

Archaeological Watching Brief Report for land at

GREENALLS COMPLEX

For Bellway Homes

Kate Pack BA MA

L~P:ARCHÆOLOGY

Archaeological Watching Brief Report for land at

GREENALLS COMPLEX WARRINGTON

Client: Bellway Homes

Local Authority: Warrington Borough Council

NGR: 361400, 386800

Planning App: 2007/12085

Author(s): K Pack

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Date: August 13

Site Code: WAR/GRN 11

L-P: ARCHAEOLOGY

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Abstract

This document outlines the results of the archaeological monitoring of groundworks at The Greenhall Complex, Warrington. The work was undertaken to record any archaeological features or deposits that may have survived on the site. The site is located at land to the south of Loushers Lane, Warrington and off China Lane, centred on NGR 361400,386800.

Historic research shows that the site lies in the vicinity Middle Bronze Age Peat activity and Roman occupation.

The watching brief along the south-western boundary of the development site encountered post-medieval activity of the 19th-20th centuries. The southernmost point of the site is recorded in the tithe map to have a small building on it with associated land plots. This evidence could be from an individual residence/smallholding.

The excavation of peat deposits on the site revealed a sequence of sandy silt above a thick extensive peat deposit that sealed a sandy clay. It was this phase of works that identified evidence of Bronze Age activity and encountered Roman archaeological deposits above the peat: Within Trench 4 a Roman soil horizon c1.5m thick was encountered sealing the peat deposit. Trench 10 revealed a Roman pit with a high density of well-preserved Roman ceramic material dating from the early-mid 2nd century AD. Trench 11 revealed a buried organic layer with preserved grass sealing the peat deposit. Within the Trench 11 extension a Roman cobbled surface was discovered that contained evidence of Roman industrial activity, including bog iron.

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1. Introduction

- 1.1. This document describes the results of archaeological monitoring of construction groundworks at land to the south of Loushers Lane, and off China Lane, Warrington, centred on NGR 361400,386800. The site lies c. 1.1km to the southeast of Warrington town centre (FIGURE 1).
- 1.2. The site is being redeveloped by Bellway Homes, including the construction of approximately 178 new dwellings along with public green space FIGURE 2.
- 1.3. The adjacent small site to the south of China Lane is also included in this report, where 14 new homes will be constructed.
- 1.4. The local authority is Warrington Borough Council who take archaeological advice from Mark Leah, Development Control Archaeologist for Cheshire Shared Services.
- 1.5. The majority of the site falls within Warrington's Area of Archaeological Potential. The Greenall Brewery Conservation Area also butts the western boundary of the site.
- 1.6. The Roman settlement of Wilderspool, scheduled monument (58861) lies 170m to the southwest of the site. Three listed buildings are also within the vicinity of the site. The Cheshire Historic Environment Record shows three Grade II listed buildings on Wilderspool Causeway c. 40m to the west of the site.
- 1.7. Archaeological monitoring was carried out intermittently by Kate Pack and Pascal Eloy on behalf of L – P : Archaeology from June 2011 - July 2013.
- 1.8. A site code of WAR/GRN 11 was assigned to the main Loushers Lane site. The adjoining smaller China Lane site was assigned a site code of WAR/CNL 13.

2. Site Background

- 2.1. In March 2012 the Department for Communities and Local Government issued the National Planning Policy Framework (NPPF) (DEPARTMENT FOR COMMUNITIES AND LOCAL GOVERNMENT 2012). This document sets out planning policies on the conservation of the historic environment and replaces all previous Planning Policy Guidance, specifically PPS5. Section 12 of the NPPF sets out planning policies on the conservation of the historic environment.
- 2.2. Paragraph 128 of the NPPF indicates planning decisions should be made based on the significance of Heritage Assets. These are defined as buildings, monuments, sites, places, areas or landscapes positively identified as having a degree of significance meriting consideration in planning decisions.
- 2.3. In considering any planning application for development the Local Planning Authority, Warrington Borough Council, is bound by the policies provided by NPPF. Additional guidance to help implement these policies is given in the accompanying Historic Environment Planning Practice Guide (DCLG, ENGLISH HERITAGE, DCMS 2010).
- 2.4. Warrington Borough Council is also bound by the saved policies within the borough's Unitary Development Plan (adopted January 2006). The relevant policy contained within the UDP is as follows:

3. POLICY BH14

Where development affects sites of known or suspected archaeological importance, or Areas of Archaeological Potential, the Council may require the applicant to submit a professional archaeological evaluation prior to the determination of the planning application, as the basis for assessing the effects of the development on the archaeological resource.

- 3.1. On matters concerning archaeology and the historic environment Warrington Borough Council take impartial advice from Mark Leah, Development Control Archaeologist.
- 3.2. At present the Loushers Lane site has been granted outlining planning permission, application number 2007/12085. A planning condition has been placed on this application concerning archaeology. Condition 12 states that:

No development shall take place until the applicant or his agent, or successors in title, has

secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant and approved in writing by the Local Planning Authority.

3.3.In relation to the China Lane site, condition 16 of planning consent 2012/18842 states:

No development shall take place within the area indicated until the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant and approved in writing by the local planning authority. The work shall be carried out in strict accordance with the approved scheme.

3.4.AIMS

3.4.1. The general aims of the watching brief are:

- To determine the presence or absence of archaeological deposits or remains.
- To record the character, date, location and preservation of any archaeological remains on the site.
- To record the nature and extent of any previous damage to archaeological remains on the site.

4. Geology & Topography

4.1.GEOLOGY

4.1.1. Geotechnical investigation on the site has identified clay over sandstone. A peat deposit, up to 5m thick, underlying a clay deposit has been identified in the east of the site (FIGURE 2).

4.2.TOPOGRAPHY

4.2.1. The site is bounded to the north by Loushers Lane, to the west by Wilderspool Causeway and to the south by Stafford Road. The east of the site is defined by a filled in canal. The study area lies to the north of the Manchester Ship Canal on an area of relatively flat land at 8mOD.

5. Archaeological & Historic Background

TIMESCALES USED IN THIS REPORT:

PERIOD	FROM	TO
PREHISTORIC		
PALAEOLITHIC	450,000	12,000 BC
MESOLITHIC	12,000	4,000 BC
NEOLITHIC	4,000	1,800 BC
BRONZE AGE	1,800	600 BC
IRON AGE	600	43 AD
HISTORIC		
ROMAN	43	410 AD
EARLY MEDIEVAL	410	1066 AD
MEDIEVAL	1066	1485 AD
POST MEDIEVAL	1485	PRESENT

Table 1 - Timescales used in this report

- 5.1. Warrington is a known industrial centre during the Roman period. The centre is situated immediately to the south west of the site. Roman cremations and inhumations have been found immediately to the east of the site (STATTER 2011).
- 5.2. The site was heavily developed by Greenalls Brewery in the mid 20th century. This had a major impact on buried archaeological deposits.
- 5.3. A full discussion of the historic background and potential archaeology on the site can be found in 'Archaeological Desk Based Assessment. Loushers Lane, Warrington.' (STATTER 2011).
- 5.4. Birmingham Archaeo-Environmental subsequently undertook a paleoenvironmental assessment of the peat deposit at the site, to conclude that the peat was an organic accumulation of the Middle Bronze Age (Cal BC 1400-1260-Cal BC 1240-1210). The pollen record revealed an alder car woodland dominated the site during this period with evidence of possible human cultivation in the wider landscape (SMITH 2011).

6. Methodology

- 6.1. Groundworks were monitored by an appropriately qualified and experienced archaeologist.
- 6.2. Examination and cleaning of all archaeological deposits was carried out by hand using appropriate tools. Archaeological deposits were examined and recorded in plan and section.

7. Results

7.1. This section will outline the results of the archaeological monitoring of the groundworks. Deposits are shown in (parenthesis), structures are underlined.

7.2. WATCHING BRIEF OF FOUNDATION EXCAVATIONS

7.2.1. Archaeological monitoring in the south-western area of the study site was undertaken by Kate Pack in two trenches, Trench A & B.

7.2.2. The uppermost deposit of both trenches was (101), a topsoil 0.4m that comprised the modern ground surface.

7.2.3. This sealed (102), a soft light brown silty sand 0.6m thick with frequent clinker and ash. This was a Post-Medieval mixed soil containing 19th-20th century pottery and tobacco pipe bowl. This deposit was seen in both trenches.

7.2.4. Within Trench A (FIGURE 3), (102) sealed pit [104] (105). [104] was oval in plan, measuring 1.5m N-S, 1m E-W and 0.55m in depth, with steeply sloping sides and a concave base. The fill (105) was soft light brown silty sand, containing 19th century pottery, glass and slag.



Plate 1: Trench A with pit [104], looking north. 1m scale

7.2.5. To the south of pit [104] was (106), a soft light brown silty sand with frequent charcoal flecks, extending 0.8m N-S and E-W. This was a bedding

layer with flagstone fragments up to 0.2m in diameter. 19th century pottery and pipe fragments were recovered from this bedding layer, giving dating evidence similar to adjacent pit fill (105).

7.2.6. Below (106) and [104] was (103), natural soft yellow sand. This was revealed in both Trenches A and B.

7.2.7. The Post-Medieval deposits of Trench A were in the area of occupation seen on 19th Century maps. The southernmost point of the site is recorded in the tithe map to have a small building on it with associated land plots. This archaeological evidence could be that of an individual residence/smallholding.

7.2.8. This area of the site had been targeted as part of the watching brief as Roman occupation was known to the immediate west of the study site. No further deposits of this nature were revealed in this area.

7.3. PEAT EXCAVATION PHASE

7.3.1. In the central site area archaeological monitoring of peat extraction was undertaken by Pascal Eloy.



Plate 2: Section 1, looking south east. 2m scale

7.3.2. Section 01 was located in the drainage ditch excavations (FIGURE 4 & 5) (PLATE 2).

7.3.3. The upper deposit (01) was a 1-1.4m thick layer of brown loam modern

overburden. Under this was (02) a 0.3m thick layer of light brown sandy silt clay, with occasional charcoal.

7.3.4. This sealed (03), a dark brown peat deposit 0.8m thick, containing wood fragments and tree stumps, with Silver Birch being identifiable.

7.3.5. Under (03) was (04), a waterlogged mid grey brown sandy clay with wood fragments and tree roots.

7.3.6. No dating evidence was recovered from these deposits.

7.4. SECTION 02, TRENCH 2

7.4.1. Section 02 was located in Trench 2, at the southern end of the excavations, in the south-east corner of the site (FIGURE 4 & 6).



Plate 3: Section 2, looking south east, 2m scale

7.4.2. The upper deposit was (05), a 1.0m thick layer of yellow sandy clay with peat and small pebbles. This deposit was similar in nature to (02) and appeared redeposited.

7.4.3. This sealed (06), a waterlogged grey brown sandy silt 0.25m thick with small gravels. This was interpreted as being a flood deposit.

7.4.4. This sealed (07), a mid grey brown silty clay 0.3m thick.

7.4.5. Below (07) was (08) a dark brown peat 0.8m thick with wood fragments, roots and stumps. This deposit appears to slope north-east.

7.4.6. This sealed (09), a yellow sand with small gravel inclusions.

7.4.7. No dating evidence was recovered from the contexts in Section 2.

7.5. TRENCH 4

7.5.1. The upper deposit (10), a 0.5m thick brown grey sandy silt modern overburden with brick and pebble inclusions. This sealed (11), a mid blue grey clean clay 0.6m thick. This could be a river flood deposit.

7.5.2. Below (11) was (12), a mid grey brown sandy silt with charcoal and small pebble inclusions, 1.5m thick (varying). This deposit contained Roman pottery and CBM. The finds appeared abraded and may be redeposited.

7.5.3. Deposit (12) sealed (13), a dark brown peat deposit, the same as (08). This peat deposit was also visible in the adjoining Trench 5 and 6, where an equine tibia was discovered.



Plate 4: Trench 4, looking north.

7.6.TRENCH 7

7.6.1. Trench 7 (FIGURE 4).



Plate 5: Trench 7, looking north, 2m scale

7.6.2. Red sandstone bedrock (91) was revealed beneath the sandy deposits at the south-west corner of the site.

7.7.TRENCH 10

7.7.1. Trench 10 (FIGURE 4).



Plate 6: Trench 10, looking east, Pit [24]. 2m scale

7.7.2. Below the modern overburden was (15), a blue grey clay 1.5m thick. This sealed (16), a waterlogged mid brown sandy silt 0.5 thick with small gravel inclusions 1%. Deposit (16) in turn sealed (17), a light grey brown sandy silt 0.05m thick, with river gravels 0.03m in diameter. (17) was interpreted as a possible Roman deposit although access and machining conditions resulted in this being unclassified. Below (17) was (18), a mid grey brown sandy clay 0.4m thick. Below (18) was (19), a mid grey brown silty clay 0.2m thick containing wood fragments. (19) sealed (20), a mid grey brown sandy clay 0.10m thick with 1% river gravel. Below (20) was (21), a mid grey brown clay and sand band 0.15m thick. (21) sealed (22), a light brown sand 0.4m thick with 1% river gravel. Below (22) was (23), a pink brown clay interpreted as glacial till, a natural deposit.

7.7.3. Pit cut [24] was U-shaped in section, 0.6m deep, with the north side slumping and the south side almost vertical. The base had a gradual break of slope with a concave base. It contained fill (25) a grey brown sandy silt with river gravels 0.07– 0.01m in diameter. Fill (25) contained a large amount of Roman pot sherds and CBM.

7.8. TRENCH 11



Plate 7: Trench 11, looking south. 2m scale

7.8.1. (FIGURE 4) Below the modern overburden (01) and sand (05) (as seen in Trench 2) was (29), a mid brown silty clay 0.2m thick with plant remains,

thought to be a flood event.

7.8.2. This sealed (28), a blue brown silty clay 0.1m thick, with plant remains, thought to be a flood event.

7.8.3. This sealed (27), a dark brown silty clay 0.4m thick, sloping down to the east. This was a dark organic layer with a thin band of preserved grass on top. (27) was situated above the peat (08) deposit.

7.8.4. Below peat (08) layer (26) was evident, being a grey brown sandy gravel, 70% gravel, thickness unknown. This was a waterlogged natural river gravel.

7.9.TRENCH 11 EXTENSION

7.9.1. (FIGURE 4) The uppermost deposit was (31), a mid grey brown waterlogged silty sand with 0.1% charcoal, 0.25m thick (varying). This deposit is seen across the study site.



Plate 8: Trench 11 Extension, cobble spread (30) looking south. 2m scale

7.9.2. This sealed (30), a pebble spread 2m x 1.7m exposed, comprised of coarse gravels and pebbles 0.30m X 0.20m to 0.05m x 0.02m (FIGURE 6). The spread is truncated at the east and west. (30) is interpreted as a cobbled surface or road orientated NE-SW. (30) contained fragments of Roman CBM, two pieces

of bog iron and a piece of coal, reflecting Roman industrial activity.

7.9.3. Beneath cobbles (30) was (32), a dark brown sandy silt 0.05m thick (varying), with gravel and charcoal.

7.10.TRENCH 16

7.10.1.(FIGURE 4) To the north of Trench 16 immediately below the overburden was (33), a orange brown peat 0.7m thick, with sand, not fully excavated in depth. This was interpreted as redeposited with sand mixed within. This deposit contained a large Roman tile fragment.



Plate 9: Trench 16 (33)peat, looking north

7.11.TRENCH 12 EXTENDED



Plate 10: Trench 12 Extended (34), looking north. 2x1m scale

7.11.1.(FIGURE 4) In the extension to Trench 12 deposit (34) was recorded, a dark brown peat 0.25m thick and sloping downwards to the east. This deposit may be redeposited and clay pipe bowls and stems were recovered from the top of the deposit.

7.12.CHINA LANE WORKS

7.12.1.From February – July 2013 groundworks were intermittently monitored at the China Lane site by Pascal Eloy, Christopher Matthews and Rachel Nicholson.

7.12.2.Section 01, in the North-East corner of the site, revealed a sequence of modern and Post-Medieval deposits.

7.12.3.The uppermost deposit was a 0.1m deep layer of tarmac (01) on a 0.25m deep gravel make-up (02). This sealed a 0.4m deep layer of levelling brick rubble (03).(04) was below this, being a redeposited sandy silt layer of dark oily industrial waste 0.08m deep. This sealed (05), a mortar layer with 10% brck fragments 0.25m in depth, interpreted as a demolition layer.(06) was below, being a sandy silt 0.12m in depth with coal and modern building debris. This sealed (07), a 0.1m deep sandy silt sub-soil with Post-Medieval pottery.



Plate 11: China Lane Area Structure 08, looking south east.
1m scale

7.12.4. Below (07) was (08), a brick structure of English bond hand-made bricks bonded with lime mortar. This was the foundations of a Post-Medieval building, likely to be an outbuilding, only partially exposed. A rectangular room was evident with dividing walls. Inner walls had a covering of white lime mortar. No floors remained.

7.12.5. The site strip of 20mx20m in the north-east corner of the site revealed a number of Post-Medieval features and structures.

7.12.6. The remains of a row of terraced houses was seen as (007) a 19th century red brick wall visible 16.5m in length, NE-SW aligned with unfrogged bricks 0.24mx0.11mx0.08m.



Plate 12: Wall (007)

7.12.7. Sandstone kerb (005) was associated with this structure, also being NE-SW aligned. (007) is a continuation of the housing plots 5-1 China Lane.



Plate 13: Kerb (005)



Plate 14: Wall (103)

7.12.8. At the back of the China Lane buildings another wall was revealed, being (103) NE-SW aligned red brick linear wall, of two rows of unfrosted bricks (0.24mx0.12mx0.08m) with slate lining to the NE side of the wall. This was on a slightly different alignment to the buildings along China Lane.



Plate 15: Wall (113) Floor (114)

7.12.9. At the southern end of the service trench run red brick wall (113) 0.38m thick NE-SW aligned with a white lime mortar, associated with floor (114). Constructed with unfrosted red bricks.

7.12.10. These rear structures are on a slightly different alignment to the China Lane building remains and may be an earlier phase of Post-Medieval activity.

8. Finds

CONTEXT	FABRIC	COUNT	DECORATION/NOTES	PERIOD
12	Orange ware	5	Small abraded sherds	Roman
12	CBM	3	Abraded	Roman
12	Hazlenut	1		
25	Mortaria	1	Wilderspool Rhaetian Mortaria. Early-mid 2 nd century. (Dan Garner pers comm.) Large sherd, 10cm, spouted	Roman
25	Orange ware	3	Wilderspool. Early-mid 2 nd century.	Roman
25	Black burnished	2	Geometric patterning	Roman
25	Grey	1	Hard fine rim	Roman
25	Domestic	17	Mid-yellow brown	Roman
25	CBM	5	Tile	Roman
25	Whetstone	1	5cm dia. Flat pebble	Roman
25	Worked stone fragment	1	Hard 6cm dia, resembles granite, smoothed surface	Roman
25	CBM	54	Up to 10cm dia. Mainly 3cm dia.	Roman
30	Bog Iron	2	Up to 10cm in dia	
30	Coal fragment			
30	CBM	4	Up to 5cm in dia	Roman
33	CBM	1	Large tile fragment	Roman
34	Tobacco Pipe	6	2 early bowls, marked PL. 4 stems	18 th - 19 th C
102	Tobacco Pipe	1	Late bowl fragment	19 th - 20 th C
102	Earthenware	2	1 black glazed, 1 rim	19 th - 20 th C
102	White china	1	Green and black décor, painted	19 th - 20 th C
105	CBM	2	Brick, 1 holed	19 th - 20 th C
105	White china	2	1 transfer printed fruit	19 th - 20 th C
106	Tobacco Pipe	2	Stems	19 th - 20 th C
106	White china	1		19 th - 20 th C

8.1. There is a quantity of material that relates to the 19th century occupation of the study site, contexts (34), (102), (105) and (106).

8.2. There are confident contexts of Roman date: layer (12), pit fill (25) and cobbled surface (30). (33) is thought to be a redeposited context.

8.3. No finds were recovered from WAR/CNL 13.

9. Summary & Conclusions

- 9.1. This document outlines the results of the archaeological monitoring on groundworks at Loushers Lane, Warrington and China Lane, Warrington. The work was undertaken to record any disturbed archaeology. The site is located at NGR 361400,386800. The site lies c. 1.1km to the southeast of Warrington town centre.
- 9.2. Historic research shows that the site lies in the vicinity of Bronze Age activity and Roman occupation. Peat deposits were known to be surviving on site. Buildings were recorded in the post-medieval cartographic sources at the site along the southern-western road frontage.
- 9.3. The Tithe map of 1836-51 depicts the development site with buildings on it, owned by Greenall and Co. By 1877 the buildings are marked as Waterloo House and grounds of the Wilderspool Brewery.
- 9.4. The watching brief along the south-western boundary of the development site encountered post-medieval activity of the 19th-20th centuries. The southernmost point of the site is recorded in the Tithe map to have a small building on it with associated land plots. This evidence could be from an individual residence/smallholding.
- 9.5. The peat excavation phase revealed a sequence of sandy silt above a thick extensive peat deposit that sealed a sandy clay. It was this phase of works that encountered Roman archaeological deposits above the peat:
- Within Trench 4 a Roman soil horizon c1.5m thick was encountered sealing the peat deposit.
 - Trench 10 revealed a Roman pit with a high density of well-preserved Roman ceramic material. Some of which was that of the Wilderspool ceramic dating from the early-mid 2nd century AD and reflecting the local industry.
 - Trench 11 revealed a buried organic layer with preserved grass sealing the peat deposit. Within the Trench 11 extension a Roman cobbled surface was discovered that contained evidence of Roman industrial activity, including bog iron.

9.6. In Trench 12 context (34) revealed 18th-19th century tobacco pipe that could be associated with activity from Waterloo House.

9.7. The China Lane site revealed 19th Century building remains fronting the Lane, with possible earlier 19th Century structural remains at the rear on a different alignment. No archaeology from any earlier periods was encountered at the China Lane site.

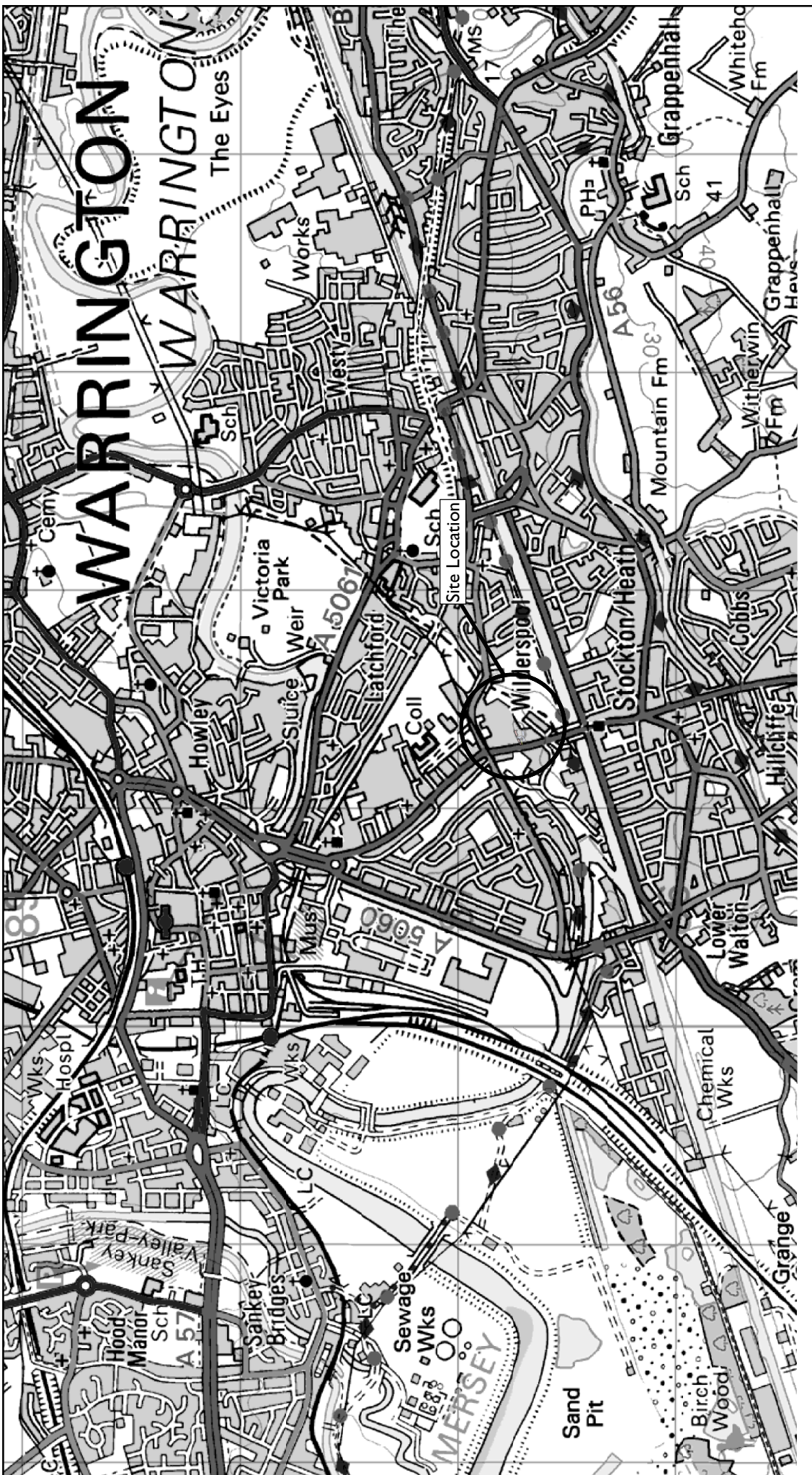
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SMITH D 2011 *A Palaeoenvironmental Assessment of Deposits at Loushers Lane, Warrington, Cheshire*. BA-E Unpublished Archive Report

STATTER C 2011 *Desk based Assessment of the G & J Brewery, Lousher Lane, Warrington*. L – P : Archaeology Unpublished Archive Report

FIGURES

FIGURE 1 // Site Location General



Scale 1:25,000 @ A4

1,500 m

PROJECT // 1096C - Greenalls Complex

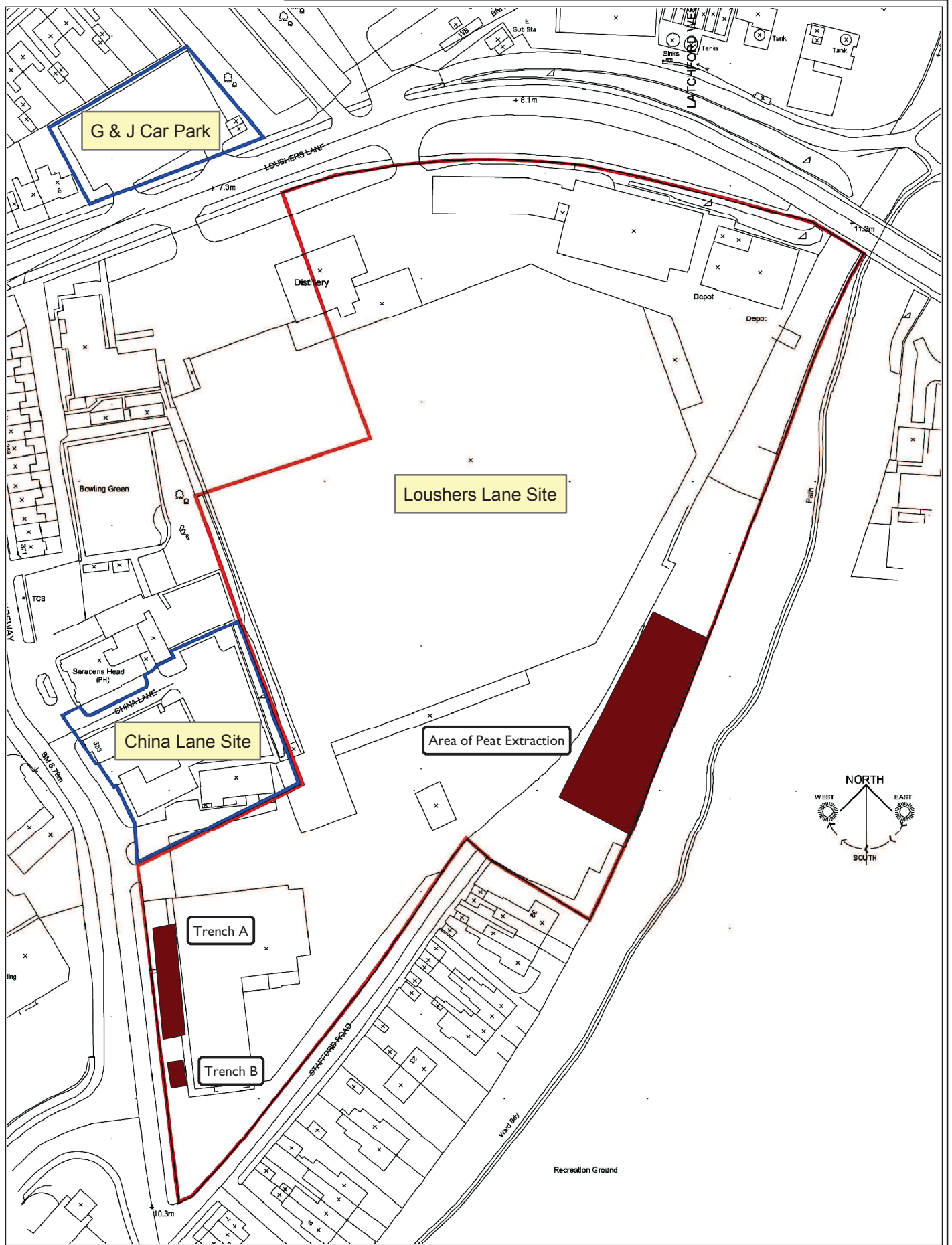
DESCRIPTION // Site location general

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FIGURE 2 // Site Location Detailed



0 50m



PROJECT // 1096C- Greenalls Complex

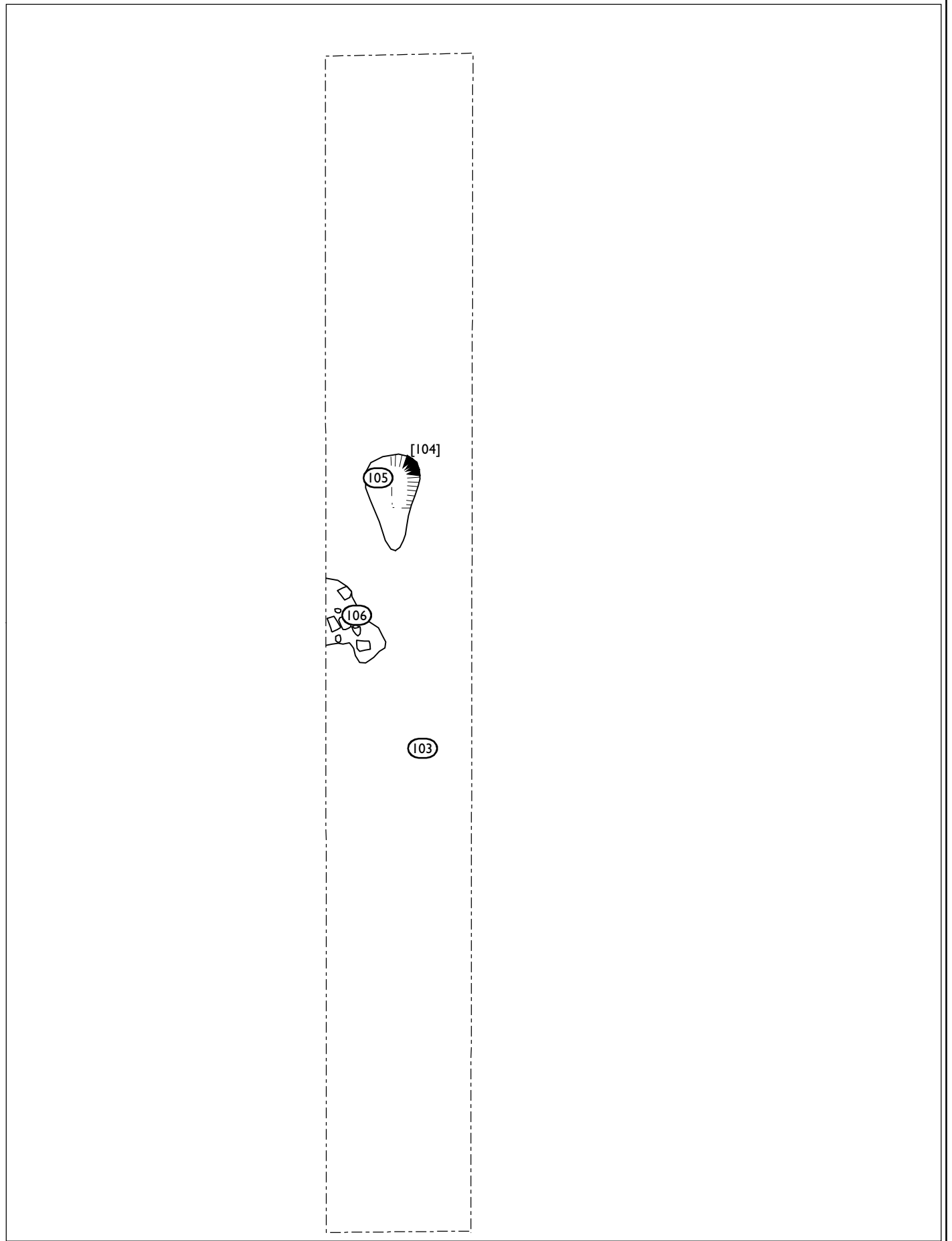
DESCRIPTION // Site Location Detailed

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FIGURE 3 // Trench A Plan



0 1m



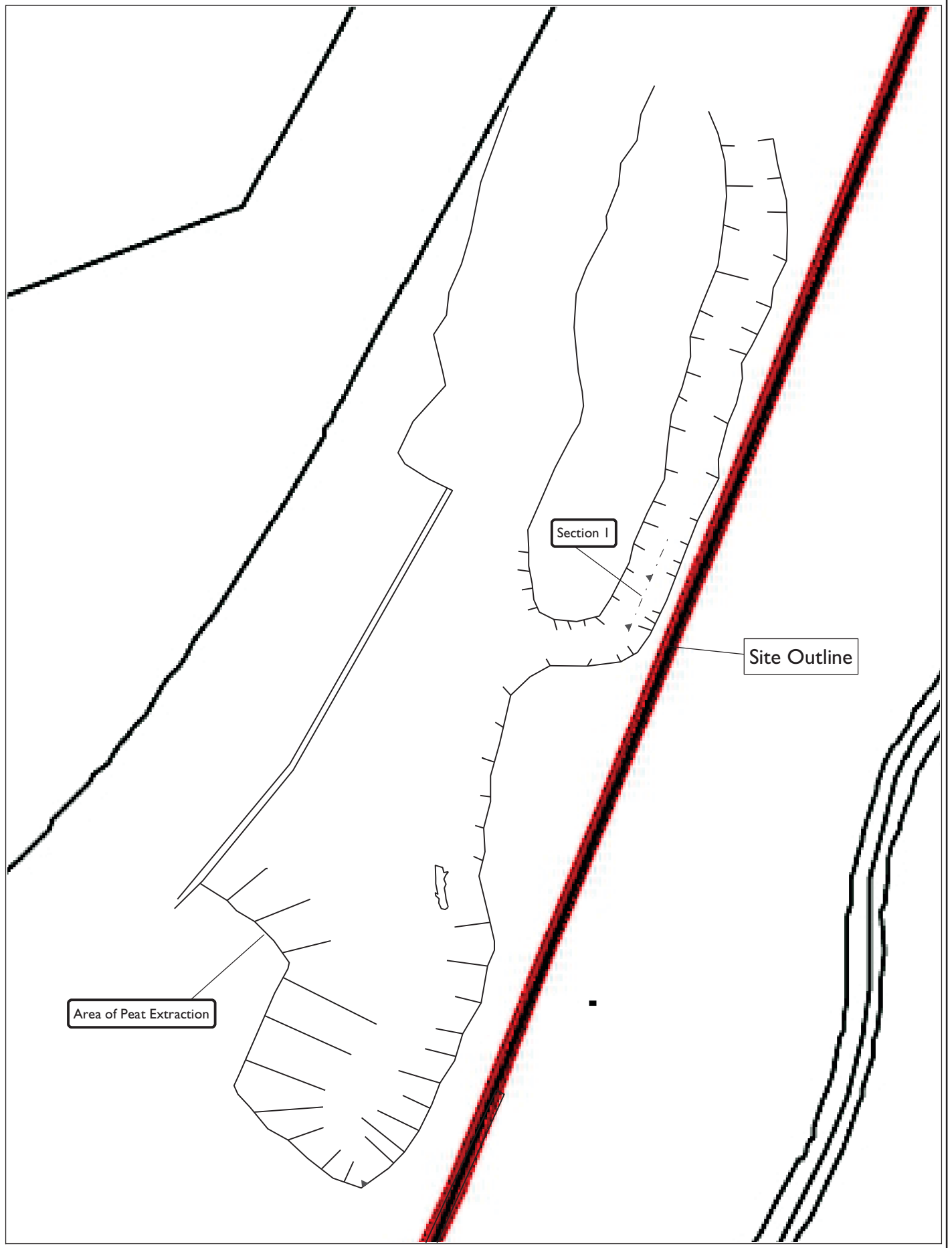
PROJECT // 1096C- Greenalls Complex

DESCRIPTION // Trench A, Plan

DOC REF: LPI096C-AWB-v1

L-P:ARCHÆOLOGY

FIGURE 2 // Site Location Detailed



0 9m



PROJECT // 1096C- Greenalls Complex

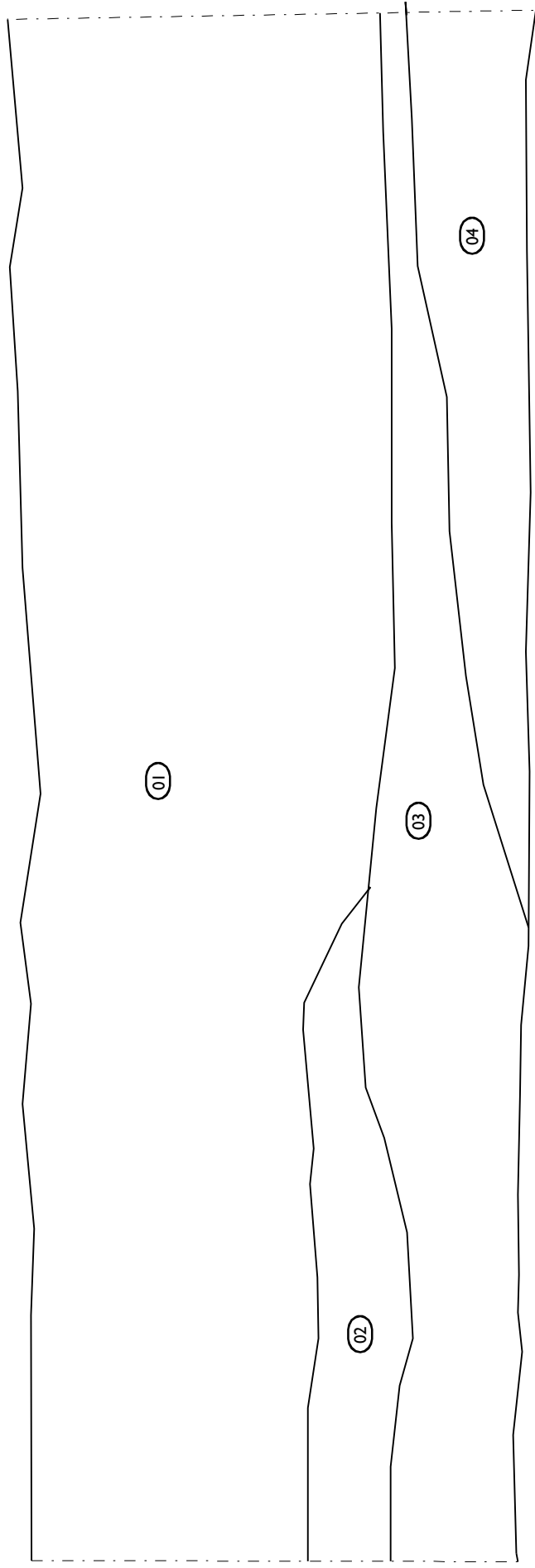
DESCRIPTION // Site Location Detailed

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FIGURE 5 // Section 01



Scale 1:25 @ A4



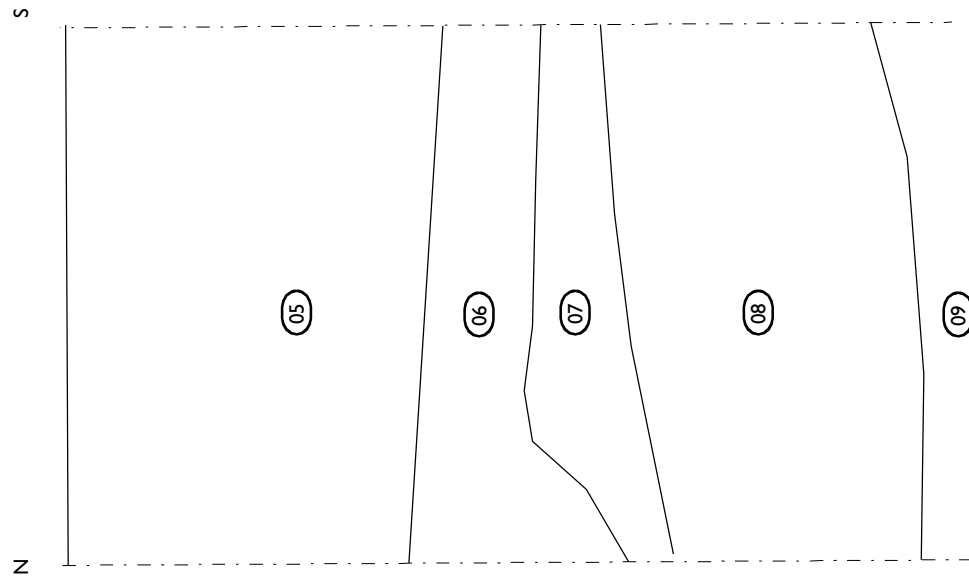
PROJECT // 1518C - Section 01

DESCRIPTION // Section 01. West Facing Section

DOC REF: LP1096C-AWB-v1

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FIGURE 6 // Section 02 and Cobble Plan



Scale 1:20 @ A4

0 | 1 m

PROJECT // IC - Loushers Lane

DESCRIPTION // Section 02 West Facing Section. Plan of Cobbled Surface [30]

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ENVIRONMENTAL REPORT

APPENDIX 1

BIRMINGHAM
ARCHAEO-
ENVIRONMENTAL



BAE



A palaeoenvironmental assessment of deposits at Louchers Lane, Warrington, Cheshire.

by

Kristina Krawiec, Emma Hopla, Dr Wendy Smith and Dr David Smith

January 2011

Summary

In September 2011 Birmingham Archaeo-Environmental were commissioned to undertake a palaeoenvironmental assessment of deposits encountered during groundworks at Louchers Lane, Warrington, Cheshire. A previous geotechnical survey identified a thin peat deposit along the north eastern edge of the site. A small test pit was excavated by BAE in order to recover material for analysis. The deposits comprised a basal grey-yellow sand overlain by a grey brown sandy organic silt. This in turn was overlain by a brown sandy silty peat which was sealed by a compacted demolition deposit. These deposits were assessed for the presence of pollen, plant macrofossils and beetles. The dating of the sediments was problematic as the upper samples were contaminated with a petrochemical and therefore unusable, despite this a date for the onset of organic accumulation was recovered beginning in the Middle Bronze Age (Cal BC 1400-1260 to Cal BC 1240-1210). The beetle and plant macrofossils recovered from the sediments were limited and did not provide much interpretative information. However, it was evident from the pollen record that an alder carr woodland dominated the sampling site during this period with evidence of possible human disturbance and cultivation in the wider landscape.

KEYWORDS: Warrington, pollen, peat, beetles, plant macrofossils, C14

1. INTRODUCTION AND METHODS

In September 2011 BA-E were commissioned to undertake a palaeoenvironmental assessment of organic deposits encountered at Louchers Lane, Warrington, Cheshire (Fig. 1, NGR 361494 386798). A small test pit was excavated by hand in order to recover material for assessment (Fig. 2). The sediment was recorded using the Troels-Smith (1955) sediment classification system (Table 1). A total of 5 bulks (5L each) and an associated series of monolith samples were collected from the exposed baulk. In addition, two bulk samples of sediment were taken for radiocarbon dating from the top and bottom of the organic deposits.

2.2 Pollen

A total of 6 sub-samples at 16cm intervals were submitted for pollen assessment. Pollen preparation followed standard techniques including potassium hydroxide (KOH) digestion, hydrofluoric acid (HF) treatment and acetylation (Moore *et al.*, 1991). A count of at least 125 total land pollen grains (TLP) excluding aquatics and spores were attempted for each sample.

2.3 Insect Remains and Plant Macrofossils

Samples were processed using the standard methods of paraffin flotation for insect remains (Kenward, Hall and Jones 1980: 4 and 11) and washover technique for extraction of plant macrofossils (Kenward, Hall and Jones 1980: 11). Only the flots were examined for insect and plant remain assessments. Nomenclature for insect remains follows Lucht 1987 and for plant remains follows Stace 2010. Data is presented on a semi-quantitative basis whereby * = 1 item and ** = 2 – 5 items.

2.4 Radiocarbon dating

Two bulk (top and base of the organic deposits) sediment samples were submitted to BETA Analytic Inc., Florida, for AMS dating. The samples underwent acid/alkali/acid pre-treatment prior, during which process it was determined that the sample from the top of the sequence was contaminated by petrochemicals and was therefore unsuitable for radiocarbon dating.

Sample number	Material	13C/12C	Radiocarbon Age	Calibrated Age
BETA-309518/ BA 2159 Base	Bulk sediment	25.8‰	3040 [±] 30BP	Cal BC 1400 to 1260 and Cal BC 1240-1210

Table 2: Radiocarbon dating results

3. RESULTS

3.1 Stratigraphy

The test pit revealed a sequence of coarse sand overlain by sandy, grey brown organic silt 0.64m thick which in turn was overlain by a 0.26m thick sandy-silty, well humified peat (Plates 1 and 2). This was overlain by 0.20m thick deposit dry compacted sand and building waste. The depth of the basal sand could not be established and the upper boundary of the humified peat had been disturbed by the ground works. The construction work on the sampling site was probably also responsible for the petrochemical contamination which prevented radiocarbon dating of the upper sample.

3.2 Insect remains and plant macrofossils

Two samples were submitted for assessment from deposits at Louchers Lane. Sample 1 (from 0.20 – 0.40m below modern ground surface) and Sample 5 (from 0.90 to 1.0m below modern ground surface) were submitted for assessment. Table 3 presents the results for both the plant macrofossils and insect remains. In general both plant and insect remains were relatively sparse in these samples with less than 5 items recovered from the plant remains in either sample. The lower sample (S.N5: 0.90 – 1.0m) did not produce any interpretable insect remains. Sample 1 (0.20 to 0.40 m) was slightly richer, and produced a small but relatively poor assemblage (ca. 20 items). This assemblage included a small number of *Aphodius* ‘dung beetles’ which may indicate pasture and grazing and a single individual of a *Gymnetron* ‘weevil’, which is normally associated with the herb ribwort plantain (*Plantago lanceolata* L.). The plant remains were limited to small numbers of rush (*Carex* spp.) nuts and one club-rush (*Isolepis* sp.) nut. Both taxa are often associated with damp/wet waterside locations.

3.3 Pollen

Concentration and preservation of palynomorphs varied throughout the samples. Assessment counts were obtained for all samples apart from 1.04m where concentrations were extremely low. The results are presented in the form of a pollen diagram (Fig.3), produced using TILIA and TILIA*GRAPH (Grimm 1991).

The sequence is dominated by trees and shrubs (up to 70% TLP) with *Alnus glutinosa* (alder) accounting for up to 65% total land pollen (TLP). Other trees and shrubs include *Corylus avellana*-type (most likely hazel) which reaches values up to 15% at the top of the diagram, *Quercus* (oak), *Betula* (birch), Ericaceae (heath family) and *Salix* (willow) which are all present at values <5%. Herbaceous pollen accounts for up to 30% consisting largely of Poaceae (wild grasses; 20-30%). Other herbs are present but only at trace values and include Cyperaceae (sedges), *Filipendula* (meadowsweet), Cereal-type, Lactuceae (dandelions), *Plantago lanceolata* (ribwort plantain) and Rosaceae (rose family). Single grains of *Artemisia* (mugwort), Brassicaceae (cabbage family), *Ranunculus*-type (buttercups), *Rumex* (docks), *Trifolium*-type (clover) and *Valeriana* (Marsh Valerian) are also present. Spores include Pteropsida (monoete) indet. (ferns), *Pteridium aquilinum* (bracken) and *Polypodium vulgare* (common polypody).

There is little change in the pollen throughout the short sequence (0.80m). The spectra indicate that the immediate sampling site was dominated by an alder carr woodland on the waterlogged soils of the floodplain during this period. Sedges and meadowsweet are also typical of such vegetation and it is likely that some of the grasses present

(most likely *Phragmites*, common reed) were associated with this wetland environment. Some mixed woodland of birch, oak and hazel would have existed on the drier soils away from the floodplain, but the extent and precise character and extent of this vegetation is unclear, in part due to the 'swamping effect' from the local pollen signal. It is also evident from the record of docks, ribwort plantain and cereals that there were some areas of open, disturbed/pasture ground and perhaps arable cultivation.

The base of the sequence and the onset of organic accumulation was dated to the middle Bronze Age (Cal BC 1400 to 1260 and Cal BC 1240-1210, BETA-309518). However, this is slightly below the base of the pollen diagram as sample 1.04m produced very few palynomorphs. There is no date available for the top of the sequence due to contamination of the upper sediments and it is therefore unclear what period of time the peat sequence represents in total. However, it is unlikely that the deposits cover more than several hundred years in total.

4. DISCUSSION AND RECOMMENDATIONS

The sand and silt sediments recorded at Louchers Lane reflect deposition by fluvial processes. The transition from organic silt to silty peat reflects a change from shallow open water to a semi-terrestrial environment, probably as a result of the infilling of a palaeochannel. The lack of extensive stratigraphic data from the site prevents further comment regarding the lateral extent of these deposits. The base of the sequence has been dated to the middle Bronze Age (Cal BC 1400 to 1260 and Cal BC 1240-1210, BETA-309518). The pollen record indicates the vicinity of alder carr woodland very close to if not directly on the sampling site. The plant macrofossil remains were limited but indicated the presence of sedges as part of the local vegetation. The vegetation on the dryland soils beyond the wetland edge is not clearly resolved in this sequence, but there is evidence for open, grassy environments and possibly also arable agriculture in the form of cereal pollen. The beetle remains were insufficient for detailed interpretation but the presence of 'dung beetles' and a single individual of a *Gymnetron* 'weevil' may support the palynological evidence for open, pastoral vegetation, probably associated with human activity in the wider area during the middle Bronze Age and later. The low numbers of beetles prevent any further detailed comment.

The sediments encountered at Louchers lane are the remnants of a suite of deposits probably associated with a former course of the River Mersey which currently passes just to the north of the site. Although it is now difficult to establish its former course due to urban development and the diversion of the waterway to allow the cutting of the Manchester Ship canal in 1887, it would appear that the river and associated floodplain was more extensive during prehistory and extended across the study area. The original course of the river on the 1st Edition Ordnance survey map shows a large meander loop close to the sampling site with several areas of marshy ground indicated to the south (Fig. 4). Little comparable palaeoenvironmental or geoarchaeological work has been carried out and the precise nature of the River Mersey during the early-mid Holocene is currently poorly understood. The sequence from this site provides a 'snap shot' of localised processes of environmental change during the prehistoric period.

The two bulk samples contained limited plant and insect remains and produced assemblages too small to be of any significant interpretive value. As a result no further analysis is recommended for these samples. The pollen analysis was more successful; however full analysis would not necessarily provide any further insight and therefore no further work is recommended.

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Figure 1: Site location

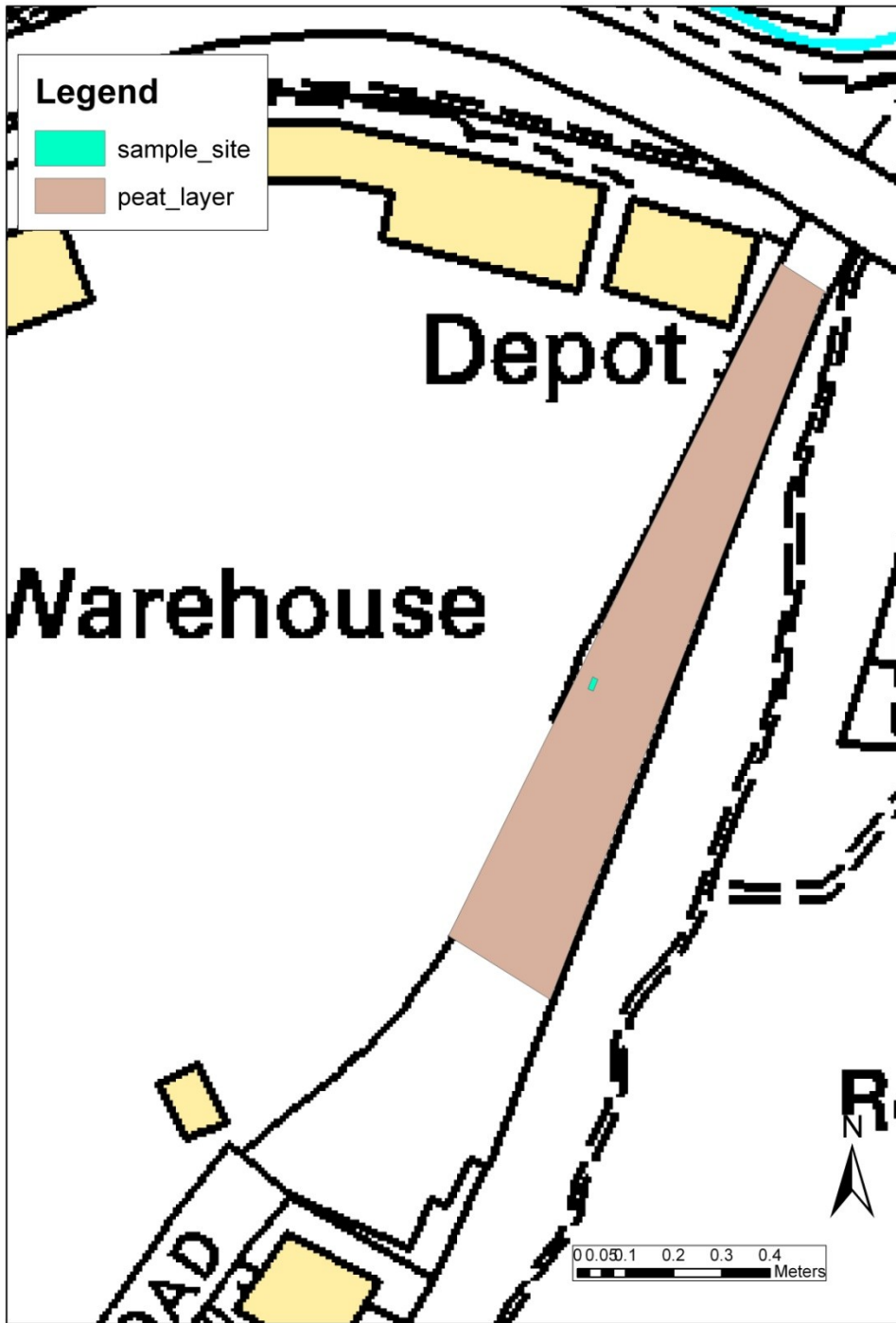
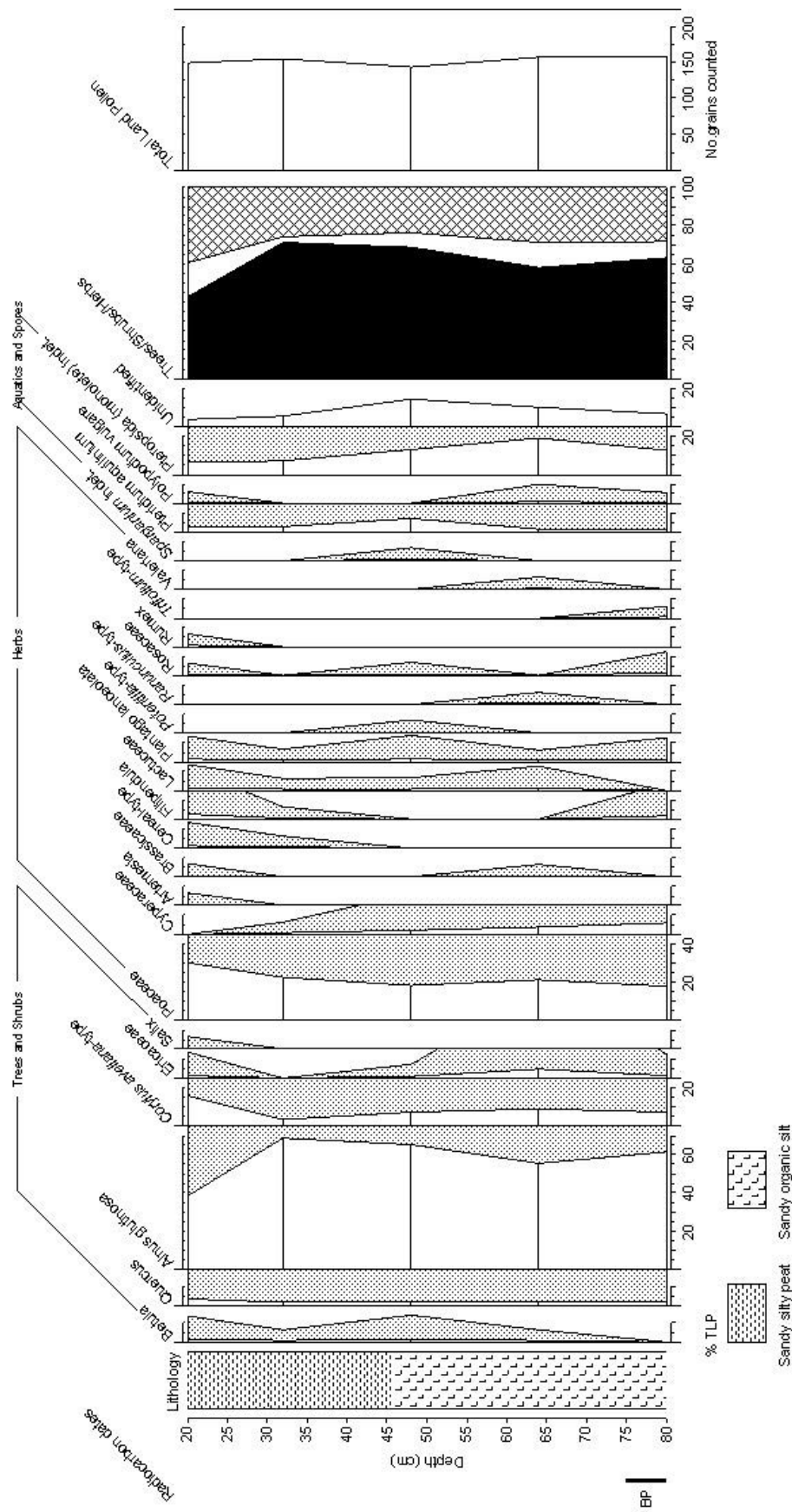


Figure 2: Sample site and peat layer

Warrington Percentage Pollen Diagram
 (shading = exaggeration x10)



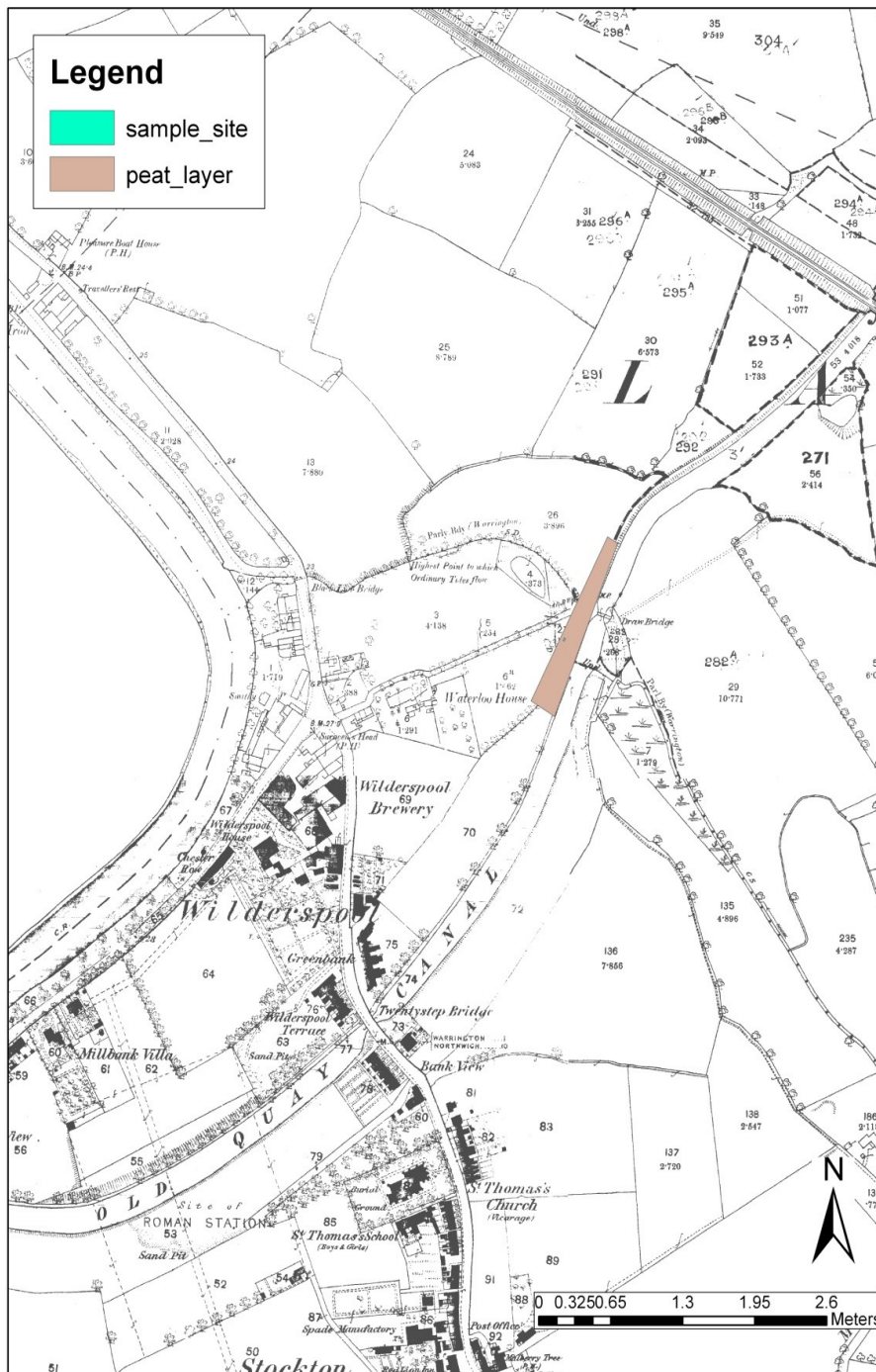


Figure 4: 1st Edition Ordnance Survey



Plate 1: Upper sediment



Plate 2: Lower sediment

Tables

Degree of Darkness	Degree of Stratification	Degree of Elasticity	Degree of Dryness	
nig.4	black	strf.4 well stratified	elas.4 very elastic	sicc.4 very dry
nig.3		strf.3	elas.3	sicc.3
nig.2		strf.2	elas.2	sicc.2
nig.1		strf.1	elas.1	sicc.1
nig.0	white	strf.0 no stratification	elas.0 no elasticity	sicc.0 water

	Sharpness of Upper Boundary
lim.4	< 0.5mm
lim.3	< 1.0 & > 0.5mm
lim.2	< 2.0 & > 1.0mm
lim.1	< 10.0 & > 2.0mm
lim.0	> 10.0mm

			Humous substance, homogeneous microscopic structure
	<i>Sh</i>	<i>Substantia humosa</i>	
<i>I Turfa</i>	<i>Tb</i>	<i>T. bryophytica</i>	Mosses +/- humous substance
	<i>Tl</i>	<i>T. lignosa</i>	Stumps, roots, intertwined rootlets, of ligneous plants
	<i>Th</i>	<i>T. herbacea</i>	Roots, intertwined rootlets, rhizomes of herbaceous plants
	<i>DI</i>	<i>D. lignosus</i>	

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II Detritus	Dh	D. herbosus		
			Fragment s of ligneous and herbaceo us plants <2mm >0.1mm	
III Limus	Lf	Dg	D. granosus	
		L. ferrugineus		R u s t . n o n - h a r d e n e d . P a r t i c l e s

			< 0 . 1 m m
IV Argilla	As	<i>A. steatodes</i>	Particles of clay
	Ag	<i>A. granosa</i>	Particles of silt
V Grana	Ga	<i>G. arenosa</i>	Mineral particles 0.6 to 0.2mm
	Gs	<i>G. saburralia</i>	Mineral particles 2.0 to 0.6mm
	<i>Gg(min)</i>	<i>G. glareosa minora</i>	Mineral particles 6.0 to 2.0mm
	<i>Gg(maj)</i>	<i>G. glareosa majora</i>	Mineral particles 20.0 to 6.0mm
	<i>Ptm</i>	<i>Particulae testae molloscorum</i>	Fragments of calcareous shells

Table 1: Physical and sedimentary properties of deposits according to Troels-Smith (1955)

Table 3: Plant and insect macrofossils from two samples at Louchers Lane, Warrington

Sample Number	1	5	
Depth	0.2 - 0.4 m	0.9 – 1.0 m	
LATIN BINOMIALS			English Common Name
INSECT REMAINS			
Sample volume for insects	2	1.8	
Sample weight for insects	2.2	1.8	
HYDROPHILIDAE			
<i>Cercyon</i> sp.	*		
STAPHYLINIDAE			
<i>Philonthus</i> spp.	**		
SCARABIDAE			
<i>Aphodius</i> spp.	**		
CURCLIONIDAE			
<i>Gymnetron</i> sp.	*		
PLANT REMAINS			
Sample volume for plants	1L	1L	
<i>Juncus</i> spp.	**	**	rush
<i>Isolepis</i> sp.		*	club-rush
Unidentified fine rootlets	1000+	1000+	

Key: * = 1 item and ** = 2 – 5 items.

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APPENDIX 2

OASIS DATA COLLECTION FORM: England

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OASIS ID: lparchae1-157488

Project details

Project name	G and J Greenalls Complex, Loushers Lane, Warrington
Short description of the project	Archaeological monitoring of groundworks at the G and J Brewery complex, Loushers Lane, Warrington.
Project dates	Start: 07-06-2011 End: 22-08-2013
Previous/future work	Yes / No
Any associated project reference codes	WAR/GRN 11 - Sitecode
Type of project	Recording project
Site status	Area of Archaeological Importance (AAI)
Current Land use	Industry and Commerce 1 - Industrial
Monument type	SURFACE Roman
Significant Finds	NONE None
Investigation type	"Watching Brief"
Prompt	Direction from Local Planning Authority - PPG16

Project location

Country	England
Site location	CHESHIRE WARRINGTON WARRINGTON G and J Greenalls Complex
Postcode	WA4 6RD
Study area	100000.00 Square metres
Site coordinates	SJ 361400 386800 52 -2 52 56 29 N 002 57 01 W Point
Height OD / Depth	Min: 8.00m Max: 10.00m

Project creators

Name of Organisation	L - P : Archaeology
Project brief originator	Local Planning Authority (with/without advice from County/District Archaeologist)

Project design originator	L - P : Archaeology
Project director/manager	Blair Poole
Project supervisor	Kate Pack
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Bellway Homes

Project archives

Physical Archive Exists?	No
Digital Archive Exists?	No
Paper Archive recipient	Warrington Local Studies Library
Paper Contents	"Animal Bones", "Ceramics"
Paper Media available	"Drawing", "Photograph", "Plan", "Report", "Section"

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	Archaeological Watching Brief Report, Greenalls Complex Warrington
Author(s)/Editor(s)	Pack, K.
Other bibliographic details	LP1096C-AWB-v1.2
Date	2013
Issuer or publisher	L - P : Archaeology
Place of issue or publication	Chester
Description	Grey literature report on the watching brief carried out at the G and J Greenalls complex, Warrington.
Entered by	K Pack (Chester@lparchaeology.com)
Entered on	22 August 2013

OASIS:

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