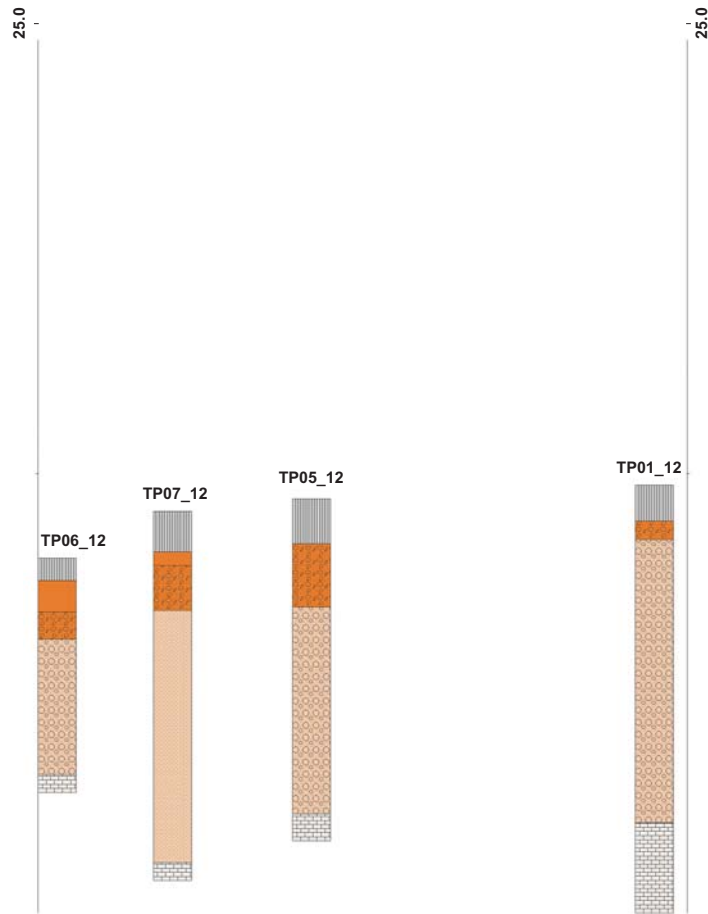
Test pit locations Fig 2











-  **Ploughsoil**
-  **Orange-Brown fm sand to slightly gravelly fm sand**
-  **Orange Brown gravelly f sand**
-  **Brown-Pale Brown fm sand to c sand and fmc flint gravel**
-  **Pale-Grey flinty sandy chalk**
-  **Light Grey f sand**
-  **Grey-Brown f sand to slightly gravelly f sand**
-  **Dark-Grey fm sand (humic sand)**
-  **Brown fm sand to slightly gravelly fm silty sand**
-  **Olive-Brown chalky sandy clay**

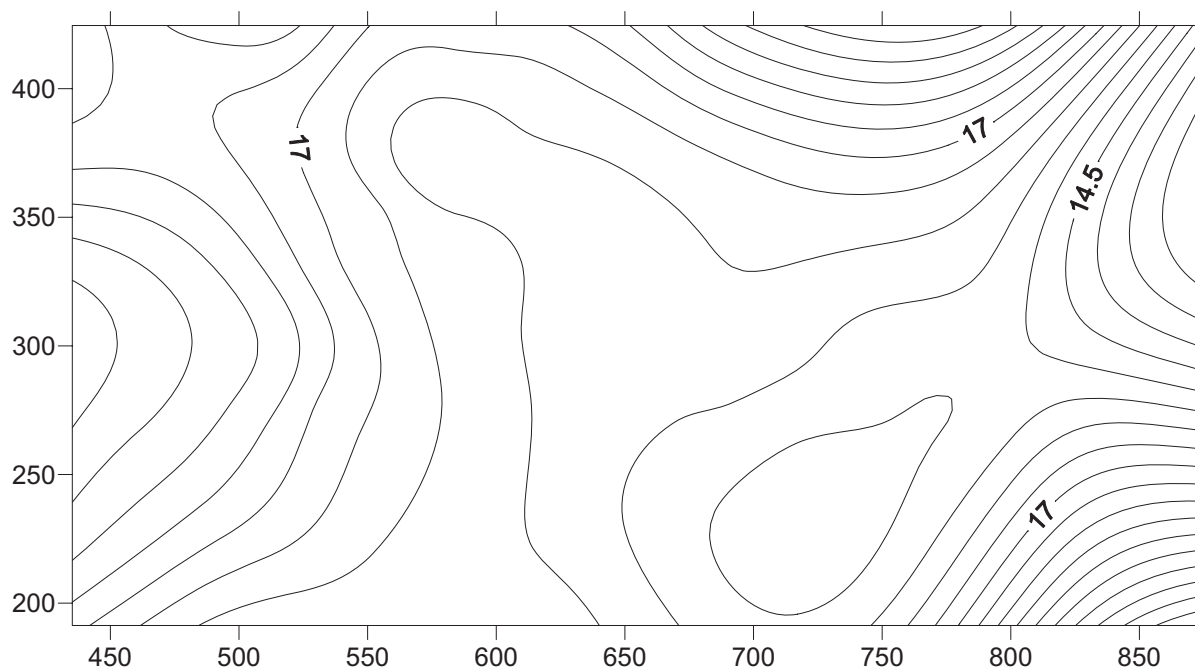
f - fine
fm - fine & medium
c - coarse
fmc - fine, medium & coarse



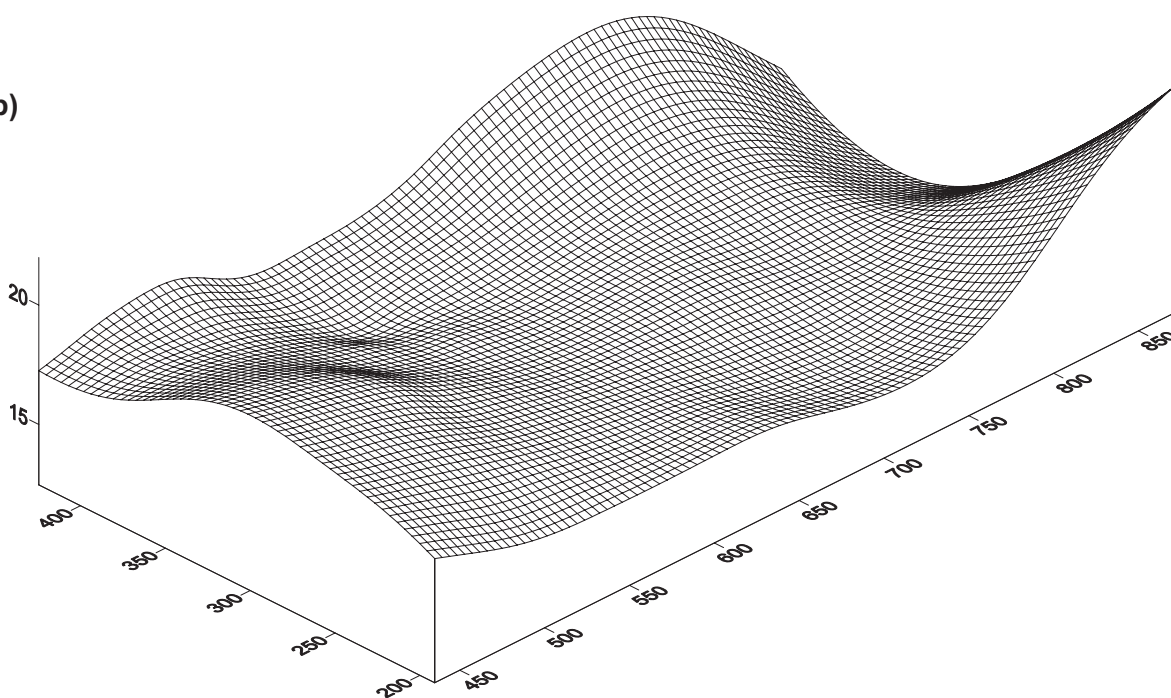
-  **Ploughsoil**
-  **Orange-Brown fm sand to slightly gravelly fm sand**
-  **Orange Brown gravelly f sand**
-  **Brown-Pale Brown f sand to slightly gravelly f sand**
-  **Brown-Pale Brown fm sand to c sand and fmc flint gravel**
-  **Pale-Grey flinty sandy chalk**

f - fine
fm - fine & medium
c - coarse
fmc - fine, medium & coarse

a)



b)



Surface of Chalk Bedrock: a) contour map of elevations, b) wire frame model Fig 5



TP06: Medium-coarse sand and gravel of units 1 and 4 Fig 6



TP08: Predominately massive fine-medium sand of Unit 1 Fig 7



TP09: Chalky diamicton (Unit 2) overlain by colluvial sediment (Unit 3) and humic sand (Unit 5)





Northamptonshire County Council

Northamptonshire Archaeology

Northamptonshire Archaeology
2 Bolton House
Wootton Hall Park
Northampton NN4 8BE
t. 01604 700493 f. 01604 702822
e. sparry@northamptonshire.gov.uk
w. www.northantsarchaeology.co.uk



Northamptonshire
County Council