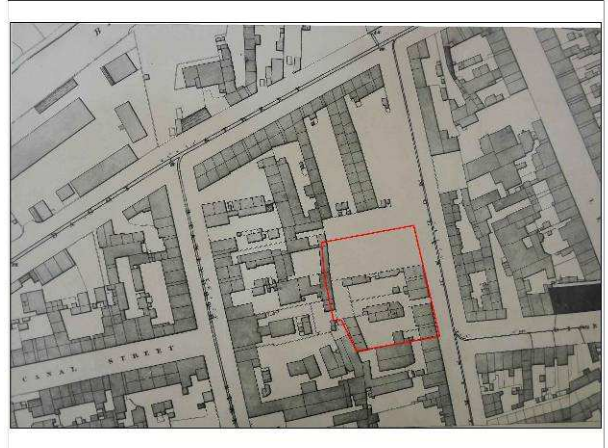


**MOLAND STREET,
BIRMINGHAM,
WEST MIDLANDS**



WATCHING BRIEF REPORT
CP. No: 10096
JUNE 2012



WA ARCHAEOLOGY LTD
COCKLAKES YARD,
CUMWHINTON,
CARLISLE,
CA4 0BQ
TEL: (01228) 564820
WWW.WA-ARCHAEOLOGY.COM

WA ARCHAEOLOGY LTD

DOCUMENT TITLE Moland Street, Birmingham, West Midlands
DOCUMENT TYPE: Watching Brief Report
CLIENT: Watkin Jones
REF NUMBER: CP10096
SITE CODE: MSB-A
OASIS REFERENCE: wardella2-143161
PRINT DATE: June 2012
GRID REFERENCE: SP 0747 8786

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.

REVISION SCHEDULE			
	01	02	03
PREPARED BY:	Charles Rickaby and Christopher Muirhead		
POSITION:	Site Assistant and Surveyor		
DATE:	21/06/2012		
EDITED BY:	Frank Giecco		
POSITION:	Technical Director		
DATE:	21/06/2012		
APPROVED BY:	Frank Giecco		
POSITION:	Technical Director		
DATE:	21/06/2012		

WA Archaeology Ltd is a wholly owned company of Wardell Armstrong LLP. Company Registration No. 07702975 VAT Registration No. 279025346. All rights reserved.

Disclaimer

No part of this report may be copied or reproduced, stored or transmitted by any means without prior written permission from WA Archaeology Ltd, or the client for whom the work was carried out. The report has been produced specifically for the client's usage, and no other party may use, make use of or rely on the contents of the report; any person or party using or relying on this document for such purposes agrees, and with such use or reliance be taken to confirm their agreement, to indemnify WAA Ltd for all loss or damage resulting from their action. No liability is accepted by WA Archaeology Ltd for any use of this report other than the use and purpose for which it was originally intended. Information contained in this report is provided by WA Archaeology Ltd using due care and diligence and no explicit warranty is provided as to its accuracy. No independent verification of any information provided to WA Archaeology Ltd has been made.

CONTENTS

SUMMARY	6
ACKNOWLEDGEMENTS	7
1 INTRODUCTION	8
2 METHODOLOGY	10
2.1 Specification.....	10
2.2 The Watching Brief.....	10
2.3 Finds and Environmental Remains.....	11
2.3 The Archive.....	11
3 BACKGROUND	12
3.1 Location and Geological Context.....	12
3.2 Historical Context	12
3.3 Previous Work	17
4 ARCHAEOLOGICAL WATCHING BRIEF	18
4.1 Introduction	18
4.2 Phase 1: Ground Reduction at the east side.....	18
4.3 Phase 2: Further Ground reduction	20
4.4 Phase 3: The north-West Corner.....	30
4.5 Discussion	31
5 FINDS	33
5.1 Finds Assessment	33
5.2 Post Medieval and Modern Pottery	33
5.3 Ceramic Building Material.....	33
5.4 Textile:.....	34
5.5 Clay tobacco pipes:.....	34
5.6 Metalwork:	34
5.7 Industrial residues:.....	35
5.8 Crucibles:.....	35
5.9 Button waste:.....	35
5.10 Statement of potential:.....	36
6 CONCLUSIONS	38
6.1 Conclusions.....	38
7 BIBLIOGRAPHY	39
APPENDIX 1: CONTEXT REGISTER	41
APPENDIX 2: FIGURES	43

ILLUSTRATIONS

FIGURES (APPENDIX 2)

FIGURE 1: SITE LOCATION

FIGURE 2: DETAILED SITE LOCATION

FIGURE 3: PLAN OF BIRMINGHAM 1795

FIGURE 4: MAP OF BIRMINGHAM 1824-1825

FIGURE 5: BOARD OF HEALTH PLANS OF BIRMINGHAM C.1848-1862

FIGURE 6: FIRST EDITION ORDNANCE SURVEY MAP 1889

FIGURE 7: ORDNANCE SURVEY MAP 1937

FIGURE 8: ORDNANCE SURVEY MAP 1952

FIGURE 9: APPROXIMATE LOCATION OF BRICK STRUCTURES, SET OVER ORDNANCE SURVEY MAP OF 1889

PLATES

PLATE 1: SOUTH FACING PHOTO OF STANCHION 2 {1001} BEING EXCAVATED.....18

PLATE 2: EAST FACING PHOTO OF SITE BEING STRIPPED OF (1000) TO REVEAL (1002)20

PLATE 3: DETAIL OF BRICK FLOOR {1010} IN THE CENTRE OF THE SITE FROM THE EAST21

PLATE 4: POST-EXCAVATION SHOT OF TRIAL PIT 5 WITH WALL {1012} VISIBLE IN THE SOUTH FACING SECTION22

PLATE 5: DETAIL OF GRAPHITE CRUCIBLE FOUND IN TRIAL PIT 5 IN THE CENTRE WEST OF THE SITE 22

PLATE 6: DETAIL OF BRICK FLOOR {1022} IN WEST CENTRE OF SITE.....23

PLATE 7: DETAIL OF CIRCULAR BRICK BUILT STRUCTURE, POSSIBLY A WELL, {1016} IN THE CENTRE WEST OF THE SITE24

PLATE 9: NORTH FACING SHOT TAKEN IN THE NORTH-WEST CORNER SHOWING NORTH WALL WITH REINFORCED GIRDERS26

PLATE 8: SHOT OF CONCRETE STANCHIONS {1017} IN NORTH-WEST CORNER FROM NORTH-EAST....26

PLATE 10: SHOT OF FURNACE {1018} AND BURNT MATERIAL (1023) NEXT TO WEST WALL IN NORTH-WEST CORNER27

PLATE 11: SHOT OF BRICK BUILT STRUCTURE {1025} ON WEST WALL {1021}.....27

PLATE 12: SHOT OF FURNACE {1019} NEXT TO N WALL28

PLATE 13: SHOT OF SOUTH PART OF WEST WALL {1021}.....29

PLATE 14: SHOT OF KINK IN WEST WALL {1021} WITH ARCHING BRICKWORK30

PLATE 15: GENERAL WORKING SHOT IN NORTH-EAST CORNER FACING NORTH.....30

PLATE 16: SECTION THROUGH A SINGLE FOUNDRY FURNACE, AND THE COMPLETE INSTALLATION OF THREE SUCH FURNACES AT BEWDLEY FOUNDRY (DAY 1992, 52)32

SUMMARY

Wardell Armstrong Archaeology were commissioned by Watkin Jones, to undertake an archaeological watching brief on groundworks relating to the development of purpose built student accommodation at Moland Street, Central Birmingham, West Midlands (NGR SP 0747 8786). Wardell Armstrong LLP undertook a Heritage assessment in 2011 in order to establish the scope of the archaeological work required to fulfil the archaeological conditions of the planning decision. The report identified a number of historic structures and features within the development area which were likely to be impacted upon by the development, most notably small-scale industrial remains. As a result, the Birmingham City County Council granted planning consent for the development on the condition that an archaeological watching brief be undertaken during ground reduction and the removal of existing building stanchions. The watching brief was required on the basis that, although the site was historically located away from the medieval core of Birmingham, it did gradually become occupied during the post-medieval expansion of the town.

Moland Street had been laid out by 1795 and following this date the area was occupied by a number of buildings from a variety of trades including brass founding and industries and manufactories associated with the gun trade. By the 1880s the development site was occupied by a malleable iron founder, a rule marker, brass founder, a coal dealer, a file and rasp marker and beer retailer which identified the site to be of archaeological interest.

The archaeological watching brief was undertaken over 16 days between the 24th March 2012 and the 8th June 2012. The watching brief monitored the stripping of the hardcore surface across the site, the removal of the stanchions and the lowering of the site by approximately 3m.

During the monitoring several walls, brick floors, and brick structures containing furnaces were located and artefacts were retained from several contexts.

As this archaeological watching brief was conducted as part of a recommendation to observe groundwork's in association with the development of a new purpose built student accommodation, no further work is deemed necessary. However, the material archive has been assessed for its local, regional and national potential and further work has been recommended due to the potential for the material archive to contribute to the relevant research frameworks.

ACKNOWLEDGEMENTS

Wardell Armstrong Archaeology Ltd would like to thank Dave Hodgkinson, Wardell Armstrong LLP, and Watkin Jones for commissioning the project, and for all assistance throughout the work.

Wardell Armstrong Archaeology would also like to extend their thanks to N Hendy of Watkin Jones, and all staff at the Moland Street for their help during this project.

The archaeological watching brief was undertaken by Charles Rickaby and Christopher Muirhead. The report was written by Charles Rickaby and Christopher Muirhead.

The drawings were produced by Adrian Bailey. The project was managed by Matt Town, Project Manager for Wardell Armstrong Archaeology Ltd. The report was edited by Frank Giocco, Technical Director for Wardell Armstrong Archaeology Ltd.

1 INTRODUCTION

- 1.1 Between the 24th March and the 8th June 2012 Wardell Armstrong Archaeology Ltd were invited by Watkin Jones to maintain an archaeological watching brief at Moland Street, Central Birmingham, West Midlands, (centered on NGR SP 0746 8786 Figure 1), during groundwork's associated with the development of purpose built student accommodation. The proposed area is not located within a conservation area, although Steelhouse Conservation area is situated to the south of Moland Street, with its northern boundary being defined by St Chad's Queensway and Lancaster Circus Queensway, and part of Corporation Street (Birmingham City Council 2007). A Heritage Assessment has been produced (Wardell Armstrong LLP 2011), which identified a number of historic structures and features within the development area that were likely to be impacted by the proposed scheme. As a result, Mike Hodder of Birmingham City Council requested that all ground reduction be subject to a programme of archaeological observation and investigation. This is in line with government advice as set out in the NPPF National Planning Policy Framework (2012).
- 1.2 The previous Heritage Assessment involved the consultation of the Birmingham City Sites and Monuments Record (SMR) for a 400m radius centered on the proposed development area on Moland Street, as well as a search of readily available published and unpublished documentary records housed in the Birmingham Central Library Local Studies and City Archives. Primarily this material consisted of historical mapping and trade directories dating from the late 18th through to the late 20th Century's in order to assess the historical development and character of the site and its immediate environs. The Heritage Assessment concluded that an archaeological watching brief should be maintained during groundworks to ensure that any potential archaeological remains were recorded prior to their loss (Wardell Armstrong LLP 2011, 41).
- 1.3 All groundwork's associated with the development of purpose built student accommodation had to be excavated under full archaeological supervision and all stages of the archaeological work were undertaken following approved statutory guidelines (IfA 2008), and were consistent with the specification provided by Wardell Armstrong LLP (2012) and generally accepted best practice.
- 1.4 The main objective of the watching brief was to obtain an adequate record of any archaeological deposits or finds which would be disturbed, exposed or removed by work associated with the development.

- 1.5 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 SPECIFICATION

2.1.1 A specification was prepared by Wardell Armstrong LLP, setting out the circumstances, aims and objectives of the archaeological watching brief (Wardell Armstrong LLP 2012). The specification 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 The works involved a structured watching brief to observe record and excavate any archaeological deposits from the development site. 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 aims and principal methodology of the watching brief can be summarised as follows:

- to establish the presence/absence, nature, extent and state of preservation of archaeological remains and to record them;
- to carry out further excavation and recording work in adequate time, if intact archaeological remains are uncovered during the project;
- to accurately tie the area watched by the archaeologist into the National Grid at an appropriate scale, with any archaeological deposits and features adequately leveled;
- to sample environmental deposits encountered as required, in line with English Heritage (2002) guidelines;
- to produce a photographic record of all contexts using colour digital photographs, as applicable, each photograph including a graduated metric scale;
- to recover artefactual material, especially that useful of dating purposes;
- to produce a site archive in accordance with MAP2 (English Heritage 1992) and MoRPHE standards (English Heritage 2006).

2.2.3 An area of approximately 1600m² was stripped of modern hardcore layers. In the first phase from the 24th March 2012 the removal of stanchions along the eastern boundary of the site created three rectangular shaped trenches approximately 4.0m x 3.0m each and part of the east of the site were stripped of hardcore material to the required formation levels (Figure 9). In the second phase from the 19th April 2012 the reduction of the western half of the site by around 3.0m was monitored. Finally on the 7th and 8th of June 2012 an area in the north-east corner of the site 10m by 23m was stripped by 1.5m of hardcore and sand. A summary of the findings of the watching brief is included within this report.

2.3 FINDS AND ENVIRONMENTAL REMAINS

2.3.1 All finds encountered were retained, including those from excavated overburden, and were cleaned and packaged according to standard guidelines, and recorded under the direction of Teresa Gilmore WAA Finds and Archives Specialist.

2.3.2 Artefactual remains were analysed by Teresa Gilmore, WAA Finds and Archives Specialist.

2.3 THE ARCHIVE

2.3.1 A full professional archive has been compiled according to the Archaeological Archives Forum recommendations (Brown 2007). The archive will be deposited within an appropriate repository, and a copy of the report given to the Birmingham City Historic Environment Record, where viewing will be available on request. The archive can be accessed under the unique project identifier WAA-12, MSB-A, CP 10096.

2.3.2 Wardell Armstrong Archaeology Ltd and Birmingham City Council, 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 Wardell Armstrong Archaeology Ltd.

3 BACKGROUND

3.1 LOCATION AND GEOLOGICAL CONTEXT

3.1.1 Moland Street lies within the City of Birmingham in the West Midlands approximately 1km north of the city centre (Figures 1 and 2). The site is bounded by the Newhall pen works to the north, to the east by Moland Street itself, and to the south by Corporation Street. The land at the western edge of the proposed development area has previously been developed to provide student housing on Staniforth Street to the rear. This student housing is on a lower level than that of the site and so the western wall of the site forms a retaining wall. The development area forms a block of land of around *c.*1600m² of wasteland. The remains of 20th century works and their service trenches were originally located on the site but have since been demolished.

3.1.2 The underlying geology in this area is Triassic Bromsgrove sandstone (Birmingham City Council 2007). The local environment, being previously dominated by rivers (BGS 2012), has overlying glacio-fluvial deposits of undifferentiated gravel (Birmingham City Council 2007). Above this the soil is a naturally wet loamy soil (Cranfield University 2011).

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 *Prehistoric:* the earliest evidence of activity comprise isolated find spots of stone tools, for example a Palaeolithic hand-axe found in a garden in Erdington in 1981, and a similar axe found in 1890 in the gravels of the River Rea at Saltley. Worked flints dating to the Mesolithic period (between 6000 and 4000BC) have been retrieved from a soil layer in natural hollows near Banbury Street in the city centre, and later stone tools from the Neolithic period (*c.*4000-2500BC) have been found within the city, for example during the widening of High street at Deritend in 1953, a stone axe derived from Langdale in the Lake District was retrieved. Other stone axes found in Birmingham are made of stone from areas such as North Wales, Cornwall and Leicestershire, indicating some form of trade during the prehistoric periods (Hodder 2011, 21-24). The most prolific evidence for prehistoric activity in the area around Birmingham is in the form of burnt mounds dating to the Bronze Age (*c.*2500-700BC), of which nearly 40 examples have been found.

- 3.2.3 *Roman:* As with the prehistoric period, there is scattered evidence for occupation and land use of the area in and around Birmingham from the Roman period. A Roman fort was established to the south of Birmingham at Metchely in Edgbaston around 48AD and was occupied until c.200AD. Within the city centre, ten sherds of Roman pottery were found within medieval deposits at excavations at Moor Street and Park Street in the Bull Ring, and at Saltley, to the east of the city, fragments of pottery suggested to have been Roman in date were retrieved from the upper part of gravels of the River Rea (Hodder 2011, 51-70). The earliest evidence for industry in Birmingham dates to the Roman period, and consisted of pottery kilns found at Perry Barr and Sutton Coldfield. Products of the Sutton Coldfield kiln have been identified at a Roman settlement at Coleshill (*ibid*, 74). Finally a single Roman coin from St Mary's Church, formerly located to the south of St Chad's Queensway, and beneath the site of the Children's Hospital (SMR No. 3289) has been found.
- 3.2.4 *Early Medieval:* The artefactual evidence is sparse, and consists only of an iron spearhead from Edgbaston; a pottery vessel of possible Anglo-Scandinavian date found near St Nicolas's Church at Kings Norton, and drainage gullies at Longbridge. Charters referring to estates at Yardley and *Hellerege* in Kings Norton suggest that there were settlements in the area of the modern city during this period, although these may have consisted of individual dwellings or hamlets rather than villages (Hodder 2011, 77). The SMR presently does not record any sites relating to the early medieval period within a 400m radius of the proposed development area on Moland Street.
- 3.2.5 *Medieval:* It is in the medieval period (generally regarded in Britain as between c.1066-1540AD) that the history of Birmingham can be traced through documentary sources and archaeological evidence. The area to the east of the medieval town, and possibly including the site that would become Moland Street, is believed to have been a deer park in the 12th and 13th centuries (Hodder 2011, 83). The SMR does not include any entries relating to the medieval period within a 400m radius of the proposed development area on Moland Street.
- 3.2.6 *Post-medieval and industrial:* Urban development towards the area in which Moland Street is located began towards the end of the 17th Century. The land on which Moland Street is now located seemingly formed part of 'Cross Fields', an area of land between Walmer Lane (Lancaster Street) and Aston Street. The newly laid out streets were rapidly filled with housing, warehouses and workshops. The north of Steelhouse Lane, located to the south-west of Moland Street, saw the growth of Birmingham's gun trade and the development of the town's earliest industrial 'quarter'. By the early

19th Century the 'Gun Quarter' covered an area from Snow Hill to Lancaster Street, and from Steelhouse Lane to the Birmingham and Fazeley Canal, with its focus around St Mary's Square (*ibid*).

- 3.2.7 From the middle of the 18th Century, historical mapping shows the development of the city of Birmingham way beyond its medieval core, however the location of what would become Moland Street and its surrounding roads still appears to have been fields, situated on the periphery of the town. John Snape's Plan of the Parish of Birmingham dating to 1779 shows that Moland Street does not appear to have been laid out by this date, although Walmer Lane (Lancaster Street) is shown, with unnamed streets to its eastern side, which may represent Staniforth Street and Potter Street amongst others, although it is possible some of the streets may have been realigned or slightly altered at a later date. Pye's plan of Birmingham, which was surveyed in 1795, shows that by this date Moland Street had been laid out parallel to Staniforth Street, and linked Aston Street with what is now known as Bagot Street, although it is not annotated as such on this map (Figure 3). By the date of this map, the Birmingham and Fazeley Canal (shown as B & F Canal on this map) has been constructed to the north side of Moland Streets and the surrounding area. Snape's plan of 1779 only shows the canal as far as the west end of Lionel Street (to the west of Moland Street), terminating in a wharf.
- 3.2.8 Moland Street appears to have derived its name from the Moland family, who are referred to in an abstract of title for an estate in the parish of Aston between 1668-1799. Moland Street itself is mentioned in documents dating to 1809-17 (Chinn 2006, 104).
- 3.2.9 There does appear to have been some industrialisation taking place in and around the site of Moland Street in the late 18th and early 19th centuries. The SMR contains entries for three glassworks located within a 400m radius of the proposed development area; Shakespear's Glasshouse (site of), established by Messrs Johnston and Shakespear in 1798 in Walmer Lane (an alternative name for Lancaster Street). This site was located to the south end of Moland Street, close to the site of the buildings which comprised the now redundant Central Fire Station (SMR No. 20492). Victoria Glassworks, operated by James Stevens and Son, manufactured flint, ruby and coloured glass in the 19th Century. This site was located to the south-west of Moland Street, on the canal side off Dartmouth Street (SMR No. 20496). The nearest glassworks to Moland Street was the Aston Flint Glassworks, which are mentioned in a trade directory of 1800, and shown on an 1810 map of Birmingham (SMR No. 20491). This site was located just to the north-east of the proposed development area, and its location was no doubt related to the canal. By 1810 there appears to have been some development along both

sides of Moland Street, although the north end where the proposed development is located remains seemingly clear.

- 3.2.10 The Triennial Directory of Birmingham of 1812 includes three entries relating to Moland Street: Walter Swift, steel toy maker; Joseph Hill, baker and Mrs Powers, ladies school. The exact locations of these small-scale industries and the school are not known as the early directories do not have street numbers. A Commercial Directory for 1816-17 suggests the beginnings of gun related trades on Moland Street, and there was also a hammer maker and screw maker. As already noted, it is possible that at this date many of the properties on Moland Street may have been residential, rather than operating as a small business possibly associated with a dwelling.
- 3.2.11 A map of Birmingham dating to 1824-25 and published in 1828 shows that the north end of Moland Street continued to remain undeveloped, with the open space (including the site of the proposed development) labelled with the name 'Mr Josiah Robins' (Figure 4). By 1829 there are trade directory entries relating to several stages of gun manufacturing on Moland Street, as well as street numbers: This directory interestingly provides the first clue that dwellings or small businesses were operating out of properties in 'courts' to the rear of the main street frontage. By the middle of the 19th century the southern part of the proposed development area on Moland Street is shown to have been developed, with properties lining the street frontage, and buildings located in the yards to the rear (Figure 5). The Board of Health maps, produced between 1848 and 1862, clearly show the individual buildings within the site although none are annotated (Figure 5).
- 3.2.12 Contemporary trade directories, however, do provide some information on the industries which were being undertaken in the area of the proposed development in the mid-19th Century. Gun related trades on Moland Street in 1845 included gun makers, gun barrel manufacturers, gun barrel filers and gun stockers (Post Office Directory of Birmingham 1845). It is likely that other industries existed along Moland Street and its surrounding roads in this period, although the pre-1870s directories only list by trade. By 1866 there are 'brass founders' listed on Moland Street, as well as several gun related industries and three beer retailers, one at No. 76 (within the proposed development area) (Commercial Directory and Gazetteer of Warwickshire with Birmingham, Morris & Co., 1866). From 1875 the industries that appear to have existed within the proposed development area at this date included a malleable iron founder (No. 70); rule maker (71); brass founder (72); coal dealer (73); file and rasp manufacturer (75) and beer retailer (76). As previously noted, these all appear to have been small, possibly bench top, concerns, which may have left no evidence in the archaeological record below ground. The First Edition Ordnance Survey

mapping of 1889 (published 1890) shows that all of the street frontage of the proposed development area was developed by this date, with buildings to the rear accessed by passageways (Figure 6). The northern side of the site which was undeveloped in the mid-19th Century, (see Figure 5), now contains buildings which are labelled 'Brass Foundry' and 'Iron Foundry'. None of the spaces to the rear of the street frontage are labelled as 'Court', although properties to the north and south sides are annotated as such, and interestingly the land to the north of the proposed development area (later to be the site of the Newhall Pen Works) has regularly-spaced square structures either side of Court No. 4 and Court No. 6, presumed to have been back-to-back housing similar to other areas of Birmingham, such as at the site of Aston Student Village (Collins 2007).

3.2.13 The Ordnance Survey map of 1937 also shows some major changes to properties on Moland Street by the early 20th Century. At the north end of the street, on the west side, the regularly-spaced square buildings, suggested to have been back-to-back housing, had been replaced by the 'Newhall Pen Works', located immediately to the north of the proposed development area (Figure 7). This site is still standing and has been designated as a Grade II listed building. The pen works were constructed in 1907 by Mansell and Mansell in red Flemish bond brickwork with ashlar dressings (SMR No. 21100). Trade directories of the early 20th Century continue to indicate that Moland Street, despite now being cut in two by Corporation Street, remained an area which contained a mix of small-scale industries. For example, the properties within the immediate vicinity of the proposed development area operated as the following: pen maker [Newhall Pen Works]; brass founder, metal merchants, Midland Malleable Foundry Co., coal seller, and shop keeper, (Kelly and Co. 1920). This directory shows that metal working continued to be an important industry within the proposed development area at this point.

3.2.14 There had been radical changes to the site by 1952. By this date the whole of the proposed development area appears to have been one large building labelled as 'Stables and Vehicle Building Works' along with No. 69 to its north side (Figure 8). Interesting features on this map include a curious curved line immediately to the west of the Stables and Vehicle Building Works, possibly representing some form of revetment wall. Directory evidence indicates that No. 69 Moland Street continued to be occupied by the Armac Manufacturing Company, listed as 'cabnt brassfounders' until at least 1960, after which the site was operated as tool makers by 'Prodisit Ltd' (Kelly's Directories 1965-1973/74). It would appear that the remainder of the proposed development area was one large building (Stables and Vehicle Building Works in 1952), possibly of one or two stories, which seems to have

been adapted to another use by the middle of the 1960s when it was occupied by the Midland Counties Dairies Limited (depot), who were present on the site until at least the mid-1970s. The Ordnance Survey map of 1978 annotates the majority of the proposed development area as 'Depot' with No. 69 to the north as 'Works', with a scrap yard to its south side, and a multitude of other works to the west on Staniforth Street.

3.3 PREVIOUS WORK

- 3.3.1 Previous work consists of a Heritage Assessment (incorporating Archaeological Assessment) compiled by Wardell Armstrong LLP in 2011, which included a site visit undertaken on the 9th November 2011.
- 3.3.2 The assessment concluded that the site has potentially experienced considerable disturbance from previous use of the site, most notably the use of the site as a Stable and Vehicle Works.
- 3.3.3 The proposed development area was visited on the 9th November 2011 in order to note any upstanding remains or areas of potential archaeological interest on the site. At the time of the site visit the area had been cleared of buildings and had been levelled. To the west side of the site, located on Staniforth Street, are modern student housing blocks. The northern and part of the western boundaries of the proposed development area were noted to be defined by the lower courses of brick walls, the northern example displaying evidence for the upper half of ground floor windows of a former building. Although now obscured by an electricity substation, these windows would have allowed light into the lower storeys of this building due to the change in ground level to the north. It is possible that at least part of this wall may relate to the structures standing at the north end of the site from the 1880s, although no architectural evidence was seemingly present to allow for accurate interpretation. There was no evidence at the time of the site visit for any buildings relating to the original layout of the street, apart from possibly the section of wall which forms the northern boundary of the proposed development area, indicating that the whole area has seen major redevelopment since the middle of the 20th Century (Wardell Armstrong LLP 2011).

4 ARCHAEOLOGICAL WATCHING BRIEF

4.1 INTRODUCTION

4.1.1 The watching brief monitoring was undertaken over three stages. The first phase was over two days on the 27th and 28th of March 2012, followed by a longer phase of 12 days between 19th April and 9th May 2012. The final phase was over two days on the 7th and 8th June 2012. The first phase related to the controlled stripping of the hardcore layer and subsoil at the east side of the site and the removal of a series of brick stanchions on the north-east side of the site. The second phase related to groundwork's required for the removal of the hardcore and subsequent subsoil layers overlying the west of the site to lower the ground by approximately 3m. The final phase monitored the removal of the hardcore and subsoil layers in the northeast corner.

4.2 PHASE 1: GROUND REDUCTION AT THE EAST SIDE

4.2.1 The Phase 1 watching brief covered the controlled stripping of deposits across the east of the site and the removal of three Stanchions {1001} (Plate 1) on the north-east side of the site in order to allow a piling rig to begin piling the east and south central sides of the site to support the road to the east and wall to the south (Figure 9).



Plate 1: South facing photo of Stanchion 2 {1001} being excavated

- 4.2.2 The uppermost layer (**1000**) was a demolition deposit of red brick fragments with some occasional roof slate, modern glass and fine pebbles. Finds were common and those retained were sherds of modern pottery that consisted of five sherds of transfer printed china; nine sherds of post medieval pottery that included brown glazed earthenware, creamware, English stoneware, hand painted china, mocha ware, and red earthenware; four pieces of post medieval tile including 'delft' tile, blue glazed, white china, and a possible kiln spacer; 10 waste blanks of button; a spurred stem from a clay tobacco pipe; a fragment of copper smelting crucible; 19 pieces of slag, and one fragment of wall plaster. These together with a graphite crucible found later that had a fragment of coarse woollen textile within it, were all dated to the 19th and 20th centuries. The ground here was stripped by a JCB 3cx with a back-hoe. This deposit was present across the site to a maximum depth of c.2.0m. Due to the type of finds discovered it is probable that this layer was created when the buildings seen in the 1937 OS map (Figure 7) were levelled to allow construction of the Stable and Vehicle Works seen in the 1952 OS map (Figure 8)
- 4.2.3 Beneath the hardcore, was layer (**1002**). This was excavated into by c.0.2m but its lower interface was not reached (Plate 2). Layer (**1002**) constituted of a yellow loose sand with occasional small stone/gravel inclusions. Finds from (**1002**) consisted of modern pottery including one sherd of moulded white china, 14 sherds of post medieval pottery consisting of creamware, mocha, glazed earthenware, transfer printed china and white china; three pieces of post medieval china wall tile; 13 pieces of shell button waste; part of a glass crucible; a piece of drainage pipe and a plastic circular spacer/drill blank. These finds all have 20th century dates.
- 4.2.4 The stanchions {**1001**} were made up of concrete with a brick covering and each measured c.1.7m by c.1.1m and were c.1.1m in height. They were assumed to be from the large building labelled as 'Stable and Vehicle Building Works' on the 1952 OS map (Figure 8).



Plate 2: East facing photo of site being stripped of (1000) to reveal (1002)

4.3 PHASE 2: FURTHER GROUND REDUCTION

- 4.3.1 The second phase of the watching brief aimed to monitor subsequent groundworks across the western half of the site between the 19th April and 9th May 2012.
- 4.3.2 The second phase of monitoring commenced with c.80m² of ground being reduced in the south-west corner and the centre of the site with a 360 degree tracked excavator using a toothed bucket. This ground reduction exposed c.0.5m of the demolition layer (1000) seen during the Phase 1 monitoring works. A red brick wall {1009}, one course high, was found in the centre of the site c.3.0m long, 0.33m wide and aligned east to west (Figure 9). There was also a brick floor {1010} c.1.0m south of this c.2.0m long north to south by c.0.4m wide (Plate 3 and Figure 9).
- 4.3.3 Five trail pits were excavated across the site in order to get a picture of the underlying stratigraphy (Figure 9). Trail Pit 1 (TP1) was c.2.0m by c.4.0m north to south and was dug at the north-west end of the site. It showed that layer (1000) measured at least 2.0m thick at this point.



Plate 3: Detail of brick floor {1010} in the centre of the site from the east

4.3.4 Four more trial pits all measuring *c.*2.0m by *c.*4.0m aligned north to south were excavated across the west and centre of the site using the 360 degree tracked excavator with a trenching bucket (Figure 9).

- Trial Pit 2 (TP2) was excavated through *c.*0.4m of hardcore upon a mat that had been laid previously by the contractors as a work surface, then through *c.*1.5m of (1000) and then into layer (1004); a well compacted orange-brown clay-sand with 40% sub-round pebbles and occasional red-brick fragments. It was later found that (1004) was *c.*0.5m thick and localised to the south-west of the site in a sub-rectangular shape *c.*15.0m by *c.*50.0m possibly synonymous with the yard at the south of the site (Figure 9). In the east facing section of the trail pit there appeared to be a pit containing industrial waste.
- Trial Pit 3 (TP3) was excavated in the south-west corner through (1000). The east facing section was a red brick wall {1013} *c.*2.3m in height and aligned north to south. It was corbelled out onto deposit (1005), dark brown silt-sand with lenses of burnt material and red brick fragments. It was thought that (1005) was a ground surface like layer (1004), and contemporary with the brick built structures.
- Trial Pit 4 (TP4) was excavated in the centre north of the site through *c.*2.0m of (1000) onto (1005). There was a red brick wall in the east facing section aligned east to west {1011} *c.*2m in height.

- Trial Pit 5 (TP5) was excavated in the west centre of the site, aligned east to west through c.2.0m of (1000) onto (1005) (Plate 4). A graphite crucible was found with a fragment of coarse woollen textile inside and retained (Plate 5). There was a red brick wall {1012} in the south facing section aligned east to west c.1.7m high. (Figure 9).



Plate 4: Post-excavation shot of Trial Pit 5 with wall {1012} visible in the south facing section



Plate 5: Detail of graphite crucible found in Trial Pit 5 in the centre west of the site

4.3.5 Further reduction in the west centre of the site revealed a concrete base with a metal pin {1014} with a brick wall and associated brick floor to the east {1015}. The concrete base {1014} could have been the upper surface of another concrete stanchion probably associated with the 'Stables and Vehicle Buildings Works' shown on Figure 8. Wall {1015} was aligned north to south and a c.4.0m length was visible. It could have been the same wall as {1013} found in Trial Pit 3 since they seemed to be on the same alignment. Unfortunately these structures were removed without supervision and so nothing more can be observed regarding them. Around 4m east of these structures, a brick floor was recorded measuring c.4.0m in length north to south and c.0.5m in width {1022} (Plate 6). Slightly further east and probably associated was a square brick structure {1007} 3.1m north to south and 3.3m east to west (measured from outside edge to outside edge). The walls were 0.33m thick and the south wall continued further east by c.0.4m before the remains ended. There were small areas of brick floors attached to the north-east and north-west walls on the outside of the building (Figure 9). The room was filled with deposit (1006) a moderately compact black carbonised material with some inclusions of post medieval pottery and slag (not retained) c.0.2m thick.



Plate 6: Detail of brick floor {1022} in west centre of site

4.3.6 The 360 degree tracked excavator reduced the ground further in the south west and west of the site with a toothed bucket. Context (1004) was seen to seal context (1005), a layer measuring c.0.5m in depth. Also picked up was deposit (1008) orange sand with uncommon inclusions of red brick

fragments and lenses of darker brown sand. Finds from this deposit consisted of two sherds of post medieval pottery in the form of English stoneware, a brown glazed red earthenware toy wheel, and a post medieval pantile. These were of 19th century date.

- 4.3.7 Ground immediately next to the south wall {1020} and in the south-west corner next to the west wall {1021} was reduced revealing more of these walls and some concrete floor at their base. The north face of wall {1020} had the remains of a wall projecting northwards {1013} which was thought to be the remains of the east wall of the row of buildings in the south-west corner (Figure 9). It was 0.33m in width and extended out by c.1m.
- 4.3.8 The 360 degree excavator with toothed bucket reduced the ground level by another 0.5m revealing more of (1008) before continuing north and north-east at this level. More of (1005) was revealed towards the centre of the site. In the west centre of the site there was a circular brick structure {1016} 1.2m in diameter constructed from a single line of bricks placed end to end in context (1005) (Plate 7). This structure did not appear to relate to anything visible on the 1889 OS map (Figure 9) and it is thought that it could be a well positioned inside one of the buildings that stood against the centre of the west wall {1021}.



Plate 7: Detail of circular brick built structure, possibly a well, {1016} in the centre west of the site

- 4.3.9 The ground was then reduced in the north-west corner to the depth of the (1008) previously uncovered. This revealed a series of three reinforced concrete stanchions with brick linings running east to west {1017} (Plate 8). The western most stanchion was below an existing concrete floor that had been flush with the original level of the site and remained attached to the west and north walls in the north-west corner (Figure 9). The centre stanchion had a very large concrete base c.3.0m by c.2.0m by c.1.0m thick. Adjacent to the north of this centre stanchion was another, set beneath concrete floor remains on the north wall. These two stanchions were also in line with an iron girder reinforcing the north wall. Another iron girder reinforced the north wall c.3.5m to the east (Plate 9). These structures were thought to relate to the 'Stables and Vehicle Building Works' building noted on the 1952 OS map (Figure 8) and the stanchions removed previously in the first phase.
- 4.3.10 On either side of the reinforced concrete stanchions and beneath the concrete floor in the northwest corner was a deposit of burnt material (1023) surrounding a brick structure {1018}. Deposit (1023) contained 8 sherds of post medieval pottery including; English stoneware; mocha ware; and white china, a clay tobacco pipe with an unmarked stem and 1 piece of iron slag. They had a 19th-20th Century date. {1018} was too damaged to define but had two furnaces facing east (Plate 10). The northern one had an iron hollow square in the roof and was filled with paper ash and carbonised material. These were thought to be the remains of buildings labeled Brass Foundry on the 1889 OS map (Figure 9).
- 4.3.11 There were two more similar brick built structures. One structure {1025} next to the centre of the west wall {1021} which appeared to have had multiple furnaces along its c.5.5m length (Plate 11), and the other next to the centre of the north wall which had a brick built furnace {1019} with a square iron lid across its upper surface (Plate 12) filled with a deposit of (1024) ash that contained a copper pot (not retained) and four crucible fragments; 14 pieces of copper alloy consisting of a caster fitting; escutcheon; furniture fitting; handle; machine parts; mount; and rivet /loop; strip an iron: fitting and one piece of non-diagnostic iron slag. These finds have a 19th to 20th century date. Structures {1018} and {1025} may have been the remains of buildings labelled 'Brass Foundry' at the north of the site, and 'Iron Foundry' to the south on the 1889 OS map (Figures 6 and 9).



Plate 9: North facing shot taken in the north-west corner showing north wall with reinforced girders



Plate 8: Shot of concrete stanchions {1017} in north-west corner from north-east



Plate 10: Shot of furnace {1018} and burnt material (1023) next to west wall in north-west corner



Plate 11: Shot of brick built structure {1025} on west wall {1021}



Plate 12: Shot of furnace {1019} next to N wall

4.3.12 The 360 degree tracked excavator then reduced the ground in the south-west corner by c.1.0m into the natural sand (1026) to its final level and reduced the bulk left next to the west wall {1021} revealing the corbelled base of this wall but leaving a shelf of material c.1.0m wide and c.1.0m higher than the final ground level. This bulk appeared to be layer (1005) which was deeper next to the west wall {1021} than further east across the site. Wall {1021} was c.2.6m high and consisted mainly of red brick in the English country garden pattern with several courses of newer bricks laid on top and newer piers built up against it but not as deep as the wall corbel. These piers had some concrete floor remaining beneath their corbel and it is thought that they were part of the 'Stables and Vehicle Building Works' seen on the 1952 Ordnance Survey map (Figure 8). There were three points where bricks projected from the wall at the south end that had been cut nearly level with the wall. These walls appear to have been synonymous with the dividing walls of the four terraced buildings seen at this position on the 1889 OS map (Figure 9). The centre one was 0.33m in width while the other two were 0.1m in width. At the south end there was white paint remaining on the older wall which curves up in a half arch from the central projecting brick work to the top of the wall (Plate 13). At the centre of the west wall {1021} was a fourth projection of bricks 0.33m in width and c.1.5m long which seemed to be coincident with the north wall of a small building on the 1889 OS map (Figure 9). Another wall projecting from the west wall {1021} was 0.5m in

width and c.1m long and did not seem to relate to anything on the 1889 OS map.

4.3.13 Where the west wall {1021} kinks westwards at its south central part the north facing section of the wall has the remains of bricks arching out as if the ceiling had been vaulted. There was also white paint remaining on these bricks. This could be the remains of a small building seen on the 1889 OS map in this corner (Figure 9) (Plate 14).

4.3.14 The 360 degree tracked excavator used a toothed bucket to reduce the ground to the north and east to the level reached in the south west corner. The natural subsoil (1026) was reached and was composed of yellow sand with occasional sub-round boulders. It was found that this interface rose upwards as we moved east probably indicating that the site was originally a hill sloping down from east to west.



Plate 13: Shot of south part of west wall {1021}



Plate 14: Shot of kink in west wall {1021} with arching brickwork

4.4 PHASE 3: THE NORTH-WEST CORNER

- 4.4.1 After a brief hiatus the final phase commenced on the 7th and 8th June 2012. An area roughly 10m by 23m was excavated in the north-east corner. The 360 degree excavator removed around 1.5m of hardcore surface layer (1000) and subsoil layer (1008) revealing more of the north wall (Plate 15).



Plate 15: General working shot in north-east corner facing north

4.5 DISCUSSION

- 4.5.1 Brick structures {1018} and {1019} both contain what may be ovens or furnaces related to the Brass Foundry that was indicated to be undertaken here on the 1889 OS map (Figure 9). Brick structure {1025} may also have had a bank of similar features.
- 4.5.2 In the 18th century when the discovery of new sources of copper available to the Midlands coincided with canal provision of water transport, and the introduction of steam power negated the importance of water mills, the brass industry began to be concentrated in the West Midlands, particularly in Birmingham. At this time brass production was undertaken using six to eight cementation crucibles placed in a ring in a cementation furnace. These furnaces were usually in banks of three, and two workshops could share a large cone chimney (Day 1992).
- 4.5.3 Nineteenth century availability of cheaper imported zinc, consolidated the trend of increased production in Birmingham by facilitating the new easier methods of brass production by the small manufacturer. In the Midlands, longstanding skills in the metal trades were combined with a vigorous and progressive attitude with which the old brass production areas geared to water-powered production could no longer compete (*ibid*).
- 4.5.4 The availability of cheaper zinc ingot brought the general adoption of the melting process of brass making. It could be carried out almost anywhere in a simple installation with a single-holed foundry furnace (Plate 16) below working floor-level, holding a single foundry crucible where the brass would have been heated to about 900°C. The resulting brass could then be further crafted in a small workshop (*ibid*).
- 4.5.5 It is probably quite likely that {1018} and {1019} are the remains of brass foundry furnaces. {1025} is less convincing due to its state of preservation.
- 4.5.6 All the remains of brick walls and structures found beneath the overlying demolition layer (1000) seemed consistent with the structures on the 1889 Ordnance Survey map (Figure 9) that still existed when the 1937 Ordnance Survey map was drawn (Figure 7). This interpretation is supported by the 19th to 20th century dates of all the finds from (1000) which is probably the demolition rubble of these buildings. Finds of shell button manufacturing waste, crucibles and industrial residues tend to support an interpretation of mixed, small scale industrial activity.

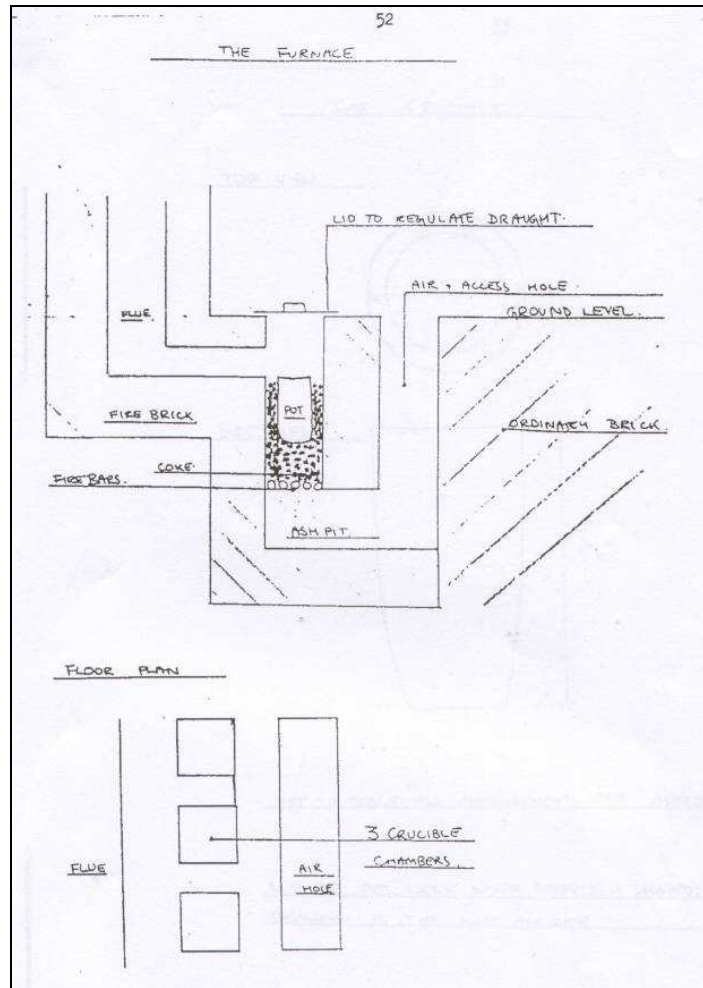


Plate 16: Section through a single foundry furnace, and the complete installation of three such furnaces at Bewdley foundry (Day 1992, 52)

5 FINDS

5.1 FINDS ASSESSMENT

- 5.1.1 A total of 125 artefacts, weighing a total of 12.5kg, were recovered from five contexts.
- 5.1.2 Artefact types recovered consisted of modern and post medieval pottery types, ceramic building material, clay tobacco pipes, shell button manufacturing waste, industrial residues, crucibles, textile and metalwork.
- 5.1.3 All finds were dealt with according to the recommendations made by Watkinson and Neal (1998) and to the Institute for Archaeologists (IfA) *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials* (2008b) under the supervision of Teresa Gilmore, WAA Ltd Finds Officer. Metalwork has been stored according to material type, in a sealed dry box with silica gel. All artefacts have been boxed up, according to material type and conforming to the deposition guidelines recommended by Birmingham City Museums and Art Gallery.
- 5.1.4 The material archive has been assessed for its local, regional and national potential and further work has been recommended on the potential for the material archive to contribute to the relevant research frameworks.

5.2 POST MEDIEVAL AND MODERN POTTERY

- 5.2.1 A total of 42 sherds of post medieval to modern pottery types, weighing 1.01kg, were retrieved from four contexts (subsoil **(1002)**, demolition layer **(1000)**, subsoil **(1008)** and subsoil **(1023)**). Pottery types present consisted of transfer printed china, hand painted china, white china, mocha ware, creamware, English stoneware, brown glazed red earthenwares and local glazed earthenwares. Of note were two joining fragments of a transfer printed china saucer, commemorating Queen Victoria's Jubilee in 1897. The mark on the back indicated that it was made in Germany, but the actual kiln that produced it is unknown.
- 5.2.2 An almost complete ceramic wheel, made from a brown glazed red earthenware, was recovered from subsoil **(1008)**. It most likely came from a child's pull-along toy, but no exact parallels have been found.

5.3 CERAMIC BUILDING MATERIAL

- 5.3.1 A total of eight fragments weighing 338 grams, were recovered from three contexts (subsoil **(1002)**, demolition layer **(1000)** and subsoil **(1008)**). The

majority of the fragments consisted of glazed china wall tiles of 19th to 20th century date, apart from one fragment of pantile from subsoil (1008), which dates from the 17th century onwards.

- 5.3.2 Of note was a third of a tin glazed/ enamelled earthenware tile, commonly referred to as 'delft' tiles, from demolition deposit (1000). It depicts a landscape design bordered by a double concentric circle. The landscape design has a willow tree on the left, six flying birds in the middle and the top part of a boat on the right, so it is likely to be a harbour style design, common by the end of the 17th century onwards. The corner design is a devolved 'Oxhead/foliate' style and typically used from the early 18th century onwards (Hume 1969, 290). It was probably made in an English delft factory, possibly Bristol, London or Liverpool, and made to imitate the imported Dutch tiles. Delft tiles in England tended to only be used in fireplaces and sometimes in wall alcoves for wash basins (van Lemmen 2005, 25).

5.4 TEXTILE:

- 5.4.1 One piece of woven textile was recovered from within the crucible found in (1000). It measured 53.4mm by 45.2mm. The threads are S spun and the weave is a 2:1 twill (2 warps over 1 weft thread). The thread count is 10/9. The weft thread appears to be double the thickness of the weft threads. The fibre used is believed to be wool. It is a black/dark brown colour.
- 5.4.2 This style of twill weave gained in popularity after the 11th Century, with the development of the treadle operated horizontal loom (Crowfoot *et al* 1996, 27). However this fragment is most likely to be 19th century in date as organic artefacts such as textiles require specific burial conditions such as dessication or waterlogging, to survive.

5.5 CLAY TOBACCO PIPES:

- 5.5.1 Two fragments of clay tobacco pipe, weighing 12 grams, were recovered from two contexts. An unmarked stem was from subsoil (1023) and a stem fragment with the base of the bowl (the spur) from demolition layer (1000). The spur displayed similar characteristics as an Oswald type 12, considered to be c.1730-80 in dating (Oswald 1975, 37). However it is residual, being present alongside later, more modern pottery types.

5.6 METALWORK:

- 5.6.1 A total of 18 pieces of metalwork, weighing 551 grams were recovered from burnt layer (1024). The majority of the metalwork was copper alloy, with

one piece of ironwork present. Several items were unidentifiable to form, but those identified included the attachment part for a castor wheel; drawer handles and escutcheons and a broken rivet. All are consistent with a 19th to 20th century date.

5.7 INDUSTRIAL RESIDUES:

5.7.1 Evidence for industrial activity in the vicinity of the site was present and consisted of slag, crucibles and button making waste. A total of 21 fragments of non-diagnostic slag, probably iron smelting related, weighing 451 grams were recovered from demolition layer (1000), subsoil (1023) and burnt layer (1024).

5.8 CRUCIBLES:

5.8.1 A total of seven fragments weighing 9.2 kg, were recovered from four contexts. Of note was an almost complete graphite crucible, from (1000) so called because it has been made from a graphitic clay. It consists of a tall conical crucible with one pointed triangular pouring spout. It is 300mm tall and has a diameter of 200mm at the top. It weighs 7.4 kg. The graphitic clay helped maintained reducing conditions as it is a refractory fabric (Bayley 1990, 3). Crucibles like this were used in foundry, normally for the smelting of iron. From within the crucible, fragments of a graphite rich smelting slag were found and a small scrap of a woollen twill weave fabric.

5.9 BUTTON WASTE:

5.9.1 A total number of 23 shell fragments, weighing 868 grams were recovered from subsoil layer (1002) and demolition layer (1000). The majority of the shell fragments are believed to be European flat oyster shell (*ostrea edulis*). All fragments were the waste from button manufacture as they had drilled holes along an edge. The diameters of the holes varied from 8.7mm to 9.5mm, to 11.7mm and 15.5mm to 19.9mm. This would suggest that buttons were being produced in a variety of different sizes, with diameters of 8mm, 9mm, 11mm, 15mm and 19mm. One button blank was recovered with a diameter of 10.15mm. No finished buttons were found. Shell buttons were commonly referred to as 'pearl' buttons due to their pearl like luster, and manufactured from mother-of-pearl or shell.

5.9.2 Button manufacture in Birmingham was a major industry during the 18th and 19th centuries, partially because Parliament had banned the import of finished pearl buttons around the end of the 18th century, but not the import of the raw materials (Abalone and flat oyster shells, mainly from Australia).

In order to make pearl buttons, the raw material had to be soaked for at least a week to ensure that the shells would not split during working. Then, because of their fragile nature, they had to be worked by hand, using a foot-lathe, often in small workshops, manned by highly skilled workshop craftsmen. In 1866 it was estimated that there were around 2,000 pairs of hands employed making pearl buttons, cutting up twenty two tons of shell weekly (Pemberton Turner 1866, 44). Pemberton Turner also noted that approximately a quarter of all the pearl buttons made in Birmingham were for export, the remaining three quarters were manufactured for the home market. The Cockney tradition of covering clothes with pearl buttons (Pearly Kings & Queens) started in the late 19th century by Henry Croft, an orphan street cleaner.

5.9.3 Evidence for button manufacture comes from further south in and around Birmingham's city centre. In the watercourse on Edgebaston Street there were discs of mother-of-pearl that were button blanks and pieces of mother-of-pearl with the circular holes from which they had been cut. Pieces of shell with circular and semicircular cuts were also found at Gibb Street and large pieces of unworked shell from Indian Ocean species at Floodgate Street must have been brought there for button manufacture. Remains of a nineteenth-Century button manufactory were found on High Street Deritend, opposite the Old Crown (Hodder 2011, 140).

5.9.4 The manufacture of mother-of-pearl buttons was in decline in the late 19th century and had been replaced by buttons from other materials including plastic in the early 20th century (Buteux 2003, 81). Therefore the buttons on the site are likely to derive from the waste products of a mother-of-pearl button workshop in the vicinity dating to at least the 19th century either during the use of a workshop/s or at the end of its/their use-life (Birmingham Archaeology 2006).

5.10 STATEMENT OF POTENTIAL:

5.10.1 The evidence for industrial activity in the vicinity of the site is important as it provides more evidence for the industrialisation of Birmingham and which industries operated where. Pearl button manufacture tended to occur in small workshops, the locations of which may not have been accurately recorded.

Context	Artefact type	Count	Weight (g)	Spot-date
Total		125	12568	
1000	Crucible: graphite / foundry Modern pottery: transfer printed china Post Medieval pottery: brown glazed earthenware; creamware; English stoneware; hand painted china; mocha ware; red earthenware; Post Medieval tile: 'delft' tile; blue glazed; white china; kiln spacer? Shell: button waste; blank Clay tobacco pipe: spurred stem Crucible: copper smelting Slag: non-diagnostic Wall plaster Textile: coarse woollen	1 5 9 4 10 1 1 19 1 1	7420 154 252 224 441 9 1634 85 52 1	C19-C20
1002	Modern pottery: moulded white china Post medieval pottery: creamware; mocha; glazed earthenware; transfer printed china; white china Post medieval tile: china wall tile Shell: button waste Crucible: glass Drainage pipe Plastic: circular spacer/drill blank	1 14 3 13 1 1 1	73 363 32 427 123 29 14	C20
1008	Post medieval pottery: English stoneware Toy wheel: brown glazed red earthenware Post medieval tile: pantile	2 1 1	76 43 82	C19
1023	Post medieval pottery: English stoneware; mocha ware; white china Clay tobacco pipe: unmarked stem Slag: Non-diagnostic iron	8 1 1	54 3 294	C19-C20
1024	Crucible: fragments Copper alloy: caster fitting; escutcheon; furniture fitting; handle; machine parts; mount; rivet /loop; strip Iron: fitting Slag: Non-diagnostic iron	4 17 1 1	60 541 10 72	C19-C20

Table 1: Finds Table of Artefacts recovered from the Watching Brief.

6 CONCLUSIONS

6.1 CONCLUSIONS

- 6.1.1 **Phase 1:** the site was stripped of hardcore and subsoil deposits and 3 brick and concrete stanchions at the east of the site under archaeological supervision. The stanchions were thought to relate to the Stable and Vehicle works built in the 20th Century. No other archaeological remains were noted.
- 6.1.2 **Phase 2:** the excavations during phase 2 uncovered a series of brick structures probably relating to the industrial evolution of this area of Birmingham in the mid 19th century. The structures containing furnaces at the north of the site appear to relate to iron and brass foundry activity that was apparently taking place here at this time (Figure 9). The structural remains are located on the western side of the site where the natural subsoil is of a greater depth suggesting that when the Vehicle and Stable Works were built sometime between 1937 (Figure 7) and 1952 (Figure 8) the existing buildings were demolished and the demolition material was used to level the ground for the new construction. In this way some remains of brick built structures were able to survive at the west of the site. The existing site boundary walls were retained, sometimes reinforced, and built upon.
- 6.1.3 As this archaeological watching brief was conducted as part of a recommendation to observe groundwork's in association with the development of a new purpose built student accommodation, no further work is deemed necessary. However, the material archive has been assessed for its local, regional and national potential and further work has been recommended on the material due to the potential for the material archive to contribute to the relevant research frameworks.

7 BIBLIOGRAPHY

- Bayley, J, 1990, *Evidence for Metalworking*, Finds Research Group 700-1700 Datasheet 12, Norwich
- BGS, 2012, *Geology of Britain Viewer*, [Programme] Available from: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> (Accessed May 2012)
- Birmingham Archaeology, 2006, *Tameside Park, Aldridge Road, Perry Barr, Birmingham: an Archaeological Evaluation 2006*, Unpublished Report, The University of Birmingham
- Birmingham City Council, 2007, *Steelhouse Conservation Area: Character Appraisal and Supplementary Planning Policies*, Birmingham
- Brown, D.H, 2011, *Archaeological Archives: A Guide to Best Practice in Creation, Compilation, Transfer and Curation*, Archaeological Archives Forum
- Buteux, S, 2003, *Beneath the Bull Ring; the Archaeology of Life and Death in Early Birmingham*, Studley: Brewin Books
- Chinn, C, 2006, *The Street's of Brum: Part 3*, Studley: Brewin Books
- Collins, P, 2007, *Aston Student Village, Aston University, Birmingham: An Archaeological Desk-Based Assessment*, Unpublished Report, Birmingham Archaeology, Project No. 1539
- Crowfoot, E, Pritchard, F, and Staniland, K, 1996, *Textiles and Clothing c.1150-c.1450*, Medieval Finds from Excavations: 4. Museum of London/HMSO, Norwich
- Cranfield University, 2011, *Landis Soilscape viewer*, [Programme] Available from: <http://www.landis.org.uk/index.cfm> (Accessed May 2012)
- Day, J, 1992, *Monuments Protection Programme: The Brass Industry*. Monuments Protection Programme Industrial Monuments, Step 1 Reports
- English Heritage, 1992, *Management of Archaeological Projects (2nd Edition)*, London: English Heritage
- English Heritage, 2002, *Environmental Archaeology: A Guide to the Theory and Practice of Methods from Sampling and Recording to Post-Excavation*. London: English Heritage
- English Heritage, 2006, *Management of Research Projects in the Historic Environment*, London: English Heritage
- Hodder, M, 2011, *Birmingham: The Hidden History*, Stroud: The History Press
- Hume, I.N, 1969, *A Guide to Artifacts of Colonial America*, University of Pennsylvania Press: Philadelphia
- IfA, 2008a, *Standard and Guidance for Archaeological Watching Briefs*, Reading: Institute for Archaeologists

IfA, 2008b, *Standard and Guidance for the Collection, Documentation, Conservation, and Research of Archaeological Materials*, Reading: Institute for Archaeologists

NPPF, 2012, *National Planning Policy Framework: Archaeology and Planning*, London: Department for communities and Local Government

Oswald, A, 1975,, *Clay Pipes for the Archaeologist*, British Archaeological Reports 14

Pemberton Turner, J, 1866, *The Birmingham Button Trade*, In Timmins, S (ed), 1866

Timmins, S. (1866), *The Resources, Products and Industrial History of Birmingham and the Midland Hardware District: A Series of Reports, collected by the local industries committee of the British Association at Birmingham, in 1865*, London: Robert Hardwicke

Van Lemmen, H, 2005, *Delftware Tiles*, Princes Risborough: Shire Publications Ltd

Wardell Armstrong LLP, 2011, *Moland Street, Birmingham: Heritage Assessment (incorporating Archaeological Assessment)*, Unpublished Document

Wardell Armstrong LLP, 2012, *Moland Street, Birmingham, West Midlands: Specification for an Archaeological Watching Brief*, Unpublished Document


Watkinson, D.E and Neal, V, 1998, *First Aid for Finds*, RESCUE, London: The British Archaeological Trust

APPENDIX 1: CONTEXT REGISTER

Context No.	Feature	Type	Dimensions (LxWxD; m)	Description
1000	Modern surface	Layer	Thickness, 1.20 to 2m	Dark grey/brown silt sand with lenses of dark brown material and with frequent brick and post medieval finds.
1001	Stanchion base	Structure	1.1x1.7x1.1	Concrete stanchion base with brick lining and iron stanchion emerging from top
1002	Disturbed natural	Layer	Thickness 0.5	Loose yellowish orange sand
1004	Deposit	Layer	Thickness c.0.5m	Orange brown clay sand with fine pebbles and red brick fragments
1005	Deposit	Layer	Thickness c.0.5m	Dark-brown silt sand with lenses of burnt material and red brick inclusions and post medieval finds.
1006	Fill of [1007]	Fill	Thickness c.0.2m	Black carbonised material with inclusions of post med. pot and slag
1007	Brick walls and brick floor	Structure	3.3mx3.1m	Brick walled square building with adjoining brick floors to the N and E
1008	Disturbed natural	Layer	Thickness c.0.5m	Orange sand with inclusions of red brick fragments and burnt material
1009	Brick wall	Structure		Red brick visible in (1000)
1010	Brick floor	Structure		Red brick visible in (1000)
1011	Brick wall	Structure		Red brick visible in (1000)
1012	Brick wall	Structure		Red brick visible in (1000)
1013	Brick wall	Structure		Red brick with corbel at base visible in (1000)
1014	Concrete base	Structure		Square concrete with metal pin to centre W of site
1015	Brick walls and floor	Structure		Red brick walls visible around [1014]
1016	Well	Structure		Circle 1.2m diameter formed of bricks laid end-to-end in centre W of site
1017	3 concrete stanchions	Structure		Concrete stanchions with central iron girder and with brick lining in NW of site beneath concrete floor remaining in NW corner adjoining N and W walls.
1018	Brick structure with furnace's in NW corner	Structure		Brick structure visible beneath concrete floor in NW corner next to W wall with 2 furnaces in it.

Context No.	Feature	Type	Dimensions (LxWxD; m)	Description
1019	Brick structure with furnace's on N wall	Structure		Brick structure visible beneath concrete floor along N wall with a furnace in it.
1020	Brick wall to S	Structure		Brick wall c 2.5 m tall along S boundary of site with older and newer elements
1021	Brick wall to W	Structure		Brick wall c.2.57m in height with a corbelled base and white paint with later stanchions supporting and a modification of newer bricks on top. Some bricks project where walls have been removed. English country garden pattern.
1022	Brick floor	Structure		Red brick floor c.4.0m long north to south in centre west of site.
1023	Deposit	Layer		Burnt material beneath concrete floor in north west corner with inclusions of slag, and post medieval finds.
1024	Deposit	Fill		Burnt material in furnace [1019] with copper pot (not retained) and copper object inclusions.
1025	Brick	Structure		Brick structure next to [1021]
1026	Natural	Deposit		Yellow Sand


APPENDIX 2: FIGURES





WA Archaeology Ltd
2012

PROJECT: Moland Street, Birmingham, West Midlands
 SCALE: 1:25,000 at A4
 REPORT No: CP10096
 CLIENT: Watkin Jones
 DRAWN BY: AB
 DATE: June 2012
 FIGURE: 1

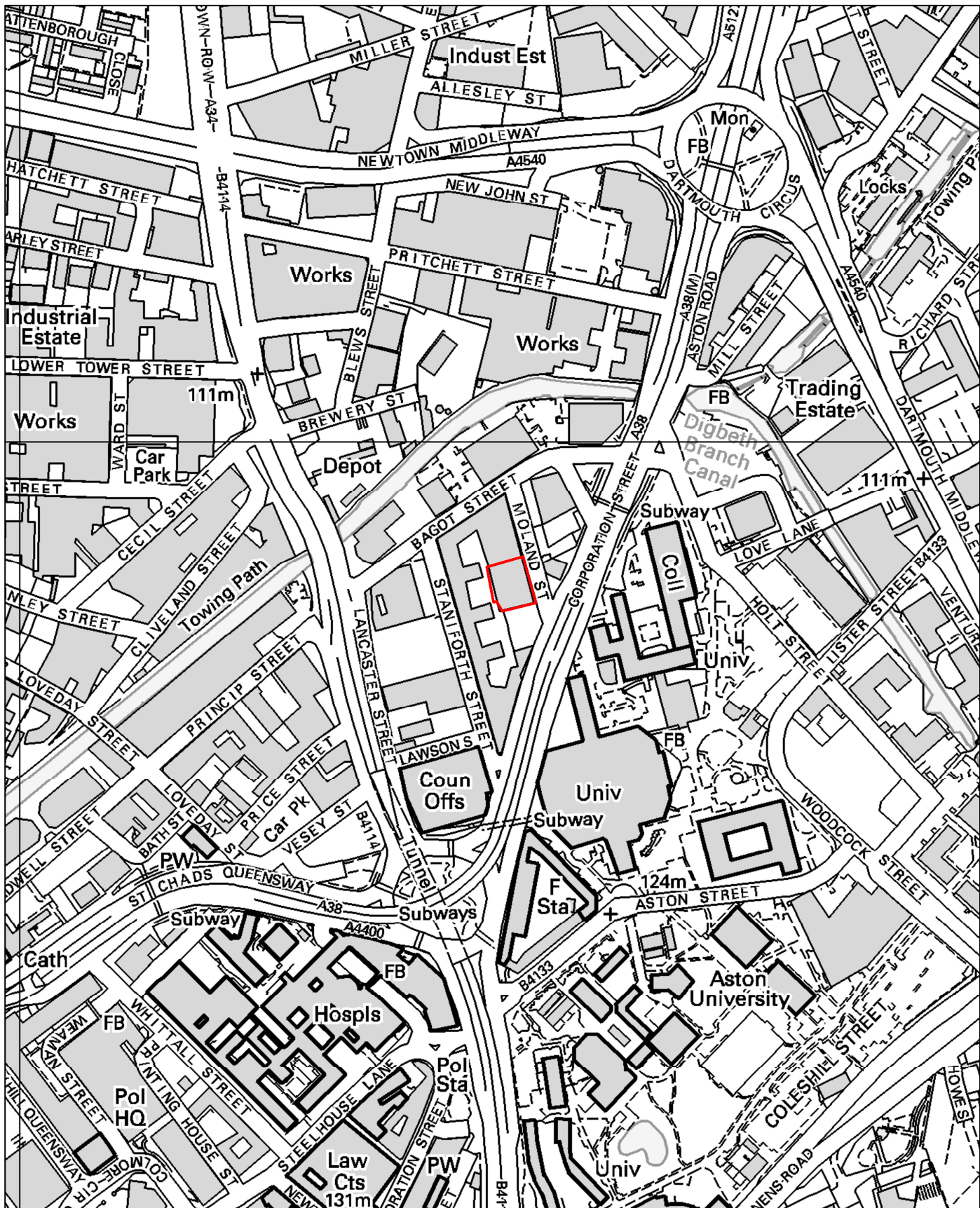
KEY:

 Site location



Reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100019512

Figure 1: Site location






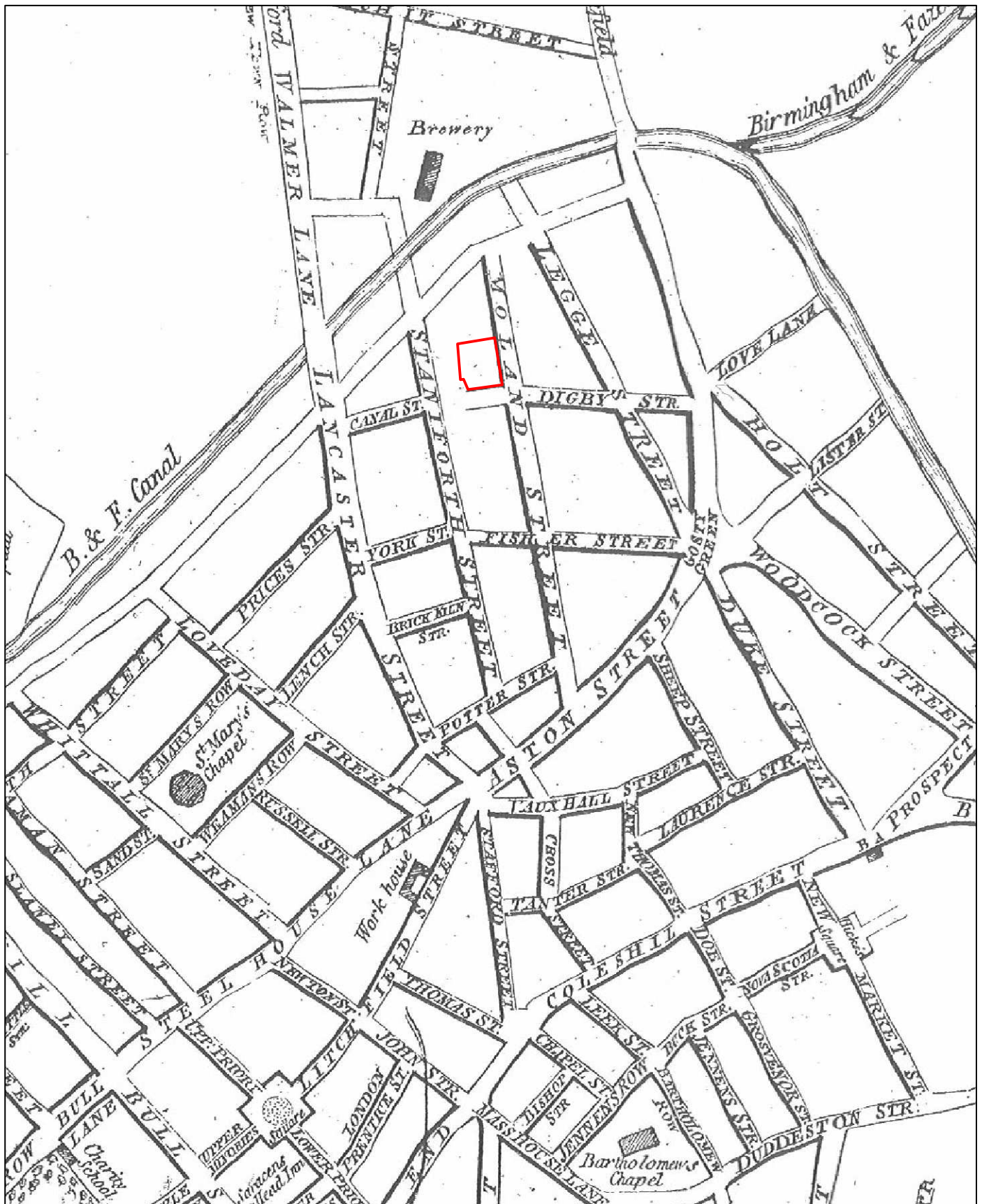
 <p>WA Archaeology Ltd 2012</p>	PROJECT:	Moland Street, Birmingham, West Midlands	KEY:	
	SCALE:	1:5,000 at A4	 Site boundary	
	REPORT No:	CP10096		
	CLIENT	Watkin Jones		
	DRAWN BY:	AB		
	DATE:	June 2012		
FIGURE:	2		<small> Reproduced by permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100019512 </small>	

Figure 2: Detailed site location






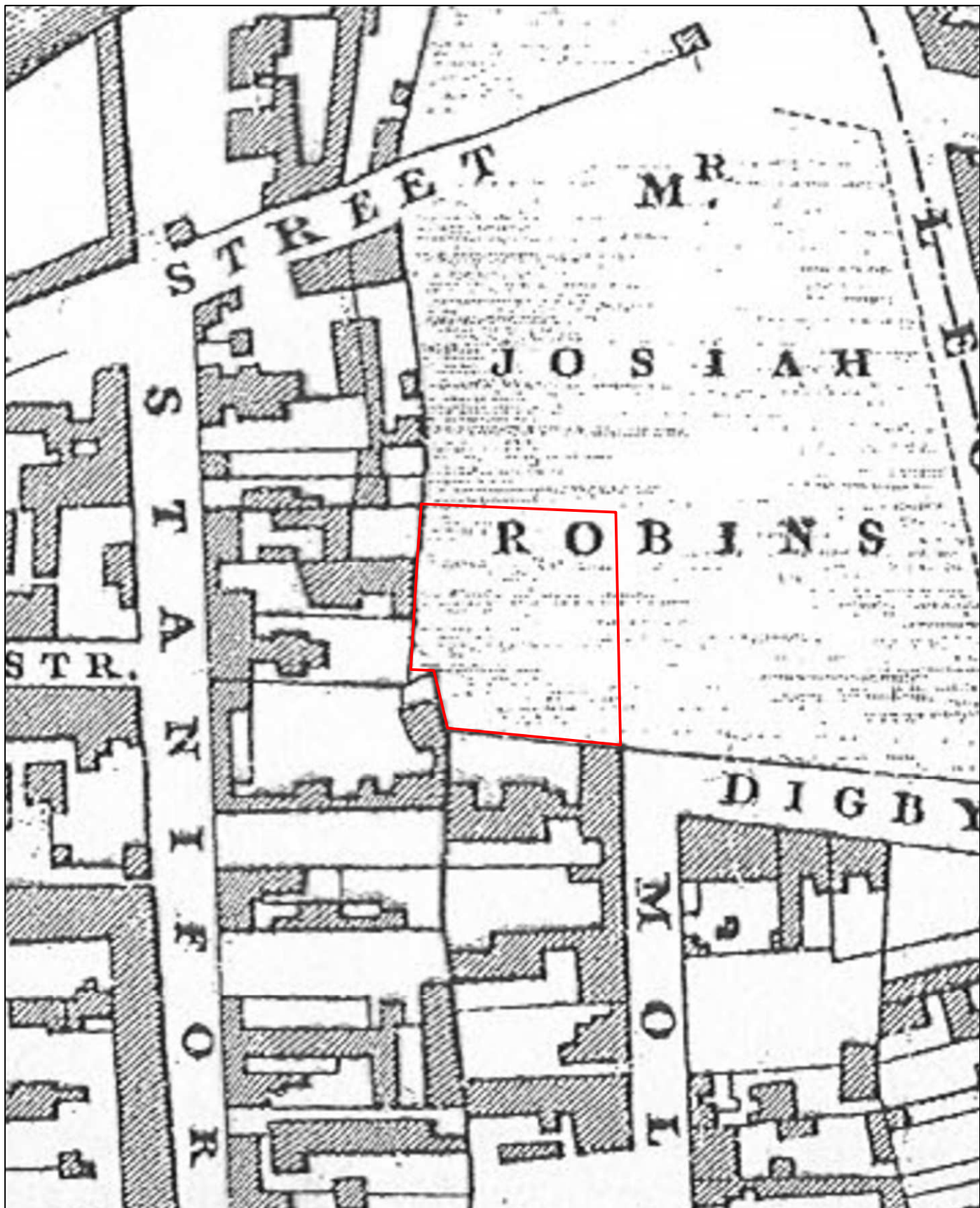
	<p>PROJECT: Moland Street, Birmingham, West Midlands</p> <p>SCALE: c.1:5,000 at A4</p> <p>REPORT No: CP10096</p> <p>CLIENT: Watkin Jones</p> <p>DRAWN BY: AB</p> <p>DATE: June 2012</p> <p>FIGURE: 3</p>	<p>KEY:</p> <p> Site boundary</p>	
---	--	---	---

Figure 3: Plan of Birmingham, 1795 (C. Pye)






 <p>WA Archaeology Ltd 2012</p>	<p>PROJECT: Moland Street, Birmingham, West Midlands</p> <p>SCALE: c.1:1,000 at A4</p> <p>REPORT No: CP10096</p> <p>CLIENT: Watkin Jones</p> <p>DRAWN BY: AB</p> <p>DATE: June 2012</p> <p>FIGURE: 4</p>	<p>KEY:</p> <p> Site boundary</p>	
--	--	---	---

Figure 4: Map of Birmingham, 1824-1825 (Pigott Smith)



WA Archaeology Ltd
2012

PROJECT: Moland Street, Birmingham,
West Midlands
SCALE: c. 1:750 at A4
REPORT No: CP10096
CLIENT Watkin Jones
DRAWN BY: AB
DATE: June 2012
FIGURE: 5

KEY:

 Site boundary



Figure 5: Board of Health Plans of Birmingham, c.1848-1862






 <p>WA Archaeology Ltd 2012</p>	PROJECT:	Moland Street, Birmingham, West Midlands	KEY:	
	SCALE:	1:1,000 at A4	 Site boundary	
	REPORT No:	CP10096		
	CLIENT	Watkin Jones		
	DRAWN BY:	AB		
	DATE:	June 2012		
FIGURE:	6			

Figure 6: First Edition Ordnance Survey, 1889






	<p>PROJECT: Moland Street, Birmingham, West Midlands</p> <p>SCALE: 1:1,000 at A4</p> <p>REPORT No: CP10096</p> <p>CLIENT: Watkin Jones</p> <p>DRAWN BY: AB</p> <p>DATE: June 2012</p> <p>FIGURE: 7</p>	<p>KEY:</p> <p> Site boundary</p>	
---	--	---	---

Figure 7: Ordnance Survey, 1937 (25 inches to 1 mile)






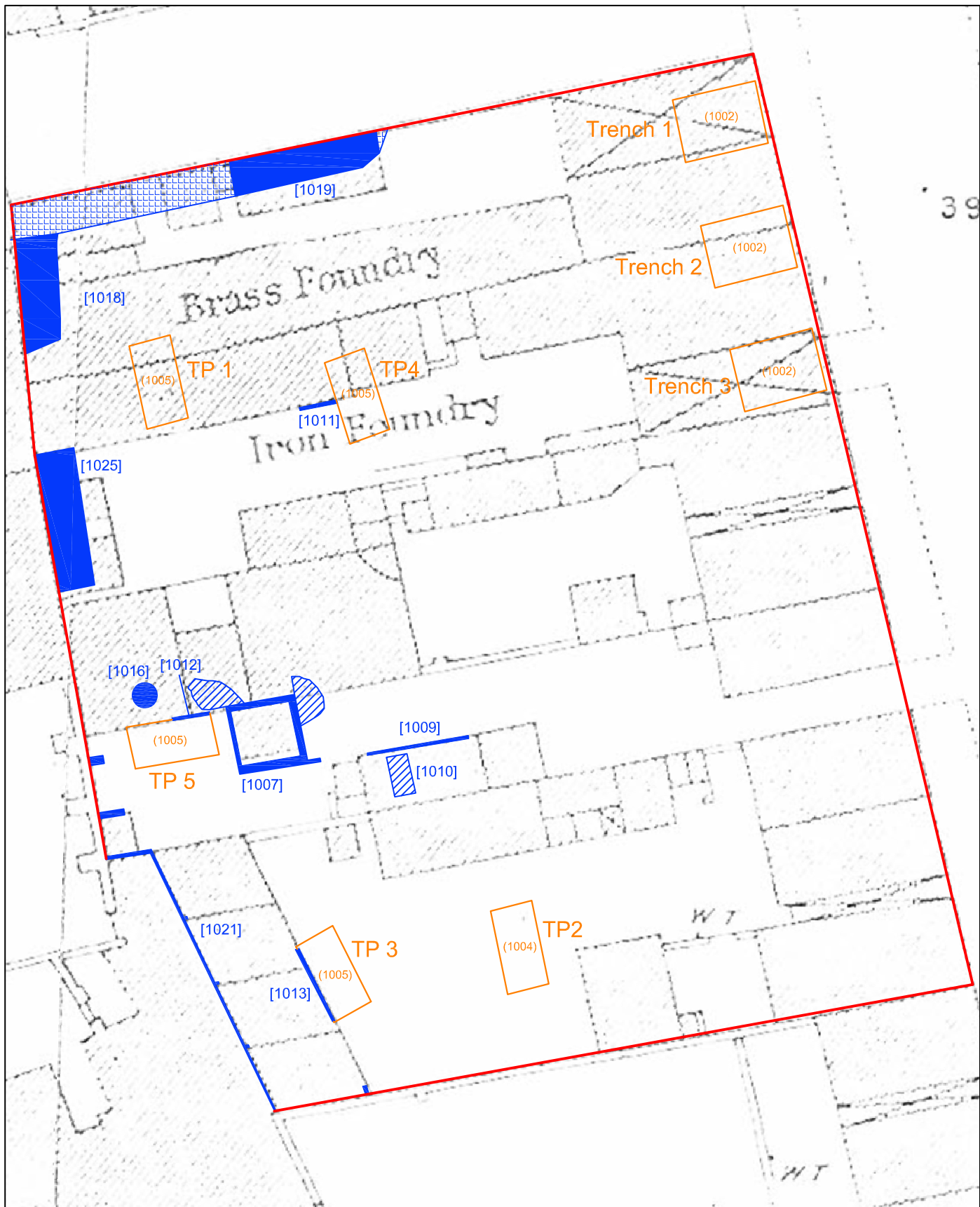
 <p>WA Archaeology Ltd 2012</p>	PROJECT:	Moland Street, Birmingham, West Midlands	KEY:	
	SCALE:	1:1,000 at A4	 Site boundary	
	REPORT No:	CP10096		
	CLIENT	Watkin Jones		
	DRAWN BY:	AB		
	DATE:	June 2012		
FIGURE:	8			

Figure 8: Ordnance Survey, 1952



39



 <p>WA Archaeology Ltd 2012</p>	<p>PROJECT: Moland Street, Birmingham, West Midlands</p> <p>SCALE: 1:500 at A4</p> <p>REPORT No: CP10096</p> <p>CLIENT: Watkin Jones</p> <p>DRAWN BY: AB</p> <p>DATE: June 2012</p> <p>FIGURE: 9</p>	<p>KEY:</p> <ul style="list-style-type: none"> Site boundary Trench/TP Brick structures Brick floor Concrete floor 	
--	--	---	---

Figure 9: Approximate location of brick structures based on First Edition Ordnance Survey 1889