

**FOUNDRY LANE,
OUSEBURN,
NEWCASTLE
TYNE AND WEAR**



WATCHING BRIEF REPORT

CP. No: 986/09

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Quality Assurance

This report covers works as outlined in the brief for the above-named project as issued by the relevant authority, and as outlined in the agreed programme of works. Any deviation to the programme of works has been agreed by all parties. The works have been carried out according to the guidelines set out in the Institute for Archaeologists (IfA) Standards, Policy Statements and Codes of Conduct. The report has been prepared in keeping with the guidance set out by North Pennines Archaeology Ltd on the preparation of reports.

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SUMMARY

North Pennines Archaeology Ltd were commissioned by Anthony Keith Architects Limited to undertake an archaeological watching brief on geotechnical investigations which were being taken to inform the position of construction of residential flats in the Former Stephen Easten Depot, Foundry Lane, Ouseburn, Newcastle-Upon-Tyne (NGR NZ 2631 6463). The site is situated within an area along the line of the Hadrian's Wall World Heritage Site. A previous desk-based assessment concluded that the line of the Wall passed through the site and that there was potential for archaeological remains of the wall and/or its associated works to have survived within the site. The site also contained a late 18th century pottery manufacturing works known as Ouseburn Pottery.

The works are currently pre-planning, and verbal discussions with English Heritage and Newcastle City Council recommended the course of action undertaken, through a verbal brief for an archaeological watching brief on the cores, which were excavated to assess the possible location of subsurface remains of Hadrian's Wall. The archaeological watching brief was undertaken on the 16th and 17th July 2009, and monitored the position and depth of geological coring undertaken over the two days. A subsequent deeper (unmonitored) core undertaken whilst NPA Ltd was off-site and outside the watching brief scope, is also discussed.

The results of the coring indicated that, as well as inevitable later archaeological remains, particularly of an industrial nature and related to the former post-medieval pottery and other industries on the site, cores taken along a possible line of the wall (suggested by a desk based assessment and plotted on the Ordnance Survey mapping) did reveal subsurface obstructions to the coring which may represent denuded remains of the Wall, between 2.5m and 6m in depth, in the form of sandstone blocks. At another point, and at 1.5m, the remains of a brick structure were found, which may represent the period the area was utilised as a pottery kiln. An additional borehole by the geotechnical team, undertaken outside the watching brief remit, also located a sandstone block on the proposed line of the wall at 6m.

As the investigations at this point utilised a series of 50mm deposit cores it cannot be said for certain what caused the obstructions at certain points of the investigation. Though theoretically these obstructions were caused by an artificial agent, they may also be part of a geological feature in this area. Given the high archaeological potential of the area, and its location close to the line of the Hadrian's Wall World Heritage Site, it is recommended that any future work be subject to a programme of archaeological investigation.

ACKNOWLEDGEMENTS

North Pennines Archaeology Ltd would like to thank Anthony Keith, Director of Anthony Keith Architects Limited, for commissioning the project and Byker Bridge Housing Association for funding the works. NPA Ltd would also like to thank Mike Collins, Hadrian's Wall Archaeologist, and David Heslop, Tyne and Wear County Archaeologist, for all their assistance throughout the project.

North Pennines Archaeology Ltd would also like to extend their thanks to the Dunelm Geotechnical & Environmental Team on site, for their help during this project. Stephen Ward of BT Bell Consulting Engineers is additionally thanked for providing information on additional bores undertaken whilst NPA Ltd were not on site.

The archaeological watching brief was undertaken by Don O'Meara. The report was written by Don O'Meara and the drawings were produced by Matt Town. The project was managed by Matt Town, Project Manager for NPA Ltd. The report was edited by Frank Giocco, Technical Director for NPA Ltd.

1 INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 North Pennines Archaeology Ltd were commissioned by Anthony Keith Architects Limited to undertake an archaeological watching brief on geotechnical investigations which were being taken to inform the position of construction of residential flats in the location of the Former Stephen Eastern Depot, Foundry Lane, Ouseburn, Newcastle-Upon-Tyne (NGR NZ 2631 6463). The proposed works lie within the corridor of the Hadrian's Wall World Heritage Site (Ref # 26069). A previous desk-based assessment concluded that the line of the Wall passed through the site and that there was potential for archaeological remains of the wall and/or its associated works to have survived within the site. The site also contained a late 18th century pottery manufacturing works known as Ouseburn Pottery (Stobbs 2007).
- 1.1.2 Because the area is of such high archaeological importance, Mike Collins, Hadrian's Wall Archaeologist, and David Heslop, Tyne and Wear County Archaeologist, requested that a programme of geotechnical investigation be undertaken to assess the possible location of subsurface remains of Hadrian's Wall. The presence of ground water at approximately 2 metres down ruled out any possibility of trenching and it was therefore recommended that core drilling be used instead to drill to down to natural strata. The targeted coring was undertaken using a series of 50mm deposit cores in a fixed line, to identify any subsurface obstruction which could relate to the position of the wall, or deposits of an archaeological nature, but also with sensitivity to the presence of industrial archaeological remains. Where obstructions were encountered, cores were taken in the vicinity to test the obstruction, and to identify its possible origin. If the targeted coring failed to provide evidence, further cores were to be taken in a zigzag pattern in order to locate any partial remains, as time allowed. The area in which the proposed construction took place was cored with twelve geological cores to a depth not exceeding 6 metres.
- 1.1.3 All the cores were subject to a programme of archaeological observation and investigation, in line with standard government advice as set out in the DoE Planning Policy Guidance on Archaeology and Planning (PPG 16). The archaeological watching brief was undertaken over two days on the 16th and 17th July 2009, which monitored the position and depth of geological coring. All groundworks were monitored and recorded under full archaeological supervision and all stages of the archaeological work were undertaken

following approved statutory guidelines (IfA 2008), and were consistent with generally accepted best practice.

- 1.1.4 This report outlines the monitoring works undertaken on-site, the subsequent programme of post-fieldwork analysis, and the results of this scheme of archaeological works.

2 METHODOLOGY

2.1 PROJECT DESIGN

2.1.1 No project design was submitted by North Pennines Archaeology Ltd for the works; a methodology for the works was established and agreed through correspondence with the Tyne and Wear County Archaeologist and English Heritage Hadrian's Wall Archaeologist. Once a methodology was established, North Pennines Archaeology Ltd was commissioned by the client to undertake the work. The methodology was adhered to in full, and the work was consistent with the relevant standards and procedures of the Institute for Archaeologists (IfA), and generally accepted best practice.

2.2 THE WATCHING BRIEF

2.2.1 A watching brief is a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons, on a specified area or site on land, inter-tidal zone or underwater, where there is a possibility that archaeological deposits may be disturbed or destroyed (IfA 2008).

2.2.2 The works involved a structured watching brief to:

- advise on the location of coring activity in a manner which using available information would most likely lead to the discovery of subsurface remains over the area of the site suitable for coring work;
- monitor the works and advise on when work should cease should solid features be encountered, or should deposits be retrieved which were of clear archaeological origin;
- interpret the soil profiles retrieved by the coring activity with the aim of placing them in their geological or archaeological context;
- record any aspects of the work which may shed light on the archaeological past of the area.

2.2.3 The aims and principal methodology of the watching brief can be summarised as follows:

- to establish the presence/absence, nature and extent of possible subsurface archaeological remains, in particular remains of Hadrian's Wall, but with attention also to possible industrial archaeological remains;

- to interpret the cores retrieved from the site and suggest areas which should be targeted by further archaeological work, should wider disturbance of the area be undertaken by pre-construction site preparation;
- to recover artefactual material, especially that useful of dating purposes, should it be encountered in the 50mm core samples;
- to produce a site archive in accordance with MAP2 (English Heritage 1991) and MoRPHE standards (English Heritage 2006).

2.2.4 Using the architects drawings as a reference point, a systematic series of cores were drilled on the site using a mini percussive rig, to a maximum depth of 6 metres. The mini percussive rig produced a sample approximately 50mm diameter in a plastic tube suitable for logging and further analysis. As it was a percussion rig, this minimised disturbance to the core, and was also light enough that it would not drill into the Wall if it was located. The first series of cores were undertaken in a manner which ran perpendicular to the supposed line of Hadrian's Wall on this site. A second line of cores ran parallel to the supposed line of the Hadrian's Wall at this site, with the intention of assessing the extent of previous obstructions encountered on the first line of drilling.

2.2.5 A summary of the findings of the watching brief is included within this report.

2.3 THE ARCHIVE

2.3.1 A full professional archive has been compiled in accordance with the specification, and in line with current UKIC (1990) and English Heritage Guidelines (1991) and according to the Archaeological Archives Forum recommendations (Brown 2007). The archive will be deposited within The Great North Museum, with copies of the report sent to the County Historic Environment Record at Newcastle City Council, available upon request. The archive can be accessed under the unique project identifier NPA09, OUS-A, CP 986/09.

2.3.2 North Pennines Archaeology Ltd, and English Heritage, support the **Online AccesS to the Index of Archaeological InvestigationS (OASIS)** project. This project aims to provide an on-line index and access to the extensive and expanding body of grey literature, created as a result of developer-funded archaeological work. As a result, details of the results of this project will be made available by North Pennines Archaeology Ltd, as a part of this national project.

3 BACKGROUND

3.1 LOCATION AND GEOLOGICAL CONTEXT

- 3.1.1 The site comprises a range of industrial buildings, now derelict, to the south of Byker Bridge and east of the Ouseburn. The Ouseburn is a lowland tributary of the River Tyne with a catchment area of 62.5km² and a length of 14.2km (Northern Rivers Authority 1993, 9). The area is shown in Figure 2.
- 3.1.2 The geology of the region rests on Middle Coal Measures of the Upper Paleozoic Carboniferous formed of inter-leaving coal measures, and a mix of sandstone, shale, seat earth, and coal. The solid geology is masked by Quaternary deposits of the Devensian. Pleistocene glaciation in this period shaped the route of the Tyne and in its retreat left thick drift sediments. The natural subsoil of the area consists of a glacial drift of boulder clay, the Lodgement Till, which overlies the solid geology to a maximum depth of 30m, but is 10m thick in most areas. Postglacial streams, which flow into the River Tyne, have cut deep narrow gorges through the boulder clay and solid rock, though most were culverted in the 19th century (Countryside Commission 1998).

3.2 HISTORICAL CONTEXT

- 3.2.1 *Introduction:* this historical background is compiled mostly from secondary sources, and is intended only as a brief summary of historical developments specific to the study area.
- 3.2.2 *Hadrian's Wall:* the Wall was a composite military barrier, which in its final form comprised several separate elements; a stone wall fronted by a V-shaped ditch, and a number of purpose-built stone garrison fortifications such as forts, milecastles and turrets. A large earthwork and ditch, built parallel with and to the south of the Wall, known as the Vallum and a metalled road linking the garrison forts, which is known as the 'Roman Military Way'. The Wall begins in the east at Wallsend in Tyneside and continues to the west terminating at Bowness-on-Solway in Cumbria, a distance of 80 Roman miles (73.5 English miles or 117 kilometres). The Wall conceived by Hadrian was to be ten feet wide and about fifteen feet high. The front face of the wall most likely sported a crenellated parapet, behind which the soldiers patrolled along a paved rampart-walk (Bedoyere 1998). The foundations of Hadrian's ten-foot wide Wall were laid from Newcastle-upon-Tyne eastward for 23 Roman miles to Chesters in Northumberland, but thereafter, apart from a few short lengths further west, the wall is reduced to eight or sometimes, six feet in width. We can assume that at some

time during the early construction of the Wall, a decision was made to reduce its width, probably in order to speed-up the work during times of threat from the tribes of southern Scotland. The wall to the west of the River Irthing was originally built out of turf and about sixteen feet wide, topped by a wooden palisade and walkway and punctuated by timber-framed turrets and milecastles. This 'turf-wall' did not endure long, and it was all replaced in stone within a few years, section by section. It is thought that the reason the western part of the Wall was built of turf was due to the fact that there were no ready supplies of stone or lime close to hand at the time of construction, and it was left to a later date to replace this with a regular stone wall. The interior structures in each milecastle seem to have varied, but all contain at least one recognizable barrack-block. They housed a varying number of men with a conjectured maximum of approximately 64 soldiers, and were effectively large gate-houses, whose garrison were originally stationed to control egress through the Wall, and perhaps to levy a tax on goods carried through.

- 3.2.3 Between each milecastle were two smaller turrets, equidistant from each other and the milecastles to either side. They were of a uniform pattern, about 20 feet square, recessed into the Wall and built-up above the height of the Wall rampart walk. In the original plan the Wall was to be garrisoned and patrolled from the milecastles, and there was no requirement for any large forts to be built on the Wall itself. The wall was to be reinforced when needed, from the forts already in existence along the Stanegate, which runs parallel, to the rear of the wall. This format was to prove inadequate, however, and the wall was soon modified by the inclusion of several auxiliary forts along its length. These garrison forts were of a standard 'playing-card' profile, but varied in size between 3 and 5 acres, depending on the type of unit it was built to house. In the infantry forts, the Wall itself generally formed the northern defences of the camp, which projected wholly to the south, as is the case with the milecastles and turrets. In the cavalry forts, or those of part-mounted units, the forts were generally built across the line of the Wall with three of its major gates opening out onto its northern side, part of the wall having to be demolished in order to accommodate the fort. In some cases forts were sited on top of milecastles, which had to be demolished, as at Bowness on Solway (Bedoyere 1998).
- 3.2.4 The original concept of the Wall fulfilled what Hadrian's biographer wrote, that he 'drew a wall along the length of eighty miles to separate barbarians and Romans' (Birley 1976). This concept reflected the form of the German Raetian *limes* in that the Wall relied on the forts of the Stanegate for reinforcements in case of need. Its main purpose was to control movement in

and out of the Province, as well as forming a base for military activity on or north of the frontier, and was never intended to be a defensive feature (*ibid*).

4 ARCHAEOLOGICAL WATCHING BRIEF

4.1 INTRODUCTION

- 4.1.1 The watching brief monitoring was undertaken in one key phase, on the 16th and 17th of July 2009. The watching brief covered the monitoring of coring works and an examination of core samples. Direction of the coring machine was undertaken to maximize the chances of locating and identifying buried archaeological deposits. Before work began the area of the site was examined and a decision made, in consultation with the onsite geologist, as to where coring should begin. The proposed line of cores suggested by the architect (Keith *pers. comm.*) could not be undertaken due to the presence of a concreted area and the presence of another larger coring unit in the western corner of the site. The area around the pillars of Byker Bridge was also avoided as there was a possibility of hitting the foundations of the structure. A final line was chosen approximately 4 metres west of the original suggested core line, Cores 1-7 following a line roughly parallel to the line originally suggested by the architect.
- 4.1.2 The coring of the site using a 50mm percussion corer presented certain issues, mainly relating to the manner in which the physical properties of the soil created difficulties for a clear section of cores to be created. The corer had a maximum depth of 6 metres, thus would theoretically produce 6 metre-long soil core tubes to be examined, theoretically a volume of soil 11780cm³.
- 4.1.3 However, this volume was not recovered, particularly where waterlogged horizons were encountered. There was a tendency for the material to fall out of the core tube when it was being raised to the surface. Thus though the core could proceed to a depth of 6 metres, in reality the total mass of material recovered did not represent the total soil the core had travelled through. This lost material presumably became the upper layers of the proceeding core, or was compressed into the sides of the core tunnel when the core piece was reinserted. In either sense there was a disparity between how deep some cores were taken and how deep the deposit was from which that soil horizon originally came. For example, a sand and small stones layer 450cm below the surface could fall from the end of its core and appear in the 500-600cm core. Therefore material was not only falling from one layer to another, but a certain amount was being lost when it was presumably being compressed into the sides of the core tunnel. This provided limitations to the available data for the subsurface deposits.

4.2 SUMMARY OF CORES

- 4.2.1 A full stratigraphic description of each core is given in Appendix 1. A summary is provided here.
- 4.2.2 *Core 1:* Core 1 was taken as 4.8m from a pillar of Byker Bridge. It reached a depth of 6 metres and terminated on sub-rounded and rounded small-medium stones, interpreted as riverbed deposits.
- 4.2.3 *Core 2:* Core 2 was taken 2.3m from Core 1. It reached a depth of 6 metres and terminated on a clay-silt layer which contained small (<3mm) fragments of wood. Notably, at 4.8m in depth a dark layer was observed which appeared to be organic, such as one would expect from the base of a ditch.
- 4.2.4 *Core 3:* Core 3 was taken 2.25m from Core 2. Coring ceased at 4.3m due to the presence of an unidentified solid object. A disc of sandstone was removed from the core, which appears from its upper surface to be dressed stone.
- 4.2.5 *Core 4:* Core 4 was taken 1.3m from Core 3. The distance from Core 3 was shortened so as to potentially further identify the solid object encountered in Core 3. The coring continued to a depth of 5m where coring ceased due to the presence of a dense layer of medium-large sandstone blocks.
- 4.2.6 *Core 5:* Core 5 was taken 1.05m from Core 4. It reached a depth of 6 metres and terminated at a layer of silt, Munsell 5Y.3/0.
- 4.2.7 *Core 6:* Core 6 was taken 2.5 metres from Core 5. It reached a depth of 6 metres and terminated on a layer of silt, Munsell 5Y.3/1, with frequent inclusions of small-medium stones.
- 4.2.8 *Core 7:* Core 7 was taken 2.5 metres from Core 6. It reached a depth of 6 metres and terminated on a layer of silt 5Y.3/1, with frequent inclusions of small-medium stones. It was decided not to extend this line further due to its proximity to an upstanding building. It was felt at this point that an accurate picture of the site had been examined by the linear arrangement of the 7 cores crossing the site.
- 4.2.9 *Core 8:* Core 8 was taken at a point intended to further investigate the solid feature encountered at Core 3. A point was chosen which would respect the hypothetical line of Hadrian's Wall marked on the architects drawing. It was taken 3.5m west of Core 3. Coring ceased at 2.5m due to a solid obstruction. A disc of sandstone was removed from the core.
- 4.2.10 *Core 9:* Core 9 was taken to further investigate this obstruction, this time from a point east of Core 3. Continuing along a line with Core 3 and Core 8 as a point on that line, Core 9 created a cross, with this new line

perpendicular to the line created by Cores 1-7 and Core 3 as the centre of the cross. Core 9 was taken 1.6m from Core 3. A further distance could not be achieved due to the presence of a concrete surface. Coring ceased at 1.5m due to a solid obstruction, which was interpreted as being of brick, possibly a foundation. The coring apparatus had previously broken quite easily through brick, and seemed at this point to have broken through several more, but the fact it was unable to continue through this brick layer suggests it may have hit a solid brick construction, as opposed to the loose brick rubble previously encountered. Alternatively it may have hit a brick structure built on a solid rock lower foundation.

4.2.11 *Core 10:* Core 10 was taken at 2.5m west of Core 8 with the intention of further investigating the line of this solid feature now marked by Cores 9, 3 and 8. Coring reached 6m in depth and ceased as a blue-grey sandstone layer. The core cut a disc from its surface, therefore though it was solid it could be identified as blue-grey sandstone, which may be an element of the previous solid features encountered, or merely a lone rock.

4.2.12 *Core 11:* Core 11 was taken at a point 1.3m north of Core 3, with the intention of investigating further the extent of this solid feature. It reached a depth of 6m and produced a stratigraphic sequence similar to that seen in Core 2.

4.2.13 *Core 12:* Core 12 was taken to investigate further the Core 9-3-8-10 line. It was taken between Core 3 and Core 8, 1m east of Core 8. Coring reached a depth of 6m and did not suggest a solid feature was along its path.

4.2.14 *Conclusion:* it was decided to cease coring at this point due to time constraints and the assumption that an accurate stratigraphic picture of the site could now be interpreted.

4.3 ARCHAEOLOGICAL FINDS AND ENVIRONMENTAL SAMPLING

4.3.1 Archaeological finds were restricted to items of modern/industrial waste such as crushed brick, pottery fragments, tile fragments, glass fragments and fragments of heavily vitrified material. These occurred within the upper 1-1.5m of cores. This type of material was seen on all the non-concreted surfaces of this site. It is assumed the finds primarily reflect the 19th century and later use of the site as a pottery and later as a storage yard. It would seem much of this material was used to create an artificial ground surface to level the site. Some of this material was collected to illustrate the type of brick and pottery generally found on site. In particular a sample of brick and a sample of sandstone are of interest as they illustrate the ability of the core to cut through solid objects. Environmental samples of the wood fragments were taken, but occur in such small quantities that they are unsuitable for identification purposes.

5 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

5.1.1 *The Watching Brief:* twelve cores were taken within the site, which it is concluded represent an accurate general picture of the sub-surface layers of this area. Several solid features were encountered. It is suggested that these were no stray stones but do represent either a solid feature, or very large rocks (greater than 50cm x 50cm x 50cm), these conclusions being based on the ability of the core to cut through brick and smaller stones without noticeable extra effort. The post-medieval and industrial deposits were clearly identifiable within the first few metres of coring, and as such their horizon is clearly established.

5.1.2 A tentative sub-surface interpretation can be provided, based on the limited evidence uncovered, and assuming the solid object encountered is indeed Hadrian's Wall. Hadrian's Wall is likely to be constructed of sandstone, and of dressed blocks as indicated from the disc removed in Core 3. The differential depths encountered can be explained by the uneven upper surface of the wall, which is typical of its survival where sections have been robbed to foundation level, or survive as upstanding remains. There is also a suggestion it may slope downwards towards the Ouseburn. At Core 3, the sandstone encountered is at 4.3m below ground level, and west of this at Core 8, it is at 2.5m, so presumably rises (though Core 12, 1m to the east of 8, did not encounter the wall, it may be a robbed section, or a door or gate). At Core 10, 2.5m west of Core 8, it falls to 6m below ground level. A borehole undertaken by Dunelm Geotechnical and Environmental encountered sandstone again approximately 10m west of Core 10, on the same line. The engineer's comment is reproduced here:

'Dunelm Geotechnical & Environmental are currently drilling Borehole 2 [their numbered sequence]. They have hit a large sandstone rock at around 6m depth [actually 6.7m – Keith pers. comm.], which they can't bore through. If they hadn't already drilled the other 2 boreholes to around 15m they would have said that this is bedrock, but this seems unlikely nearer to the Ouseburn' (Ward pers. comm.)

5.1.3 In addition, the deposits encountered in Core 2 and 11 would fit with the position of the Wall ditch on the north side of the Wall. Both reached a depth of 6 metres and were clearly sampling soft organic deposits which fit with the fill of a ditch. The stone rubble encountered in Core 4, at 5m depth, could relate to rubble from the wall, and is at a virtually identical depth to the sandstone structure encountered in Core 3.

5.1.4 The conclusion must therefore be that the Wall survives at between 2.5m and 6m below the ground surface, with associated features.

5.2 RECOMMENDATIONS

5.2.1 As this area lies within the line of Hadrian's Wall and within an area of known industrial archaeological remains it is recommended that ground works which intend to disrupt layers deeper than 1.5m should be monitored by an archaeologist for the purpose of identifying and recording archaeological features encountered.

5.2.2 Work which goes deeper than this should be preceded by a phase of further archaeological investigation through open trenches. At this point further coring work will not illustrate what is the exact nature of the solid feature noted along the Core 9-3-8-12-10 line. The water table at this site appears to be slightly greater than 1m from the surface. This created a problem for the Dunelm geologists when digging a trench on the site, and thus may need to be factored into the timing and nature of these trenches.

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APPENDIX 1: CORE DESCRIPTIONS

CORE POINT 1	
<i>Depth BGS (M)</i>	<i>Description</i>
0 – 0.25	loose gravel with frequent inclusions of crushed brick and coal fragments
0.25 – 1.25	Industrial waste material; crushed brick, crushed tile, coal fragments, clinker and nodules of a heavily vitrified material. All this material suggests this is waste material from high temperature processes
1.25 – 1.40	a light yellow sand deposit
1.40 – 1.50	Brick; a large fragment of vitrified material was found at 1.60m, and taken as a sample
1.60 – 2.00	heavily compacted brick and coal
2.00 – 2.50	wet and seemed to represent the top of the local water table
2.50 – 2.75	fine clay silt with few inclusions of small stones
2.75 – 4.00	wet material, very loose gravels with unconsolidated clays and silt
4.00 – 6.00	river gravels (sub-rounded and rounded small-medium stones with dark yellow-brown silt
CORING STOPPED AT 6M	

CORE POINT 2	
<i>Depth BGS (M)</i>	<i>Description</i>
0 – 0.20	mixed gravels with inclusions of coal fragments
0.20 – 0.70	silts with frequent industrial inclusions; crushed brick, glass fragments, ceramic fragments
0.70 – 0.80	unidentified very fine white clay like material
0.80 – 1.00	waterlogged medium sand and gravel with occasional crushed brick inclusions
1.00 – 1.30	very wet gravely material
1.30 – 1.50	a medium sand layer with occasional crushed brick
1.50 – 2.00	medium sand with a fragment of limestone
2.00 - 2.20	coarse sand and small-medium stones
2.25 – 2.50	large stones and silt material. More of the white clay seen at 20-80 was also seen
2.50 – 3.00	silt and medium stones
3.00 – 3.20	fluvial silt and clay
3.20 – 4.00	sandy-silts 5Y.4/1
4.00 – 5.00	a dense clay 2.5YR.4/1. A dark (possibly organic) layer was seen at 480cm. Fragments of wood were observed at this point, though they were extremely fragmentary (<3mm)
CORING STOPPED AT 5.1M	

CORE POINT 3	
<i>Depth BGS (M)</i>	<i>Description</i>
0 -1.00	crushed brick, medium angular stones and crushed coarse, grained yellow sandstone
1.00 – 1.20	coarse sand and gravel
1.20 – 1.30	crushed brick
1.30 – 2.00	loose sandy silt and frequent crushed brick and tile fragments
2.00 – 2.90	waterlogged coarse sand with frequent angular to sub-rounded stones
2.90 – 3.00	a well stratified silt layer
3.00 – 4.00	silt material, mottled grey to orange 2.5Y.6/8
4.00 – 4.30	stratified sandy silts 2.5YR.4/0, 10YR.6/8, 7.5YR.5/6
CORING STOPPED AT 4.3M – Solid Obstruction (Sandstone Plug Obtained)	

CORE POINT 4	
<i>Depth BGS (M)</i>	<i>Description</i>
0 – 0.30	loose angular gravel
0.30 – 0.40	a solid conglomerate stone
0.40 – 0.60	loose material with occasional crushed brick and pottery fragments
0.60 – 0.90	fine fragments of crushed brick and coal, dark brownish-black in colour
0.90 – 1.00	sandstone
1.00 – 1.20	angular gravels, very wet
1.20 – 1.60	silty-sand, very wet and interspersed with fragments of brick
1.60 – 2.00	brick
2.00 – 2.80	very wet crushed brick with occasional angular small-medium stones
2.80 - 3.00	a sandstone identical to that found in Core 1 125-140
3.00 – 3.30	angular medium stones and silt
3.30 – 3.80	coarse sand, though there was loss of material
3.80 – 3.90	coarse sand 2.5Y.5/4
3.90 – 4.00	silty-sand 5Y.4/1
4.00 – 4.10	unconsolidated material, possible from core collapses
4.10 – 4.30	medium sand 5Y.4/4
4.30 – 4.60	fine sand and silt 2.5Y.4/0
4.60 – 5.00	sand and medium stones, 10YR.6/8
CORING STOPPED AT 5M – sandstone rubble	

CORE POINT 5	
<i>Depth BGS (M)</i>	<i>Description</i>
0 - 0.20	unconsolidated angular medium stones
0.20 - 0.30	conglomerate material
0.30 - 0.50	loose sandy material, crushed brick and some coal fragments
0.50 - 0.60	crushed brick
0.60 - 0.70	crushed sandstone
0.70 - 1.00	mottled silty-sand with frequent inclusions of brick fragments and yellow sandstone fragments
1.00 - 1.50	very wet sand and small stones
1.50 - 2.00	frequent crushed brick, loss of material at 170-200
2.00 - 2.30	unconsolidated material
2.30 - 2.60	coal and brick fragments
2.60 - 3.00	uniform fine-medium sand layer 5Y.4/4
3.00 - 3.40	fine sand 5Y4/4
3.40 - 3.60	medium-coarse sand 5Y.4/4
3.60 - 3.80	fine sand and silt 2.5YR 4/0
3.80 - 3.85	coarse sand 2.5Y4/4
3.85 - 4.00	silt 2.5Y.4/0. and 2.5Y3/0
4.00 - 5.00	coarse sand and gravels with occasional sub-rounded stones. Twig fragments were found at 480 in a 2.5Y.3/0 silt
5.00 - 6.00	unconsolidated material, much of which appears to be from core collapses. Much loss of material from core lifting
CORING STOPPED AT 6M	

CORE POINT 6	
<i>Depth BGS (M)</i>	<i>Description</i>
0 - 0.50	loose gravel material with occasion coal fragments and infrequent crushed brick
0.50 - 0.65	a hard clay layer 2.5Y.5/6
0.65 - 1.00	clay material with infrequent rounded medium stones
1.00 - 2.00	very wet clay-silt layer dominated by a number of crushed bricks
2.00 - 2.50	very wet sample with frequent crushed brick bit also much loss of material
2.50 - 3.00	medium sand 2.5Y.4/4
3.00 - 3.50	fine sand 2.5Y.4/4
3.50 - 3.70	medium sand 5Y.4/3
3.70 - 4.00	silt 2.5Y.3/0
4.00 - 4.50	very wet sample with some sediment loss
4.50-5.00	a coarse grained sand 10YR.7/8
5.00 - 6.00	silts and some loose small-medium stones, much of which may be from core collapses. Material was lost from this core
CORING STOPPED AT 6M	

CORE POINT 7	
<i>Depth BGS (M)</i>	<i>Description</i>
0 – 0.25	loose small-medium stones with frequent fragments of coal
0.25 – 0.35	layer of tarmacadam
0.35 – 0.45	sandstone
0.45 – 0.60	crushed brick and small-medium stones
0.60 – 1.00	silty-clay mottle with coarse sand
1.00 – 1.20	silty-sand with frequent medium stones
1.20 – 1.30	ash-like layer, with bands of white clay like material and black charcoal bands
1.30 – 1.40	brick
1.40 – 2.00	medium sand with some fragments of coal
2.00 – 3.00	an upper layer of gravels, possibly from core collapse. The mid section - dark silt, 2.5Y.2/0 over a silty sand layer 10YR.3/3
3.00 – 3.40	silty sand 2.5Y4/4
3.40 – 3.50	sandstone
3.50 – 4.00	a grey sandy-silt 2.5Y4/0 which contained fragments of wood
4.00 – 5.00	coarse sand 2.5Y.7/6 with frequent small rounded stones
5.00 – 5.50	loose sands and gravels
5.50 – 6.00	silt 5Y.3/1 with infrequent small stone inclusions
CORING STOPPED AT 6M	

CORE POINT 8	
<i>Depth BGS (M)</i>	<i>Description</i>
0 – 0.50	loose gravel material with infrequent coal and crushed brick
0.50 – 0.60	sandstone
0.60 – 1.00	loose crushed brick with some pottery fragments
1.00 – 1.70	loose small-medium stone with frequent crushed brick and pottery fragments
1.70 – 2.00	silty sand with frequent medium stone inclusions
2.00 – 2.30	silt with infrequent small-medium stone inclusions 5Y.3/1
2.30 – 2.50	silt with frequent river gravels, 5Y.3/1
CORING STOPPED AT 2.5M – Solid Obstruction (Sandstone Plug Obtained)	

CORE POINT 9	
<i>Depth BGS (M)</i>	<i>Description</i>
0 – 0.40	loose gravel material with frequent coal and crushed brick fragments
0.40 – 0.50	fine sand
0.50 – 1.00	mainly (c.95%) crushed brick
1.00 – 1.50	crushed brick
CORING STOPPED AT 1.5M – Solid Obstruction (Brick Foundation)	

CORE POINT 10	
Depth BGS (M)	Description
0 – 0.20	small-medium stones with frequent crushed coal
0.20 – 0.40	crushed brick and coarse sand
0.40 – 0.60	silty-sand with frequent crushed brick
0.60 – 0.63	conglomerate stone
0.63 – 1.00	silty sand with angular gravels
1.00 – 1.10	consisted fine sand
1.10 – 1.50	small-medium stones and pottery fragments
1.50 – 2.00	heavily compacted brick and angular medium stones with a minor sandy-silt component
2.00 – 3.00	river silts 5Y.3/1 with rounded small-medium stones. There was much loss of material from this core
3.00 – 4.00	mottled silt and sandy-silt 2.5Y.4/2
4.00 – 4.50	silts as seen in 300-400
4.50 – 5.00	a layer of coarse sand and small stones with charcoal inclusions
5.00 – 6.00	river silts and small-medium stones. Blue-grey sandstone was hit at 600
CORING STOPPED AT 6M – Solid Obstruction (Sandstone Plug Obtained)	

CORE POINT 11	
Depth BGS (M)	Description
0 – 0.50	loose small-medium stones, crushed brick and infrequent coal fragments
0.50 – 0.60	a dark clay-sand
0.60 – 1.00	mottled silty-sand and sandy-clay with infrequent crushed brick
1.00 – 2.00	consisted loss of material. Sandstone hit at 200. Upper material - coarse sands. Very wet material
2.00 – 2.40	small-medium stones, very wet consistency
2.40 – 2.60	mottled grey-brown clays and small stones
2.60 – 2.90	sandy clay 2.5Y.4/0
2.90 – 3.00	coarse sand and gravel
3.00 – 3.70	sand and gravel
3.70 – 4.00	angular stones and sand
4.00 – 4.40	small-medium stones with a high medium-coarse sand content
4.40 – 4.80	silty sand
4.80 – 5.00	mottled sand-silt and infrequent small-medium stones
5.00 – 6.00	sand and small stones at upper layers with silt at 570-580 and medium sand at 580-600
CORING STOPPED AT 6M	

CORE POINT 12	
<i>Depth BGS (M)</i>	<i>Description</i>
0 – 1.00	medium-large stones, crushed brick and coal fragments with minor sand and silt elements.
1.00 – 2.00	silty sand with occasional crushed brick inclusions
2.00 – 2.50	very wet, coarse sand, 2.5Y2/0
2.50 – 3.00	medium sand, 2.5Y.3/0, with occasional rounded stones
3.00 – 3.50	medium sand 2.5Y.3/0
3.50 – 4.00	clay silt mottled as 360-390
4.00 – 4.50	silty-sand, 2.5Y.3/0
4.50 – 5.00	coarse sand with frequent small stones
5.00 – 6.00	coarse sand with frequent coarse sand material
CORING STOPPED AT 6M	

APPENDIX 2: FIGURES
