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A Report to Anglian Water Services Limited

December 1998

Prepared by

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Site Code: CRP97 LCCM Accession No.: 261.97 NGR: SK 9705/7140 Planning Application No.: LA17/0755/96

CITY CENTRE STORM WATER PUMPING STATION, CARHOLME ROAD, LINCOLN

ARCHAEOLOGICAL WATCHING BRIEF

By K Wragg

CLAU ARCHAEOLOGICAL REPORT NO: 357

CITY CENTRE STORM WATER PUMPING STATION, CARHOLME ROAD, LINCOLN

Archaeological Watching Brief

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CITY CENTRE STORM WATER PUMPING STATION, CARHOLME ROAD, LINCOLN

ARCHAEOLOGICAL WATCHING BRIEF

NON-TECHNICAL SUMMARY

During October 1997, the City of Lincoln Archaeology Unit (C.L.A.U.) was appointed by Anglian Water Services Limited (A.W.S.L.), to carry out a watching brief on the construction of a new pumping station on Carholme Road, Lincoln.

The scheme comprised two deep pumping chambers, two surface structures to house the control equipment etc., and out-flow pipework connecting the pumping station to the Brayford Pool.

The pumping chambers themselves measured 10.67m and 4m (internal diameter) respectively, with the larger of the two having a 15m deep shaft. Construction of the shafts was to be carried out by *Caisson Sinking*. This method involves firstly a cutting ring (of the same diameter of the shaft), and then a series of sectional concrete rings (which are bonded together and ultimately form the walls of the chamber) being forced into the ground by the use of a series of hydraulic rams.

In view of the possibility of encountering important buried archaeological remains, even given the restraints imposed by the proposed construction methodology, the Planning Permission granted for the site was subject to an archaeological condition requiring the maintenance of a watching brief during the course of all groundwork associated with the development.

Additionally, trenching for the out-flow connection to the Brayford Pool was included

in the watching brief at the discretion of A.W.S.L. (planning consent not being required for this type of work).

The subsequent results from the watching brief on the site of the pumping station itself proved largely negative. Given the construction methodology adopted, this is not particularly surprising.

The trenching for the outflow pipework leading to the Brayford Pool, however, while not initially part of the archaeological project, did reveal remains which, while relatively limited in their extent, were quite substantial.

These remains, in the form of stone constructions discovered at the junction of Carholme Road and Brayford Wharf North, do not coincide with any obvious existing building and/or street alignments. They do, however, appear to relate to elements of the former 'Newland' Gasworks, which appear on the 1842 map by J.S.Padley (and the subsequent 1888 O.S. Map).

Comparison of the positions of the stone features with these earlier maps suggests that the smaller of the two possibly represents part of the gasworks boundary wall. The more substantial stone construction could possibly be part of the foundations for one of the large gas-holders originally situated at the north-east corner of the Gasworks site.

CITY CENTRE STORM WATER PUMPING STATION, CARHOLME ROAD, LINCOLN

ARCHAEOLOGICAL WATCHING BRIEF

1.0 INTRODUCTION

The City of Lincoln Archaeology Unit (C.L.A.U.) was approached by Anglian Water Services Limited (A.W.S.L.), during October 1997, to undertake an archaeological watching brief on a new construction scheme on Carholme Road, Lincoln (see Fig.1).

The scheme involved the construction of a new storm water pumping station on the north side of Carholme Road, comprising two deep pumping chambers and two surface structures to house the control equipment etc. (see Fig.2).

The pumping chambers themselves measured 10.67m and 4m (internal diameter) respectively, with the larger of the two having a 15m deep shaft. Construction of the shafts was to be carried out by Caisson Sinking. This method involves firstly a cutting ring (of the same diameter of the shaft), and then a series of sectional concrete rings (which are bonded together and ultimately form the walls of the chamber) being forced into the ground by the use of a series of hydraulic rams. Surplus material is then removed from within the concrete shaft by means of a mechanical excavator (see Plate 1, below).

All remaining trenches for the foundations for the above-ground structures and associated services were to be machine-excavated, with depths not expected to exceed 1m.

In view of the possibility of encountering important buried archaeological remains, even given the restraints imposed by the proposed construction methodology, the Planning Permission granted for the site was subject to

an archaeological condition. This condition required the maintenance of a watching brief during the course of all groundwork associated with the development.

Additionally, trenching for the out-flow connection to the Brayford Pool also began to reveal features of archaeological interest, and while this was not actually covered by the condition imposed by the local planning authority (as planning consent is not required for this type of work), A.W.S.L. decided to extend the watching brief provision to monitor this part of the project.

Accordingly, the C.L.A.U. was commissioned by A.W.S.L. to carry out a watching brief on both the site and the connecting pipework, with archaeological observations undertaken between the 6th of November 1997 and the 3rd of July 1998.

The information in this document is presented with the proviso that further data may yet emerge. The Unit, its members and employees cannot, therefore, be held responsible for any loss, delay or damage, material or otherwise, arising out of this report. The document has been prepared in accordance with the terms of the Unit's Articles of Association, the Code of Conduct of the Institute of Field Archaeologists, and *The Management of Archaeological Projects 2* (English Heritage, 1991).

2.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Lincoln is situated at the point where the Jurassic limestone ridge known as the Lincoln Edge is cut by a glacial gap, through which the River Witham now flows. At its junction with the River Till, canalised as the Fossdyke, flowing from the west, is a presumed natural lake, the Brayford Pool. Its extent was much greater in antiquity than at present, and it is known to have existed at the time of the Roman Conquest. The first syllable of the colloquial Roman name for the City of Lincoln, *Lindum*, was derived from the Celtic word for "lake", "pool" or "marshy/water place" (Rivet & Smith, 1979).

Archaeological investigation in this area has been relatively limited, although, excavations have been undertaken on Brayford Wharf North, and around West Parade/Orchard Street (both areas to the east of the current project).

In the Brayford Wharf area, excavations were carried out during the early 1970's prior to the construction of a multi-storey car-park at the southern end of Lucy Tower Street. The objective of this project was to investigate the origin of this part of town and the extended town wall and tower.

During this excavation the earliest feature recorded was a possible Late Saxon jetty cut into the underlying peat layers, which was overlain by a sloping foreshore of sand and peat. This was itself cut by a mid to late 12th century north-south channel, running into the Brayford, together with several posts, dating to the mid 13th century.

This area seems to have been periodically flooded by the Brayford during the early to mid 14th century, and the channel appears to have become blocked by silt, requiring recutting, on at least one occasion.

Rubble dumps provided consolidation for the construction of the extended city wall and the "Lucy" Tower in the early to mid 14th to 15th centuries, and both the Tower and internal construction surfaces were well preserved. To the west of the wall a possible drainage ditch was found to have been in use between the 14th and 16th centuries, before finally silting up. An east-west wall ran along the edge of the Brayford, to the east of the Tower, probably protecting the land behind from flooding. This wall was replaced whenever the level of the land rose through dumping.

In the mid 16th century the ditch was recut, the Lucy Tower was re-faced in brick, and possibly at this time the bases of two vats were set into the tower base. The east-west walls continued to be replaced.

By the mid 18th century the ditch had again silted up, and dumps of material raised the surface to the south of the tower during the 18th and 19th centuries. The tower was again re-faced, while to the west it was butted by an east-west brick wall which cut across the site of the ditch, and acted as a flood barrier to the

west of the tower. The city wall was thoroughly robbed in the 18th or 19th century and the Lucy Tower was finally demolished in the mid 19th century (Colyer, 1975; Vince & Jones, (eds) 1990).

Further archaeological investigation was undertaken in 1989, on the proposed site of a new *Holiday Inn* (subsequently to become the *Courtyard by Marriott* Hotel), on a site fronting Brayford Wharf North.

During this project, undated river deposits of gravel, peat and silt were revealed, together with a possible revetment comprising three tapered posts and associated stones. On reclaimed land to the north-east the remains of a line of posts aligned north-east to south-west suggested an early property line.

A large rectangular kiln constructed of limestone blocks and flat roof-tiles, some of which dated to the 14th to 16th century, was also revealed, and a small mid 14th to 15th century structure may have lain to the north, as indicated by a scatter of limestone and roof tile fragments. There were also a number of flat limestone slabs, possibly post-pads, aligned north-south between the possible structure and the kiln. Numerous isolated refuse pits, mostly of late medieval date were found throughout the site (Chitwood, 1990; Vince & Jones, (eds) 1990).

The elements of the project centred around West Parade and Newland Street West, lay to the west of both the lower Roman *Colonia*, and the medieval town wall (which, as related above, extended as far as the north bank of the Brayford Pool). The area is believed likely to contain evidence of Roman, and later, medieval suburban occupation and land-use.

During excavations at The Park (at the Lincoln City Council offices, to the east of the site), on the line of the lower city wall, two or three periods of building were found, sealed by the earliest rampart, which was built at the end of the 2nd or early in the 3rd century. Later, during the 4th century, a gateway was inserted through the defences, its frontal projections incorporating many large reused blocks. These included some decorated and moulded fragments from a temple or funerary monument; if the latter, it was probably

located outside the walls, possibly close to the site.

While little or no evidence was found for activity during the majority of the Saxon period, re-occupation of the area within the walls seems to have begun in the 11th century.

The Roman fortifications are thought to have survived into the medieval period; the date at which the gate went out of use is uncertain although it was certainly blocked by the 13th century. There was some evidence of occupation and structures throughout the medieval period.

A postern gate running obliquely through the Roman fortifications was discovered during excavations on the site of the police station on West Parade, and was probably of medieval date suggesting the continued use of the wall.

In more recent times, Carholme Road has been developed for residential occupation, with numerous terraced houses constructed along both the street frontage and connecting side streets. Small factories, shops and public houses have also been built in the area.

However, even in the relatively short period of time since the construction of these buildings numerous changes have taken place to both the street alignments, and the buildings themselves. The site of the proposed pumping station itself was occupied by a public house until the mid 1970's.

To the south of the Carholme Road/Brayford Wharf North junction, a Gasworks complex was in operation from the early 19th century until 1934 (see Figs.4 & 5)

3.0 RESULTS

As the two main elements of this project were physically unconnected, each area has been dealt with separately, as follows.

3.1 Area 1: Main Pumping Station site (see Figs.2 & 6)

As somewhat expected, the groundwork methodology adopted in this Area precluded detailed investigation of the majority of the buried strata. The only deposits that could be recorded, were those revealed during the enabling works to allow the *Caisson Sinking* to be carried out, and in the shallow foundation trenches for the surface structures. The maximum depth of these elements was c.2m (see Fig.6).

The earliest deposit revealed in this Area was [106], a friable light orange-brown sand, which was present from a depth of approximately 1.8m (c.4.8m O.D.) below the existing ground level to the limit of excavation (L.O.E.). This was overlain by a 1.1m thick layer of mid brown sandy silt, [105].

[105] contained occasional small limestone flecks and occasional pebbles, and was sealed by a thin band of orange-brown sand with no inclusions [104].

It appears likely that the sand layer [106] represents the top of the natural (i.e., geological) strata. Unfortunately no dating evidence was revealed from [104] and [105] to allow interpretation of these deposits.

Above [104], however, all the remaining deposits were of obviously modern origin. Of these: [103] comprised a 300mm thick middark grey sandy silt; [102] was made up of 100mm-150mm of light grey/white ash & mortar; and [101] was a mixed mid grey sandy silt. Both [101] and [103] contained modern rubble inclusions (probably from the demolition of the public house formerly occupying the site). [101] formed the existing surface deposit for the site, lying at approximately 6.5m O.D.

3.2 Area 2: Intermediate Pumping Chamber (see Figs.3, 6, 7 & 8)

This Area was located at the junction of Carholme Road and Brayford Wharf North, and comprised a rectangular trench measuring approximately 9m (N-S) x 3.5m (E-W) (see Fig.3). The trench was initially excavated to a depth of between 2m and 2.5m (which unfortunately precluded access to the trench for detailed observation), with the depth ultimately increased to c.5m (following installation of trench shoring).

The discoveries in this trench largely comprised two substantial limestone features, both apparently oriented north-south.

Of these, [115] was present within the east-facing section of the trench from a depth of c.600mm below the existing road surface to the L.O.E. (at 2.5m). The feature comprised at least three courses of very large, squared limestone blocks (measuring up to 1.5m in length, and 600mm in height), laid with no obvious bonding. [115] continued into the northern trench section, but had been truncated to the south (in total [115] extended for at least 3m (N-S)), and was overlain by [111], a very mixed mid brown sandy silt deposit containing ash, limestone and brick inclusions.

This deposit as then sealed by [114], a large (i.e., 400mm-500mm thick) slab of concrete, which actually lay directly on top of the upper course of [115] (see Fig.7).

The second limestone feature was situated at the northern end of the trench, and was predominantly seen within the south-facing section (see Fig.8). This feature, [118], appeared less substantial than the aforementioned [115], being made up of six courses of smaller, more irregularly-shaped limestone blocks. Again no bonding was in evidence, and while the length of the feature could not be determined, its width was approximately 750mm.

To the west, [118] was sealed/abutted by firstly [117], a mid orange-brown sand, and then by [116], a layer of mid grey sandy silt. These deposits also abutted [115] in the western side of the trench. The entire trench to the east of [118] was occupied by a modern

multiple service trench, [119], which was present from a depth of c.500mm to the L.O.E.

At the southern end of the trench two further layers of silt ([112], a light brown sandy silt, and [113], a mid-dark grey-brown sandy, slightly clayey silt) were revealed in the east-facing trench section, but unfortunately no correlation between these deposits and the features to the north could be made.

The uppermost of these two layers, together with the aforementioned [114], [116] and [119], were then sealed by a thin layer of black ash & tarmac, [110], which also contained a cable duct.

This was then overlain by the various layers associated with the existing road carriageway, including: [109], pitched limestone foundations; [108], mixed limestone hardcore & bitumen bedding; and [107], the road surface itself.

4.0 DISCUSSION OF RESULTS AND CONCLUSIONS

The results from the watching brief on the site of the pumping station itself proved largely negative, which given the construction methodology adopted, is not particularly surprising.

The trenching for the outflow pipework leading to the Brayford Pool, however, while not initially part of the archaeological project, did reveal remains which, while relatively limited in their extent, were quite substantial.

These remains, in the form of stone constructions discovered at the junction of Carholme Road and Brayford Wharf North, do not coincide with any obvious existing building and/or street alignments.

They do, however, appear to relate to elements of the former 'Newland' Gasworks, which appear on the 1842 map by J.S.Padley (and the subsequent 1888 O.S. Map) (see Figs. 4 & 5).

Comparison of the positions of the stone features with these earlier maps suggests that the smaller of the two ([118]) possibly represents part of the gasworks boundary wall. The more substantial stone construction ([115]) could possibly be part of the foundations for one of the large gas-holders originally situated at the north-east corner of the Gasworks site.

5.0 ACKNOWLEDGEMENTS

The City of Lincoln Archaeology Unit would like to thank the following for their assistance during this project: Anglian Water Services Limited, Lincoln Engineering Design Office, P.O.Box 12, Lincoln, LN5 7JE, for their funding and support during this project; Mr S.Gormley, (A.W.S.L. Project Engineer); Mr J.Huthwaite (Site Agent) and all on-site staff of Jackson Civil Engineering Ltd., Dobbs Lane, Kesgrave, Ipswich, Suffolk, IP5 7QQ (main site contractors).

6.0 BIBLIOGRAPHY

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Rivet, A L F & Smith, C, 1979 The placenames of Roman Britain

Vince, Alan & Jones, Michael J (eds) 1990 (Revd edn) *Lincoln's Buried Archaeological Heritage*, City of Lincoln Archaeology Unit, Lincoln

7.0 LHA NOTE/ARCHIVE DETAILS

7.1 LHA NOTE DETAILS

CLAU CODE: CRP97

PLANNING APPLICATION NO.: LA17/0755/96

FIELD OFFICER: K. Wragg

NGR: SK 9705/7140

CIVIL PARISH: Lincoln

SMR No.:

DATE OF INTERVENTION: 06/11/97 - 03/07/98

TYPE OF INTERVENTION: Watching Brief

UNDERTAKEN FOR: Anglian Water Services Limited, Lincoln Engineering Design Office, P.O.Box 12, Lincoln, LN5 7JE.

7.2 ARCHIVE DETAILS

PRESENT LOCATION: City of Lincoln Archaeology Unit, Charlotte House, The Lawn, Union Road, Lincoln, LN1 3BL.

FINAL LOCATION: The City and County Museum, Friars Lane, Lincoln.

MUSEUM ACCESSION No.: 261.97

ACCESSION DATE:

APPENDIX A - ARCHIVE DEPOSITION

The archive consists of:

No. Description 1 Site diary

1 Report

21 Context records8 Scale drawings

1 set Photographic records - Colour slides

1 Stratigraphic matrix

The primary archive material, as detailed above, is currently held by:

The City of Lincoln Archaeology Unit, Charlotte House, The Lawn, Union Road, Lincoln, Lincolnshire, LN1 3BL.

It is intended that transfer to the City and County Museum, Friars Lane, Lincoln, in accordance with current published requirements, under Museum Accession Number 261.97, will be undertaken following completion of this project.

APPENDIX B - COLOUR PLATES



Plate 1: View of excavation for main pumping chamber(Area 1) in progress, showing methodology

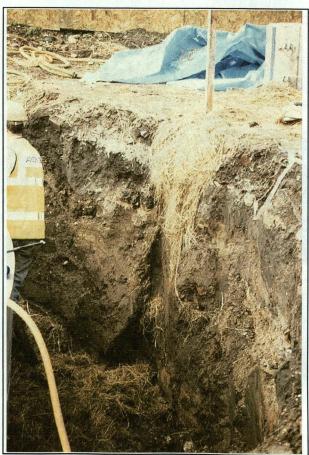


Plate 2: View of revealed deposits, Pumping Station site (Area 1)

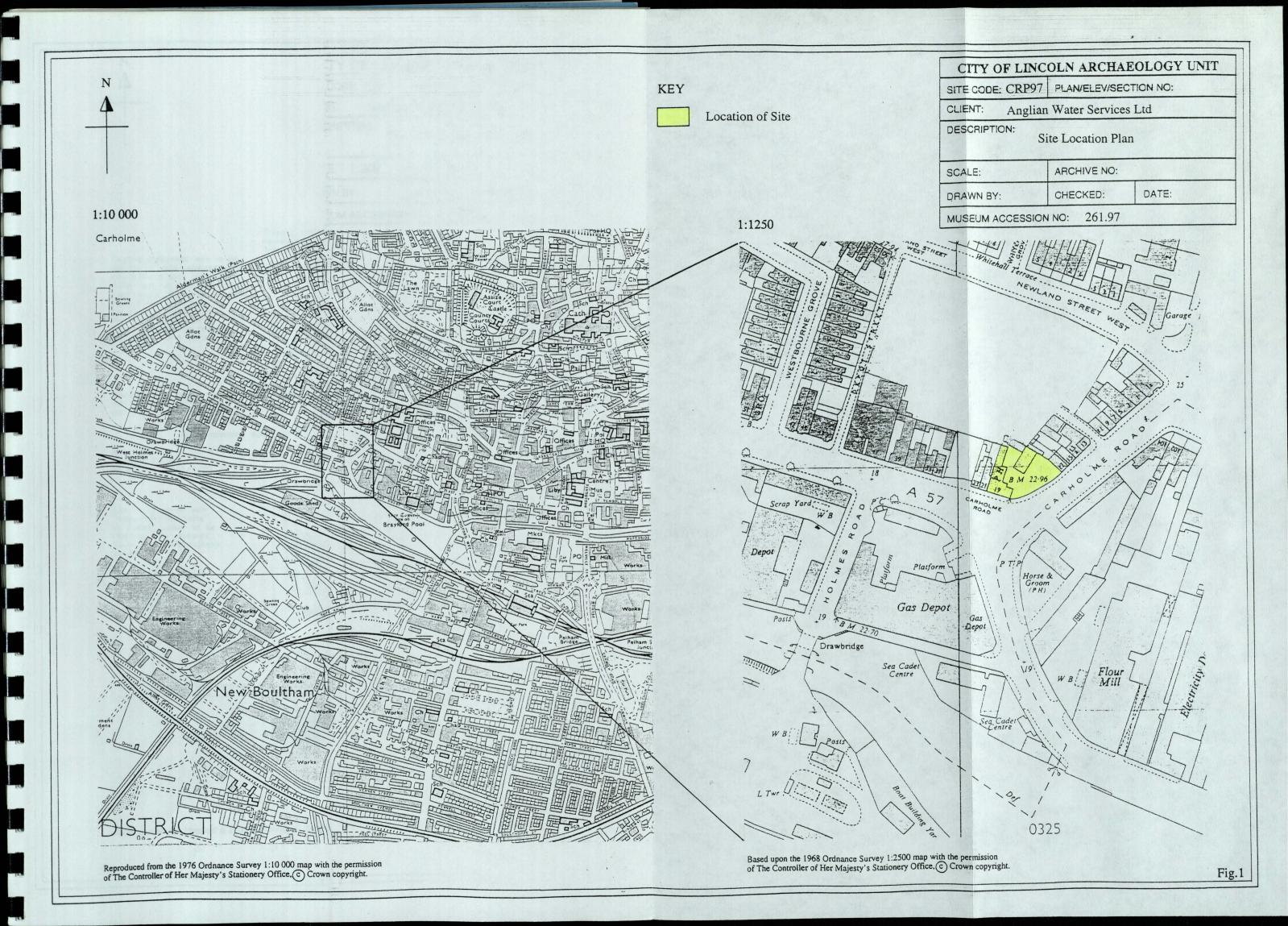
APPENDIX B - COLOUR PLATES (continued)

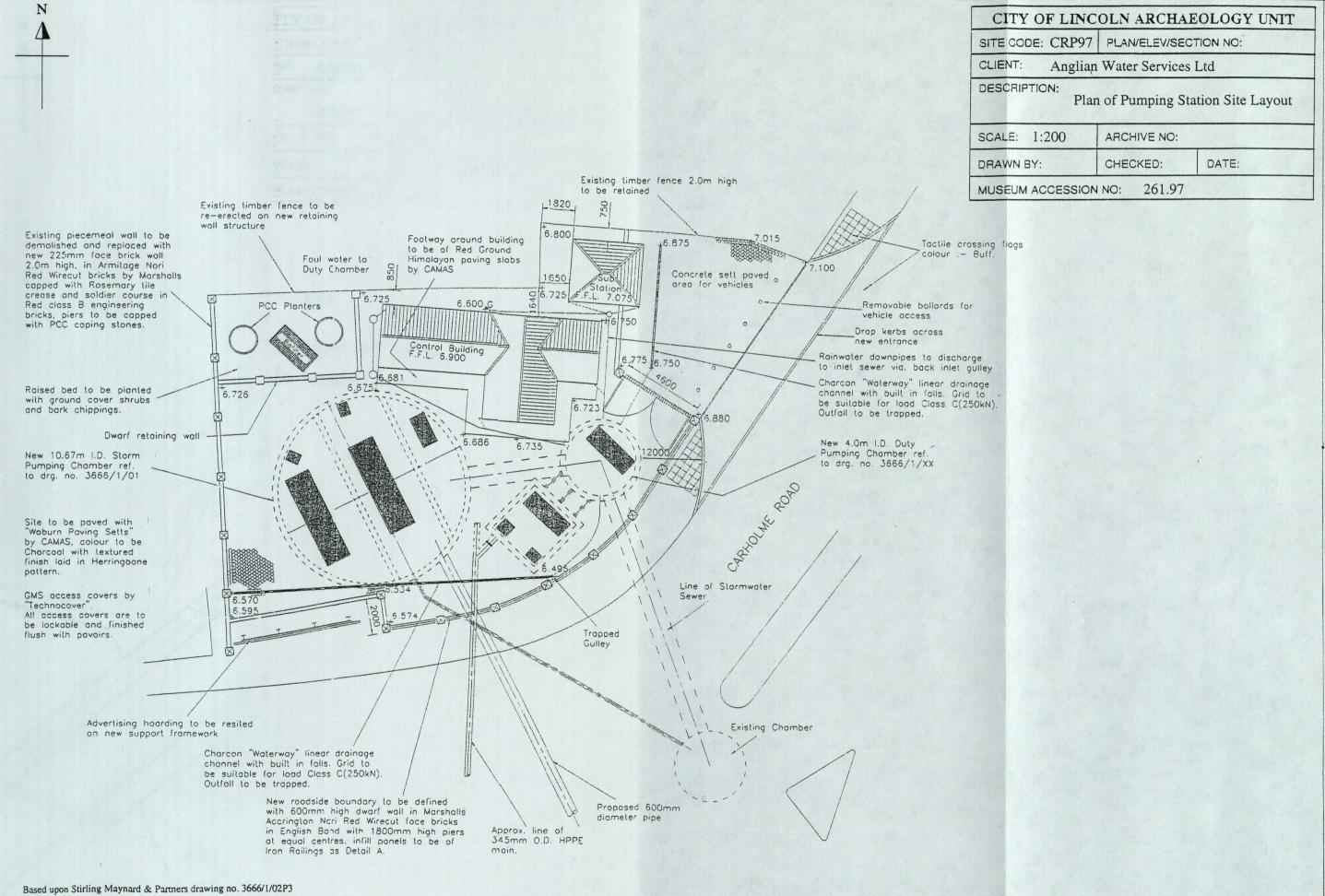


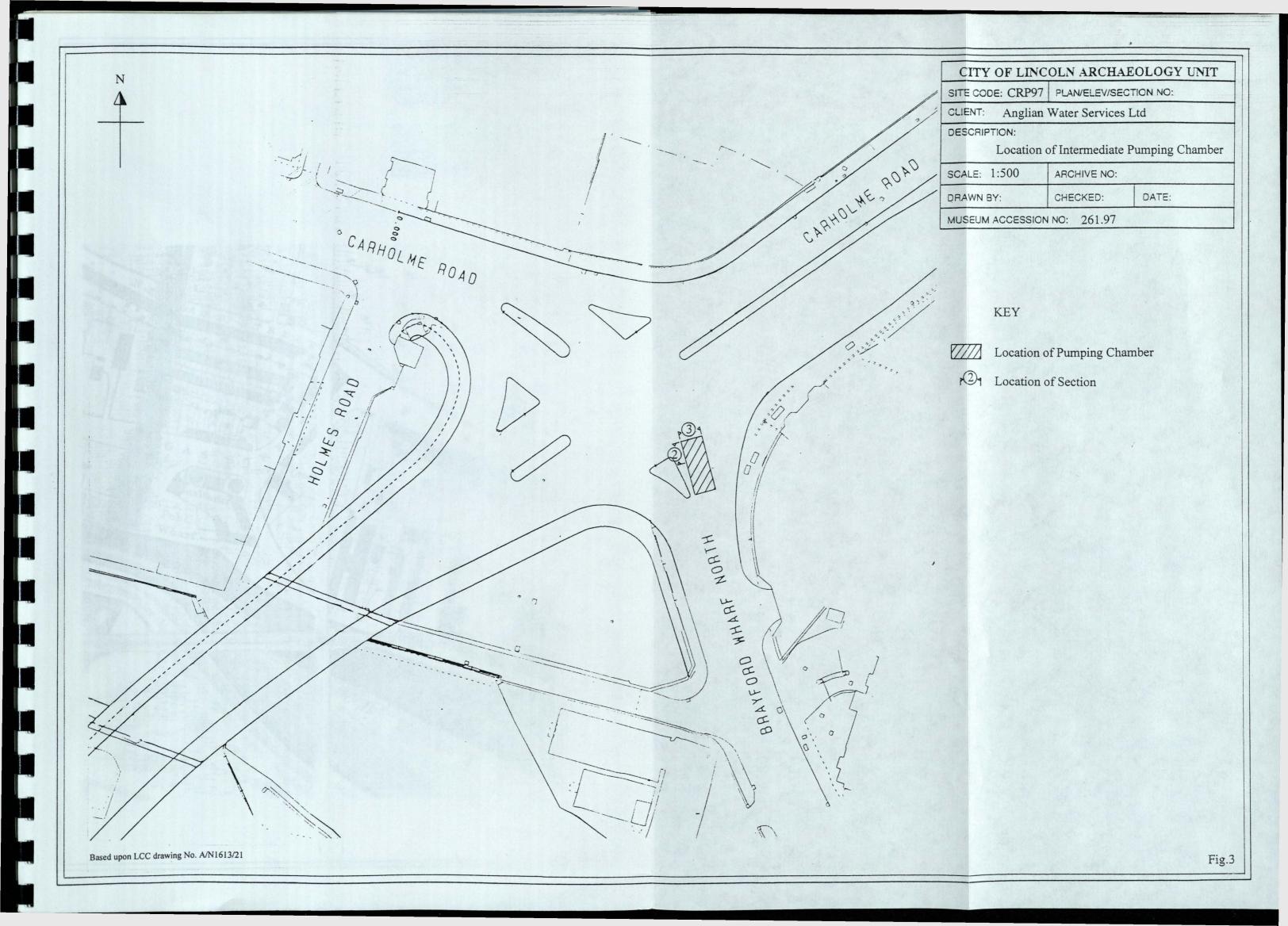
Plate 3: View of substantial limestone feature [115], Area 2, looking south-west



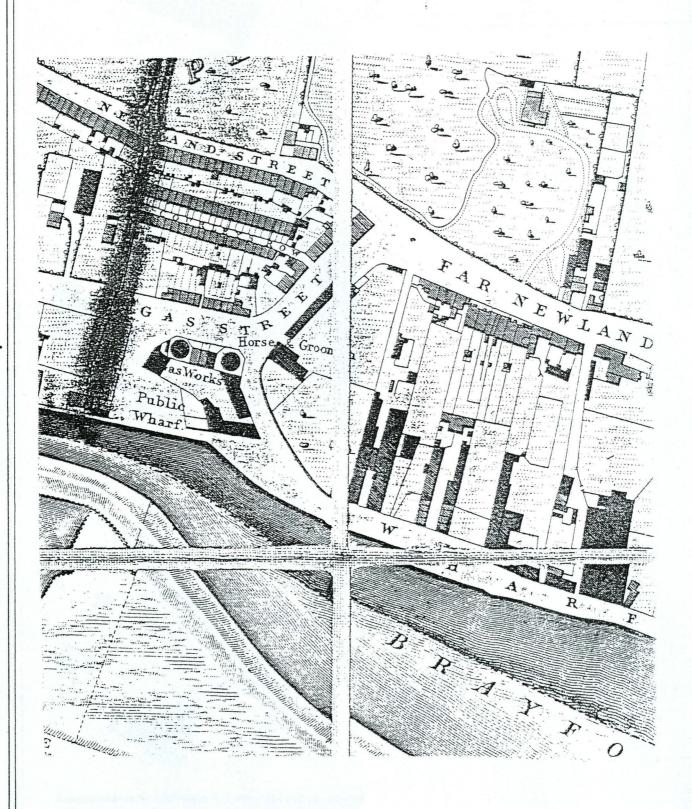
Plate 4: View showing modern disturbance, Area 2, looking west (limestone feature [118] visible in background section)

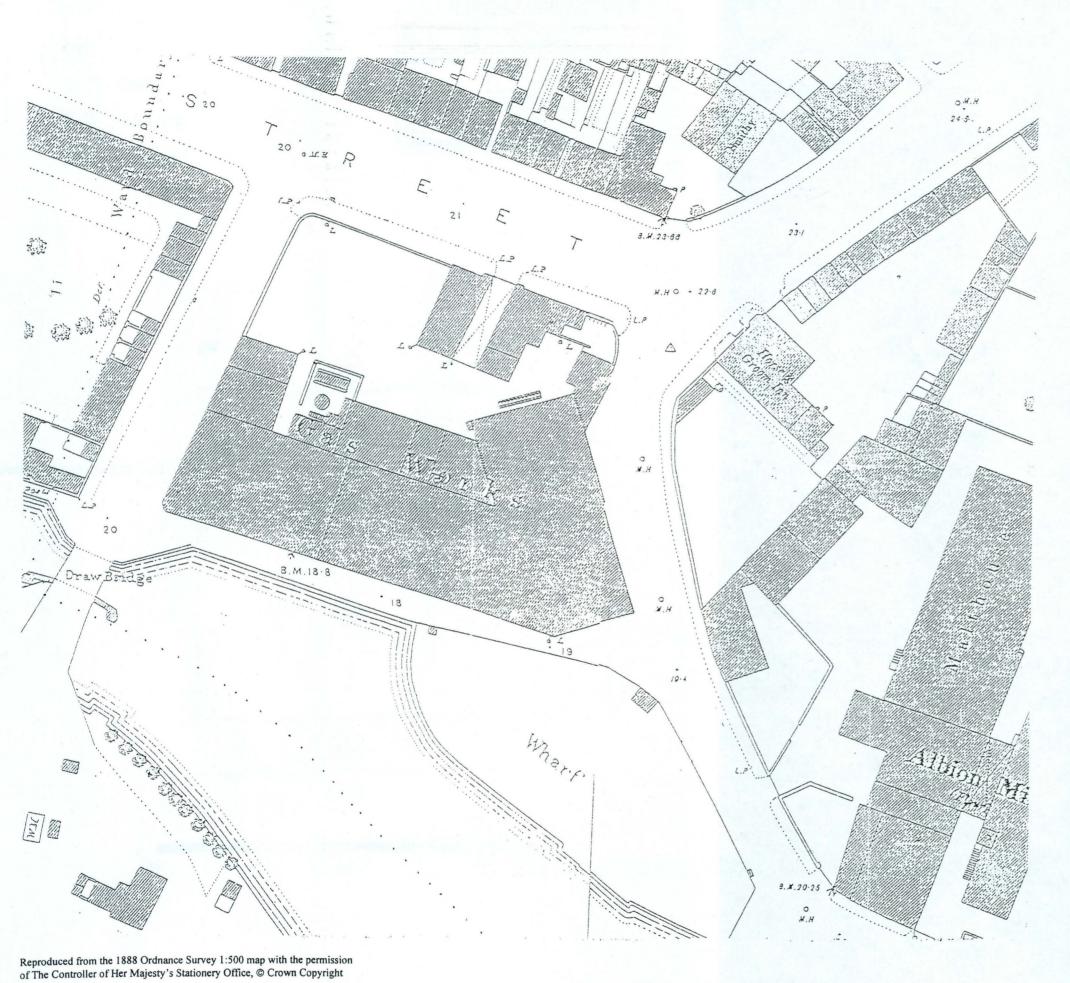






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SCALE: N.T.S.	ARCHIVE NO:	ney 5 1642 Map





CITY OF LINCOLN ARCHAEOLOGY UNIT

SITE CODE: CRP97 PLAN/ELEV/SECTION NO:

CLIENT: Anglian Water Services Ltd

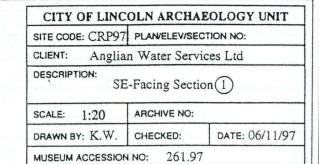
DESCRIPTION:

Extract from the 1888 O.S. Map

SCALE: N.T.S. ARCHIVE NO:

DRAWN BY: CHECKED: DATE:

MUSEUM ACCESSION NO: 261.97

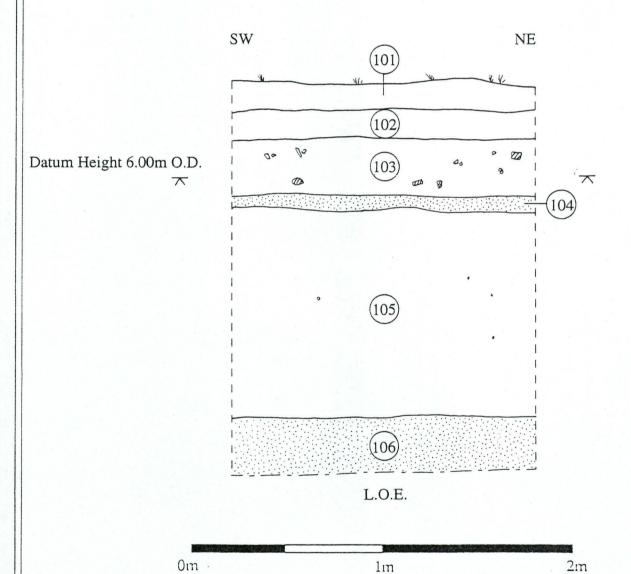


KEY

Sand

Brick/Tile

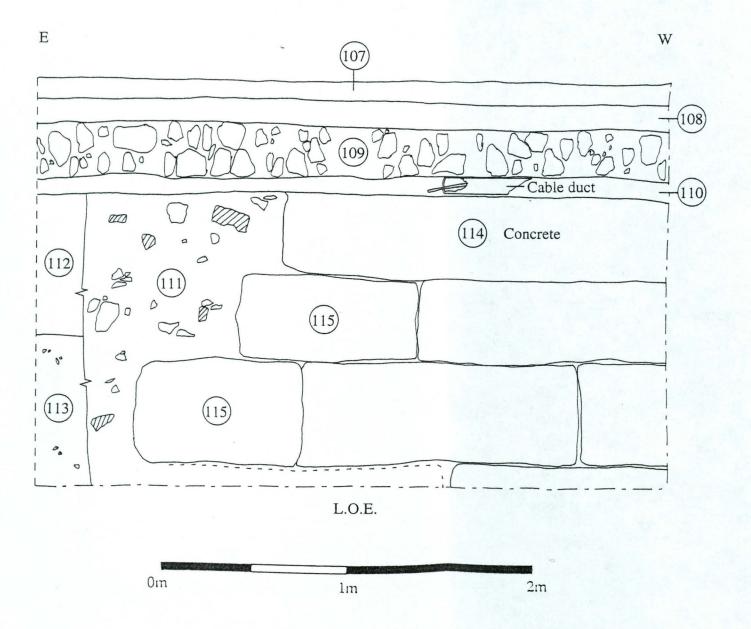
Limestone



KEY

☐ Brick/Tile

20 Limestone



CITY OF LINC	OLN ARCHAE	OLOGY UNIT
SITE CODE: CRP97	PLAN/ELEV/SECT	TION NO:
CLIENT: Anglian	Water Services	Ltd
DESCRIPTION:	East-Facing Secti	on 2
SCALE: 1:20 ARCHIVE NO:		
DRAWN BY: K.W.	CHECKED:	DATE: 03/04/97
MUSEUM ACCESSION	NO: 261.97	

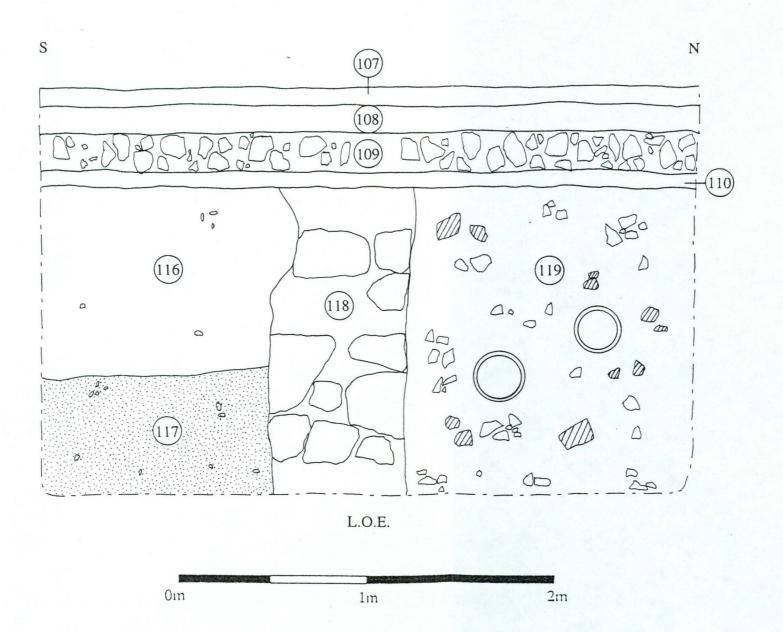
KEY

-tentions-week

Sand

Brick/Tile

DS Limestone



CITY OF LINC	OLN ARCHAE	OLOGY UNIT			
SITE CODE: CRP97	PLAN/ELEV/SECTION NO:				
CLIENT: Anglian Water Services Ltd					
DESCRIPTION: South - Facing Section 3					
SCALE: 1:20	ARCHIVE NO:				
DRAWN BY: K.W.	CHECKED:	DATE: 06/04/97			
MUSEUM ACCESSION	NO: 261.97				



LINCOLN CITY OF LINCOLN ARCHAEOLOGY UNIT CHARLOTTE HOUSE, THE LAWN, UNION ROAD, LINCOLN LNI 3BL archaeology TEL: 01522545326 FAX: 01522548089

DIRECTOR: MICHAEL J. JONES MA.FSA.MIFA

With Compliments

30 December 1998

Anglian Water Services Ltd P O Box 12 Enterprise House Witham Park Lincoln LN2 5HA

For the attention of Mr Stephen Gormley

Dear Sirs

Lincoln City Centre Storm Water Pumping Station, Carholme Road, Lincoln Archaeological Watching Brief CLAU Project: CRP97 Museum Acc No. 261.97

Please find enclosed two copies of our Archaeological Report No. 357 describing the results of the watching brief carried out in conjunction with groundwork for the above project.

A copy of the report is being deposited with the Lincolnshire Sites and Monuments Record Office, and a further copy will be lodged with the City and County Museum as part of the project archive in due course.

In accordance with our quotation and your Order No. PL 774961 AWSD our original invoice has been sent with a copy of this letter direct to your payments section at Norwich. We enclose a copy invoice for your records.

We would take this opportunity to thank all parties concerned for their interest and co-operation.

Yours faithfully

for and on behalf of the

City of Lincoln Archaeology Unit

John Hockley

CC

Contracts Manager

2 1 JAN 99

County Sites & Monuments Record Office, Lincoln + Report
Anglian Water Services Ltd., Payments Section, Norwich + Original Invoice
Anglian Water - Conservation Section, Histon, Cambs. + Report.

Mr [K George, Lincoln City Council