

**THE FORMER BBC SITE,  
OXFORD ROAD, MANCHESTER**

**PHASE 1B: PLOT 14 (MSCP)**

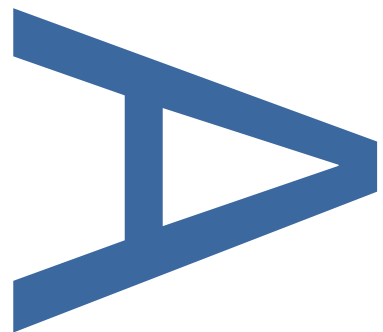
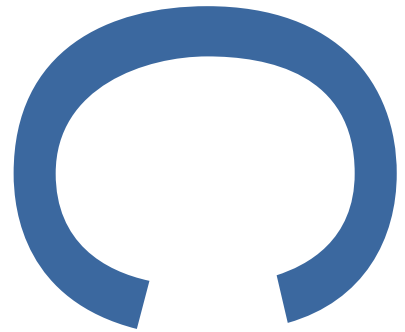
**A SUMMARY OF AN  
ARCHAEOLOGICAL EVALUATION**

**LOCAL PLANNING AUTHORITY:  
MANCHESTER CITY COUNCIL**

**PLANNING REF: 113832/FO/2016**

**PCA REPORT NO: R12830**

**MARCH 2017**



**PRE-CONSTRUCT ARCHAEOLOGY**

DOCUMENT VERIFICATION



THE FORMER BBC SITE, OXFORD ROAD,  
MANCHESTER

PHASE 1B: PLOT 14 (MSCP)

A SUMMARY OF AN ARCHAEOLOGICAL  
EVALUATION

Quality Control

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	Project Number	K4888
	Report Number	R12830

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**THE FORMER BBC SITE, OXFORD ROAD, MANCHESTER: PLOT 14 (MSCP)**  
**A SUMMARY OF AN ARCHAEOLOGICAL EVALUATION**

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**PLANNING APPLICATION NUMBER:** 113832/FO/2016

**LOCAL PLANNING AUTHORITY:** Manchester City Council

**CENTRAL NGR:** SJ 84395 97309

**ARCHAEOLOGICAL SITE CODE:** ARM17

**COMMISSIONING CLIENT:** Bruntwood

**WRITTEN BY:** Paw Jorgensen  
Pre-Construct Archaeology Ltd

**PROJECT MANAGER:** Chris Mayo  
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**March 2017**

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## 1 INTRODUCTION

- 1.1 Four evaluation trenches were excavated between 6 and 10 February 2017 prior to the construction of the proposed multi-storey car-park on the site currently occupied by Armstrong House, Manchester (centred at SJ 84395 97309) (Figure 1). The work was carried out by Pre-Construct Archaeology Limited (PCA) and followed an approved methodology designed in a Written Scheme of Investigation<sup>1</sup>.
- 1.2 The site is presently occupied by Armstrong House and a landscaped area just to the north of it. To the north, the site is bordered by Cloak Street, and to the east and south by a now defunct access ramp to Mancunian Way and Mancunian Way respectively. Historically the site was farmland until the second quarter of the 19<sup>th</sup> century whereafter it was occupied by several streets and alleys and the industrial, commercial, and residential buildings fronting them. By the 1960s the site had been cleared of buildings and subsequently became the site of Armstrong House.
- 1.3 The evaluation was undertaken in response to a planning condition attached to consent for the development, and forms the first stage of archaeological fieldwork at the site. The planning application was supported by an Environmental Statement which included a Historic Environment Desk-Based Assessment (DBA) prepared by PCA<sup>2</sup>.
- 1.4 The designed evaluation was to see the excavation of four trial trenches located within the accessible areas of the site so as to target possible remains identified from map regression work within the DBA. These trenches were all successfully completed.
- 1.5 All four archaeological evaluation trenches were excavated by a JCB using a flat-bladed grading bucket. All trench locations were surveyed from known points, and plans were drawn of each trench at a scale of 1:20 showing the locations of all archaeological features. Levels were measured in relation to a temporary benchmark (TBM) using a dumpy level. The trenches were located as follows (also see Figure 2):

Centre of trench			
Trench	Easting	Northing	Surface Elevation
Trench 1	384390.656	397324.520	36.65 m OD
Trench 2	384392.231	397312.047	36.27 m OD
Trench 3	384404.978	397318.609	36.26 m OD

<sup>1</sup> Mayo, C 2017 'The Former BBC Site, Oxford Road, Manchester: Plot 14 (MSCP): Written Scheme of Investigation for an Archaeological Evaluation', unpublished report for PCA

<sup>2</sup> Mayo, C. 2016 'The Former BBC Site, Oxford Road, Manchester – Phase 1B: Plot 14 (MSCP): An Historic Environment Desk-Based Assessment', unpublished report for Pre-Construct Archaeology Ltd, number R12306

Trench 4	384410.973	397302.710	36.87 m OD
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- 1.6 Since the completion of the evaluation work, the client has undertaken some geotechnical site investigations and the results of these<sup>3</sup> have been supplied to PCA for review (summarised at Appendix 3). These interventions provide a wider spatial coverage of the site than could be achieved by archaeological trenches. The results of this work have been incorporated into this report.
- 1.7 PCA were commissioned for the work by Bruntwood; the project was managed for PCA by Chris Mayo and supervised by the author. It was monitored on behalf of the City of Manchester by Norman Redhead, Heritage Management Director (Archaeology) at the Greater Manchester Archaeological Advisory Service (GMAAS).
- 1.8 The following summary presents the results of the archaeological evaluation, and is intended for review by GMAAS in order to decide what further mitigation works, if any, may be necessary.

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<sup>3</sup> NX Consulting Ltd., 2017 'Phase 1 Geoenvironmental Desk Study and Preliminary Phase 2 Assessment for Proposed Car Park & Hotel, Armstrong House, Cloak Street, Manchester, M1 7EP.', unpublished report, Project No: 299

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## 2 ARCHAEOLOGICAL RESULTS

### 2.1 Geology

2.1.1 Natural sandy clay was recorded in Trenches 2, 3 and 4, where it survived relatively untruncated. It comprised firm dark brown clay with large patches of mid-yellowish brown sandy gravel. The height of the natural clay remained relatively consistent throughout the site. It was recorded at a height of 35.67m OD to the southeast and 35.31m OD to the northeast suggesting a slight rise towards the south.

### 2.2 Trench 1

2.2.1 Excavation of this trench exposed a number of archaeological features which are considered to relate to the buildings which once fronted the former Heron Street from at least 1831. Bancks's map from that year (Figure 5) suggests that these walls may have been the rear of a large structure which fronted to Cooke Street but which, by the Ordnance Survey map of 1849-50 (Figure 6), had been sub-divided into two properties. The northerly of the two, fronting Cooke Street, is labelled as the Wheatsheaf Inn whilst the southern, of which the walls in Trench 1 seem to be part, was likely to be a terraced dwelling.



*Plate 1: Overview of Trench 1, looking east-southeast (1m scale).*

2.2.2 The remains recorded in Trench 1 consisted of a substantial brick foundation, [4], aligned roughly north-south and a narrower brick wall, [5], aligned perpendicular to this. Sondages were excavated on both sides of the narrow brick partition, showing that the walls survived to a height of at least 1.10m (35.79m OD), although an internal floor surface (if present) could not be

reached. This suggests that the narrower wall may well have been the partition separating the cellars of the two dwellings which fronted Heron Street. Brick and mortar samples taken from the two brick walls indicated that they were likely dated 1850 to 1900, which therefore leads to the likelihood that the structures at this location on Heron Street were reconfigured around this time when the Wheatsheaf Inn was developed.

- 2.2.3 When the building was demolished in the middle of the 20<sup>th</sup> century the basement was backfilled with demolition rubble recorded as [1] and [2]. Following the demolition, a Yorkstone surface, [3], was laid across this part of the site (Figure 4), at a height of 35.96m OD.

### 2.3 Trench 2

- 2.3.1 This trench contained a modern ceramic drain which had caused heavy truncation to the archaeological sequence throughout much of it. However, two small areas survived undisturbed in the eastern and western parts of the trench. In the western part of the trench, the natural clay, [8], was sealed by a brickearth-like subsoil, [11], recorded at 35.31m OD, which had been cut by the construction cut, [16], for a roughly north-south aligned brick footing, [14]. Only the lowest course of the footing survived, at 35.24m OD. It had been constructed using dry laid unfrogged red bricks dated sometime between 1830 and 1900. The footing was sealed by a demolition deposit, [10], which had been truncated by cut for the modern drain pipe.



*Plate 2: Overview of Trench 2, looking east (1m scale)*

- 2.3.2 In the eastern end of the trench, the natural clay was also sealed by the aforementioned subsoil, which was recorded as [12] at 35.28m OD. To the east, the subsoil had been cut by a linear cut, [18], aligned roughly north-south. It was filled by a black coal and clinker rich fill, [13],



producing both CBM dated 1850-1900 and pottery dated 1790-1820. The single piece of CBM recovered was found at the very top of the deposit, and is likely intrusive. As such, the likely spot date for the context, considering the entire pottery assemblage recovered (16 sherds), is 1815-1835. To the east, the fill of the cut had been truncated from a height of 35.35m OD by the construction cut, [17], for a red brick footing, [15], aligned along a roughly north-south axis. The bricks and mortar used in the construction of the footing were consistent with a 1850-1900 date.

- 2.3.3 The brick footing at the western end of the trench is shown from map regression (Figures 5 and 6) to be beneath the former Heron Street, and it is thus likely that the remains may be part of a service. The brickwork at the eastern end is likely the footing for one of the dwellings shown on the same map along the east side of Heron Street.

## 2.4 Trench 3

- 2.4.1 The natural clay in Trench 3 was sealed by a dump or levelling layer, [26], located at 35.54m OD; the pottery assemblage recovered from the layer suggests a deposition date of 1815-1835, which is therefore contemporary with the earliest development of the area as suggested from historic maps.



Plate 3: Overview of Trench 3, view to south (1m scale).

- 2.4.2 To the east layer [26] had been truncated by the construction cut for a brick footing, [20]/[22]/[23], and to the east by the construction cut for a curvilinear footing, [6], and a small wall initially thought to be a fireplace, [7], joining on to it to the south at 35.57m OD. The bricks

used in the construction of both the curvilinear footing and the postulated fireplace are suggestive of a 1830-1900 date, while the footing to the east was dated 1850-1900. The interior of 'fireplace' [7], was filled with loose brick rubble in a sand, ash and charcoal matrix, [24]. Unfortunately, excavation of the rubble fill did not produce any datable finds, but it can be assumed that the fill is a result of the building's demolition in the 20<sup>th</sup> century. In the centre of the trench, with no discernible relationship with either of the other brick walls, was a "U" shaped drain support, [19], constructed of red unfrosted bricks. Like the remaining brick structures, it is likely to date to between 1830 and 1900. Sealing the entire trench was a layer of modern made ground laid down to landscape the site following the demolition of the buildings in the 20<sup>th</sup> century.

- 2.4.3 The enclosed space within wall [7], thought to be a fireplace, correlates closely on the 1849-50 OS map (Figure 6) with an outbuilding to the rear of the dwellings which fronted Heron Street. It is therefore probable that this wall represents the remains of an ash pit.
- 2.4.4 The curved wall [6] can also be closely matched to a wall on the 1849-50 map which enclosed the rear yard of the dwelling. Walls [20] and [21] may relate to the wall which formed the opposite side of the alley at the rear of the properties, itself enclosing the rear, western end of the Mount Place terrace.

## 2.5 Trench 4



Plate 4: Overview of Trench 4, view north (1m scale).

- 2.5.1 This trench was excavated in the southeastern part of the site, immediately southeast of
-

Armstrong House. The archaeological sequence here consisted of natural clay at 35.67m OD, overlain by a 0.18m-thick layer of made ground, [28], comprising compact mid-brown sandy gravel with frequent pockets of ash and charcoal. At the northern end of the trench, this was truncated by the construction cut for an east-west aligned brick wall, [31]. The brick wall had been constructed using unfrosted red bricks measuring 235mm x 120mm x 80mm laid in stretcher bond, one skin thick. On both side of the wall, Yorkstone slabs had been laid to form paved surfaces. To the north, the stone surface was recorded as [30], while to the south of the wall, the surface was recorded as [29]. The stone surface to the south of the wall occurred at 35.93m OD, while the one to the north was laid roughly 0.10m lower. Sealing both stone surfaces was a layer of modern made ground raising the ground to its current level.

- 2.5.2 These remains correlate closely to the 1849-50 OS map (Figure 6), and imply that the wall represents the street frontage boundary to the dwellings on former Crossley Street, and the slabs are the remain of pavements.

## **2.6 Geotechnical Site Investigation**

- 2.6.1 A recent geotechnical study has seen the completion of a number of boreholes and test-pits across the site (Appendix 3). They have been located in areas which were inaccessible to PCA during the evaluation, for example in the car park (still in use) to the south of Armstrong House (the SI work here was completed rapidly over a weekend which was unachievable for linear evaluation trenches).
- 2.6.2 In summary, within the car park area Test Pits 04 and 06 were excavated and a borehole (BH05) was installed. These demonstrated the survival of layers and remains most likely archaeological in nature including an intact brick floor in TP04 at 1.4m BGL, and thick made ground deposits in BH05 (to 3.0m BGL) which may be indicative of a deep, in-filled feature.
- 2.6.3 The SI work included interventions at the eastern side of the site close to Brook Street. Despite this area sitting at a visibly lower elevation than Armstrong House, where the evaluation trenches were dug, the results in TP01, BH01 and BH03 show made ground deposits which could again be archaeological. The thickness of made ground in BH02 (c1.5m) is considered to be typical, whereas in BH01 the material was recorded as up to 4.0m thick – perhaps the result of an in-filled truncation or feature.

### **3 CONCLUSIONS**

- 3.1 The archaeological evaluation demonstrated that structural remains related to the 19<sup>th</sup> century development of the area survived within all four evaluation trenches. These remains primarily consisted of brick footings rather than cut features, although contemporary layers also survived across the site. The remains uncovered by the evaluation can be closely related to the buildings shown on historic maps of the area: the structural remains can be related with confidence to walls shown on the 1849-50 OS map, forming parts of the dwellings fronting Crossley Street and Heron Street. Wall [5] in Trench 1 would appear to have been an internal division between cellars in adjacent properties; its narrowness (one stretcher width) is alarming by modern expectations but standard for contemporary worker's dwellings in Manchester.
- 3.2 When compared to the historic maps, there is less correlation of the remains to the earlier (1831) Bancks survey. This may be the result of the map being less accurate and clear than the later OS plan, or alternatively it may suggest a reconfiguration to some of the earlier walls.
- 3.3 In the southern part of the site, the modern ground level rises slightly. The excavation of Trench 4 showed that this rise was partly due to a rise in the natural topography (at levels between 35.67m OD to the southeast and 35.31m OD to the northeast) and partly due to artificial landscaping following the clearance of the site in the 20<sup>th</sup> century in preparation for the construction of Armstrong House. It is likely therefore, that further archaeological remains survive across the northern half of the site.
- 3.4 Geotechnical work has been completed<sup>4</sup> which includes interventions in parts of the site which could not be evaluated by PCA. These have demonstrated the presence of deposits of made ground which are likely to be archaeological in nature, and extending to thicknesses (1.5 to 3.0m) which probably represent infilled features or cellars for the properties which faced the former Cooke Street, Crossley Street, Mount Place and Brook Street.
- 3.5 An intact brick floor surface was recorded in TP04 to the south of Armstrong House.
- 3.6 The geotechnical work has shown some evidence for localised truncation from services, for example in TP06. It is anticipated that the construction of the Mancunian Way overpass will have caused at least localised but significant truncation to the archaeological resource in this southern area of the site.

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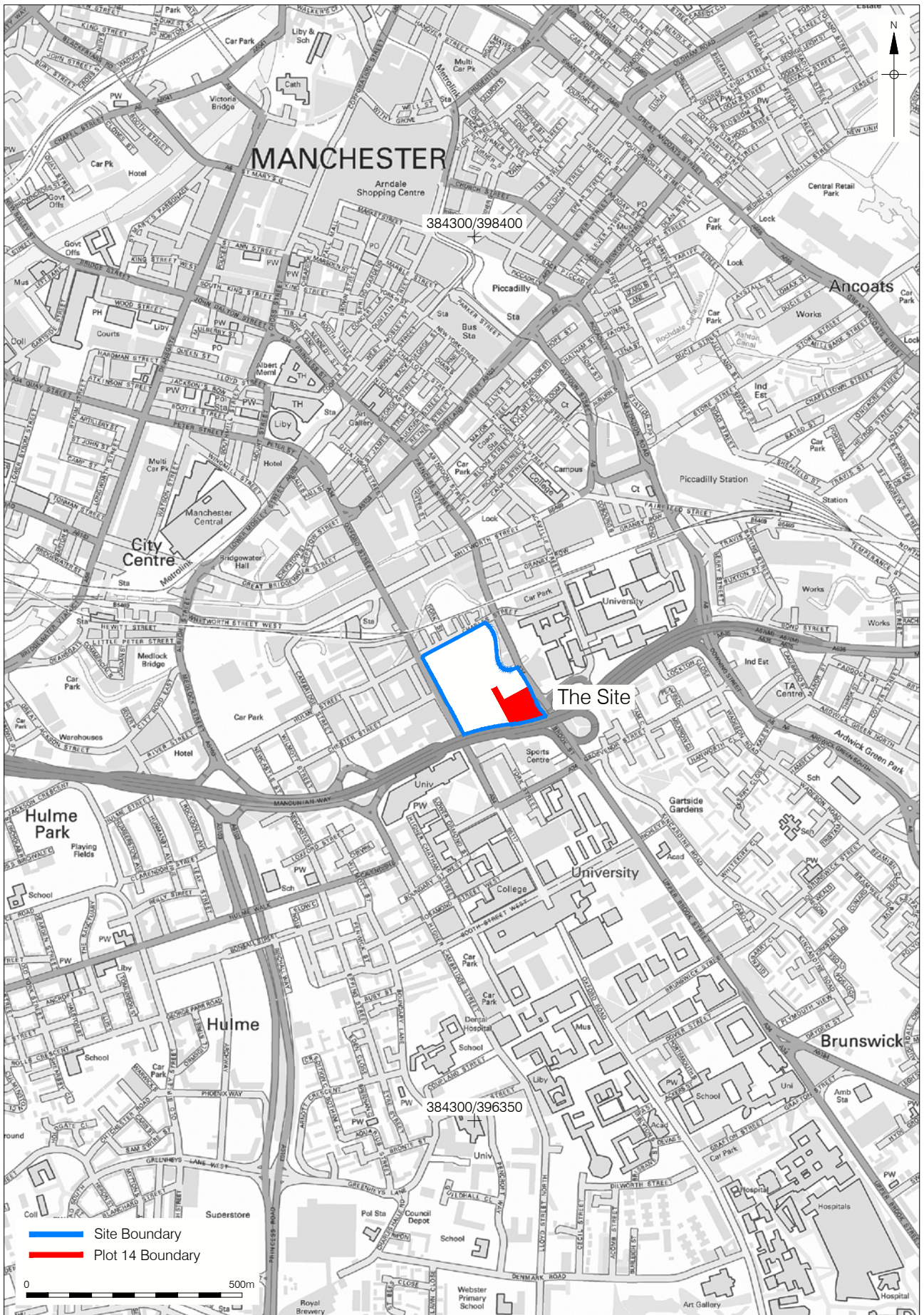
<sup>4</sup> 4 NX Consulting Ltd., 2017

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## **4 ACKNOWLEDGEMENTS**

- 4.1 Pre-Construct Archaeology Limited would like to thank Bruntwood for commissioning the work and Norman Redhead of GMAAS for monitoring the project on behalf of the City of Manchester.
- 4.2 The author would also like to thank James Hopper and Mike Tunnicliffe for their hard work on site, Mark Roughley for preparing the illustrations, Chris Jarrett, Amparo Valcarcel and Karen Deighton for assessing the artefacts and Chris Mayo for project management and editing.

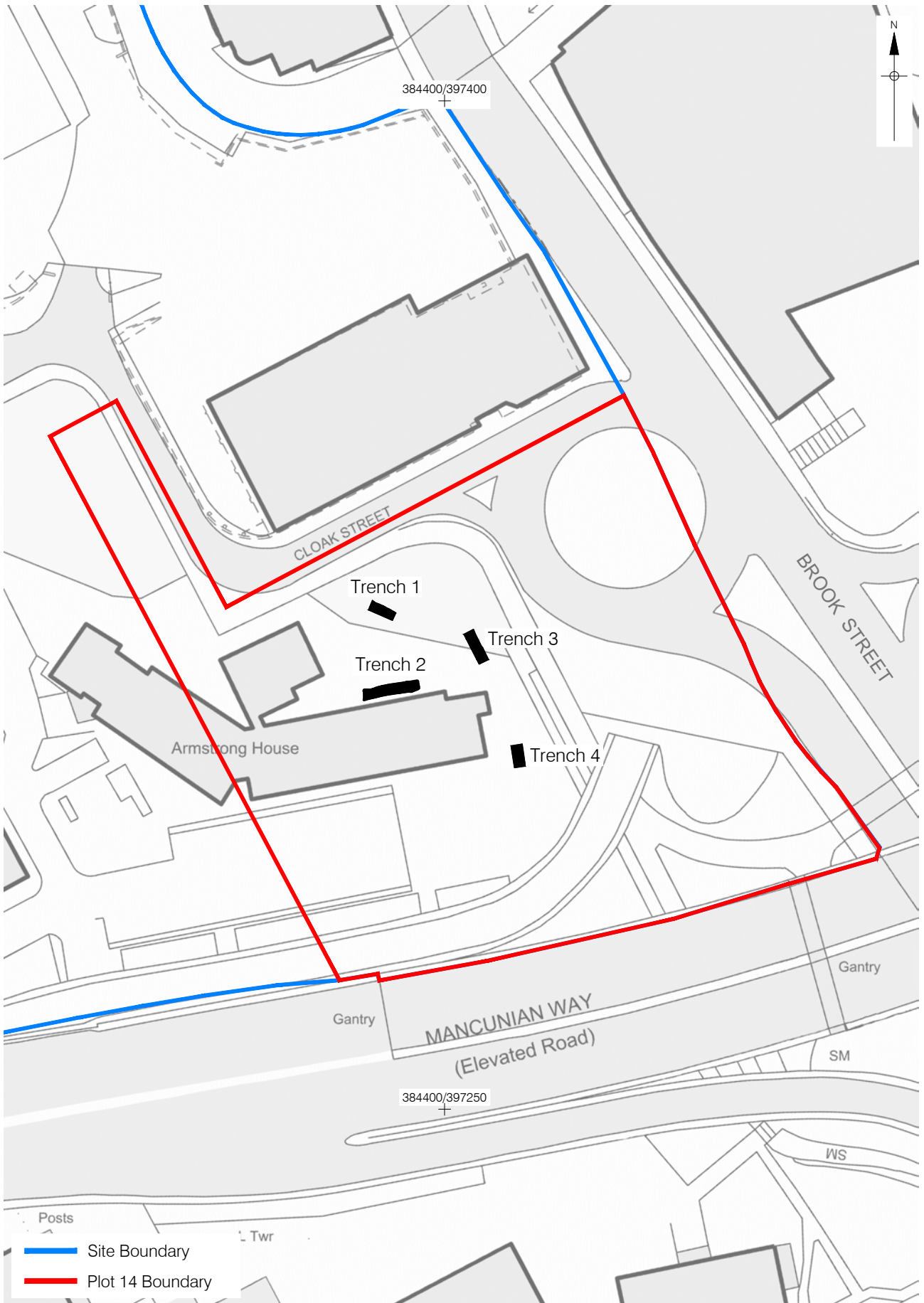




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Figure 1  
 Site Location  
 1:12,500 at A4





0 40m

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Figure 2  
Detailed Site and Trench Location  
1:800 at A4





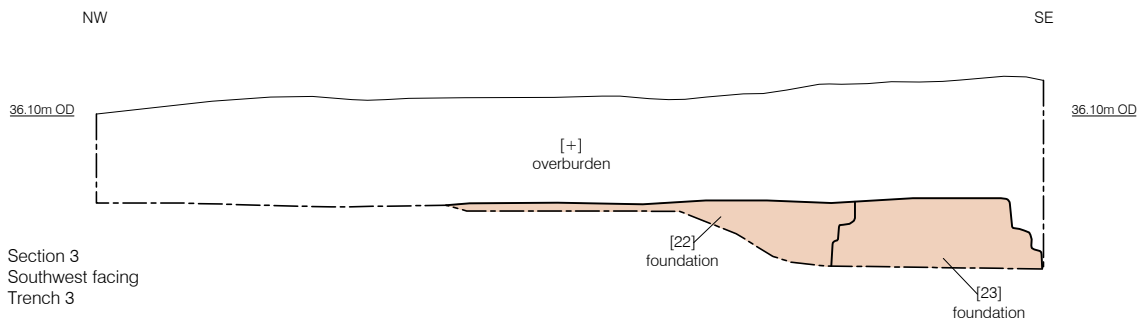
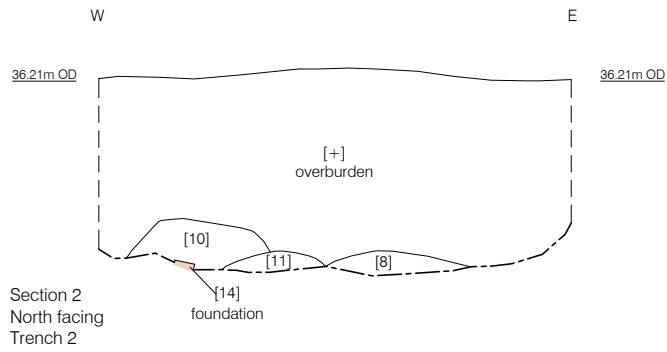
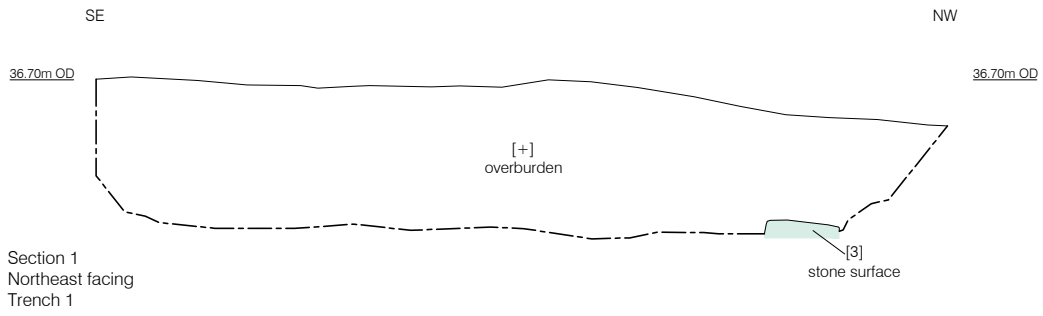
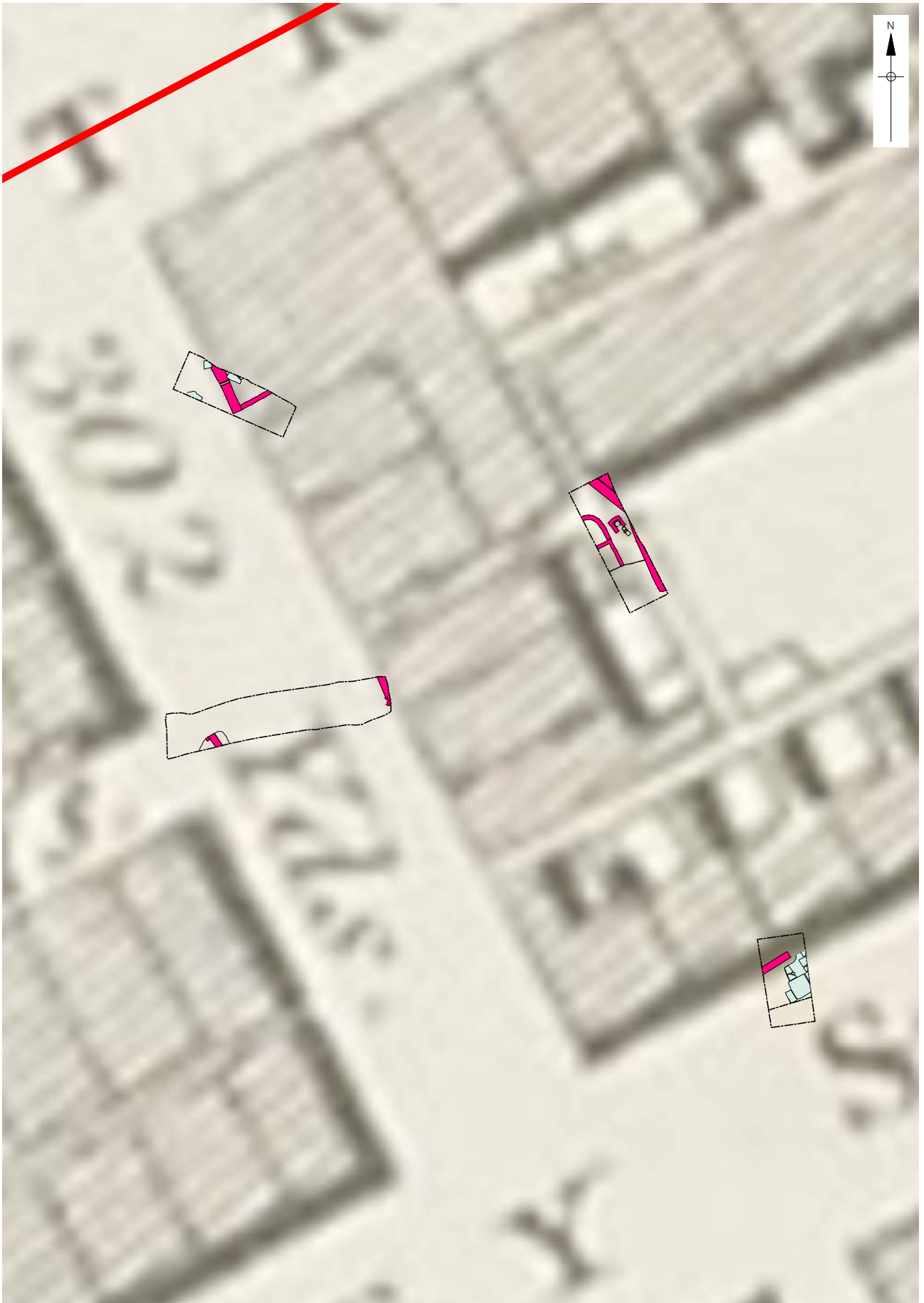


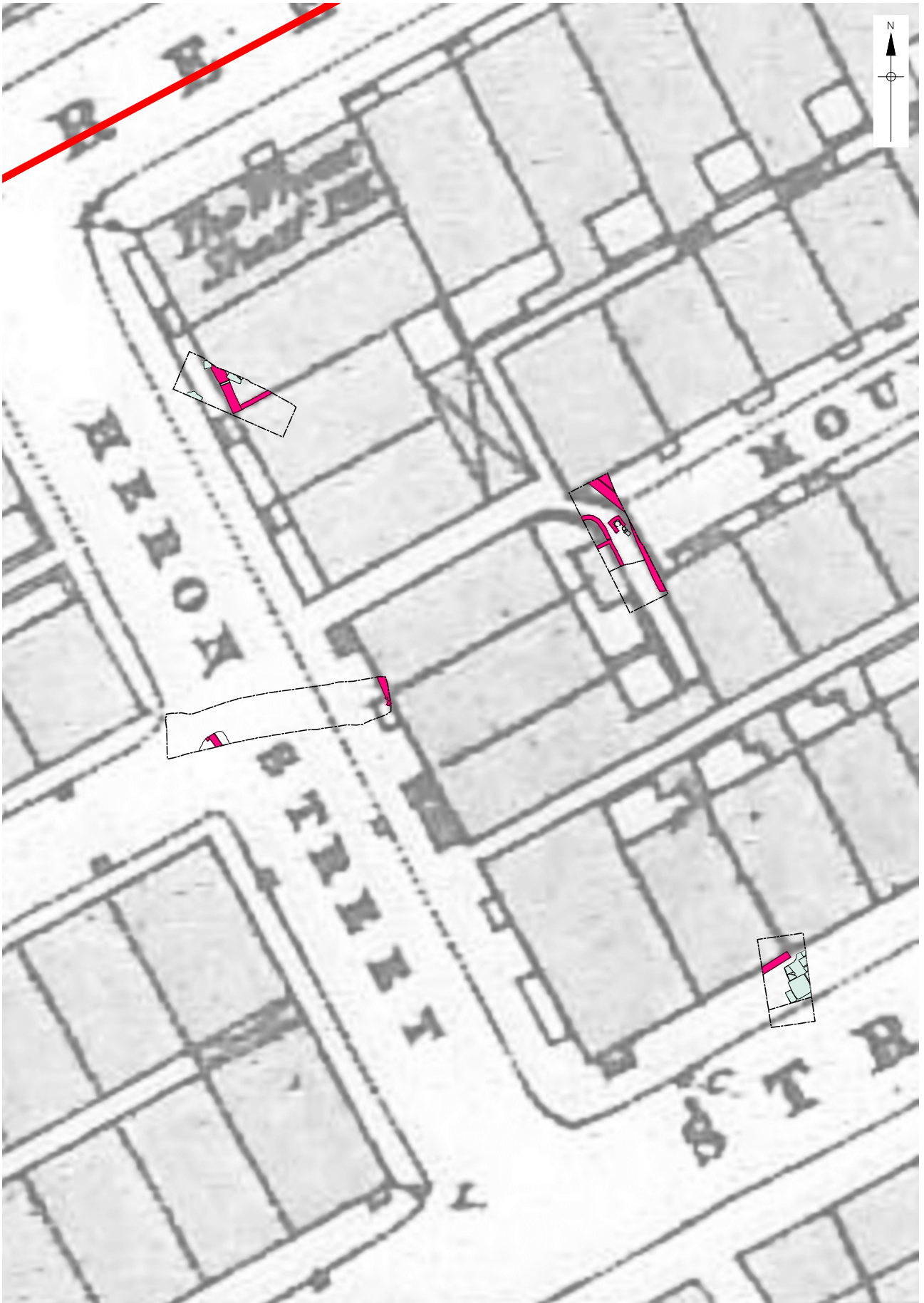
Figure 4  
Sections 1 to 3  
1:40 at A4



0 10m

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Figure 5  
Masonry features overlain on an extract from Banks  
& Cos. Plan of Manchester and Salford, 1831  
1:200 at A4



0 10m

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Figure 6  
Masonry features overlain on an extract of the  
Ordnance Survey map, 1849-50  
1:200 at A4

## 5 APPENDIX 1: OASIS REPORT FORM

**OASIS ID: preconst1-278668**

### Project details

Project name	THE FORMER BBC SITE, OXFORD ROAD, MANCHESTER: PLOT 14 (MSCP)
Short description of the project	An archaeological evaluation consisting of four trenches. The evaluation documented several brick walls associated with the development of the area during the second quarter of the 19th century.
Project dates	Start: 06-02-2017 End: 10-02-2017
Previous/future work	Yes / Yes
Any associated project reference codes	ARM17 - Sitecode
Any associated project reference codes	113832/FO/2016 - Planning Application No.
Type of project	Field evaluation
Site status	None
Current Land use	Industry and Commerce 2 - Offices
Monument type	WALLS Post Medieval
Monument type	FLOORS Post Medieval
Significant Finds	POT Post Medieval
Significant Finds	CBM Post Medieval
Significant Finds	CTP Post Medieval
Significant Finds	GLASS Post Medieval
Methods & techniques	"Sample Trenches"
Development type	Car park (high-rise)
Prompt	Planning condition
Position in the planning process	After full determination (eg. As a condition)

### Project location

Country	England
Site location	GREATER MANCHESTER MANCHESTER MANCHESTER The Former BBC Site, Oxford Road, Manchester: Plot 14 (MSCP)
Postcode	M1 7ED
Study area	1600 Square metres
Site coordinates	SJ 84395 97309 53.472029971148 - 2.23512232897 53 28 19 N 002 14 06 W Point
Height OD / Depth	Min: 35.31m Max: 35.67m

### Project creators

Name of Organisation	Pre-Construct Archaeology Limited
Project brief originator	Greater Manchester Archaeological Advisory Service
Project design originator	Chris Mayo
Project director/manager	Chris Mayo
Project supervisor	Paw Jorgensen
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Bruntwood

### Project archives

Physical Archive recipient	Manchester Museum of Science and Industry
Physical Archive ID	ARM17
Physical Contents	"Glass", "Metal", "Ceramics"
Digital Archive recipient	Manchester Museum of Science and Industry
Digital Archive ID	ARM17
Digital Contents	"Stratigraphic"
Digital Media available	"Database", "Images raster / digital photography", "Images vector", "Spreadsheets", "Text"
Paper Archive recipient	Manchester Museum of Science and Industry
Paper Archive ID	ARM17
Paper Contents	"Stratigraphic"

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Paper Media available	"Context sheet", "Drawing", "Plan", "Report"
<b>Project bibliography 1</b>	
Publication type	Grey literature (unpublished document/manuscript)
Title	The Former BBC Site, Oxford Road, Manchester: Plot 14 (MSCP): A Summary of an Archaeological Evaluation
Author(s)/Editor(s)	Jorgensen, P.
Other bibliographic details	PCA R12830
Date	2017
Issuer or publisher	Pre-Construct Archaeology Limited
Place of issue or publication	London
Description	Unpublished client report, A4 with PCA covers
Entered by	Chris Mayo (cmayo@pre-construct.com)
Entered on	29-Mar-17

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## 6 APPENDIX 2: FINDS ASSESSMENTS

### 6.1 Pottery Assessment (ARM17)

By Chris Jarrett, Pre-Construct Archaeology Limited

#### 6.1.1 Introduction

A small sized assemblage of pottery was recovered from the site (one box). The pottery dates entirely to the post-medieval period and particularly those types that were in production more so in the 19th century. The pottery is mostly in a good condition and no sherds are recorded as abraded or laminated. The pottery is in a fragmentary state, existing as sherd material and none of the vessels have a complete profile, while only approximately 42% of the vessels can be assigned to a specific form. The pottery appears to have been deposited under secondary, possibly tertiary circumstances, although the pottery types that are found together are mainly contemporaneous. The pottery was quantified by sherd count (SC), estimated number of vessels (ENV), besides weight. Pottery was recovered from four contexts and the sizes of the groups of the pottery are all small (fewer than 30 sherds).

In total the assemblage consists of 50 sherds, 44 ENV, 565g (of which 20 sherds/20 ENV/148g are unstratified). The assemblage was examined macroscopically and microscopically using a binocular microscope (x20), and recorded in a database format file by fabric, form and decoration. The pottery is discussed by its distribution and types. The pottery types have been classified according to the coding system used by the Museum of London (2014) or suitable alphabetical codes were cross referenced to this.

#### 6.1.2 The pottery types

The range of pottery types and the forms that occur in these wares are shown in Table 1. The coarse earthenwares provide mostly large vessels for use in the kitchen, as represented by the blackware (BLACK) and the unstratified rounded jar, or as horticultural flower pots provided by the post-medieval redware examples, which are unstratified or recovered from context [26].

Table wares and tea wares are the main forms recorded in the industrial finewares: creamware (CREA), pearlwares (PEAR/BW/ERTH/SLIP and TR/4) and the refined white earthenwares (REFW/PNTD and TPW).

The refined stonewares pottery types occur as either tea wares, such as the glazed black basalt ware (BBASG) tea pot (context [26]) or the mid 18th century white salt-glazed stoneware (SWSG) saucer (context [17]). Otherwise this class of pottery is found as a container and recorded as an unstratified cylindrical jam or preserve jar made in English stoneware with Bristol glaze (ENGS BRST).

Pottery type	Code	Date range	SC	ENV	Wt (g)	Forms
Glazed black basalt ware	BBASG	1770-1880	1	1	9	?Tea pot
Blackware	BLACK	1600-1900	7	5	184	Rounded jar
Bone china	BONE	1794-1900	1	1	4	-

Pottery type	Code	Date range	SC	ENV	Wt (g)	Forms
Creamware	CREA	1740-1830	3	3	17	Plate
English stoneware with Bristol glaze	ENGS BRST	1830-1900	1	1	11	Jar, cylindrical (jam etc.)
Pearlware	PEAR	1770-1840	9	8	38	Jug, plate
Pearlware with under-glaze blue-painted decoration	PEAR BW	1770-1820	3	3	29	Dinner and rectangular plates
Pearlware with under-glaze polychrome-painted decoration in 'earth' colours	PEAR EARTH	1790-1820	1	1	52	Deep rounded bowl
Pearlware with slip decoration	PEAR SLIP	1775-1840	7	5	138	Medium rounded bowl
Pearlware with transfer-printed decoration	PEAR TR	1770-1840	7	6	29	Rounded jug, plate, saucer
Pearlware with under-glaze colour transfer-printed decoration (green, mulberry, grey etc)	PEAR TR4	1825-1840	1	1	3	Saucer
Post-medieval red earthenware	PMRED		2	2	29	Flower pot
Refined white earthenware	REFW	1805-1900	2	2	8	-
Refined whiteware with under-glaze painted decoration	REFW PNTD	1805-1900	1	1	2	Bowl
White salt-glazed stoneware	SWSG	1720-1780	1	1	1	Bowl
Refined whiteware with under-glaze transfer-printed decoration	TPW	1780-1900	2	2	4	Plate
Refined whiteware with under-glaze brown or black transfer-printed decoration	TPW3	1810-1900	1	1	7	Dinner plate

Table 1. ARM17: post-medieval pottery types (and their forms) quantified by sherd count (SC), estimated number of vessels (ENV) and weight

### 6.1.3 Distribution

The distribution of the pottery is displayed in Table 2 and shows the contexts containing pottery, the size, number of sherds, ENV and weight, the earliest and latest date of the most recent pottery type (Context ED/LD) and a spot date for the group. All of the pottery was recovered from layers dated to Phase 2. The spot date of 1815–1835 is given to those contexts that contain as the latest items transfer-printed wares with European designs produced during that period.

Context	Description	Trench	Phase	SC	ENV	Wt (g)	Context ED	Context LD	Fabric and forms	Spot date
1				2	1	11	1770	1840	PEAR TR (rounded jug)	1780–1840
13				16	13	292	1790	1820	BLACK, CREA, PEAR, PEAR (plate), PEAR EARTH (deep rounded bowl), PEAR SLIP (medium rounded bowl), PEAR TR (saucer)	1815–1835
17				1	1	1	1720	1780	SWSG (bowl)	1720–1780
26				11	9	113	1770	1840	BBASG (teapot), BLACK, CREA, PEAR (plate), PEAR TR (plate), PMRED (flower pot)	1815–1835

Table 2. ARM17: Distribution of the pottery showing for each context the phase it occurs in, quantification by sherd count (SC), estimated number of vessels (ENV), weight and estimated vessel equivalents (EVEs) as well as the date range of the latest pottery type (Context ED/LD), the pottery types and forms present and a suggested spot date for the deposition of the deposit.

### 6.1.4 Significance, potential and recommendations for further work

The pottery has little significance at a local level consisting of fragmentary domestic wares largely of a 19th century date and frequently found in the Greater Manchester area. The pottery is comparable to other assemblages of post-medieval pottery that have been recovered from local archaeological excavations: Greengate Towers, Salford (Hughes 2007; Bradley 2014); Greengate Embankment, Salford (Jarrett 2015a) and 16 Chapel Street, Salford (Jarrett 2015b), besides previous excavations at the former BBC site, Oxford Road (Jarrett 2015c). The pottery has the potential to date the deposits it was recovered from. There are no recommendations for further work on the material at this stage and its importance should be reviewed if future archaeological work is undertaken on the site and new finds of pottery are retrieved.

#### 6.1.5 References

Bradley, J. 2014, *Greengate Towers, Salford. Archaeological analysis* (issue 2). Oxford Archaeology North unpublished document

Hughes, V. 2007. *Greengate Towers, Salford, Greater Manchester, archaeological investigation*. Oxford Archaeology North, unpublished document.

Jarret, C. 2015a. 'Pottery'. In: A. Goode and J. Proctor, *An Archaeological Excavation at The Exchange, Greengate Embankment, Salford, Manchester. Assessment Report*, Pre-Construct Archaeology limited unpublished report

Jarrett, C. 2015b. 'Pottery Assessment'. In: J. Taylor, *Assessment of Archaeological Investigations at 16 Chapel Street, Salford, Greater Manchester*. Pre-Construct Archaeology Limited unpublished report.

Jarrett, C. 2015c. 'Pottery Assessment'. In: A Goode, *The Former Bbc Site, Oxford Road, Manchester. An Archaeological Investigation*. Pre-Construct Archaeology Limited unpublished report No: R12300.

Museum of London Archaeology, 2014. Medieval and post-medieval pottery codes. Accessed February 23rd, 2017. <<http://www.mola.org.uk/resources/medieval-and-post-medieval-pottery-codes>>.

## 6.2 Glass assessment (ARM17)

*By Chris Jarrett, Pre-Construct Archaeology Limited*

- 6.2.1 There are only two glass items (308g) recorded. The first is an unstratified flat, thick walled fragment (5g) of clear glass, and probably represents part of a 19th-20th century dated window pane. It was found in the area of Trench 1. The second item is intact and was found in context [1] and consists of a moulded clear lead glass inkwell and it has a height of 42mm and a weight of 303g. The vessel has a short upright rim (28mm in diameter), which was cut at a slight angle with trimming shears, a wide rounded shoulder, a short cylindrical wall and a flat base (75mm in diameter). The base is very thick walled to prevent it from being knocked over, although the vessel has cracks in the base. The ink well would have had a copper alloy lid, which survives only as the circular mount (39mm in diameter, 7mm tall and weighing 16g) and the lower hinge



joint for the missing lid. This item dates to the 19th-20th century.

- 6.2.2 The assemblage is of little interest, despite the presence of the intact inkwell, which could have been used in either a clerical or domestic setting. The main potential of the glass is to date the context it was recovered from. There are no recommendations for further work on the assemblage, although if new glass is recovered from further archaeological work on the study area, then the importance of the inkwell should be reviewed.

### **6.3 Clay tobacco pipe assessment (ARM17)**

*By Chris Jarrett, Pre-Construct Archaeology Limited*

#### **6.3.1 Introduction**

A small sized assemblage of clay tobacco pipes was recovered from the site (less than one box). Most fragments are in a fragmentary, although good condition indicating that the majority of the material was deposited soon after breakage. Clay tobacco pipes were found in two contexts, as small sized (fewer than 30 fragments) groups.

All of the clay tobacco pipes (fifteen fragments, of which four are unstratified) were entered in to a database format file and classified using Oswald's (1975) typologies: prefixed OS for his general types. The pipes are further coded by decoration and quantified by fragment count. The tobacco pipes have been discussed by their types and distribution.

#### **6.3.2 Assemblage**

- 6.3.3 The clay tobacco pipe assemblage from the site comprises three bowls and twelve stems. The pipe bowls occur only as one type dated c.1820–1860 and all three bowls were smoked.

##### *The bowl types*

1820–1860

OS24: three spurred bowls, with a rounded front and straight back. A fragmentary bowl (context [13]) has slight ribs on the front and back of the bowl and the spur has been trimmed. The two other bowls in the assemblage have moulded decoration. The first of these bowls (context [13]) has leaf borders on the front and back of the bowl and moulded milling (in the style of English copies of Irish bowls) around the rim and found above a band of discrete shamrock leaves. This border occurs over a rectangular panel on each side of the bowl, that contains foliage borders surrounding a shamrock, while around the base there is pin-headed fluting of the same size contained within round ended borders. The mould used to make this bowl was worn and the two halves poorly fitted, while the initials on the spur may have been deliberately removed. This bowl type has also been recovered from 74-88 Great Ancoats Street, (unstratified: SF 433) (Jarrett 2017). The second decorative bowl (context [27]) has its spur missing. On the front of this bowl is recorded graduated sized fluting giving the appearance of a scallop shell-like motif. A leaf border occurs on the back of the bowl, while on the sides are depictions of branching plants.

## Stems

Four unstratified stems occur and these are fine to medium in thickness with medium sized bores and these may date to the 18th century or earlier. The eight stems found in context [13] are thin in thickness and mostly have thin bores and date to the 18th or 19th century, although they are most likely to be contemporaneous with the 19th-century bowls they were found with.

### 6.3.4 Distribution

Context Phase	Assemblage	No. of	Context considered			
	size	fragments	Context ED	Context LD	Bowl types (makers), etc.	date
13	S	10	1820	1860	x 2 OS24 bowls, x 8 stems	1820–1860
27	S	1	1820	1860	x 1 OS24 bowl	1820–1860

Table 1. Distribution of the tobacco pipes showing the number of fragments, the size of the assemblage, the date of the latest clay tobacco pipe bowl (Context ED and LD), the range of bowl types and a deposition spot date (context considered date) for each context

### 6.3.5 Significance, potential and recommendations for further work

The clay tobacco pipe assemblage from the evaluation have little significance, despite the fact that decorative bowls are present, crucially none of them are maker marked. The bowl types, decoration and their general poor finish are consistent with those found in Manchester. The main potential of the clay tobacco pipes are to date the context they were recovered from. There are no recommendations for further work on the bowls. However, should further archaeological work occur on the study area then the importance of the pipes recovered from the evaluation should be reviewed in the event of new material being recovered.

### 6.3.6 Reference

Jarrett, C. 2017 'Clay and Bakelite tobacco pipe assessment'. In. P. Jorgensen, Blossom Street, Block A, Manchester M4 5AF. An Archaeological Evaluation. Pre-Construct Archaeology Ltd unpublished document.

Oswald, A, 1975 Clay pipes for the archaeologist, BAR 14, Oxford

## 6.4 Building Materials (ARM17)

By Amparo Valcarcel, Pre-Construct Archaeology Limited

### 6.4.1 Assemblage

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date with mortar
0	MN1; OVG	Unfrogged machine brick ; opaque vitreous glass <i>tesserae</i>	20	1800	1900	1800	1900	1830-1910	No mortar
1	OVG;Glass	Glass and opaque vitreous <i>tesserae</i>	56	1800	1900	1800	1900	1800-1910	1850-1900

Context	Fabric	Form	Size	Date range of material		Latest dated material		Spot date	Spot date with mortar
				1800	1900	1800	1900		
2	OVG	Opaque vitreous glass <i>tesserae</i>	24	1800	1900	1800	1900	1800-1910	1850-1900
4	MN1	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	1850-1900
5	MN2	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	No mortar
6	MN1	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	No mortar
7	MN1	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	No mortar
13	MN2	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	1850-1900
14	MN1	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	No mortar
15	MN1	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	1850-1900
16	MN1	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	No mortar
19	MN1	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	1850-1900
20	MN1;MN2	Unfrogged machine brick	2	1800	1900	1800	1900	1830-1900	1850-1900
21	MN1	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	No mortar
22	MN1	Unfrogged machine brick	2	1800	1900	1800	1900	1830-1900	1850-1900
23	MN1	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	1850-1900
31	MN2	Unfrogged machine brick	1	1800	1900	1800	1900	1830-1900	1850-1900

#### 6.4.2 Review

The small assemblage (118 fragments, 49.60 kg) consists mainly of modern sample bricks (local red/orange sandy industrial bricks) and *tesserae*. The bricks are unfrogged and heavy, with sharp arises that suggests a machine manufacture. Two different fabrics are present: a red sandy fabric with small clay and iron oxide pellets inclusions (MN1); and an orange sandy fabric with flint inclusions (MN2). The bricks are bonded with a hard grey concrete dated from middle 19<sup>th</sup> to early 20<sup>th</sup> century.

A large group of *tesserae* was collected from [0] [1] and [2]. *Tesserae* are made by slate (black), marble (white), glass (golden) and opaque vitreous glass (grey, green, blue, yellow and red), and are bonded with a hard concrete. These types of mosaics were popular in high status houses at the beginning of 19th century to the beginning of 20th century, normally related to Art Nouveau.

#### 6.4.3 Recommendations

The value of this small assemblage shows an industrial activity between the early 19th century and early 20th century, probably related to the rapid industrial expansion in Manchester. The presence of *tesserae* probably indicates the existence of a high status house nearby. No further work recommended.

#### **6.5 Animal bone (ARM17)**

*By Karen Deighton, Pre-Construct Archaeology Limited*

A single bone fragment was recovered from context [24]. This was the proximal end of a cattle sized rib.

## **7 APPENDIX 3: RELEVANT GEOTECHNICAL RESULTS**



<b>NX Consulting</b>		Contract Name: Armstrong House, Manchester			Client: Bruntwood PLC			Borehole ID: BH01					
		Contract Number: NX299	Date Started: 20/02/2017	Logged By: KE	Start Date: 20/02/2017	End Date: 24/02/2017	Sheet 1 of 2						
T: 0161 904 0187 marknewton@nxconsulting.org.uk www.nxconsulting.org.uk		Easting:	Northing:	Ground Level (mAOD):	Hole Type: Cable Percussion			Scale: 1:50					
Drilling Contractor / Drillers Taylor Drilling Services. Ian and Deklan Taylor.				Method / Plant Used Commaccio 205 Rotary Drilling Rig / Water Flush			Weather / Ground Conditions Weather:						
Samples & In Situ Testing				Strata Details					Groundwater				
Depth	Sample ID	Test Result		Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/ Installation		
0.20	D				(0.40)		Black clayey silty organic sand with some roots (Topsoil - Made Ground)						
0.40					0.40		Old tarmac road (Drillers Description - Made Ground)						
0.70	D				0.60		Grey and light brown clayey silty fine to coarse sand (Made Ground)						
0.80 - 1.20	B				(0.70)					1			
1.50 - 1.95	B	SPT(S) 1.50m, 50 (8,10/50 for 235mm)			1.30		Very dense (probably cemented) light grey clayey silty fine sand (pulverized fuel ash - Made Ground)						
1.50 - 2.00	D									2			
2.20	D				(2.20)								
2.50 - 2.95	B	SPT(S) 2.50m, 50 (4,8/50 for 200mm)								3			
2.50 - 3.00	D												
3.20	D				3.50		Firm friable dark grey sandy gravelly clay. Gravel is fine to coarse angular to subangular brick and clinker. (Made Ground)						
3.50 - 3.95	B	SPT(S) 3.50m, N=11 (1,2/2,3,3,3)			(0.50)					4			
3.50 - 4.00	D				4.00		Firm to stiff becoming stiff greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded of mixed lithologies			4			
4.20	D												
4.50 - 4.95	U												
5.00	D						From 5.00m becoming stiff			5			
5.50	D				(3.00)								
6.00 - 6.45	B	SPT(S) 6.00m, N=45 (4,8/10,11,11,13)								6			
6.00 - 6.50	D												
7.00	D				7.00		Very dense reddish brown clayey silty fine to coarse SAND (probably residual sandstone)			7			
7.50 - 7.95	D	SPT(S) 7.50m, 50 (8,15/50 for 145mm)			(1.30)					8			
		SPT(S) 8.10m, 50 (25 for 115mm/50 for 125mm)			8.30		No recovery (AZCL)						
8.30 - 9.00	0	0	0		(1.35)					9			
9.00 - 10.50	57	42	30		9.65		Weak reddish brown fine to coarse grained SANDSTONE partially to distinctly weathered. Very closely to closely spaced			10			
	TCR	SCR	RQD	Fracture	Continued next sheet								
Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Hand Pit excavated to 1.20m bgl to clear services. Cable percussion drilling using 150mm OD casing and tools to 8.30m bgl. PX casing (139.7mm OD) installed to 8.30m. Coring undertaken using a PWF core barrel (120mm OD) in conjunction with core liner to 18.00m bgl. 87mm diameter core recovered. Installation comprised 0.50m plain pipe and 4.50m slotted pipe with gravel pack and bentonite seal, finished off at ground level with a flush cover set in concrete. Water flush used in rotary drilling will have masked any water strikes. Engineering descriptions to BS5930: 2015.				
Chiselling					Installation				Water Strikes				
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Depth Strike	Depth Casing	Depth Sealed	Time (mins)	Rose To (m)	Remarks
								3.30	3.00	3.40	20	3.20	





<b>NX Consulting</b> T: 0161 904 0187 marknewton@nxconsulting.org.uk www.nxconsulting.org.uk	Contract Name: Armstrong House, Manchester			Client: Bruntwood PLC			Borehole ID: BH02							
	Contract Number: NX299	Date Started: 21/02/2017	Logged By: KE	Start Date: 21/02/2017	End Date: 21/02/2017		Sheet 1 of 1							
Easting:		Northing:		Ground Level (mAOD):	Hole Type: Cable Percussion			Scale: 1:50						
Drilling Contractor / Drillers Taylor Drilling Services. MH and GE				Method / Plant Used Dando 2000 cable percussion rig			Weather / Ground Conditions Weather:							
Samples & In Situ Testing				Strata Details					Groundwater					
Depth	Sample ID	Test Result		Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/ Installation			
0.20	B				0.10		Cobble setts (Made Ground)							
0.20 - 0.30	D				0.20		Grey fine to coarse sand (Made Ground)							
0.50	B				0.30		Dark brown and black slightly clayey fine to coarse gravelly sand. Gravel is fine to coarse ash and brick (Made Ground)							
0.50 - 1.00	D						Friable brown sandy gravelly clay. Gravel is fine to coarse sandstone and ash and brick (Made Ground)							
1.00	B				(1.20)					1				
1.00 - 1.50	D													
1.50	B	SPT(S) 1.50m, N=7			1.50		Soft to firm dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded of mixed lithologies							
1.50 - 2.00	D	(1,0/1,2,2,2)								2				
2.20	D				(1.50)									
2.50 - 2.95	U													
3.00	D				3.00		Stiff locally firm brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded of mixed lithologies							
3.20	D									3				
3.50 - 3.95	B	SPT(S) 3.50m, N=12												
3.50 - 4.00	D	(1,2/2,3,3,4)								4				
4.20	D													
4.50 - 4.95	U													
5.00	D				(3.90)					5				
5.50	D													
6.00 - 6.45	D	SPT(S) 6.00m, N=31								6				
		(3,3/7,7,7,10)												
					6.90		Reddish brown clayey silty fine to coarse SAND. Laminae of brown sandy clay noted			7				
					(0.60)									
					7.50		Reddish brown fine to coarse SAND. Possibly weakly cemented			8				
					(1.00)									
					8.50		End of Borehole at 8.50m			9				
										10				
Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Hand Pit excavated to 1.20m bgl to clear services. Cable percussion drilling using 150mm OD casing and tools to 8.50m bgl. Installation comprised 0.50m plain pipe and 4.50m slotted pipe with gravel pack and bentonite seal, finished off at ground level with a flush cover set in concrete. Engineering descriptions to BS5930: 2015.					
Chiselling					Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks		Top (m)	Base (m)	Type	Dia (mm)	Depth Strike	Depth Casing	Depth Sealed	Time (mins)	Rose To (m)	Remarks
												0	0.00	No groundwater encountered.

<b>NX Consulting</b>		Contract Name: Armstrong House, Manchester			Client: Bruntwood PLC			Borehole ID: BH03					
		Contract Number: NX299	Date Started: 22/02/2017	Logged By: KE	Start Date: 22/02/2017	End Date: 26/02/2017	Sheet 1 of 3						
T: 0161 904 0187 marknewton@nxconsulting.org.uk www.nxconsulting.org.uk		Easting:		Northing:		Ground Level (mAOD):		Hole Type: Cable Percussion					
Drilling Contractor / Drillers Taylor Drilling Services. Ian and Deklan Taylor.		Method / Plant Used Commaccio 205 Rotary Drilling Rig / Water Flush				Weather / Ground Conditions Weather:							
Samples & In Situ Testing			Strata Details					Groundwater					
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/ Installation			
0.50 0.50 - 1.00	B D		0.19 0.30			Tarmacadam (Made Ground) Grey sandy fine to coarse gravel (Made Ground) Stone flags (Made Ground) Soft brown sandy clay and pockets of clayey fine to coarse sand (probable Made Ground)							
1.20 1.50 - 2.00	D D	SPT(C) 1.50m, N=29 (7,7/9,11,5,4)	(1.40)						1				
2.20 2.50 - 2.95	D U		1.70			Stiff locally firm to stiff brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded of mixed lithologies			2				
3.00 3.50 - 3.95 3.50 - 4.00	D B D	SPT(S) 3.50m, N=18 (3,4/4,4,5,5)				From 3.50m-5.00m firm to stiff			3				
4.20 4.50 - 4.95	D U								4				
5.00 6.00 - 6.45 6.00 - 6.50	D B D	SPT(S) 6.00m, N=19 (2,2/3,4,5,7)	(6.30)			From 6.00m-8.00m firm to stiff			5				
7.50 - 7.95	U								6				
8.00 8.50	D D		8.00			Stiff brown and reddish brown sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded of mixed lithologies			7				
9.00 - 9.45	D	SPT(S) 9.00m, 50 (4,6/50 for 170mm)	(1.20)						8				
			9.20			Very dense reddish brown clayey silty fine to coarse SAND (probably residual sandstone)			9				
			(1.30)						10				
Continued next sheet													
Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Hand Pit excavated to 1.20m bgl to clear services. Cable percussion drilling using 150mm OD casing and tools to 10.50m bgl. PX casing (139.7mm OD) installed to 10.50m. Coring undertaken using a PWF core barrel (120mm OD) in conjunction with core liner to 19.50m bgl. 87mm diameter core recovered. Installation comprised 0.50m plain pipe and 4.50m slotted pipe with gravel pack and bentonite seal, finished off at ground level with a flush cover set in concrete. Water flush used in rotary drilling will have masked any water strikes. Engineering descriptions to BS5930: 2015.				
Chiselling					Installation				Water Strikes				
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Depth Strike	Depth Casing	Depth Sealed	Time (mins)	Rose To (m)	Remarks
								3.00	3.00	3.10	20	2.85	

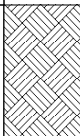
<b>NX Consulting</b>	Contract Name: Armstrong House, Manchester			Client: Bruntwood PLC			Borehole ID: BH03						
	Contract Number: NX299	Date Started: 22/02/2017	Logged By: KE	Start Date: 22/02/2017	End Date: 26/02/2017		Sheet 2 of 3						
T: 0161 904 0187 marknewton@nxconsulting.org.uk www.nxconsulting.org.uk	Easting:		Northing:		Ground Level (mAOD):	Hole Type: Cable Percussion		Scale: 1:50					
Drilling Contractor / Drillers Taylor Drilling Services: Ian and Deklan Taylor.			Method / Plant Used Commaccio 205 Rotary Drilling Rig / Water Flush			Weather / Ground Conditions Weather:							
Samples & In Situ Testing				Strata Details				Groundwater					
Depth	Sample ID	Test Result		Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description		Water Strike	Backfill/ Installation			
10.50 - 10.95 10.50	D D S	SPT(S) 10.50m, 50 (25 for 75mm/50 for 75mm)			10.50		No recovery (AZCL)						
10.50 - 12.00	0 0	0			(1.50)				11				
12.00 - 13.50	76 73	32			(1.50)		Very weak reddish brown fine to coarse grained SANDSTONE partially weathered. Very closely to closely spaced subhorizontal to 30 degree fractures (40, 90, 180) planar to undulating rough open with coating of sand and clay on surfaces.		12				
							◆At 12.80m 60 degree fracture planar rough open with approx 30% loss of core diameter around fracture		13				
							◆At 13.30m 60 degree fracture planar rough open with approx 30% loss of core diameter around fracture		14				
13.50 - 15.00	93 87	63			(1.50)		Weak reddish brown fine to medium grained SANDSTONE partially weathered. Very closely to medium spaced subhorizontal to 20 degree fractures (50, 120, 220) planar to undulating rough tight to open clean. Localised weathering around fracture surfaces reduces strength to very weak for up to 30mm into rock.		15				
15.00 - 16.50	80 20	0			(1.90)		Recovered as reddish brown coarse GRAVEL. Gravel is assessed as weak.		16				
16.50 - 18.00	96 73	68			(1.10)		Weak to medium strong reddish brown fine to coarse grained SANDSTONE partially weathered. Very closely to closely spaced subhorizontal to 10 degree fractures (20, 110, 180) planar to undulating rough tight to wide with some clay coating on surfaces.		17				
18.00 - 19.50	80 60	43			(1.20)		Recovered as reddish brown coarse GRAVEL. Gravel is assessed as weak.		18				
							Weak to medium strong reddish brown fine to medium grained SANDSTONE partially to distinctly weathered. Very closely to closely spaced subhorizontal fractures (20, 120, 180) planar to undulating rough tight to open. Localised diametrical core loss of up to 10% around fractures and strength reduction to very weak.		19				
					(0.50)		No recovery (AZCL)		20				
					20.00		Continued next sheet						
Start & End of Shift Observations				Borehole Diameter		Casing Diameter		Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Hand Pit excavated to 1.20m bgl to clear services. Cable percussion drilling using 150mm OD casing and tools to 10.50m bgl. PX casing (139.7mm OD) installed to 10.50m. Coring undertaken using a PWF core barrel (120mm OD) in conjunction with core liner to 19.50m bgl. 87mm diameter core recovered. Installation comprised 0.50m plain pipe and 4.50m slotted pipe with gravel pack and bentonite seal, finished off at ground level with a flush cover set in concrete. Water flush used in rotary drilling will have masked any water strikes. Engineering descriptions to BS5930: 2015.				
Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Depth Strike	Depth Casing	Depth Sealed	Time (mins)	Rose To (m)	Remarks
								3.00	3.00	3.10	20	2.85	



<b>NX Consulting</b>		Contract Name: Armstrong House, Manchester			Client: Bruntwood PLC			Borehole ID: BH04					
		Contract Number: NX299	Date Started: 23/02/2017	Logged By: KE	Start Date: 23/02/2017	End Date: 23/02/2017	Sheet 1 of 1						
T: 0161 904 0187 marknewton@nxconsulting.org.uk www.nxconsulting.org.uk		Easting:	Northing:	Ground Level (mAOD):	Hole Type: Cable Percussion			Scale: 1:50					
Drilling Contractor / Drillers Taylor Drilling Services. MH and GE			Method / Plant Used Dando 2000 cable percussion rig			Weather / Ground Conditions Weather:							
Samples & In Situ Testing				Strata Details					Groundwater				
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/ Installation			
0.00 - 1.00	B			(1.30)		Grass over soft brown sandy gravelly clay with medium cobble content and some black organic matter and rootlets. Gravel and cobbles are brick (Made Ground)			1				
1.50 - 2.00	B	SPT(C) 1.50m, N=20 (3,9/5,4,4,7)		1.30		Soft brown and grey sandy gravelly with some black organic matter and medium cobble content. Cobbles are brick (Made Ground)			2				
2.50 - 3.00	B	SPT(C) 2.50m, N=35 (1,7/7,9,10,9)		(3.00)				3					
3.50 - 4.00	B	SPT(C) 3.50m, 50 (3,5/50 for 295mm)						4					
		SPT(C) 4.30m, 50 (25 for 85mm/50 for 115mm)		4.30	At 4.30m obstruction no progress End of Borehole at 4.30m			5					
								6					
								7					
								8					
								9					
								10					
Start & End of Shift Observations			Borehole Diameter		Casing Diameter		Remarks:						
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Hand Pit excavated to 1.20m bgl to clear services. Cable percussion drilling using 150mm OD casing and tools to 4.30m bgl. Borehole terminated at 4.30m bgl due to obstruction. Re-drilled as BH04A. Engineering descriptions to BS5930: 2015.				
Chiselling			Installation				Water Strikes						
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Depth Strike	Depth Casing	Depth Sealed	Time (mins)	Rose To (m)	Remarks
											0	0.00	No groundwater encountered.

<b>NX Consulting</b>	Contract Name: Armstrong House, Manchester				Client: Bruntwood PLC			Borehole ID: BH04A					
	Contract Number: NX299	Date Started: 24/02/2017	Logged By: KE	Start Date: 24/02/2017	End Date: 27/02/2017		Sheet 1 of 3						
T: 0161 904 0187 marknewton@nxconsulting.org.uk www.nxconsulting.org.uk	Easting:		Northing:		Ground Level (mAOD):	Hole Type: Cable Percussion		Scale: 1:50					
Drilling Contractor / Drillers Taylor Drilling Services. Ian and Deklan Taylor.				Method / Plant Used Commaccio 205 Rotary Drilling Rig / Water Flush			Weather / Ground Conditions Weather:						
Samples & In Situ Testing				Strata Details					Groundwater				
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/ Installation			
0.10 - 1.00	B					Grass over soft brown sandy gravelly clay with medium cobble content and some black organic matter and rootlets. Gravel and cobbles are brick (Made Ground)							
0.50	D												
1.50 - 2.00	B	SPT(C) 1.50m, N=9 (1,1/2,2,2,3)		(3.20)									
2.20	D												
2.50 - 3.00	B	SPT(C) 2.50m, 50 (3,7/50 for 145mm)											
3.20	D			3.20									
3.50 - 3.95	U					Firm to stiff becoming stiff locally firm dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded of mixed lithologies							
4.00	D												
4.20	D												
4.50 - 4.95	B	SPT(S) 4.50m, N=15 (1,1/2,3,5,5)				From 4.50m becoming stiff							
4.50 - 5.00	D												
5.50	D			(4.80)		From 5.50m-5.95m locally appearing firm							
6.00 - 6.45	U												
6.50	D												
7.00	D												
7.50 - 7.95	B	SPT(S) 7.50m, N=34 (5,6/7,7,10,10)											
7.50 - 8.00	D												
8.00	D			8.00		Stiff reddish brown sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded of mixed lithologies							
8.50	D			(0.50)									
8.50	D			8.50		Very dense reddish brown clayey silty fine to coarse SAND (probably residual sandstone)							
9.00 - 9.45	D	SPT(S) 9.00m, 50 (4,5/50 for 275mm)		(2.00)									
10.00	D	TCR	SCR	RQD	Fracture	Continued next sheet							
Start & End of Shift Observations				Borehole Diameter		Casing Diameter		Remarks:					
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Hand Pit excavated to 1.20m bgl to clear services. Cable percussion drilling using 150mm OD casing and tools to 10.00m bgl. PX casing (139.7mm OD) installed to 10.00m. Coring undertaken using a PWF core barrel (120mm OD) in conjunction with core liner to 21.00m bgl. 87mm diameter core recovered. Installation comprised 0.50m plain pipe and 4.50m slotted pipe with gravel pack and bentonite seal, finished off at ground level with a flush cover set in concrete. Water flush used in rotary drilling will have masked any water strikes. Engineering descriptions to BS5930: 2015.				
Chiselling				Installation				Water Strikes					
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Depth Strike	Depth Casing	Depth Sealed	Time (mins)	Rose To (m)	Remarks
											0	0.00	No groundwater encountered.



<b>NX Consulting</b>	Contract Name: Armstrong House, Manchester				Client: Bruntwood PLC				Borehole ID: <b>BH04A</b>		
	Contract Number: NX299		Date Started: 24/02/2017		Logged By: KE		Start Date: 24/02/2017		End Date: 27/02/2017		
Easting:		Northing:		Ground Level:		Hole Type: Rotary OH & Core				Sheet 3 of 3 Scale: 1:50	
Drilling Contractor / Drillers Taylor Drilling Services. Ian and Deklan Taylor.				Method / Plant Used Commaccio 205 Rotary Drilling Rig / Water Flush				Weather / Ground Conditions Weather:			
Samples & In Situ Testing					Strata Details					Groundwater	
Depth	TCR	SCR	RQD	Fracture Index	Fracture Spacing	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description	Water Strike	Backfill/ Installation
19.50 - 21.00	100	100	80				21.00	.....			
									End of Borehole at 21.000m	21	
										22	
										23	
										24	
										25	
										26	
										27	
										28	
										29	
										30	
Start & End of Shift Observations					Water Strike Details				Remarks: Hand Pit excavated to 1.20m bgl to clear services. Cable percussion drilling using 150mm OD casing and tools to 10.00m bgl. PX casing (139.7mm OD) installed to 10.00m. Coring undertaken using a PWF core barrel (120mm OD) in conjunction with core liner to 21.00m bgl. 87mm diameter core recovered. Installation comprised 0.50m plain pipe and 4.50m slotted pipe with gravel pack and bentonite seal, finished off at ground level with a flush cover set in concrete. Water flush used in rotary drilling will have masked any water strikes. Engineering descriptions to BS5930: 2015.		
Date	Time	Depth (m)	Casing (m)	Water (m)	Water Strike Depth	Time Elapsed	SWL	Remarks			
Flush Information					Installation						
Top (m)	Base (m)	Flush Type	Return	Flush Colour	Top (m)	Base (m)	Type	Dia (mm)			



<b>NX Consulting</b>	Contract Name: Armstrong House, Manchester			Client: Brunwood PLC			Borehole ID: BH05						
	Contract Number: NX299	Date Started: 25/02/2017	Logged By: KE	Start Date: 25/02/2017	End Date: 26/02/2017	Sheet 1 of 3							
T: 0161 904 0187 marknewton@nxconsulting.org.uk www.nxconsulting.org.uk	Easting:		Northing:		Ground Level (mAOD):	Hole Type: Cable Percussion			Scale: 1:50				
Drilling Contractor / Drillers Taylor Drilling Services: MH and GE			Method / Plant Used Dando 2000 cable percussion rig			Weather / Ground Conditions Weather:							
Samples & In Situ Testing				Strata Details					Groundwater				
Depth	Sample ID	Test Result	Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/ Installation			
0.20	D			0.10 (0.30)		Tarmacadam (Made Ground) Grey fine to coarse gravel (Hardcore - Made Ground)							
0.50 - 1.00	B			0.40		Soft brown sandy very gravelly clay with occasional black amorphous organic matter. Gravel is fine to coarse brick and clinker (Made Ground)							
1.50 - 2.00	B	SPT(C) 1.50m, N=9 (1,3/3,2,2,2)		(1.20)					1				
2.20	D			1.60		Soft brown sandy clay with occasional black amorphous organic matter (Made Ground)			2				
2.50 - 2.95	U			(1.40)									
3.00	D			3.00		Firm locally firm to stiff and soft to firm dark brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded of mixed lithologies			3				
3.20	D												
3.50 - 3.95	B	SPT(S) 3.50m, N=42 (3,4/7,7,7,21)							4				
3.50 - 4.00	D												
4.20	D								5				
4.50 - 4.95	U												
5.00	D												
5.50	D			(5.30)		From 5.50m-6.00m soft to firm							
6.00 - 6.45	B	SPT(S) 6.00m, N=23 (2,3/5,5,6,7)							6				
6.00 - 6.50	D												
7.00	D								7				
7.50 - 7.95	U												
8.00	D								8				
8.50	D			8.30 (0.70)		Soft to firm dark brown sandy gravelly CLAY. Gravel is fine to coarse subangular to subrounded of mixed lithologies							
9.00 - 9.45	D			9.00 (1.50)		Very dense reddish brown clayey silty fine to coarse SAND (probably residual sandstone)			9				
Continued next sheet													
Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Hand Pit excavated to 1.20m bgl to clear services. Cable percussion drilling using 150mm OD casing and tools to 10.50m bgl. PX casing (139.7mm OD) installed to 10.50m. Coring undertaken using a PWF core barrel (120mm OD) in conjunction with core liner to 21.00m bgl. 87mm diameter core recovered. Installation comprised 0.50m plain pipe and 4.50m slotted pipe with gravel pack and bentonite seal, finished off at ground level with a flush cover set in concrete. Water flush used in rotary drilling will have masked any water strikes. Engineering descriptions to BS5930: 2015.				
Chiselling					Installation				Water Strikes				
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Depth Strike	Depth Casing	Depth Sealed	Time (mins)	Rose To (m)	Remarks
											0	0.00	No groundwater encountered.

<b>NX Consulting</b>	Contract Name: Armstrong House, Manchester				Client: Bruntwood PLC				Borehole ID: BH05				
	Contract Number: NX299		Date Started: 25/02/2017		Logged By: KE		Start Date: 25/02/2017		End Date: 26/02/2017				
T: 0161 904 0187 marknewton@nxconsulting.org.uk www.nxconsulting.org.uk		Easting:		Northing:		Ground Level (mAOD):		Hole Type: Cable Percussion		Sheet 2 of 3 Scale: 1:50			
Drilling Contractor / Drillers Taylor Drilling Services. MH and GE				Method / Plant Used Dando 2000 cable percussion rig				Weather / Ground Conditions Weather:					
Samples & In Situ Testing					Strata Details					Groundwater			
Depth	Sample ID	Test Result			Level (mAOD)	Depth (m) (Thickness)	Legend	Strata Description			Water Strike	Backfill/ Installation	
10.50	D D					10.50		No recovery (AZCL)					
10.50 - 12.00	0	0	0		(1.50)						11		
12.00 - 13.50	87	76	37		(1.50)			Very weak to weak reddish brown fine to medium grained SANDSTONE distinctly to partially weathered. Very closely to closely spaced subhorizontal to 20 degree fractures (20, 70, 120) planar to undulating rough open to wide. Wide fractures are up to 6cm and gravel filled.			12		
								From 13.05m-13.15m subvertical fracture planar rough. Core missing on one side of fracture			13		
								At 13.40m 60 degree undulating rough open fracture			14		
13.50 - 15.00	87	83	64		(1.50)			Weak to medium strong reddish brown fine to coarse grained SANDSTONE partially weathered to unweathered. Very closely to medium spaced subhorizontal to 15 degree fractures (40, 140, 270) planar to undulating rough open with some sand coating on surfaces.			15		
15.00 - 16.50	73	47	31		(0.80)			Recovered as reddish brown coarse GRAVEL. Gravel is assessed as weak.			16		
15.00 - 16.50						15.80		Weak reddish brown fine to coarse grained SANDSTONE partially weathered. Very closely to closely spaced subhorizontal to 30 degree fractures (10, 75, 200) planar to undulating rough tight to wide with some clay coating on surfaces. Strength reduction to very weak up to 30mm thick around fractures			17		
16.50 - 18.00	70	48	28		(3.70)						18		
18.00 - 19.50	95	87	69								19		
						19.50		Weak to medium strong reddish brown fine to coarse grained SANDSTONE partially weathered. Very closely to medium spaced subhorizontal to 20 degree fractures (40, 110, 300) planar to stepped rough open to wide clean. Strength reduction			20		
	TCR	SCR	RQD	Fracture	Continued next sheet								
Start & End of Shift Observations					Borehole Diameter		Casing Diameter		Remarks:				
Date	Time	Depth (m)	Casing (m)	Water (m)	Depth (m)	Dia (mm)	Depth (m)	Dia (mm)	Hand Pit excavated to 1.20m bgl to clear services. Cable percussion drilling using 150mm OD casing and tools to 10.50m bgl. PX casing (139.7mm OD) installed to 10.50m. Coring undertaken using a PWF core barrel (120mm OD) in conjunction with core liner to 21.00m bgl. 87mm diameter core recovered. Installation comprised 0.50m plain pipe and 4.50m slotted pipe with gravel pack and bentonite seal, finished off at ground level with a flush cover set in concrete. Water flush used in rotary drilling will have masked any water strikes. Engineering descriptions to BS5930: 2015.				
Chiselling					Installation				Water Strikes				
From (m)	To (m)	Duration	Remarks	Top (m)	Base (m)	Type	Dia (mm)	Depth Strike	Depth Casing	Depth Sealed	Time (mins)	Rose To (m)	Remarks
											0	0.00	No groundwater encountered.



# NX Consulting

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Trial Pit No  
**TP01**  
 Sheet 1 of 1

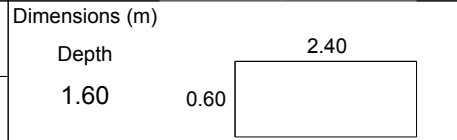
Project Name  
 Armstrong House, Manchester

Project No.  
 NX299

Coords: E: N:  
 Level:

Date  
 21/02/2017

Location: Manchester



Scale  
 1:25  
 Logged By

Client: Bruntwood PLC

Samples and In-Situ Tests			Depth (m)	Level (m OD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.40	ES		0.20			Cobble Setts (Made Ground)
			0.90			Friable brown sandy gravelly clay with pockets of clayey sand and medium cobble content. Gravel and cobbles are brick and concrete. (Made Ground)
1.00	B		0.90			Brown clayey gravelly sand with medium cobble and low boulder content. Cobbles and boulders are brick and concrete and sandstone blocks (Made Ground)
			1.60			Trial Pit Complete at 1.60m

**Remarks:** Stability: Unstable and collapsing from 1.00m bgl. Terminated at 1.60m bgl due to collapsing sides. Excavated using a JCB 3CX. Backfilled with excavated arisings on completion. Soils logged in accordance with BS5930 2015.

**Groundwater:** No groundwater encountered.

# NX Consulting

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Trial Pit No

**TP02**

Sheet 1 of 1

Project Name Armstrong House, Manchester	Project No. NX299	Coords: E: _____ N: _____ Level: _____	Date 21/02/2017
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Location: Manchester	Dimensions (m) Depth 2.00      0.60      2.40	Scale 1:25
Client: Bruntwood PLC	Logged By	

Samples and In-Situ Tests			Depth (m)	Level (m OD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.30	ES					Grass over black slightly clayey silty organic sand with many rootlets (topsoil - Made Ground)
1.30	ES		0.90			Whole bricks (probably cemented) with some matrix (25%) of ashy topsoil and roots (Made Ground)
			2.00			◆ At 2.00m obstruction encountered probable old concrete floor
						Trial Pit Complete at 2.00m

**Remarks:** Stability: Sides stable during excavation. Terminated at 2.00m bgl due to obstruction. Excavated using a JCB 3CX. Backfilled with excavated arisings on completion. Soils logged in accordance with BS5930 2015.

**Groundwater:** No groundwater encountered.

# NX Consulting

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Trial Pit No  
**TP03**  
 Sheet 1 of 1

Project Name Armstrong House, Manchester	Project No. NX299	Coords: E: _____ N: _____ Level: _____	Date 21/02/2017
Location: Manchester		Dimensions (m) Depth 2.20      0.60 <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px; vertical-align: middle;"></span> 2.40	Scale 1:25
Client: Bruntwood PLC			Logged By

Samples and In-Situ Tests			Depth (m)	Level (m OD)	Legend	Stratum Description
Depth (m)	Type	Results				
1.00	ES		0.40		[Cross-hatch pattern]	Grass over black slightly clayey silty organic sand with many rootlets (topsoil - Made Ground)
			1.30		[Cross-hatch pattern]	Friable yellowish brown very sandy gravelly clay with medium cobble and low boulder content. Cobbles and boulders are small to medium brick and sandstone blocks. (Made Ground)  ◆ At 0.90m with some black sand - possibly old topsoil
2.20 2.20	B ES		2.20		[Cross-hatch pattern]	Cemented grey silty fine sand (pulverized fuel ash - Made Ground)  Trial Pit Complete at 2.20m

**Remarks:** Stability: Sides stable during excavation. Terminated at 2.20m bgl due to slow progress in cemented pfa. Excavated using a JCB 3CX. Backfilled with excavated arisings on completion. Soils logged in accordance with BS5930 2015.

**Groundwater:** No groundwater encountered.



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Trial Pit No  
**TP05**  
 Sheet 1 of 1

Project Name Armstrong House, Manchester	Project No. NX299	Coords: E: _____ N: _____ Level: _____	Date 21/02/2017
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Location: Manchester	Dimensions (m) Depth 2.80      0.60 <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px; vertical-align: middle;"></span> 2.40	Scale 1:25
Client: Bruntwood PLC		Logged By

Samples and In-Situ Tests			Depth (m)	Level (m OD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.30	ES		0.40			Grass over black slightly clayey silty organic sand with many rootlets (topsoil - Made Ground)
1.00	ES					Bricks and sandstone blocks up to medium boulder sized with some (40%) grey clayey gravelly sand matrix (Made Ground)
						◆ From 0.90m brick wall / structure in side of pit
						◆ From 2.00m matrix becomes stiff friable clay with occasional slate gravel
2.50	B		2.30			Stiff friable brown slightly sandy CLAY (possible Made Ground)
			2.80			Trial Pit Complete at 2.80m

**Remarks:** Stability: Partial collapse during excavation. Terminated at 2.80m bgl. Excavated using a JCB 3CX. Backfilled with excavated arisings on completion. Soils logged in accordance with BS5930 2015.

**Groundwater:** No groundwater encountered.





## 8 APPENDIX 4: CONTEXT INDEX

Site_Code	Context	CTX_Type	Fill_of	Trench	CTX_Interpretation	CTX_Category	CTX_Length	CTX_Width	CTX_Depth	CTX_Level_s_high	CTX_Level_s_low	CCD_Start	CCD_End
ARM17	1	Layer		1	Made ground	Make-up	3.9	1.5		35.85	35.78	1850	1900
ARM17	2	Layer		1	Made ground	Make-up	1.4	1.2		35.78	35.78	1850	1900
ARM17	3	Masonry		1	Stone surface	Floor	3.9	1.5		35.84	35.84		
ARM17	4	Masonry		1	Brick foundation	Foundation	2	0.42		35.8	35.8	1850	1900
ARM17	5	Masonry		1	Brick footing	Wall	1.3	0.16		35.79	35.79	1830	1900
ARM17	6	Masonry		3	Curvilinear brick footing	Wall	1.22	0.21		35.58	35.58	1830	1900
ARM17	7	Masonry		3	Fireplace set into footing [6]	Other	1.06	0.1		35.57	35.57	1830	1900
ARM17	8	Natural		2	Natural clay	Natural	3.27	1.5		35.31	35.08		
ARM17	9	Natural		2	Natural gravel	Natural	0.56	0.54		35.18	35.18		
ARM17	10	Layer		2	Demolition deposit	Demolition	0.56	0.78	0.27	35.48	35.27		
ARM17	11	Layer		2	Brickearth like subsoil	Other	1.12	0.52		35.31	35.18		
ARM17	12	Layer		2	Brickearth like subsoil	Other	1.17	1.17		35.28	35.28		
ARM17	13	Fill	18	2	Fill of [18]	Backfill	1.32	0.9	0.15	35.31	35.31	1850	1900
ARM17	14	Masonry	16	2	Brick foundation	Foundation	0.5	0.36	0.07	35.24	35.21	1830	1900
ARM17	15	Masonry	17	2	Brick footing	Foundation	1.1	0.24	0.15	35.37	35.37	1850	1900
ARM17	16	Cut		2	Construction cut for [14]	Construction Cut	0.5	0.36	0.07	35.21	35.15	1830	1900
ARM17	17	Cut		2	Construction cut for [15]	Construction Cut	2.1	0.24	0.15	35.35	35.2	1720-1780	
ARM17	18	Cut		2	Linear cut	Other	1.34	0.9	0.15	35.35	35.35		

Site_Code	Context	CTX_Type	Fill_of	Trench	CTX_Interpretation	CTX_Category	CTX_Length	CTX_Width	CTX_Depth	CTX_Level_s_high	CTX_Level_s_low	CCD_Start	CCD_End
ARM17	19	Masonry		3	Drain support	Drain	0.49	0.1		35.6	35.6	1850	1900
ARM17	20	Masonry		3	Brick footing	Foundation	1.77	0.33		35.59	35.59	1850	1900
ARM17	21	Masonry		3	Brick footing	Foundation	0.87	0.24		35.59	35.59	1830	1900
ARM17	22	Masonry		3	Brick footing	Foundation	2.1	0.21		35.66	35.66	1850	1900
ARM17	23	Masonry		3	Brick footing	Foundation	0.92	0.24		35.66	35.66	1850	1900
ARM17	24	Layer		3	Rubble fill inside fireplace [7]	Demolition	0.96	0.48		35.54	35.54		
ARM17	25	Layer		3	Backfill of cellar	Demolition	1.06	0.46		35.57	35.57		
ARM17	26	Layer		3	Made ground	Make-up	3.48	1.8		35.54	35.53	1815	1835
ARM17	27	Layer		2	Redeposited brickearth Bedding for [29]	Make-up	1.32	0.9	0.14	35.44	35.35	1820	1860
ARM17	28	Layer		4		Bedding	0.94	0.9	0.18	35.85	35.85		
ARM17	29	Masonry		4	Stone floor	Floor	0.9	0.6	0.06	35.93	35.93		
ARM17	30	Masonry		4	Stone floor	Floor	0.5	0.2	0.06	35.82	35.82		
ARM17	31	Masonry		4	Brick footing	Foundation	1.1	0.12		35.68	35.68	1850	1900

# PCA

## **PCA SOUTH**

UNIT 54  
BROCKLEY CROSS BUSINESS CENTRE  
96 ENDWELL ROAD  
BROCKLEY  
LONDON SE4 2PD  
TEL: 020 7732 3925 / 020 7639 9091  
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## **PCA NORTH**

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## **PCA CENTRAL**

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BREWERY ROAD, PAMPISFORD  
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## **PCA WEST**

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## **PCA MIDLANDS**

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