Lincoln Eastern Bypass

Archaeological Monitoring of Ground Investigation Works

Prepared by T. Linington

2014

Project Code – LEB1

TPA Report No. 91/2014

Trent & Peak Archaeology ©
Unit 1, Holly Lane
Chilwell
Nottingham
NG9 4AB
0115 8967400 (Tel.)
0115 925 9464 (Fax.)

Trent & Peak ARCHAEOLOGY

Trent & Peak Archaeology is a trading name of York Archaeological Trust Registered Charity in England and Wales (No. 509060) and Scotland (No. SCO42846)

Registered Office:
47 Aldwark, York YO1 7BX

A Company Limited by Guarantee
Without Share Capital Registered
in England No. 1430801

QUALITY ASSURANCE

Prepared by **Date**	Thomas Linington, Project Supervisor
Checked by **Signed** **Date**	Gareth Davies, Project Manager 
Approved by **Signed** **Date**	Lee Elliott, Head of Projects 
Report Number	91/2014
Status	Version 1.2

DISCLAIMER

This Report has been prepared solely for the person/party which commissioned it and for the specifically titled project or named part thereof referred to in the Report. The Report should not be relied upon or used for any other project by the commissioning person/party without first obtaining independent verification as to its suitability for such other project, and obtaining the prior written approval of York Archaeological Trust for Excavation and Research Limited ("YAT") (trading as Trent & Peak Archaeology) YAT accepts no responsibility or liability for the consequences of this Report being relied upon or used for any purpose other than the purpose for which it was specifically commissioned. Nobody is entitled to rely upon this Report other than the person/party which commissioned it. YAT accepts no responsibility or liability for any use of or reliance upon this Report by anybody other than the commissioning person/party.

SUMMARY

- Trent & Peak Archaeology was commissioned by Anglian Water, to carry out a watching brief, consisting of archaeological monitoring and recording of ground investigations (GI) works (comprising a hand dug inspection pit and rotary borehole located at 480165.66 E, 355641.88 N & 11.421m OD) ahead of the Lincoln Eastern Bypass (LEB1) works.

- The work was carried out on the 28th July 2014 with archaeological monitoring by staff from Trent & Peak Archaeology in accordance with the approved Written Scheme of Investigation (Davies 2014).

- The proposed Lincoln Eastern Bypass Scheme is located on the eastern side of the city of Lincoln.

- A total of one borehole was monitored archaeologically to a depth of 2.0m below ground level (BGL); this included the hand dug pit, as well as the retrieved dynamic probes.

- The findings of this watching brief were very limited, due to the works only comprising a single borehole. From this it appeared that within the boundary of the housing estate and play area, there was limited chance of archaeology surviving intact, due to truncation by the 20th century development of the area. In addition, at a depth of 0.9m BGL naturally lain deposits were observed which appeared to have no archaeological potential. By a depth of 1.95m BGL sterile natural deposits were certainly encountered.

Report on the archaeological watching brief for the Newark Sewer Flood Scheme

Contents

LIST OF PLATES

LIST OF FIGURES

1. INTRODUCTION

1.1 Trent & Peak Archaeology was commissioned by Anglian Water, to carry out a watching brief, consisting of archaeological monitoring and recording of ground investigations (GI) works (comprising a single hand dug inspection pit and dynamic probing) ahead of the Lincoln Eastern Bypass Scheme works.

1.2 The development, hereafter 'the Site', was located on the eastern limits of the city of Lincoln, just on the edge of a 20th century housing estate.

1.3 The archaeological monitoring was conducted as part of initial evaluation works in order to assess the potential survival of archaeological deposits around the route of the proposed redevelopment.

2. PROJECT BACKGROUND

2.1 Due to the impending works associated with the Lincoln Eastern Bypass, Anglian Water needed to consider moving a number of their services on the eastern fringe of Lincoln.

2.2 It had been agreed that the initial evaluation of archaeological potential throughout the scheme was to take the form archaeological monitoring of any invasive Ground Investigation works, comprising boreholes.

2.3 While there were no records of any archaeological findings within the immediate study area, due to the proximity to the historic city of Lincoln, it was deemed that archaeological attendance was required.

3. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

3.1 Topography*:* As noted above, the site was located on the eastern fringe of Lincoln, just outside the built-up area of a 20th century housing estate. The borehole was located on a grassy play area. (Figure One)

3.2 Geology*:* The solid geology underlying the site was Blisworth Clay Formation – Mudstone, sedimentary bedrock formed approximately 165 to 168 million years ago in the Jurassic Period, in an environment previously dominated by swamps, estuaries and deltas. (http://mapapps.bgs.ac.uk/geologyofbritain/home.html).

3.3 No superficial geology was observed across the site.

3.4 While no records existed of any archaeological finds in the immediate area of the site, the city of Lincoln had a long and rich history**.** Founded by the Romans, following their conquest of Lincolnshire in AD48, it grew in size (possibly to a population of up to 8000), before falling into decline in the 4th century AD. Lincoln's history is obscure until the conquest by the Danes in the late 9th century, when it was transformed into a fortified burgh. Following the recapture of the town by Edward the Elder (Alfred the Greats son) in the late 9th century, Lincoln once again flourished.

3.5 Following the Norman conquest of England in the late 11th century, a castle and cathedral were constructed in Lincoln, and it continued to be one of the major cities of the country. This was mostly due to its flourishing wool trade. It was only in the 14th century that the cities fortunes began to decline; this was further exacerbated by the Black Death in devastating the city in 1349 and the closure of the numerous friaries during the 16th century.

3.6 Lincoln's fortunes only improved during 18th and 19th century, when during the industrial revolution it became a centre of heavy engineering, with companies such as Ruston's, Clayton's, Proctor's and William Foster's, being based there.

3.7 Whist there are large amounts of archaeological evidence for concentrated activity within the historic limits of the City of Lincoln, due to the GI site being located on its eastern fringe, it was unclear whether any soil horizons of archaeological might be observed. Nevertheless, the GI borehole is located in an area of high geoarchaeological potential and the possibility of buried horizons (e.g.alluvium or buried gravel horizons) masking hitherto unknown areas of archaeological potential is considered high.

4. METHODOLOGY

4.1. The objective of the archaeological attendance could be stated as:

- To identify the presence of any deposits of archaeological/geoarchaeological significance and, if possible to assess the date and state of preservation of archaeological remains. Any features of geoarchaeological significance within window samples/boreholes were also to be recorded and, where there was the potential for palaeoenvironmental data, an appropriate level of sampling was to be undertaken.

4.2 *Methodology*

4.2.1 All archaeological monitoring was carried out in accordance with the current industry best practice and guidance (IFA 2008a and 2008b).

4.2.2 The uppermost 1.2m of the borehole was a hand dug by the principal GI contractor. Following this, an opportunity was afforded for observed deposits to be fully recorded by the attending archaeologist. A photograph was taken to record the intervention and a borehole record sheet completed. If any archaeological remains were present they were also to be planned and a section drawn (where appropriate) at a scale of 1:20.

4.2.3 Following hand digging of the upper 1.2m, an opportunity was afforded for the archaeologist to observed the deposits that were then observed at a greater depth within the sample cores (up to a depth of c. 2m). Photographs were taken to record each deposit interface and a borehole record sheet completed. If any archaeological remains were present they were also to be planned and a section drawn (where appropriate) at a scale of 1:20.

4.2.4 The borehole logs compiled by the principal GI contractor were made available to by TPA.

4.2.5 All interventions were mapped with GPS by the principle GI contractor for height and location purposes.

4.2.6 The results for of the investigation are now presented in Section 5 below, and a full context register of the intervention can be viewed in Appendix 1.

5. RESULTS

5.1 *Introduction*

5.1.1 An outline narrative of the results of the archaeological monitoring during the ground investigations is presented below. The location of the intervention is shown on Figure 2 and listed in full in Appendix 1.

5.2 *Borehole Results*

5.2.1 **Borehole BH101** (480165.66 E, 355641.88 N & 11.421m OD) was located within the Grassy Play Area at the eastern limit of a housing estate centred around Hawthorne Chase. Following the removal of the topsoil (0001) to a depth of 0.1m Below Ground Level (BGL), a firm light-grey-brown clayey-silt with occasional fragments of slag and frequent angular fragments of limestone (0002) was observed to a depth of 0.6m BGL. At this depth, a firm mid-brown silty-clay with occasional flecks of brick and moderate flecks of limestone (0003) was observed to a depth of 0.90m BGL. Both (0002) and (0003) were interpreted as made ground deposits, most likely associated with the construction of the nearby housing estate and paying fields.

5.2.2 Bellow deposits (0001)- (0003), the observed deposits are interpreted as interleaving bands of natural clay and gravel. At 0.90m BGL, firm light-yellow-brown clay (0004) was observed to a depth of 1.10m BGL, at which point a layer of gravel within a matrix of light-yellow-brown clay (0005) was observed to a depth of 1.50m BGL, at which point a layer of gravel within a matrix of light-yellow-brown clay, with inclusions of lithorelic limestone (0006) was observed to a depth of 1.801m BGL. At this point yellow-brown clay (0007) was observed to depth of 1.95m BGL, sealing yellow-brown clay with moderate gravel inclusion (0008), which extended to 1.95m BGL. Within these interleaving bands no material indicative of human activity, such as charcoal flecks or cultural material was observed. The final deposit observed during the watching brief was grey-clay with lithorelic limestone inclusions (0009), which extended to at least a depth of 2.0m BGL.

5.2.3 At 2.0m BGL dynamic probe refused at this depth, so the principle GI contractor changed to a rotary drill which made further archaeological observations impossible, however, the presence of the lithorelic limestone fragments and the refusal of the dynamic probe indicated that the underlying solid bedrock had alread been reached.

6. Discussion

6.1 The findings of this watching brief were very limited, due to the works only comprising a single borehole. From this it appeared that within the boundary of the housing estate and play area, there was limited chance of archaeology surviving intact, due to truncation by the 20th century development of the area. In addition, at a depth of 0.9m BGL naturally lain deposits were observed which appeared to have no archaeological potential. By a depth of 1.95m BGL sterile natural deposits were certainly encountered.

6.2 This would not preclude the possibility of archaeological horizons surviving in the nearby agricultural land, which had not yet been developed.

6.3 Full archive photographs have been made of the intervention (see Appendix 2) and can be made available for consultation if necessary.

BIBLIOGRAPHY

BGS *1:50,000 scale geological map: Newark* (online reference:http://mapapps.bgs.ac.uk/geologyofbritain/home.html).

Appendix 1 Borehole Context Register

BOREHOLE 01

Context	Depth	Thickness	Description	Interpretation
0001	0.00m	0.10m	Soft Brown Say-Silt	Topsoil
0002	0.10m	0.30m	Firm Light-Grey-Brown Silty-Clay Inclusions of: Occasional Fragments of Slag Frequent Angular Fragments of Limestone	20th Century Made-Ground
0003	0.40m	0.20m	Firm Mid-Brown Silty-Clay Inclusions of: Occasional Flecks of Brick Moderate Flecks/very small Fragments of Limestone	20th Century Made-Ground
0004	0.60m	0.30m	Firm Light-Yellow-Brown Clay	Natural
0005	0.90m	0.20m	Loose Gravel in a matrix of Light-Yellow-Brown Clay	Natural
0006	1.10m	0.40m	Loose Gravel in a matrix of Light-Yellow-Brown Clay Inclusions of : Angular Limestone Fragments	Natural
0007	1.50m	0.30m	Firm Yellow-Brown Clay	Natural
0008	1.80m	0.15m	Firm Yellow-Brown Clay With inclusions of: Moderate Gravel	Natural
0009	1.95m	0.05m	Firm Gray Clay With inclusions of: Lithorelic Limestone Fragments	Natural

Appendix 2 Index of Archive and Arrangements for Deposition

Field Records	***Description***	***Number***
Watching brief record sheets	Record of visit and work carried out	1
Borehole Record Sheets	Record of each intervention	1
Photographs:-		
Digital	All views	14
Documents	*Description*	*Number*
Health & Safety	Safe working statement & risk assessment	1
Report to client	Report of findings of the watching brief.	1

The archive is currently held in the offices of Trent & Peak Archaeology, Unit 1, Holly Lane, Chilwell, Nottingham, NG9 4AB. It will be deposited at an appropriate museum by the completion of the Newark Sewer Mains Replacement Scheme .

Appendix 3 Plates

PLATE 1: Hand-dug pit of Borehole One

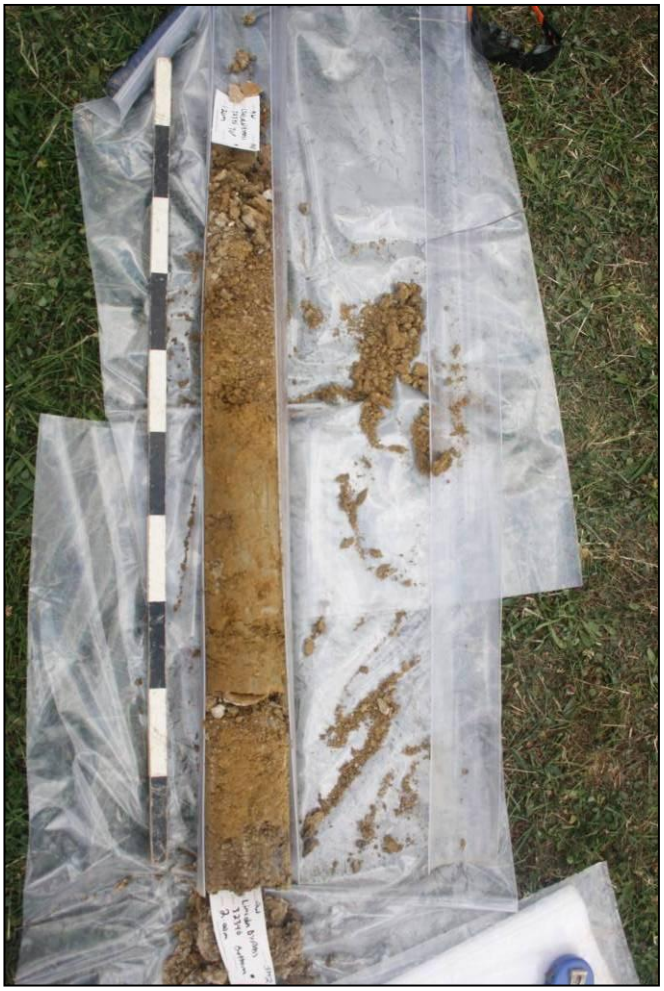

PLATE 2: Windowsample of 1.2m - 2m of Borehole One

Appendix 4 Figures

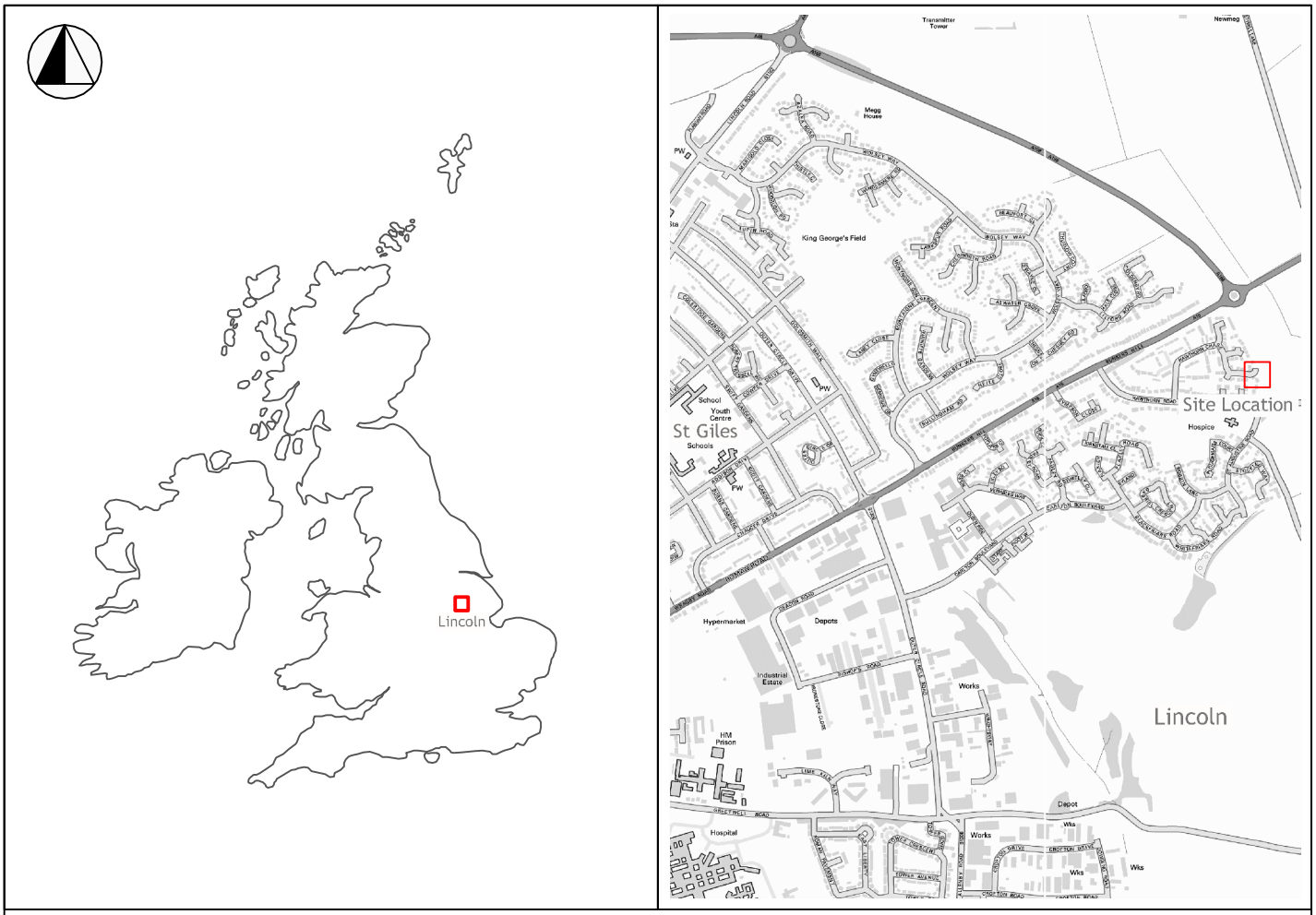

Figure 1: Location map

(Ordnance Survey map reproduced with the permission of Her Majesty's Stationery Office © Crown Copyright Licence No. AL 100020618).

Geoarchaeological assessment data

Borehole Log

Trent & Peak ARCHAEOLOGY

Borehole number:	BH01	Date:	28/07/14
Location:	Hawthorn Close	Co-ordinates:	
Drilling method:	Window Sample Mechanical Rig	Logged by:	T. Linington

Description	*Legend*	*Depth (thickness) m*	*Comments / Samples*
0001 - Soft brown sandy silt		0.10m (0.10m)	Topsoil
0002 - Firm light grey-brown clayey silt		0.40m (0.30m)	20th Century Made Ground
0003 - Firm mid brown silty clay		0.60m (0.20m)	20th Century Made Ground
0004 - Firm light yellow-brown clay		0.90m (0.30m)	Natural
0005 - Loose/friable light yellow-brown clay and loose angular gravel		1.10m (0.20m)	Natural
0006 - Loose/friable light yellow-brown clay and loose gravel with angular fragments of limestone		1.50m (0.40m)	Natural
0007 - Yellow-brown clay		1.8m (0.30m)	Natural
0008 - Yellow-brown clay and moderate gravel		1.94m (0.14m)	Natural
0009 - Grey clay and lythorelic limestone fragments		2.00m (0.06m)	Natural
End of borehole			

Figure 2: Borehole Log