



ALBION SQUARE, WHITEHAVEN, CUMBRIA

**Archaeological
Evaluation,
Excavation,
and Watching Brief**



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CONTENTS

SUMMARY	3
ACKNOWLEDGEMENTS.....	5
INTRODUCTION	6
1.1 Circumstances of the Project	6
1.2 Location, Topography, and Geology	6
1.3 Aims and Objectives	7
2. METHODOLOGY.....	11
2.1 WSI/Project Design	11
2.2 Location	11
2.3 Methodology	12
2.4 Finds and Samples	13
2.5 Archive	13
3. BACKGROUND.....	15
3.1 Introduction.....	15
3.2 Historical Background	15
4. RESULTS	24
4.1 Introduction.....	24
4.2 Phase 0 (Natural geology)	25
4.3 Phase 1 (Gardens and Domestic Structures, c 1660-1781).....	25
4.4 Phase 2: The Soapery and Contemporary Structures (c 1781-1854).....	26
4.5 Phase 3 (Intermediate Phase Including Bakery 1854-1866).....	29
4.6 Phase 4 (Phoenix Foundry 1866-1930)	29
4.7 Phase 5 (Hanratty's Yard, 1930-Present)	32
4.8 Undated Modifications and Features	32
4.9 Finds	32
4.10 Plant Remains and Charcoal	35
5. DISCUSSION.....	37
5.1 Introduction.....	37
5.2 Early Activity.....	37
5.3 The Soapery	38
5.4 Domestic Activity and the Bakery.....	39
5.5 The Foundry.....	40
5.6 Review of Research Aims	41

5.7	Potential for further work	41
6.	BIBLIOGRAPHY	42
6.1	Primary Sources (Whitehaven Archive and Record Office (WRO))	42
6.2	Published Cartographic Sources	42
6.3	Secondary Sources	43
	APPENDIX 1: WYG WSI.....	45
	APPENDIX 2: SUMMARY OF CONTEXTS	46
	APPENDIX 3: FINDS CATALOGUE.....	53
	ILLUSTRATIONS	55
	List of Figures	55
	List of Plates	55

SUMMARY

In 2010 Copeland Borough Council submitted planning application to redevelop two parcels of land site located to the north and south of Albion Street, Whitehaven, Cumbria (NGR NX 9713 179). In recognition of the archaeological potential of the site, Cumbria County Council Historic Environment Service (CCCHES) requested that any groundworks associated with the preparation and redevelopment of the site should be preceded by an appropriate scheme of archaeological works. Subsequently Energy Coast West Cumbria (Properties) Ltd (ECWC) acquired the site and implemented the design and construction of enabling works to allow the construction of the proposed development to commence. The enabling works included the evaluation and investigation of the North site as it was considered by CCHES that the North Site held archaeological potential.

On behalf of ECWC, WYG Engineering Ltd (WYG) commissioned Oxford Archaeology North (OA North) to undertake a trial-trench evaluation and a targeted open-area excavation at the site between May and August 2012. An intermittent watching brief took place in December 2012 and February 2013.

Documentary study identified that the site had been held as a free-hold tenancy in the mid-seventeenth century, with development along its eastern edges (along Old Town, now Swingpump Lane) present by 1699. Over the course of the next century, the street frontages to the east, south (Albion Street) and west (Rosemary Lane) were developed, and by 1790 the entire plot was densely occupied, but for allotments along its northern edge. Although the street fronts were largely occupied by domestic properties and at least one public house, the core of the plot was given over to industry. A complex of buildings were used as a soapery from at least 1790, and probably earlier, as the soapery warehouse on the Albion Street frontage was used as a Methodist Chapel from 1781. The soapery closed in *c* 1854, the premises briefly housing a bakery until 1866, when the site was occupied by the Phoenix Foundry. In 1930 the site was used as a reclamation yard, first for a rag merchants and then for scrap metals.

Nine trial trenches, open-area excavation (539m²) and localised watching brief, revealed evidence of the soapery and the foundry within the heart of the site and on Rosemary Lane, as well as domestic structures on, or behind, the street front. An early plot boundary and buried soils relating to the use of the plot for eighteenth-century horticulture were also identified. A substantial part of the soapery's footprint was exposed, including the warehouse, a base for a putative ash mill, and a boiler house, as well as several other buildings of uncertain function, all arranged around a northern courtyard. Several of these buildings represented the original eighteenth-century fabric, whilst others were clearly modifications enacted over the first half of the nineteenth century. Internal fittings rarely survived. Evidence for the bakery was limited to an oven built into a standing wall, but it was possible to identify extensive remains associated with the early use of the foundry, which initially appears to have used the soapery boilers for power. Documented changes to north range in 1892 were observed only occasionally, with evaluation trenches investigating the base of the foundry chimney and revealing engine beds in the north range. Other parts of the north range showed signs of deep truncation and contamination.

The majority of domestic activity was represented by the remains of buildings (walls and stone surfaces, but also a cellar on Albion Street) and three stone-lined wells,

mostly identified around the edges of the site. Such remains were well preserved in patches, but, being shallowly founded, were vulnerable to later development.

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OA North is grateful to the staff of Whitehaven Archive and Records Office, particularly Robert Baxter, Mary Chisholm, Jenny Lister and Lesley Park, for their assistance in providing images and information relating to the historic background of Albion Street. We are particularly appreciative of Dave Banks, Brenda and Michael Di Blasio, Ronnie Calvin, Sarah Flynn, Derek Hamson, Gerald McGlennon and Gerald Rumney; all members of the community who expressed interest and enthusiasm in the excavation, and who shared their local knowledge and memories of the area.

The archaeological evaluation and excavation was undertaken by Caroline Raynor with the assistance of John Onraet, Aidan Parker, and Becky Wegiel, whilst the watching brief was conducted by Becky Wegiel and David Maron. The survey was undertaken by Caroline Raynor whilst the aerial photography was undertaken by Jamie Quartermaine. The report was written by Caroline Raynor and Becky Wegiel and illustrated by Mark Tidmarsh. The project was managed by Stephen Rowland, who also edited the report.

INTRODUCTION

1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 In 2010 Copeland Borough Council submitted a planning application for the redevelopment of two derelict plots of land either side of Albion Street, Whitehaven, Cumbria (NGR NX 9713 1791; Fig 1). A desk-based assessment (CFA 2010) identified that the northern plot (henceforth ‘the site’) had been held as a free-hold tenancy in the seventeenth century, and was occupied by an eighteenth-century soapery and the nineteenth-century Phoenix Foundry. In recognition of the archaeological potential of the site, Cumbria County Council Historic Environment Service (CCCHES), the county council’s department responsible for advising local planning authorities on heritage matters, requested that any groundworks associated with the preparation and redevelopment of the site should be preceded by an appropriate scheme of archaeological works.
- 1.1.2 Subsequently Energy Coast West Cumbria (Properties) Ltd (ECWC) acquired the site and implemented the design and construction of enabling works to allow the construction of the proposed development to commence. The enabling works included the evaluation and investigation of the North site as it was considered by CCHES that this area held archaeological potential.
- 1.1.3 The archaeological works comprised a Level 2 building survey of the standing remains and structures within and around the development site (Cracknell 2012), and a trial-trench evaluation (OA North 2012). Significant archaeological remains were identified in several evaluation trenches across the site, and, accordingly, CCCHES requested that those within the central part of the site should be expanded to create an open area that would be investigated as a formal excavation. An intermittent watching brief was also undertaken during development groundworks. On behalf of ECWC, WYG Engineering Ltd (WYG) commissioned Oxford Archaeology North (OA North) to undertake the evaluation and excavation between May and August 2012, and the watching brief in December 2012 and February 2013. The following report presents the results of OA North’s works at the site.

1.2 LOCATION, TOPOGRAPHY, AND GEOLOGY

- 1.2.1 The site lies within an urban context and is located at the western edge of Whitehaven’s Old Town (Plate 1). It is bounded to the south by Albion Street; to the north by Harmless Hill and a 1970s multi storey car park; to the west by the steep incline of Rosemary Lane; and the east by Swingpump Lane, which, although retaining its original street name, is now on a much-altered orientation following the creation of a one-way system around the town (Fig 1).
- 1.2.2 The site slopes gently from north to south and from west to east, but the steep slopes to the north and west of the site could suggest that the natural topography was a little more severe and that there has been a certain amount of modification to the site’s ground levels. The geology of the site is mixed and comprises Westphalian Coal Measures overlain by alluvial and fluvioglacial deposits infilling a deep buried glacial valley.

- 1.2.3 At the start of the project, the site was occupied by several structures, some of which will be retained within the final development scheme. These include the Phoenix Foundry's square sandstone chimney at the western limit of site (Plate 2), and, running along Rosemary Lane, a boundary wall that once formed the lower façade of eighteenth- to nineteenth-century domestic dwellings on that thoroughfare. One property, the Dusty Miller Public House, remains upstanding at the south-east corner of the site. This is the last of numerous dwellings, warehouses and public houses with frontages on Albion Street and Swingpump Lane. Within the site itself, several of the foundry walls stood to near full height, and were recorded prior to demolition (Cracknell 2012), whilst parts of levelled walls and patches of cobbled surfaces were visible in places.

1.3 AIMS AND OBJECTIVES

- 1.3.1 **Introduction:** in order to maximise the potential of the heritage resource, archaeological projects are strategic in nature, with a series of clearly defined aims, often posed as research questions, and objectives, which are the practical means formulated to address the research questions. These aims and objectives are modified and developed to meet the requirements of the project and the confines of the available data. The research aims and objectives presented below (*Sections 1.3.5-6*) were devised in recognition of the understanding of the investigation area at the start of the project, but the themes can be developed or modified should the investigation identify remains that are different in character or date to those thought to lie within the site.
- 1.3.2 **Research Context:** in order to formulate the aims and objectives of the project, it is necessary for the site to be placed within an appropriate research context. This context is provided by the *North West Regional Research Framework* (Brennand 2006; 2007), which seeks to highlight areas where knowledge and understanding is lacking, or limited, and devise research themes that address those lacunae. On the basis of the map regression, a limited programme of desk-based research, watching brief and trial-trench evaluation, the principal archaeological resource on the site can be defined as:
- Structures and features associated with a soapery, which is thought to have been a significant industrial concern founded in the eighteenth century and which may have continued in use into the nineteenth century;
 - Structures and features associated with the Phoenix Foundry and Engineering Works, which was established on the site in 1866 and was in use until at least 1905;
 - Domestic properties around the margins of the development site;
 - Other structures of as-yet unknown function.
- 1.3.3 **Research Themes:** all these features are thought to belong to the later post-medieval and Industrial periods and, accordingly, the following initiatives presented in the Post-medieval and Industrial Period Research Agendas (Newman and McNeil 2007; McNeil and Newman 2007) are considered pertinent:

- *Initiative 6.10*: ‘Sample appropriate deposits for palaeo-environmental evidence wherever possible to gain information on the exploitation of plants and animals...’ (Newman and McNeil 2007, 119);
- *Initiative 6.25*: ‘Early industries should be studied in relation to their landscape setting Sample appropriate deposits for palaeo-environmental evidence wherever possible to gain information on the exploitation of plants and animals...’ (Newman and McNeil 2007, 128);
- *Initiative 7.7*: ‘Study the material culture of industrial workers’ households...’ (McNeil and Newman 2007, 139);
- *Initiative 7.24*: ‘Need to excavate urban cellars to examine life ‘below stairs’ in the middle class house and cellar dwellings and workshops in working class houses’ (*op cit*, 146);
- *Initiative 7.25*: ‘Where threatened with possible redevelopment excavations are required of now undeveloped and cleared former working class areas regarded as slums’ (*op cit*, 147);
- *Initiative 7.35*: ‘Industry specific studies are needed for those industries that have received little archaeological attention...Equally, more research is needed into the smaller but highly significant nineteenth and twentieth century workshop based industries...’ (*op cit* 154);
- *Initiative 7.41*: ‘The retention of later period artefacts and their routine analysis as part of all archaeological excavation projects’ (*op cit*, 156).
- *Initiative 7.44*: ‘Build upon the archaeological investigation of warehousing undertaken this far in the region to examine warehousing in towns and establish regional distribution patterns and typologies’ (*ibid*).

1.3.4 At a local level, it is clear that Whitehaven is an important historic town. However, much study has focused on the seventeenth- and eighteenth-century planned town, whereas the peripheral location occupied by the present development site, and the industries hosted there, have received very little attention. The town was a significant port, but little is known of the local industries that supported that facility and its ships; even less is known about the soapery, or, indeed, the archaeology and history of soaperies in general.

1.3.5 **Research Aims**: by considering the above themes and initiatives, the following research questions (RQ) can be posed to inform and guide the strategies implemented during the project:

- RQ1** What is the nature, date, density and extent of the archaeological remains on the site, and can they be understood in terms of their sequence, relationships and their functions?
- RQ2** Is it possible to define, quantify and interpret evidence for specialised economic, craft-production or industrial activity on the site, and relate them to specific structures?
- RQ3** What aspects of the layout and organisation of the soapery be recovered, understood and interpreted, particularly in terms of development over

time, functional areas, and their inter-relationships? Put simply, what can we say about the way the soapery functioned?

- RQ4** What aspects of the layout, powering and organisation of the foundry be recovered, understood and interpreted, particularly in terms of development over time, functional areas, and their inter-relationships?
- RQ5** What evidence is there for other industrial processes on the site, and how can these be understood in terms of the historical development of the site?
- RQ6** What can be understood about the nature of domestic occupation on the site, particularly in terms of the origin, longevity and quality of domestic structures, any relationships or integration that might have been shared with the industrial sites (both in terms of their origins and their subsequent contemporary use) and the status, living conditions and lifestyles of the inhabitants?
- RQ7** How can the results of the investigation be made available to the wider public in an accessible form, whilst undertaking appropriate archiving of the artefacts and primary data?

1.3.6 **Overall Research Objectives:** the following over-arching objectives have been formulated with reference to the research questions (*Section 3.3*), which are referenced in parentheses at the end of each objective.

- ROa** To undertake an appropriate level of archaeological investigation across the extent of the preserved archaeological remains, thus allowing the definition, characterisation, comprehension and interpretation (including function, relative sequence and processes of formation) of all observed deposits and features, and their basic preservation by record through the textual, graphical and electronic techniques (all RQs).
- ROb** To undertake an appropriate finds recovery programme to maximise the collection of artefacts from the site and record their stratigraphic context (all RQs).
- ROc** To undertake, following advice from EH, a suitable programme of palaeoenvironmental sampling of well-stratified and uncontaminated deposits where these can be informative about the nature of industrial activities on site (all RQs);
- ROd** Collate and check site records and process, digitally synthesise and present the site survey data, base mapping and photographs within a computer package to create a series of detailed site plans by phase (all RQs).
- ROe** Using the processed data, organise feature, structure and phase groups, and undertake a rapid analysis and interpretation of the on-site stratigraphy. This will permit the best possible understanding of the physical form and functions of, and relationships between, the different individual and composite elements of the site, provision of a chronological framework and also the formulation of an holistic narrative of the site (all RQs).

- ROf** Undertake processing, cataloguing, stratigraphic integration and any appropriate analysis of the artefacts recovered from the fieldwork, in terms of date, origin, quality, form, fabric and function, presence and nature of residues, spatial distribution, preservation, residuality, provenance and comparison with other sites in the region (RQ1-6).
- ROg** Process, assess then undertake any appropriate palaeoenvironmental and sedimentological analyses of any bulk and monolith samples taken from the excavation. This will allow a better understanding of on-site activity, as well as maximising recovery of artefacts and faunal remains (RQ2-6).
- ROh** Undertake processing, cataloguing, stratigraphic integration, assessment and then any appropriate analysis of the faunal (including fish) remains recovered from the fieldwork, in terms of preservation, taphonomy, and general spatial distribution, as well as the range and proportion of taxa and the selection of specific elements where these relate to consumption on site, or to specific industrial processes (RQ2-6).
- ROi** Undertake a brief programme of documentary research of readily available primary and secondary sources, such as trade directories, census returns, *etc*, that should permit a greater understanding of the activities and occupants hosted by the site (all RQ).
- ROj** Compare and, where appropriate integrate, the overall results with the findings from studies of contemporary sites in the region and, where appropriate, further afield (all RQ).
- ROk** Collate and publish in an appropriate medium the results of the analysis of the archaeological project, and submit the final archive (RQ7).

2. METHODOLOGY

2.1 WSI/PROJECT DESIGN

2.1.1 The CCCHES-approved WYG written scheme of investigation (WSI) for the evaluation (*Appendix 1*), and the OA North project design for the excavation (OA North 2012) were adhered to during the relevant stages of the project. Variations from the original scheme of works involved changes to the position and sizes of several trenches in order to accommodate access requirements and to avoid live services. In addition, several trenches were expanded in an attempt to characterise the extent of features found to continue beyond the original bounds of the intervention. Throughout, close liaison was maintained with CCCHES and the WYG Archaeologist and Project Manager, and all work was consistent with the relevant Institute for Archaeologists (IfA) and English Heritage (EH) guidelines (IfA 2008a, 2008b, 2010; EH 2006).

2.2 LOCATION

2.2.1 **Evaluation:** nine targeted trial trenches were situated in order to identify the date, character, significance and state of preservation of sub-surface archaeological remains at key points of the site (Fig 2). All were at least 2m wide, and between 5m and 15m in length. Further to the excavation of the original nine trenches, adjacent Trenches 2 and 5 were expanded to encompass all of the intervening space between them (producing Trench 5X). In addition, Trenches 3 and 7 were expanded.

Trench	Aim	Proposed Dimensions	Final Dimensions	Notes
1	Located in the north-west of the site above the foundry chimney to target the North Range and potential flues or other features connected to the chimney which might provide evidence of the industrial systems	2mx15m	2mx15m	Moved 1.5m south-east due to services
2	Located within the central range of buildings to assess the archaeological remains and historical uses, including the soapery	2mx10m	2mx10m	
3	Located to the east of North Range and East Range to assess the development of Old Town as recommended in the desk-based assessment	2mx10m	2mx10m	Moved south to avoid GW monitoring point
3X	Additional to original scope, to investigate eastern extent of structures identified in Trench 3		2mx6m	
4	Located within the West Range to assess the archaeological remains and historical uses	2mx10m	3mx5.1m	Moved 3m north-east and reshaped due to services
5	Located within the central range of buildings to assess the archaeological	2mx10m	2mx10m	

	remains and historical uses, including the soapery			
5X	Additional to original scope, conjoining Trenches 2 and 5 to investigate structures identified therein		6mx10m	
6	located adjacent to the chimney to assess the foundations of the chimney, evidence of flues and the potential remains associated with a cast iron column	2mx3m	2mx3m	
7	Located to assess the foundations of the Dusty Miller public house and the former properties along the eastern boundary	2mx10m	2mx10m	Moved 3m northward to avoid pub foundations
7a	Small trial pit to assess the foundations of the Dusty Miller		0.5mx0.5m	
7X	Additional to original scope, to investigate eastern extent of structures identified in Trench 7		2mx6m	
8	Located along the Albion Street frontage to assess the properties along this road	2mx15m	4.1mx5.3m	Moved slightly northward to avoid services and 5m to west to encompass safely a complete cellar
9	Located within the North Range to assess the archaeological remains and historical uses	2mx5m	2mx5m	Moved 6m to west due to spoil heap

Table 1: Summary of evaluation trench locations as proposed and excavated

2.2.2 Excavation: the primary aim of the excavation was to expose, identify and record the remains of eighteenth and nineteenth-century industrial and associated structures and deposits. Accordingly, the area of Trenches 2, 5 and 5X was expanded to measure 22.75m by 34.5m, encompassing a substantial proportion of the former industrial complex, and with excavations reaching a maximum of 2m below the modern ground level (Fig 2; Plate 3).

2.2.3 Watching brief: the intermittent watching brief was undertaken in two stages. The first comprised the recording of several wells revealed by groundworks within the eastern part of the site, close to Swingpump Lane (Fig 2). The second involved the monitored excavation of an area 11m by 4m against the western boundary wall of the site, encompassing Evaluation Trench 6.

2.3 METHODOLOGY

2.3.1 Similar methods were used during the evaluation, the excavation and the second stage of the watching brief. The modern overburden was removed under archaeological supervision using a 360 mechanical excavator that alternately used a narrow-bladed bucket and a ditching bucket. The deposits were removed in a controlled manner, typically 0.05m at a time, to allow the identification of any stratification of deposits and features. Where structural remains were encountered, machine excavation was halted and the features were exposed by

hand-digging and cleaned for recording. Where man-made features were not encountered, and where practicable to do so, the area was reduced to the level of the underlying natural geology.

- 2.3.2 **Recording:** the ‘preservation by record’ of all features of archaeological interest was achieved by the generation of a comprehensive archive, in accordance with the standard and guidance for archaeological evaluations and excavations produced by the Institute for Archaeologists (2009a; 2009b). All features and deposits were recorded stratigraphically on OA North *pro-forma* sheets, using a system adapted from that used by the Centre for Archaeology Service of English Heritage, with suitable accompanying graphic documentation (surveyed plans, elevations and sections at appropriate scales).
- 2.3.3 An indexed photographic record of individual contexts, feature groups, and overall site shots from standard view points, was maintained using high-resolution digital photography and monochrome print film, and the inclusion of a visible, graduated metric scale. In addition, a series of high-resolution aerial photographs were taken with 18 megapixel resolution digital cameras.

2.4 FINDS AND SAMPLES

- 2.4.1 Finds recovery and sampling programmes were carried out in accordance with best practice, following the current IfA and English Heritage (2011) guidelines, and subject to expert advice in order to minimise deterioration. All artefacts recovered from the evaluation and excavation trenches were retained and assessed. The finds were assessed as part of the post-excavation programme by an in-house specialist from Oxford Archaeology North.
- 2.4.2 **Environmental bulk sediment samples:** two bulk samples, from fills **1090** and **1084** of ditch segments **1083** and **1089** were processed for environmental assessment. Ten litres of each sample were disaggregated in water by hand, with the light fraction (flot) collected on a 250µm mesh and the dense residue collected within a series of graded sieves; both fractions were allowed to dry. The flots were scanned with a Leica MZ6 stereo microscope and any plant material was provisionally identified where possible; botanical nomenclature followed Stace (2010). Plant remains were scored on a scale of abundance of 1-4, where 1 is rare (up to five items) and 4 is abundant (>100 items). The components of the matrix were recorded as present (+) or abundant (++)

2.5 ARCHIVE

- 2.5.1 The results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current English Heritage guidelines (*Management of Research Projects in the Historic Environment*, 2006). Any finds suitable for retention will be deposited with the Tullie House Museum, Carlisle, whilst the original record archive of the project will be deposited with either that institution, or the Cumbria Record Office (Whitehaven). Copies of the final report will be lodged with the Cumbria Historic Environment Record, Kendal.

- 2.5.2 The Arts and Humanities Data Service (AHDS) online database *Online Access to index of Archaeological Investigations* (OASIS) will be completed as part of the archiving phase of the project.

3. BACKGROUND

3.1 INTRODUCTION

- 3.1.1 The following section presents a brief summary of the historical and archaeological background to the development site in order to place the findings within context. Due to the nature of the findings, it concentrates on the post-medieval and industrial periods, although information relating to earlier activity in the vicinity of the site can be found elsewhere (CFA 2010).

3.2 HISTORICAL BACKGROUND

- 3.2.1 Although Whitehaven was a medieval port, the town's fortunes fluctuated until the area was acquired incrementally by the Lowther family between c 1600 and 1666 (Nicolson and Burn 1777, 43). The presence of local salt and coal resources meant that the town was well-placed for the export of such goods from the Lowther family's estates to Ireland and beyond, in return receiving large volumes of foreign imports (Routledge 2002, 14). Accordingly, the town's first pier was constructed between 1633 and 1634; it is possible that the street grid was laid out soon after. Between 1685 and 1702 the population of Whitehaven virtually tripled from 1089 to 2972 inhabitants, peaking at around 16,000 in 1785 as the town became one of England's seven most important ports outside of London. Indeed, Whitehaven's tobacco trade, which reached its zenith in around 1740, was outstripped only by London, whilst the winning and export of coal was second only to Newcastle (Barfoot and Wilkes 1794; Collier 1991, 2-3). Slavery, too, was important, so that 'Whitehaven merchants were probably the fifth largest group of slave traders in Britain in 1750-1769' (Richardson and Schofield 1992, 184).
- 3.2.2 The development site is located within Whitehaven's early seventeenth-century settlement, known as *Old Town* (Plate 4), which radiated outwards from the south and west side of the harbour and market place and pre-dated the more formal street grid that characterises much of the historic town. According to the Lowther's early land records, the site on the northern side of Albion Street is listed as a freehold tenancy as early as 1667, and it would appear that the bounds of these early plots dictated the pattern of subsequent development and construction (CFA 2010, 3). In contrast with the compact eighteenth-century development, the Old Town was rather more open in character, with frequent garden plots, that remained well into the nineteenth century.
- 3.2.3 By the end of the seventeenth century the site was occupied by buildings fronting the street called Old Town, to the east (Pellin 1699; 1705; Plates 4 and 5), by 1770 on Albion Street, to the south (Hodkinson 1783; Plate 6), and by 1790, along Rosemary Lane, to the west (Howard 1792; Plate 7). Howard shows that the northern part of the plot was occupied by gardens/allotments, but everywhere else it was densely occupied. Many of the buildings, particularly the domestic-sized properties around the corner of Old Town and Albion Square back onto each other, and there are few courtyards. The principal structure within the plot would appear to be a group of buildings forming a vaguely F-shaped configuration and labelled 'soapery'. It is just possible that the soapery is

also shown on Hodgkinson's *Plan of Whitehaven, 1770*, but several anomalies between this and later maps makes it difficult to be certain. According to Howard (1790, Figure 4), the principal axis of the soapery runs north/south from Albion Street, with a westward-projecting wing and a large northern wing that fronts the gardens/allotments. Between these wings, the soapery would appear to have had a large courtyard accessed from Rosemary Lane, whilst a group of nine dots on the map to the immediate east of the soapery may be associated pits or vats, or may merely represent areas of planted garden. In contrast with virtually all the other buildings on the map, which are merely hatched, Howard shades the soapery in black, his convention for public and religious buildings. His key records that part of the soapery was in use as a Methodist Meeting Hall, a role that was served from 1781 (Williams 1869, 64). Such a situation was mirrored elsewhere in Whitehaven, with the *Old Guinea Warehouse* used by The Birdites and Baptist's worshipping at *Gore's Buildings* (*op cit*, 65).

- 3.2.4 Slightly stepped back from the Albion Street frontage, the southern part of the axial range of the soapery, which appears to run broadly north/south, corresponds with the position of Unit 15 (a former four-storey warehouse) as labelled in the CFA DBA (2010). This 'stepping back', which may have aided the warehouse cranes in the off-loading of material from carts, is also shown Wood's map of 1830, and the OS maps of 1865 and 1899 (Figs 5-7), as well as on the historical illustration of the Phoenix Foundry *c* 1895, the 1925 OS map, and on a photograph of the warehouse taken *c* 1990, strongly suggesting that the footprint, if not indeed, the whole, of the eighteenth-century building, remained extant throughout the subsequent usage of the site. It could be argued that Unit 16, a lean-to structure against the western wall of the warehouse, is also shown by Howard (and subsequently by Wood and on the OS maps; Figs 5-7) as a small squarish structure at the street front. However, it is of note that this depiction is at some variance from the 1895 illustration of the foundry (CFA, 2010, Plate 15).
- 3.2.5 At the south-eastern corner of the development area, the angled configuration of the buildings at the junction of Albion Street and Old Town closely corresponds with depictions of the plan of *The Dusty Miller* Public House (Unit 11 and 12 in the CFA DBA; 2010) on later maps. The pub is recorded as having an early nineteenth-century façade (*op cit*, 12), so it is perhaps possible that Howard depicts an earlier incarnation of the building. Between the warehouse and Unit 12 of the pub, Howard depicts a broad structure, the eastern half of which is somewhat longer than the west. The position of this structure corresponds with Units 13-14 (Nos 16-17 and 15 Albion Street), and a very similar configuration is shown by Wood and also on the 1865, 1899 (Figs 5-7) and 1925 OS maps, albeit with the block clearly divided into two properties along the street front. It is apparent from the Level 1 building investigation that Units 13-14 represent the subdivision of a single three-storey structure, correlating with Howard's map, and it might then be concluded that that structure also dated to the later eighteenth century.
- 3.2.6 These early developments and the soapery (or soap-boilers, as such industries are commonly listed in street directories) are not recorded in the local archive, suggesting that this area of production was of secondary importance, with the

salt pans and coal mining taking precedence. However, the historical archives do provide a mixed collection of handwritten credit notes, correspondence, notarised deeds and indentures, indicating the chain of possession for the land around Albion Street, Rosemary Lane and Harmless Hill, and relating to the lease of the land in which the presence of a soapery is noted. These documents date from 1700-1810 with a further separate portfolio dealing with the land from 1824 until the 1930s.

- 3.2.7 Late eighteenth-century documents indicate that the site encompassed at least two plots, although their exact extents, locations, and their usage, were not directly recorded. Nonetheless, through the integration of various sources it can be established that one of the plots was occupied by John Johnston, who in 1794 sold his parcel to Edward Johnston for £ 900. The land was listed as Plots 10/10b, which, if correlating with the system used by Pellin (1705), would be the second-most plot to the north of Albion Street, and one of several east/west-aligned plots running from Old Town (Plates 4 and 5). Moreover, the position of Pellin's Plot 10, behind the street front, correlates with that of the soapery labelled on Howard's map (1792). It is uncertain whether John Johnston was a soapmaker but Edward clearly was (and a candle merchant to boot). A handwritten credit note dated to 1804 is particularly informative, if not immediately intelligible:

"Messrs Richard Barker and Son, Sent of Edward Johnston the soap and candle merchants, now in use at the Old Soapery... Pay One Hundred and Fifty Pounds £150 – at the same kind(word illegible).... in note £150 – Signed Edward Johnston" (YDX 553/2/ 1804).

The reference to 'Old Soapery' suggests that the enterprise was of some antiquity even at the start of the nineteenth century (YDX 553/2 1700–1810). Similarly, the leasee, Richard Barker and Sons, was a soap boiler and tallow chandler, with premises at Mark Lane (Jollie 1811, 98), and it is probable that their lease was of a fully functioning, pre-existing operation.

- 3.2.8 At a similar time, an adjoining plot on the Albion Street frontage was owned by James and Frances Watson. Frances Watson died a widow in 1792, but her will of that year leaves the land at Albion Street to her brother, one Nathaniel Wilson, who in turn bequeathed it to his niece (James and Frances's daughter), Ann Swindburne, in 1803. In that same year, Ann's husband (listed as William Swindburne of Workington, gentleman) leased the land to Thomas Nicholson, a merchant of Whitehaven, who used part of the land to erect a warehouse along the Albion Street frontage. It is likely that elements of Nicholson's warehouse survived until quite recently and may have followed quite closely the footprint of an earlier structure on the plot as shown by Howard (1792). If so, the Swindburne/Nicholson plot would have occupied the central part of Albion Street, and of the site as a whole.
- 3.2.9 Richard Barker was still clearly making soap on the site in 1806, and, whilst the following note indicates that the warehouse and soapery adjoined, it is apparent that he and Mr Thomas Nicholson were not always the best of neighbours:

"Sir, I hereby given you notice to block up the three lights [windows] which you have at present broke out of your warehouse into my Soapery Yard on the 18th of

October, otherwise to make me some acknowledgement for the said lights. Signed R.B April 17th 1806” (YDX 553/2/1806).

- 3.2.10 Richard Barker and Sons continued to operate on the site as Soap Makers and Tallow Chandlers for the next fifty years. Pigot and Co’s National Commercial Directory of 1828-9 lists premises at both Albion Street and Mark Lane (Pigot, 1828, 96), and it is possible that the latter, lined with large houses and inns (OS 1866), and connecting Strand Street and the Harbour, may have been a domestic residence or commercial site, while production took place on the larger Albion Street site. Clues to the layout of the Albion Street site are provided by Wood’s somewhat stylised map (1830) and, indeed, there is little change within the plot since Howard’s map (1792). Much of the western half of the site is labelled *Messrs Barkers*, whilst the northernmost building on the site is annotated *Soapery*. The family would also appear to have leant their name to a lane running between the Harmless Hill gardens and Old Town.
- 3.2.11 Although soap was not the most significant of the town’s industries, it still warranted mention in a gazetteer of 1838 (Wright 1838, 692) which provides a concise summary of the imports, exports and industry of Whitehaven, stating that *“the commerce is very extensive; the exports are coal which is the most important article of trade, lime freestone, alabaster and grain, with manufactured goods; the imports are linen and flax from Ireland, wine from Portugal and Spain, dried fruits from the Levant and various articles from the Baltic, America and West Indies. The chief manufactures are linen, sailcloth, checks, gingham, sheeting, thread, twine, colours, paper, soap, candles, tobacco pipes, anchors and nails; here are iron and brass foundries and breweries...”*
- 3.2.12 Documentation relating to the eighteenth- and early nineteenth-century production of soap is limited, and the type and quantity of soap produced by the Barker’s at Albion Street is not known. However, the small number of contemporary sources provide a basic idea of the type of processes being carried out on such sites. The process of making soap consists of boiling vegetable oils or, and more likely in the case of the tallow-chandling Barkers, animal fats, in an alkaline solution such as lye. Richard Barker the Elder’s soapery was dealing with beef tallow which, when processed, produced a saponified (ie, soapy) product called sodium tallowate. This contemporary account is especially interesting:

“The tallow is first melted in the vessel with weak barilla ley [lye], the mixture is then gradually brought to a boiling heat, and we continue adding alkali until the whole of the tallow has formed a saponaceous compound. We know this has taken place if the compound has a milky appearance, with a considerable degree of consistence and seems to be separating from the liquid below. This separation is a very material part of the operation and to effect it completely a quantity of sea salt or weak kelp ley is added. The materials are continued boiling for two or three hours and then the fire is withdrawn. The soap will now be found united at the top of the liquor, or what is called “waste ley”, which is of no further use and is therefore drawn off with pump or siphon. The soap is now melted for the last time with a small quantity of water or what is better, weak kelp ley. It is left to cool for a short time and afterwards cast into frames. The melting with water

is of considerable importance as it gives the soap a smooth and compact appearance or what the workmen term a “skin”” (Jameson 1799, 112).

3.2.13 Both hard (using soda as the alkali) and soft (using potash) soap were produced in this manner in England in the seventeenth and eighteenth centuries, although by the end of that period, hard soap was far more favoured (Jones, 2006, 344). Port towns on the west coast of England were particularly popular in the eighteenth-century, as a key ingredient of hard soap production was Irish or Scottish kelp, which could be burned to produce soda-rich ash. The soap produced at the Barker’s works would probably have been used in a number of industries within Whitehaven, including cloth-making, specifically the production of linen and sailcloth mentioned above, as well as being exported to other ports along the west coast of England and the east coast of Ireland.

3.2.14 There are no surviving records detailing the internal features and equipment used in Barker’s Soapery; however, insurance records dating from 1829 for a contemporary works operated in Liverpool by Joseph Crosfield and Sons (in business 1815–1865) give a basic indication of the organisation, components and fittings that might be expected:

“... the main building containing the soap pans or coppers; a cottage nearby; a counting house, warehouse and candleroom on the south side of the yard with stock and utensils, two cottages... a box room and smithy with stock and utensils; shed with furnace, utensils and lye vats and a shed with three steam boilers...” (Musson, 1965, 33)

3.2.15 By 1844, Richard Barker the Elder was deceased, and his will, dated 27th June of that year, bequeathed his properties to his sons, Richard and Henry Barker. However, by this time Henry had already left Whitehaven and was engaged in seeking his fortune, travelling widely in Chile, Russia and America. His unique travels are recorded in series of six letters sent to his brother variously from Russia, Chile, at sea while en route to California and also to San Francisco. He documented life and conditions in Chile, including a recent earthquake and war with Peru, along with his own business ventures. His letter of May 30, 1849 indicates that he was amongst the first pioneers and prospectors to arrive in California after the discovery of gold. Henry never returned to Whitehaven, and died from cholera in California in 1851 (BANC MSS 99/357 cz).

3.2.16 Consequently the running of the business passed to Richard Barker Junior who operated the soapery until just prior to 1854 when no further records mention a functioning soapery on site. There is no indication as to why the business ceased to operate, particularly at a date that almost coincides with the abolition of Soap Duty. The duty was first imposed upon soap manufacturers by Customs and Excise authorities in 1711, moderated in 1840 and then abolished in 1853 (Jones 2006, 344). By early 1854 the soapery had become a bakery, possibly owned by Edward Steele. The demise of the Barkers may have been greeted with some relief by the Nicholsons, who were finally able to illuminate their warehouse, as this original memorandum dated February 9th 1854 states:

“I, Edward Steele of Egremont hereby agree to give permission to Mr T Nicholson to break out and open a window in the wall separating the bakery (lately Soapery) inside the yard at present occupied by Tho’ Wilson, for the annual payment of one shilling [and] ask that he the said Mr Nicholson will if

required by Edward Steel, block up said window should he require it – the payment to be made on the 25th of March each year. Edward Steele” (YDX 553/2 1854).

- 3.2.17 No documents were found concerning Thomas Wilson’s bakery, although no doubt many of the soapery spaces and fixtures associated with heating and storage would have been of use with minimal alteration. By 1865, two plots of land are registered as being for sale on the north side of Albion Street, including the area of the former bakery and soapery. The plots of land and the buildings therein are described in a deed of sale dated 9th February 1865 (YDX 553/1 1864).

“Particulars and condition of sale of property in Albion Street, Whitehaven; Lot 1: All that freehold messuage or dwelling house and warehouse with the stableyard premises therein adjoining situat’d on the N.W side of Albion Street in Whitehaven in the County of Cumberland containing in front to the said street, 20 yards 6 inches or thereabouts and extending thence backwards to the premises described in Lot 2, 30 yards or thereabouts adjoining on or towards the S.W to the premises of George Fletcher and Mr Perry, for or towards the N.E to the premises of Mr John Tomlinson (and except as the stable) now in the occupation of Mrs Joshua Watson as tenant from year to year.

Lot 2: All those freehold warehouses, Ash Mill (now converted into a bakery and cottages) with the stable sheds and yard thereto belonging formerly used as a soap manufactory situate in the Old Town in Whitehaven, aforesaid being of an irregular figure bounded on or towards the N.W by premises of Mr Edward Steele, on or towards the N.E by premises of the late John Thexton and Robinson Burkett, on or towards the S.E by premises of Mr John Tomlinson in part and by Lot 1 by the premises of Geo’ Fletcher in another part and on or towards the S.W by Rosemary Lane, containing an extreme length between the premises of the said John Thexton of Rosemary Lane 160 feet or thereabouts and in extreme breadth between the premises of the said Edward Steele and the said Geo’ Fletcher 63 feet and 6 inches or thereabouts now in the possession of Mr George Gillet.

Together with the steam engines Ovens and machinery belonging to the said premises,...’

- 3.2.18 The records for Lot 2 are of particular note as they mention the warehouses and Ash mill which had formerly been part of the soapery before being converted into a bakery and cottages. The presence of the Ash Mill suggests that the Barkers were at least refining, if not indeed producing, their own raw materials for soap manufacture. It is possible that machinery associated with the ash mill could have been adapted to grind grain although if this had been the case then the documents might be expected to report the presence of a grain mill.
- 3.2.19 It is highly likely that the situation described in the deed of sale, with a mixture of domestic, storage and industrial structures, is depicted on the 1865 OS map and the OS Town Plan. Although there are clear differences from the portrayal of the site on earlier maps, the configuration of several buildings might suggest that these changes took place within the framework shown by Howard (1792) and Wood (1830). Given that the soapery occupied the site for much of the period, it is probable that many of the structures remained in use, with the greater

detail of 1865 map possibly reflecting internal divisions that were ignored by Wood. Similarly, it is entirely possible that Wood stylised or regularised some of the building footprints to lend them an artificially squared appearance when compared to those shown on the OS map. A third point of difference are several small courtyards shown on the 1865 map but absent from Wood's map. It is probably that these courtyards were extant in 1830, but may have been missed if Wood undertook the majority of his survey work from the street front. None of the structures within the development site is annotated on the 1865 OS map, and, although *Barker's Buildings* and *Newtown Foundry* do appear, the labels are well to the south of Albion Street. The principal changes can be summarised as follows:

- modification to the north range (the block marked *Soapery* by Wood (1830)) through the expansion of this range to the western edge of the plot and its subdivision into two major blocks. Although this may be a complete rebuild, the eastern, southern and northern edges of the structure on the 1865 map would appear to be in the same position as that of the soapery in 1830, suggesting a degree of structural continuity. Indeed, several lengths of walling that were preserved on the site until shortly before the evaluation would appear to correlate with parts of structures shown on the 1865 OS, and probably also Wood's, maps. Thus, Unit 18 broadly coincides with the eastern and southern edges of the north and central ranges, whilst Unit 19 is likely to have formed the northern wall of the north range when it was expanded westward to Rosemary Lane. Detailed descriptions of these features are presented in the Historic Building Investigation (Cracknell 2012), but in summary they were generally 540mm thick and built of coursed sandstone with dressed stone window surrounds and quoins at the corners.
- the northernmost part of the site would appear no longer to have been used for gardens/allotments, but instead, structures have been appended to the northern edge of the north range, whilst a series of small cellular structures has been built just outside the northern site boundary. These could be cottages with a single ground-floor room and an adjoining yard/forecourt;
- Development in the north-eastern and south-eastern parts of the site (*ie*, those fronting the now defunct street *Old Town*) would seem to remain broadly within the footprints of the structures shown on Wood's Map, with either some of the larger buildings subdivided into smaller properties, or, perhaps more likely, more detail of older elements being shown;
- The greatest changes would appear to be in the central and eastern parts of the site. Ostensibly, a large structure (that labelled by Wood as belonging to Messrs Barker and also shown by Howard) adjoining several components of the soapery complex has been demolished and replaced by a southern courtyard flanked by a several smaller buildings. A neighbouring structure along the western edge of the site may have shared a similar fate, and was replaced by a multi-cellular range of buildings stretching to the newly redeveloped north range in the north-west corner of the site. Although largely demolished, the facades of these structures (Unit 21; built of large blocks of uncoursed local stone with finer sandstone jambs and lintels) survive on

Rosemary Lane, and have a rather domestic appearance (correlating with the smaller units shown in the corresponding position in the 1865 OS map). From the difference in ground levels between Rosemary Lane and the immediately adjacent development site, it seems that the ground has been terraced and it is likely either that the basements for these buildings were at ground-floor level inside the development site, or, that domestic structures had been built above industrial units. The 1895 drawing of the foundry is not particularly informative in resolving this issue.

- 3.2.20 It is regrettable that the 1865 bill of sale does not include a record of the people who then purchased the individual lots. However, no intervening businesses are listed, and it is likely that the Phoenix Foundry occupied the site from 1866 onwards, operated by the brothers, Thomas and William Ramsay. Historical records relating to the development of the Phoenix Foundry are fairly limited, with the earliest primary written documentation dating to the 1st March 1892 and taking the form of architects plans, drawn up in relation to the expansion and improvement of the existing foundry buildings as well as the addition of new structures (Plates 4-5). The plans show additions and modifications to the northern range only (the area directly north of the boiler room and chimney, adjacent to Harmless Hill), including a moulding shop and filling shop, and indicating the required terracing to the natural sloping bedrock at the edge of the site.
- 3.2.21 Further documentation dated 6th November 1896, when a contract between the Whitehaven Harbour Commissioners and Messrs Ramsay Bros was drawn up in relation to the performance of haulage and shunting of harbour traffic (D/BH/5/10). The Ramsay Brothers were originally listed as Engineers as well as owners of the Phoenix Foundry, so their involvement in the management of the mechanised elements of the harbour workings is not unexpected. Their role within Whitehaven included not only the operation of the foundry which produced, amongst other items, steam boilers and dock furniture, including mooring bollards (some of which are still in evidence along the edge of Queens Dock today), but also the management of goods and cargo along the quayside. In 1900, a further archived letter suggests that the Ramsay Brothers had been ineffective in managing the foundry as well as the haulage and logistics at the harbour side. The letter states that the haulage shunting is not being carried out efficiently due to Ramsay Bros only operating one steam engine when two are required for the purpose (D/BH/5/10 1900).
- 3.2.22 The layout of the Phoenix Foundry is shown on the 1899 and 1925 OS maps, which present near-identical depictions of the development site (Fig 7). The 1899 map records only a few substantive changes from the 1865 OS map, and it must then be assumed that many elements of the foundry were built within, or utilised, existing structures, or at least followed their footprints. The greatest change would appear to have taken place in the north range, which has been expanded northward beyond the original extent of the soapery and to the site boundary occupied by the row of cottages, encompassing the former gardens there. The map suggests that this was a single building, although no doubt internal divisions and supports would have been present. The Foundry chimney (Unit 20) can be made out as a small square within a larger structure at the western end of the north range. The northern edge of the latter building co-

incises with wall (Unit) 19, which was the northern edge of the narrow north range shown on the 1865 OS map. Smaller structures within the original and southern courtyards have been removed, but there are few obvious additions.

- 3.2.23 An indenture of 1905 suggests that the Ramsay Brothers situation had further changed, with the leasing of land to the north of Albion Street, some of which was previously occupied by the brothers themselves, being leased to a woman named Lizzie Jackson. This document does not state that the foundry had closed, but suggests operation in more diminished circumstances;

“.... and portions of said warehouse being now, as formerly occupied by Ramsay Brothers, one dwelling house now or formerly occupied by James Ramsay, another dwelling house by Daniel O’Fee and a third dwelling house by (no name given) Hooper, to hold unto and to the use of the said Lizzie Jackson...” (YDX 553/ 1905).

- 3.2.24 The Ramsay Brothers lease for Albion Street was terminated on 31st of January 1930 with arrears to the Lowther estate for £500 as well as outstanding fines for up to £200 for failure to make good the property and repair the dilapidated portions of the walls and buildings on the site (DH/215/2/2/8). It is not clear whether the arrears and repairs were ever made.
- 3.2.25 In 1927 part of the foundry site was taken over by Peter Hanratty. James Hanratty, Peter’s younger brother operated a rag business at 5 Albion Street and the two brothers formed a partnership operating a marine merchants and rag business on the site of the former foundry. By 1927 Peter Hanratty and his young family were residing at 4 Albion Street with numbers 5-7 being used as the marine store and rag warehouse. The Calvin family were in residence at 2 Albion Street, with Ethel Thompson living in the adjacent property at 3 Albion Street. 12 Albion Street was still in use as the Ramsay Brothers office and 14 Albion Street operated as the Phoenix foundry and headquarters for the Whitehaven Hardware Company (also run by Ramsay Bros) which maintained a cast-iron and brass smelting and finishing facility until the 1930s (Hanratty *pers comm* 2012). The site was finally turned over for use as a scrap metal yard by Bernard Hanratty from May 1961 (SMBWH/3/2858/WHA503).

4. RESULTS

4.1 INTRODUCTION

4.1.1 Over 200 structures and deposits of archaeological interest were encountered during the course of the archaeological investigation. These deposits can be attributed to five distinct phases of activity (Phases 1-5), all of which date to the post-medieval/industrial period and generally range between the late-eighteenth century and the early-twentieth century. As far as possible the results from the excavation and evaluation have been integrated to produce a more meaningful historical narrative.

4.1.2 **Phasing:**

Phase 0 – Natural geology

Phase 1 – Gardens, allotments and associated boundaries and features, together with domestic structures on Old Town (*c* 1660-1781+)

Phase 2 – The Soapery and contemporary structures (*c* 1781–1854)

Phase 3 – Intermediate phase including bakery (*c* 1854-1866)

Phase 4 – Ramsay Bros Phoenix Foundry (*c* 1866–1930)

Phase 5– Hanratty's Marine Store, scrap yard and twentieth-century activity (1930-present)

4.1.3 The majority of the structural remains comprise brick and sandstone walls associated with the remains of the soapery and the Phoenix Foundry. The 'rooms' within these structures form a convenient means of directing the reader around the site (Fig 3; Table 2).

Room	Building	Function			
		Phase 2	Phase 3	Phase 4	Phase 5
1	2			Casting Room	
2	2			Casting Room	
3	1	Warehouse	Warehouse	Warehouse	Warehouse
4	1	Warehouse	Warehouse	Warehouse	Warehouse
5	1	Warehouse	Warehouse	Warehouse	Warehouse
6	1	Warehouse	Warehouse	Warehouse	Warehouse
7	1	Warehouse	Warehouse	Warehouse	Warehouse
8A/8B	4	Cistern room?	Cistern room?	Cistern room?	
9	5			Workshop	
10	5			Workshop	
11	5			Workshop	
12	2	Ash mill?	Mill?	Foundry floor	
13	6			Foundry - cupola	

Room	Building	Function			
		Phase 2	Phase 3	Phase 4	Phase 5
				furnaces	
14	-	Courtyard	Courtyard	Courtyard	
15	1	Warehouse	Warehouse	Warehouse	Warehouse
16A/16B	3	Boiler room		boiler room?	
17	7	North Range	North Range	North Range	
Tr1		North Range	North Range	North Range	North Range
Tr3 + 3X	-	Domestic (?) building	Domestic (?) building	Domestic (?) building	
Tr4	-	Domestic (?) building	Domestic (?) building	Domestic (?) building	
Tr6	-		Chimney base	Chimney base	Chimney base
Tr7 + 7X	-	Domestic (?) building	Domestic (?) building	Domestic (?) building	
Tr8	-	Domestic (?) building, or warehouse?	Domestic (?) building, or warehouse?	Domestic (?) building, or warehouse?	Domestic (?) building, or warehouse?
Tr9				North range?	
WB			West range	West range	West range

Note: Tr=Trench; WB=Watching Brief

Table 2: Summary of site structural components according to phase

4.2 PHASE 0 (NATURAL GEOLOGY)

4.2.1 Geological deposits were encountered only in localised parts of the site (largely as a result of artificial terracing) and, where identified, were found to be a mixed character. Geotechnical investigation identified sandstone bedrock beneath the Rosemary Lane retaining wall at the western limit of the site, but such material was not otherwise revealed. Orange-brown sandy clay was reached at a relatively shallow depth in Trenches 1 and 9 (Plates 10-11), whilst similar material was observed within a narrow sondage in Room 1 (Building 2; Fig 8) and beneath the floors of Room 12 and 13 respectively (Buildings 2 and 6; Figs 8). Within Evaluation Trenches 3X, 7 and 7a, a fine pale yellow sand was identified.

4.3 PHASE 1 (GARDENS AND DOMESTIC STRUCTURES, c 1660-1781)

4.3.1 Evaluation Trenches 2 and 9, within the northern and central area of the site (Plates 11 and 12), exposed limited pockets of dark brown organic soil which contained eighteenth-century pottery and represented horticultural activity that pre-dated the industrial usage of the site. A boundary or drainage ditch, **1083=1089** (Plate 13), was identified running on a north/south orientation in the area of what would become Rooms 6 and 7 (Building 1; Fig 9). This narrow, shallow ditch extended for a distance of 4m and originally measured at least

0.4m deep. The dark brown organic basal deposits, **1084** and **1090**, were subject to palaeoenvironmental assessment (*Section 4.10*).

- 4.3.2 Wall **1030** (Room 11, Building 5) has been attributed to this phase because its north-east/south-west alignment ran at a distinct 45 degree angle (Plate 14) to every other structure on the site, and because it had defined the limit of, or had been overlain, by several later structures. It was extremely well-constructed from pink sandstone, and had been neatly levelled.
- 4.3.3 Within the eastern part of the development site, Evaluation Trenches 3, 3X, 7 and 7X revealed clear, but often truncated, evidence for structural activity relating to the historic settlement on Old Town (now Swingpump Lane; Plates 15-16). In northerly Trenches 3 and 3X these comprised an east/west-orientated handmade red brick wall (the face of which was obscured by a relatively modern-looking cement render; Plate 15) which was abutted by a fragmentary flagstone floor bedded on the natural sand.
- 4.3.4 Similar remains were revealed to the south in Trenches 7 and 7X. They included vestiges of two pink ashlar sandstone walls (Plate 16), both constructed from large well-shaped blocks (very unlike the majority of walls attributed to the industrial structures to the north and west). The largest of these was orientated east/west and probably represented an external wall which appears on Howard's (1792), Wood's (1830) and both the 1865 and 1899 OS Maps. The smaller pink sandstone wall was orientated north/south along the centre of the trench and abutted the larger wall. Associated with the walls was a surface of small water-worn (beach?) cobbles set into the natural sand. These were sealed with a layer of black moulding sand which probably derived from the foundry and, within the eastern trench extension, by a concrete surface fitted with a ceramic-lined drain or trough, perhaps for an outside toilet. These surfaces had been subject to modern disturbance at the northern end of the trench, which may in part account for the absence of features from the southern 5m of the trench (particularly if floor slabs had been robbed out). However, it is also apparent that the southernmost portion of the trench may coincide with some sort of open space or courtyard (OS 1865; 1899). If Howard (1792) and Wood (1830) accurately portray this area as being occupied by buildings, then these must have been removed completely.
- 4.3.5 Two sandstone-lined wells were revealed within the eastern part of the site, and, at 4-5m deep, were most likely to have been associated with the domestic activity identified in the area (Fig 2). Well **2522** lay just to the north of Trench 3X and was 1.5m in diameter. It had been capped with sandstone slabs and contained an iron fitting that is likely to have once been attached to a pump (Plate 17). To the south-east of Trench 7, close to the rear of the Dusty Miller public house, well **2523** had an internal diameter of 0.7m (Plate 18).

4.4 PHASE 2: THE SOAPERY AND CONTEMPORARY STRUCTURES (c 1781-1854)

- 4.4.1 Excavated structures and features attributed to Phase 2 can often be correlated with those shown on Howard's, Wood's, and the first edition OS map and town plan (1792; 1830 and 1865, respectively; Figs 4-6). They included the probable warehouse (Building 1) and four adjoining and contiguous buildings to the north and east (Buildings 2, and 4-6; Figs 8-9). In addition, parts of the north range

(Building 7 and the northern courtyard (Room 14) were also revealed, as was Building 3, to the south-west (Figs 3, and 8-9).

- 4.4.2 The principal walls of these buildings were substantial, deeply founded, and constructed of a mix of large pink sandstone blocks and beach cobbles (Plate 3). They comprised walls **1022** and **1032**, which formed the western and northern walls of the warehouse, and which were abutted by walls **2004**, and **1028**, the eastern and western walls of Building 2, respectively. Wall **1021**, the eastern edge of the warehouse, was of generally similar construction, but utilised fewer cobbles and a greater quantity of greyish-white mortar. Sandstone walls **1029** and **1053**, the northern edges of Buildings 5 and 6 (Plates 19 and 20), and **1100** and **1101**, bounding the southern edge of the north range (Plate 21) were also soapery features.
- 4.4.3 The warehouse (Building 1; Fig 9; Plates 3 and 22) covered a broadly rectangular area of 260m² (of which 159m² was exposed) and was seen to be broadest at its northern end (8.9m wide, narrowing along its full length towards the unexposed street front portion). Internally, the building was divided into a series of east-west-aligned cells by walls **1068**, **1075**, **1079**, **1019** and **1020**, that were bedded without foundations cuts directly onto the natural sandy clay. Although it is possible that these walls may have defined individual basements, they had not been keyed into the axial walls, and there was no evidence of surfacing materials; it is thus likely that they supported a sprung timber floor. The only entrance identified lay half-way along the length of western wall **1022**, with a corresponding pink sandstone riser giving pedestrian access into the courtyard to the west.
- 4.4.4 Several minor modifications were made to the fabric of the warehouse, with the use of handmade brick suggesting that these had been made during its association with the soapery. The most significant of these were the addition of two domestic-type hearths (**1069** and **1070**), constructed from a mix of handmade brick and cobbles to the inner phase of warehouse northern wall **1032**. Close to these hearths, windows **1071** and **1072** may have been bricked-up at the same time and, although brick wall **1068**, which ran the width of the warehouse, may have been contemporary, its function is uncertain.
- 4.4.5 Adjoining the northern end of the warehouse was Building 4 (Plate 23). The exterior walls, **2038** and **2041**, were both substantial and well made, constructed of well-faced pink sandstone and generally presenting a better quality and more ordered course and bond type than seen elsewhere in the complex. Wall **2038** was keyed into the western warehouse wall, suggesting contemporaneity. The building was seemingly divided into two small rectangular rooms by partition wall **2035**, abutting walls **1022** and **2041**. Interestingly, the floor and eastern and western walls of northerly Room 8B was lined with a plastic, puddled clay, **2037**. This clay lining would have created a waterproof seal, potentially allowing the room's use as a cistern.
- 4.4.6 Few internal features relating to the soapery were preserved within Buildings 1, 2, and 5, with the notable exception within Building 2 of a large sandstone structure, **2007**, measuring 2m x 2.1m by approximately 1.8m deep (Fig 10: Plate 24). Built of four large blocks of well-shaped pink sandstone and with a stepped, three-tiered base (Plate 25), structure **2007** was clearly designed to

survive pressure of heavy weights and industrial processes. Furthermore, a circular channel approximately 0.25m deep ran around its outer edge, although this displayed little sign of use. An original surface of pink sandstone slabs (**1060**) was identified across much of Building 6 (Room 13), whilst in Building 5, the floor of Room 9 comprised loosely set beach cobbles that abutted earlier wall **1030**.

- 4.4.7 Bound by these buildings and those of the north range, L-shaped Courtyard 14 was paved with a mixture of small sandstone blocks and large beach cobbles (Fig 9; Plate 26). The surface was well preserved, but largely obscured by laminated layers of indurated black moulding sand (*Section 4.6*).
- 4.4.8 The northern range was very poorly preserved. Within the excavation area sandstone walls **1100** (with an entrance threshold opposite Building 2) and **1101** (Fig 8) probably represented its southern and eastern edges, the latter angling to the south in the direction of Building 6. A *c* 4m-wide gap between walls **1101** and **1053** suggested that the intervening space may have been occupied by wagon doors or similar. The only other evidence was identified in Evaluation Trench 1 and comprised an east/west-aligned pink sandstone wall in the position of the northern wall of the north range on as depicted by Wood (1830) and on the OS 1865 map (Figs 5-6).
- 4.4.9 Building 3 (encompassing Rooms 16a and 16b) was located at the southern end of warehouse western wall **1022** (Plate 27), and, like Building 4, had notably well-made walls that abutted that of warehouse Building 1. Although it appears on the OS first edition maps, it is absent from those of Howard and Wood, suggesting that it may have been added during the first half of the nineteenth century. Indeed, its depiction on the 1865 OS town plan suggests that this small building, with its sunken brick and sandstone floor (**1008**) accessed from the western courtyard by small stone steps, **1007**, was a boiler house. No fixtures or fitting survived, but based on the historic period it could have housed a Lancashire-type boiler. Cartographic sources show an identical structure appended to the western edge of the north range, an area heavily affected by contamination and thus not investigated.
- 4.4.10 Structures to the west of the central soapery complex (*ie*, between the soapery's western courtyard and Rosemary Lane) were investigated by Evaluation Trench 4 (Plate 28) and the watching brief. It is highly likely that western retaining wall (recorded as **2514** in the watching brief) relates to the soapery, both in terms of the structures of the west range, and because it would have been an important feature in consolidating the terrace for industrial development. Moreover, it was built of irregularly coursed and variably sized sandstone blocks in a similar style to soapery structures that had occupied the site prior to the current development.
- 4.4.11 Trench 4 identified foundation courses of a pair of parallel pink sandstone walls at the eastern and western edges of excavation. These continued beyond the northern and southern limits of the trench and could be correlated with features on the 1865 and 1899 OS maps, but the easternmost, at least, may have originated as a part of Messrs Barker's Building as shown on Wood's map of 1830, being retained as the wall to the southern courtyard of the soapery. Further remains were identified during the watching brief. The sandstone flags in floor **2516** (0.3m bgl; Fig 11) were similar to those of floor **1060** in Building 6 (Fig

8), and may have been contemporary. The northern end of floor **2516** had been cut by a later industrial feature, whilst its southern extent seemed to have been defined by a truncated mortar and sandstone spread, **2503**. This may have been the base of a levelled east/west-orientated wall that can be correlated with a structure on the 1865 and 1899 OS maps (Figs 6-7 and 11). Sandstone plinth **2501** (0.75 x >0.6m) may have been part of that structure, although it is uncertain whether an anecdotally recorded and possibly associated metal pillar, or roof support, was an original element. To the south of these structures was very compacted brown clay floor **2508**, possibly a working surface (Plate 29).

- 4.4.12 Structures along the Albion Street front were investigated by Evaluation Trench 8 (Plate 30). This revealed a 2.1m-deep cellar with pink sandstone walls and brick elements limited to the footings for the quarter-turn stone staircase located against the north-western side of the trench. The floor of the cellar seemed to have been robbed out, revealing fine natural yellow sand.

4.5 PHASE 3 (INTERMEDIATE PHASE INCLUDING BAKERY 1854-1866)

- 4.5.1 Prior to the demolition of the standing remains at the site, a metal oven was identified built into a brick embrasure against the eastern wall of the soapery (Figs 2 and 6-7; Plate 31), and was presumably a relic of the site's use as a bakery. It was not possible to identify any modifications or additions that could be definitely attributed to the bakery within the excavation or watching brief areas, however. Indeed, it seems probable that much of that activity continued within the existing framework of the soapery.

4.6 PHASE 4 (PHOENIX FOUNDRY 1866-1930)

- 4.6.1 As with the bakery, much of the early use of the foundry would appear to have taken place within the template of the extant soapery buildings. Nonetheless, there was clear evidence for changes, in Buildings 2, 5 and 6, all of which, retained features connected to metal working.
- 4.6.2 The heaviest modification was undertaken within Building 2, which was subdivided to form Rooms 1, 2 and 12; Plates 32-4). No northern wall was identified to westernmost Room 12, and it is possible that this had been levelled to accommodate larger doors on the courtyard. More certainly, the base that may have supported the decommissioned ash mill was cut by the brick-built box chamber of a subterranean flue, **2029** (Plate 35; Fig 10), which cut through wall **1028** as it ran north-westward, perhaps toward the extant foundry chimney, as a 600mm-diameter ceramic pipe. The flue was sealed by a floor of refractory tile and brick (**1044**; Plate 34), which had been repaired numerous times, particularly above the flue. The eastern, box-shaped, part of flue **2029** culminated at newly constructed wall **2006**, of pink sandstone with a sandy lime mortar. This rested upon the sandstone base and, together with similarly constructed walls **2009** and **2012**, and earlier walls **2004-5**, defined cell-like Rooms 1 and 2 (each 2.3m by 2.4m), which occupied the eastern half of the building (Plates 32-3). These may have been used for casting; they had neither floor nor entrance, but were each linked to Room 12 by a gently sloping channel built from refractory brick and yellow refractory tile. There was no direct evidence for burning, or heat-affected areas, within either room although

a layer of black casting sand sealed the floor of natural sandy clay within Room 1. Room 2 had undergone a small amount of modification with the addition of a brick step **2014** being inserted along reused Phase 2 east wall **2004**.

- 4.6.3 To the east, Room 13 (Building 6; Fig 8; Plate 36), contained the best-preserved elements of the foundry, comprising the remains of three cupola furnaces built against the walls at its western end. Correspondingly, the flooring (**1060**) within the room largely comprised refractory brick and tile at the 'hot' western end, and the retained soapery sandstone slabs elsewhere. Close to the furnaces, the floor featured a T-shaped shallow channel of uncertain function, although it may have helped to support apparatus for manipulating the crucibles or for fuelling the furnaces, or may instead have related to the soapery. Two of these furnaces, **1055** and **1056**, were paired over a central rectangular pit with a third, less well-preserved example, **1058**, located in a recessed bay at the southern corner of the room. The paired furnaces both had an internal diameter of 0.8m and were constructed of wedge-shaped yellow refractory brick (no makers mark was observed). The interior iron grill in both furnaces was obscured by the residual slag from the last casting (Plate 37), the composition of which indicated that both had been used for brass working in the area adjacent to the cupola furnaces. Although the pits beneath the furnaces would originally have formed hearths, the introduction of more modern technology was represented by the remnants of a gas pipe, **1066**, which cut through the edge of the furnace base and also through the foundry floor **1060** and its channel (which was not repaired).
- 4.6.4 Building 5 was also heavily modified during Phase 4. It would appear that Phase 2 sandstone wall **1029** was levelled, and the north wall of the building constructed 1.5m to the north in brick (**1042**), enclosing a patch of cobbles that must originally have lain within the soapery courtyard. It is possible that these cobbles also formed the Phase 4 floor inside the building, although similar structures to the west of wall **1030** had been truncated by later activity. Despite that, Room 11 contained the only activity-related fixture, which comprised the remains of a small rectangular hearth-like brick structure, **1097**, built into brick and sandstone wall **1098** (Plate 20). This incomplete structure seemed to consist of two compartments, with the uppermost containing vitrified sand, slag and copper-alloy objects, all fused into a large mass, whilst the lower presumably was the heat source. Room 11 may thus have functioned as a small workshop for melting or re-working small metal objects.
- 4.6.5 To the north of these structures, Courtyard 14 would have continued in use throughout Phase 4. The sealing deposits of laminated spent moulding sand, **1003**, probably developed over time as such material was removed from the casting rooms. It could represent material dumped from the last few moulding episodes, although it is unlikely that this was normal practise, as the courtyard would have quickly filled with sand. Two features possibly relating to the operation of the foundry were identified at the north-east corner of the courtyard, both built against wall **1101**. These comprised a brick-lined arch-shaped platform, **2045**, and a brick-lined channel **2046** (Plate 38).
- 4.6.6 The best-preserved elements of the Phase 4 north range were identified in Evaluation Trench 1 in the north-west corner of the site (Plate 10). At the south-eastern and north-western ends of the trench were the remains of two

large rectangular concrete machine bases, with the latter located within the expanded area of the Foundry north range as shown on the 1899 OS map. These bases had traces of metal edging and appeared to have been poured into cuts in the natural clay. To the east, within Evaluation Trench 9 (Plate 11), the west-facing elevation of a large pink sandstone rubble wall with patchy lime mortar bond was exposed cutting the earlier garden soil on a rough north/south alignment. The crude nature of the bond suggested that the wall may have been some sort of later addition associated with the expanded foundry. It possibly represents a subdivision of the allotments/gardens, as suggested by Howard's (1792) and Wood's (1830) maps, but, as the widest wall exposed during the evaluation, was probably too substantial for such a minor function.

- 4.6.7 Further east, almost nothing survived of the north range within the excavation area (Room 17). Indeed, much of the area would appear to have been dug out and infilled with copious amounts of moulding sand (a layer extending from ground level to over 1.4m deep). Two parallel, north/south-orientated I-sectioned metal rails or runners, **1107**, were identified at depth. They continued beyond the limit of excavation to the north, and may have been associated with the movement of fuel, products, or the ubiquitous moulding sand.
- 4.6.8 The west range, including the base of the foundry chimney, was investigated by Evaluation Trench 6 and during the watching brief (Fig 11). These revealed extensive evidence of the foundry (Plate 39), and comprised the aforementioned floors **2516** and **2508**, as well as flue structure **2520**, the putative location of a machine base (robbed out, leaving deposits **2517-8**), and, most obviously, the chimney. Sand at the base of a 2m-deep sondage may have represented the natural geology, but no other such deposits were identified in the area. Indeed, the westernmost part of the trench encountered bedrock at a shallow depth. The roughly hewn sandstone blocks of the chimney foundations were bedded on the sand, whilst flue **2520** (0.5m wide) was situated along the western retaining wall (**2514**), running up to the chimney to the north. The flue appeared to have been partially carved into bedrock **2511** (which exhibited signs of being heat affected) and had brick sides, capped with sandstone slabs (**2521**; Plate 40). The flue did not go straight into the chimney; instead, a raised brick column filled with clay suggested that the flue was angled up into a hole (subsequently bricked up) in the south side of the chimney.
- 4.6.9 At the centre of the intervention, the northern part of flag floor **2516** was stress fractured, suggesting that it received heavy use at this point, and appeared to have been cut by the rectangular construction cut for a robbed-out feature, perhaps a machine base. This measured some 1.5m wide by 2m long and was filled with a very compact layer of clay **2517** (0.05m thick), above **2518**, a friable silty clay layer (Plate 39). This, and the eastern edge of flue **2520**, were butted by surface **2519**, which formed the floor in the northern part of the intervention. It comprised a mixture of sandstone flags and refractory brick, suggestive of modifications at various times. A truncated squared wooden post **2512** (0.5 x 0.4m) was found to cut surface **2508** (Plate 29), whilst nearby iron plate **2515** (0.4 x 0.3m, 0.1m thick) had an indeterminate function.

4.7 PHASE 5 (HANRATTY'S YARD, 1930-PRESENT)

- 4.7.1 The majority of evidence relating to the use of the site as a rag merchants and latterly as a scrap yard comes from intrusive cuts and made ground layers, particularly towards the centre of the site, which frequently truncated the remains of the soapery and foundry. Truncation was particularly heavy in the north-west corner adjacent to the chimney and the site of Evaluation Trench 1. Made ground deposits (**1000**) during this phase of activity appear to chiefly comprise a heterogeneous mix of manmade materials including bundles of rags (supporting the historic records identifying a rag warehouse on site), scrap metal, domestic waste and animal bones. Several modifications to the west range are likely to relate to Phase 5. Although it followed the course of an earlier structure and abutted sandstone plinth **2501** (*Section 4.1.11*), east/west-aligned brick wall **2500** had been built within a construction trench that clearly cut flue **2520/2504** and floors **2508** and **2516**. North of the wall, a salt-glazed waste water pipe utilised the chamber of the former flue (Plate 40), probably servicing the houses above on Rosemary Lane: there were holes cut on top of the pipe to accommodate down spouts or similar. To the south, the pipe ran south-eastward, cutting through floor **2508**.

4.8 UNDATED MODIFICATIONS AND FEATURES

- 4.8.1 Each of the warehouse's internal walls, **1019**, **1020**, **1075**, and **1079**, showed evidence of later modification, with the insertion of machine-made brick column bases. These fixtures were each built about a third of the way from the east wall of the warehouse, with the exception of wall **1020**, which had two evenly spaced bases (Plate 41). These bases presumably indicate that greater support was needed for the upper floors as the building aged. Beneath courtyard 14, between the north and south ranges, sandstone-capped drain **2047** was identified on a roughly east/west alignment (Fig 10). The feature was most likely to have related to either the soapery or the foundry.
- 4.8.2 Well **530** (measuring 8-9m deep) with an aperture of 0.8m, was identified at the western limit of excavation and was found to be constructed of neatly shaped curved sandstone blocks (Plate 42). Without further investigation it is not possible to accurately phase this structure (which is absent from historic mapping) but the presence of a possible cistern room (Room 8A) attached to the western side of the central range, between the well and the warehouse, might indicate that they were contemporary in their use, if not necessarily their origin. It is also possible that the well pre-dates the Soapery and acted as a principal water source for the gardens and the allotments which occupied the site prior to 1799. This same well was later covered and forgotten during the occupation of the yard by the Hanratty family.

4.9 FINDS

- 4.9.1 A small assemblage comprising some 169 fragments of artefacts and ecofacts was recovered from the site. Their distribution and quantification is shown in Table 3.
- 4.9.2 Approximately 39% of the assemblage (65 fragments) was pottery, and represented probably between 30 and 50 vessels. Although the sherds were

generally unabraded, they were mainly relatively small, and are unlikely to reflect anything other than the small-scale deposition of domestic refuse, with largely chronologically undiagnostic black-glazed coarsewares forming the bulk of the group. Only one vessel has the potential to date earlier than the middle decades of the eighteenth century. A poorly-made unglazed whiteware base from Room 11 could possibly be of Romano-British or (less likely) medieval date, but it must be borne in mind that unglazed whitewares continued to be made into the nineteenth century and other vessels from the same group are without doubt much later.

	Ceramic vessel	Clay pipe	CBM	Glass	Iron	Industrial debris	Mollusc	Animal bone	Copper alloy	Totals
Room 8	10	1		1			2	8		21
Room 9	2							1		3
Room 10	3			9						12
Room 11	4									4
Room 12	9	3				9				21
Room 13			1		15	6		2	1	25
Room 14	1				33					34
Room 16	3	1								4
Room 17					5					6
WB					3					3
Other	33	2		1						36
Totals	65	7	1	11	56	15	2	11	1	169

Table 3: Quantification of finds by room

- 4.9.3 Three other fragments stand out from the group, one being a small body sherd of eighteenth-century Westerwald stoneware coming from made ground **2050**, seen in Room 12. A small fragment from the rim of a tin-glazed plate was from buried soil **508** (in Trench 5), and a somewhat featureless base fragment of white salt-glazed stoneware was from cobble bedding layer **714** (Trench 7). All can be placed in the mid- to late eighteenth century. Nothing else can be regarded as unequivocally of similar date, but several of the fragments of black-glazed redwares seen in Rooms 8 and 10 give the impression of being in earlier fabrics. The remainder of the blackwares, however are very late eighteenth-century at the earliest, and likely to be appreciably more recent. Most are likely to have been locally made, as are the few fragments of self-glazed redwares with simple slip-trailed decoration, a form of decoration which survived in country potteries into the twentieth century. There were only a few fragments of refined white earthenwares, some transfer-printed, another with sponge decoration, and again, these are likely to be of nineteenth-century date, as is a single fragment of bone china from Room 16.
- 4.9.4 A small amount of vessel glass came from Rooms 8 and 10. In both cases the vessels represented were tall cylindrical dark olive green wine/beer bottles which can be dated to the late eighteenth century at the earliest, but which are most likely to date to the first half of the nineteenth century. A fragment of glass tubing was associated with the metalwork from Room 17. Very little clay tobacco pipe was recovered from the site and, all being small stem fragments, it cannot be regarded as chronologically diagnostic, except in confirming the late dates provided by pottery and glass from the site.
- 4.9.5 The second largest component of the assemblage, representing just over 34% of

the material (56 objects), is generally poorly preserved ironwork which has not been x-rayed. The site was at some point thought to have been associated with metal recycling, and much of the ironwork can therefore be regarded as of little significance in charting its development. Nonetheless, three large iron objects were recovered in relatively good condition during the watching brief on the western range. All three can be associated with secondary iron-working: two (Tools 1 and 2) are clearly intended for working hot metal, used for shaping and possibly cutting hot iron in the course of the production of other iron objects, the third (Tool 3) is a pair of tongs, used to hold or transport metal hot objects during their production.

- 4.9.6 **Tool 1** (Plate 43) has a rod handle, with a tight loop at one end, formed in the same plane as the head. The rod is split close to the head, and opened up to accommodate it (Plate 44a). The head, tentatively identified as a top swage, is basically Y-shaped (Plate 44b), and is intended to be used in conjunction with a bottom swage for reducing or drawing down a round bar. The expanded top of the head is an indication of use, the metal having spread, cracked and curled over by repeated hammering.
- 4.9.7 **Tool 2** (Plate 45) has a rod handle, with a loop at one end, formed at right-angles to the head. The rod is split close to the head, and was opened up to accommodate the head (Plate 46a) and then hammered back to secure it. The head, the purpose of which has not been identified, is basically triangular in plan, but is semi-circular in side view (Plate 46b). It does not appear to be bladed, but was presumably it is intended to make a semi-circular depression or cut, and would have been used with a bottom set of some kind. Lillico (1991, fig 10) illustrates a gouge set in a rod handle like this example, used for cutting a rounded end to a piece of metal, but it is not clear from the illustration as to whether the tool is bladed. A so-called curved-edge set, set in a hardy hole in the anvil, is also similar in cross-section, and is used to cut hot metal.
- 4.9.8 **Tool 3** (Plate 47) is a pair of hinged tongs with long straight handles, but curving jaws. The tool has been provisionally identified as bow or pipe tongs, used to carry cylindrical pieces of hot metal. These would, thus, not be out of place being used in conjunction with Tool 1, thought to be a swage of some sort. The head of the tongs is not clearly visible as a large fragment of coarse fabric now adheres to the mouth and hinge, obscuring detail.
- 4.9.9 Tools 1 and 2 are very different, although both clearly intended to be used in the same manner. Their markedly different heads suggest that both were intended for specialised processes. Both have the head held in an originally loose-fitting rod handle, and both now are held firmly in place by corrosion. The head of these tools was intended to be struck with a sledge hammer by the smith's assistant, and the loose-fitting handle reduced jarring and damage to the arms of the smith. (Harries and Heer 1993). Tool 3 would have been used to steady the hot iron as it was worked and to transport it from hearth to anvil as necessary. As seems customary, many such tools were made by the individual smiths working at the foundry, and would presumably have differed slightly in appearance from smith to smith. Blacksmithing tools are simple forms and do not change significantly through time, thus dating with any precision is

effectively impossible. It must, therefore, be assumed that they are contemporary with the foundry.

4.9.10 A rapid assessment of the remainder of the group suggests that it is very mixed, including large hand-forged nails, a horseshoe, fire tongs, a file, and other items which have clearly been broken up, perhaps with a view to recycling. A single copper-alloy object, possibly the tap for a gas lamp, probably also has its origin in metal reclamation. Gas lighting was introduced in the early nineteenth century, but was not widely used in poorer housing until the end of the same century. Metal-working slags are also presumably associated with the same processes, which seem in general to have been confined to activities within the areas of Rooms 13, 14, and 17. A large fragment of fused fire brick also came from Room 13 (structure **1056**), and must be associated with the high-temperature processes carried on there.

4.9.11 Ecofacts are confined to a small assemblage of obviously butchered animal bone and the complete shell of a single large native oyster. All presumably derived from domestic waste.

4.10 PLANT REMAINS AND CHARCOAL

4.10.1 Plant remains were recorded in both the bulk samples from fills **1084** and **1090** of ditch cuts **1083** and **1089**, respectively. These were occasionally preserved by charring, but waterlogged plant remains and charcoal fragments were more abundant.

Context	Sample	Feature	Matrix	Plant remains	Potential for further work	Potential for Dating
1090	1	Ditch	Charcoal >2mm ++, <2mm ++ including diffuse porous taxa and roundwood, Coal ++, HAVM++, AMP ++, sand +, silt/clay+	CPR cereal/large grass (1), WPR (4) including <i>Rumex</i> , <i>Fumaria</i> , <i>Rubus</i> and <i>Juncus</i>	WPR limited analysis	Yes
1084	2	Ditch	Charcoal >2mm ++, <2mm ++ including diffuse porous taxa and <i>Quercus</i> , Coal ++, HAVM++, AMP ++, sand and gravel+,	CPR <i>Triticum</i> sp and <i>Avena</i> /large grass (2), WPR (4) including <i>Avena</i> , <i>Rubus</i> , <i>Chenopodium</i> and <i>Carex</i>	CPR and WPR limited analysis	Yes
Bay 6		North wall		Uncharred oat grains and glumes		Yes

Table 4: Assessment of the plant remains and charcoal

Notes: CPR = charred plant remains, WPR = waterlogged plant remains, AMP = amorphous plant remains and HAVM = heat affected vesicular material Plant remains are scored on a scale of abundance of 1-4, where 1 is rare (up to five items) and 4 is abundant (>100 items). Matrix components are recorded as present + or abundant ++

4.10.2 **Charred Plant Remains:** the charred plant remains included wheat (*Triticum* sp) and possible oats (*Avena*) or large grass grains. These were more frequent in

ditch fill **1084**. The charred grains were poorly preserved and appeared to have been burnt at high temperatures.

- 4.10.3 **Waterlogged Plant Remains:** abundant waterlogged plant remains were identified in both samples, but greater diversity was observed in ditch fill **1090**. The assemblage of waterlogged seeds identified (in both samples) included oat, fumitory (*Fumaria* sp), sorrels (*Rumex* sp), sedges (*Carex* sp), brambles (*Rubus* sect 2 Glandulosus), pale persicaria (*Persicaria lapathifolia*), rushes (*Juncus* sp), and fat-hen (*Chenopodium album*). In addition, a deposit of uncharred oat grains and glume bases was recovered from the north wall in Room 6 of the warehouse.
- 4.10.4 **Charcoal and other matrix components:** abundant charcoal fragments were recorded in both contexts, although only hazel/alder (*Corylus/Alnus*), including round wood, was recorded in ditch fill **1090**. In ditch fill **1084**, oak (*Quercus*) was also recorded. Abundant fragments of coal and heat affected vesicular material were noted in the matrices along with amorphous plant remains, sand, gravel and clay.
- 4.10.5 **Discussion:** there is evidence for cereal consumption on the site and the large number of uncharred oat grains within the north wall of the building may indicate the presence of horses on the site, although oats may also be used in bread making. This store of grains within the wall is likely to represent the hoarding of it by small mammals. The assemblages of waterlogged plant remains suggest open (fumitory), waste (brambles), cultivated (pale persicaria) or wet ground (rushes and sedges) in or around the site. Reed stems were observed by the field archaeologists in the natural geology beneath the floors in some areas of the site, and suggest that the natural environment was probably marshy prior to construction of the buildings. Their preservation in the ditch fills suggest that conditions were anoxic and anaerobic.
- 4.10.6 Coal (readily available in the locale), charcoal and wood were all being used as fuel when the ditch was filling. There was, however, no evidence for industrial activity identified in the bulk samples.

5. DISCUSSION

5.1 INTRODUCTION

- 5.1.1 The fieldwork undertaken to date has exposed a significant portion of the industrial heart of the soapery and foundry, as well as providing glimpses of the nature of activity in the surrounding and more peripheral areas of the development site. Through the integration of documentary and cartographic material with the fieldwork results, it has been possible to attribute many of the structures to five phases that collectively span almost three centuries, and to gain an understanding of the nature and sequence of activity on the site. Correlating structural remains with dated phases, and identifying and dating sub-phases within the major chronological divisions, was not always easy, and was not aided by the use of locally sourced roughly hewn pink sandstone and large water-rolled cobbles as the principal construction materials. Modifications to such components can be very hard to detect, particularly when the sandstone blocks often appeared to be little more than rubble.

5.2 EARLY ACTIVITY

- 5.2.1 The earliest activity on the site may possibly date to the Roman or medieval period, but, being represented by a single sherd of redeposited and chronologically ambiguous pottery, cannot be interpreted. Several Roman coins are reputed to have come from the town (OA North 2006) and the area lies amidst a network of coastal defences, so the presence of contemporary activity in the area is not unexpected. Equally, Whitehaven was a port of some significance in the medieval period and, although settlement is likely to have been focused closer to the harbour, less intensive activity could well have extended into the current development area.
- 5.2.2 Although the development site is known to have been a freehold tenancy by the mid-seventeenth century, none of the findings, including the diagnostic artefacts, could be attributed to such a date. Nevertheless, stone walls are extremely hard to date without other forms of supporting information, and it is possible that the wall identified in Trench 9, and wall **1030** within the industrial complex, could represent earlier forms of land division. Indeed, wall **1030** is altogether curious, as its alignment differs from any other structure or plot boundary documented since the early eighteenth-century town plans (Pellin 1705), and it might be concluded that it is of seventeenth-century date or earlier.
- 5.2.3 Conversely, ditch **1083=1089** is much more likely to tie into the subdivision of the site, bounding either the side of a plot running from Albion Street, or the rear (or internal subdivision) of one on Old Town. The latter seems more likely: Pellin's maps show the site's earliest development on that street, whilst any organisation of the Albion Street frontage might be expected to be later, and thus to be better respected by the buildings. Indeed, the historic maps would indicate that Pellin's late seventeenth-century east/west plots between Old Town and Rosemary Lane were the primary influence on the arrangement of the gardens at the northern end of the development site and on the positions of

individual properties. The date that ditch **1083=1089** was first cut is uncertain, but it would appear to have finally filled up around the mid-eighteenth century, corresponding with dated artefacts from the soil horizons that formed when the majority of the site hosted horticulture and similar activities. The nature of that environment, comprising areas of wet ground, scrub and cultivation, is indicated by the plant remains from the ditch samples.

- 5.2.4 Whether or not the structures identified close to the Old Town street frontage were really contemporary with these backyard deposits is of some debate. They were certainly present by the late eighteenth century and would appear to represent infilling within plots rather than the earliest, street-front, structures. It is possible that the wells also date to this period, and would have been extremely useful for each of the later industries.

5.3 THE SOAPERY

- 5.3.1 Despite the good preservation of many of the soapery structures, and the fact that there are several cartographic representations and historical documents of varying value and accuracy, tracing the history of the enterprise has not been particularly easy. Indeed, even the date of its foundation is somewhat uncertain, although it must have been present by 1781 when part of it, presumably one of the floors of the multi-storey warehouse, was used as a Methodist Chapel. However, working backwards in time, the sale documents (*Section 3.2*) and the OS 1865 map and town plan provide some excellent clues as to the nature of the industrial complex at the end of its life. Moreover, they permit a broad reconstruction of the extent of the complex, suggesting that it occupied a T-shaped configuration running from the just west of the centre of Albion Street, and with the northern section running from Rosemary Lane to a court of houses on the corner of Barker Lane and Old Town (Fig 6). At the time of the sale, the site had been a bakery for about a decade, so it is unsurprising that none of the structures are directly attributed to the production of soap. Nevertheless, the recorded ancillary buildings probably served a similar function ten years earlier.
- 5.3.2 Within southern Lot 1, the warehouse mentioned can be correlated with excavated Building 1, although the stable and dwelling could be represented by either of the other structures shown on the 1865 OS map (Fig 6, and, in the case of the narrow building running from the street front, on Howard's map of 1792 Fig 4). Although the latter buildings received limited attention during the investigation, excavation of warehouse Building 1 would indicate that this, together with retaining wall **2514**, was perhaps the earliest part of the complex, around which the other buildings had been constructed. Its slightly wedged shape probably reflects its position with the somewhat irregular plot, rather than any attempt to appropriate additional space from undeveloped neighbouring plots. However, it is possible that the use of locally collected beach cobbles within the foundations reflects a bid to economise on quarried stone. Boiler House Building 3 was not specifically mentioned as part of Lot 1, although that within northern Lot 2 was, and is almost certainly shown on the 1865 OS map, just to the north-west of the limit of excavation. This northern boiler may have powered an engine that worked the putative ash mill, which may have stood on the large sandstone block in Building 2, but, being absent

from Wood's map, was probably only installed in that position after 1830. Other structures listed under Lot 2, including several warehouses, are likely to have occupied the northern and north-eastern ranges. Although the north-west range lay outside the excavation area, it may have been occupied by the other stables mentioned in the bill of sale. It is an interesting feature of the site that these single-storey structures at the foot of the Rosemary Lane terrace appear to have been surmounted by houses with doors and windows onto the steep gradient of that street. The structural remains identified by the watching brief in that area were fairly undiagnostic, but certainly stables would have formed a far more appropriate base for houses than would industrial workshops.

- 5.3.3 Comparison of earlier maps (Howard; 1792 and Wood; 1830) with the 1865 OS would indicate that the original configuration of the soapery was slightly different from its final incarnation. However, dating the changes and attributing functions to its component structures is near impossible, particularly given that the earliest cartographic sources are not necessarily accurate. There are two substantive differences. First, the earlier sources indicate that the principal axis of the complex (*ie*, as defined by warehouse Building 1) ran all the way to the north range, creating courtyards on either side. This contrasts with the situation on the 1865 OS map, with its single courtyard and the north range joined to the main block at its eastern end. No archaeological evidence of that original plan was identified in the area of Courtyard 14, although it could have been sealed by the extremely indurated moulding sand in that location. Building 2, housing the putative ash mill, is thus unlikely to have been part of the original architecture (and indeed, was probably constructed of stone reused from the original configuration), whilst the boiler houses (including Building 3) most certainly were not. Secondly, Howard and Wood show that much of the southern portion of the soapery was occupied by a large square structure, rather than the courtyard depicted on later sources. Although the western wall of this building was identified in Evaluation Trench 4, the remainder lay outside the area of investigation. It is possible that elements may be preserved beneath the later soapery courtyard, or that the building represented a relatively open-plan workshop with a floor that was easily converted to use as a courtyard (indeed, the watching brief of the west range suggests that it may have been clay or rammed earth).
- 5.3.4 Given the history of the site, it is perhaps unsurprising that only the most robust of the soapery fixtures were preserved. Based on historic descriptions, the majority of eighteenth- and nineteenth-century soap- and candle- making apparatus would have been readily portable. Key elements such as the coppers, lifts (bottomless wooden boxes used for moulding soap), and fire pits, could be removed or modified with very little expense or effort prior to the building being adapted for alternative uses. Equally, housing large volumes of raw materials, fuel and finished products, as well as transport, would have required a considerable quantity of generally featureless storage space.

5.4 DOMESTIC ACTIVITY AND THE BAKERY

- 5.4.1 Although the 1865 bill of sale records that several buildings within the soapery complex were used as, or had been converted to, dwellings, there was very little evidence for habitation within the excavation area. Nor were there any below-

ground features relating to the bakery identified within the excavation area. Given that the bread oven was located on the first floor, and on the east-facing side of the surviving wall that marked the eastern limit of excavation, it is possible that other remains associated with the bakery lay just to the east. Certainly the oven is likely to represent the most drastic (and, indeed, necessary) modification to the soapery buildings, and it would otherwise appear that the bakery utilised many of the soapery structures of the central range with only minor modifications.

- 5.4.2 Whilst investigation beyond the industrial core of the site was more limited, it seems unlikely that the group of buildings along the southern end of Rosemary Lane and the corner of Albion Street were ever part of the industrial complex. It is perhaps possible that the one on the Albion Street frontage could have been Nicholson's warehouse, with its contentious windows, but the remainder was probably domestic dwellings. That these may have been built, or developed, back-to-back, is suggested both by their depiction on the 1865 OS map, and by the fact that they were served by a ginnel from Rosemary Lane and a back alley that was walled-off from the soapery courtyard (and also shown by Howard; 1792). It is likely that the pair of walls encountered in Evaluation Trench 4 correspond to the rear of those houses and the boundary of the soapery courtyard (itself originally the west wall of a building). The domestic structures further north along Rosemary Lane, can be no earlier than the soapery buildings that formed their lower storeys. Particularly when compared with the more salubrious planned town to the east, it is unlikely that the irregular and compacted buildings in the area of Albion Street occupied one of the most desirable residential areas. Most were located cheek by jowl with industries that would have been malodorous and at times downright dangerous. As such, they are likely to have housed many of those who worked in the industries.

5.5 THE FOUNDRY

- 5.5.1 Like the soapery, certain elements of the foundry were very well preserved, but truncation of others makes it difficult to gain a complete understanding of how the site functioned holistically. There was also some evidence of sub-phasing, although the only documented changes are those to the north range in 1892. These changes do not include those observed in Buildings 2, 5 and 6, and it seems likely that those modifications within the existing soapery buildings took place soon after the Ramsay Brothers took up residence. Under those circumstances, it may have been that Building 2 formed the focus of heating and casting activity, with furnaces built into Rooms 1 and 2. Given that the associated flue heads off in the direction of the soapery boiler house within Courtyard 14 (OS 1865), it seems likely that the early foundry operation harnessed the existing soapery power system. Given the location of the flue and refractory surface, it is probable that industrial processes were undertaken in the west range, although it might be posited that these involved secondary processing rather than direct founding. Either way it must have been extremely noisy, and something of a risk, for the occupants of domestic dwellings above, although might have reduced their need for heating.
- 5.5.2 The 1892 modifications to the north range allowed the addition of expanded moulding and filling shops (Plates 8-9), and presumably provided further

finishing workshops on the upper floor of the multi-storey structure. The project involved terracing the area beneath the north range extension, and it is possible that the floor of the original north range was further dug out at that stage, as it is difficult to understand why such an excavation, seemingly filled only with spent moulding sand, would be undertaken at a later date. The project may also have updated the power plant, as neither of the soapery boiler houses, whilst depicted on the 1892 plans, were shown on the 1899 OS map. Further, the machine beds identified in Evaluation Trench 1, close to the foundry chimney, may also have been set up at that time. The 1899 map would indicate that modifications to Building 2 would probably have led to the cessation of heating and casting there, although it is apparent that this part of the complex was given over to working copper alloy; such activity in neighbouring Building 6 persisted until the end of the foundry's usage.

5.6 REVIEW OF RESEARCH AIMS

- 5.6.1 The fieldwork undertaken to date has allowed the majority of the project's research aims to be addressed in whole, or in part. It has been possible to gain a basic understanding of the sequence, extent and general date of structures relating to the soapery and the foundry (RQ1) and, although the function of certain of the buildings in each phase could not always be ascertained, the nature of activity undertaken in others could be interpreted (RQ2). We have a good understanding of the layout and structural development of the soapery over time, but currently rather less comprehension of functional areas, and their inter-relationships (RQ3). Our understanding of the manner in which the foundry was powered is rather incomplete, with the majority of information relating either to the foundry's early usage (when the soapery power systems would appear to have been harnessed and modified), or to the brass side of the works (where gas seems to have been used during the latest stages; RQ4).
- 5.6.2 Documentary sources have revealed that the site served various other functions, including as a bakery and a chapel (RQ5). Of these, only elements of the bakery were preserved as above-ground remains, and neither could be identified archaeologically, not least because the chapel probably occupied an upper floor in warehouse Building 1. Rather less data has been recovered concerning the nature of domestic activity on the site (RQ6), although it would seem that at least some of the domestic units were occupied by soapery and foundry workers, providing a rare opportunity to investigate the domestic and working lives of individuals.

5.7 POTENTIAL FOR FURTHER WORK

- 5.7.1 The site has attracted public interest, and contains well-preserved, interpretable, remains of largely overlooked industries and housing in a little-studied part of the historic town. Accordingly, some form of publication would be of value.

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APPENDIX 1: WYG WSI

Energy Coast Cumbria West (Properties) Ltd

Albion Square, Whitehaven

Evaluation Excavation Written Scheme of Investigation

April 2012

Arndale Court, Otley Road, Headingley, Leeds, LS6 2UJ

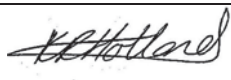


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Contents Page

1.0	Introduction	1
2.0	Site Location and Existing Uses	1
3.0	Archaeological Background	2
4.0	Aim of the Evaluation Excavation.....	3
5.0	Evaluation Excavation Locations	4
6.0	Evaluation Excavation Strategy and Methodology.....	5
6.1	Evaluation Strategy	5
6.2	Contingencies and Unexpectedly Significant or Complex Discoveries	7
6.3	Strategy Review.....	8
7.0	Recording.....	8
8.0	Archive Consolidation and Post-Excavation Work.....	10
9.0	Reporting	11
10.0	Programme	13
11.0	Contractor and Staffing	13
12.0	Health and Safety	14
13.0	Monitoring and Quality Control	14
14.0	Archive	15
15.0	Copyright	16
16.0	Resolution of Issues	16
17.0	Further Information.....	17

18.0	References	17
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Appendix Contents

Appendix A – Report Conditions

Appendix B – Project Brief from Cumbria County Council

Appendix C – Trench Location Plan

Appendix D – CDM Designers Risk Assessment



Evaluation Excavations Written Scheme of Investigation

1.0 Introduction

Archaeological evaluation excavations are required as part of post-consent works to identify and record potential archaeological remains within the site of the proposed development at Albion Square, Whitehaven, Cumbria. The results of these evaluation excavations will be used to inform the mitigation strategy to be adopted for the site.

This written scheme of investigation has been prepared by Kirsten Holland, Principal Archaeologist at WYG Environment on behalf of Energy Coast West Cumbria (Properties) Ltd. The written scheme of investigation has been prepared in accordance with a brief provided by Jeremy Parsons, Historic Environment Officer for Cumbria County Council (Appendix B).

The on-site works will be undertaken by Oxford Archaeology North and details are provided in Section 12.

This specification covers the above site only and relates only to the requirement pertaining to the site in question. It does not address the archaeological requirements for subsequent development of further areas or phases.

2.0 Site Location and Existing Uses

The proposed development site is located to the north and south of Albion Street, Whitehaven, Cumbria. The grid reference for the approximate centre of the site is NX 9713 1791. It is bounded to the south by commercial development, to the east by the B5345 New Town, to the north by a multi-storey car park and the west by Rosemary Lane. The site is located at approximately 10m AOD.

The site is currently largely disused with a number of empty buildings in the south side of the site including some derelict buildings and a workshop. In the north of the site the Dusty Miller public house remains on the corner of Albion Street and New Town, a chimney in the north-west of the site and a number of derelict walls remain in the north-east of the site. Other parts of the site are gravel and dirt, or are overgrown with vegetation or obscured by rubble. Prior to the archaeological evaluations taking place upstanding structures within the site will be removed with the exception of the Dusty Miller public house, chimney and sub-station. The structures for demolition have been surveyed previously (Cracknell, 2012). The vegetation and rubble will also be cleared off the site.



3.0 Archaeological Background

A desk-based assessment (CFA, 2010) and a programme of building recording (Cracknell, 2012) have been previously completed for the site and will be made available to Oxford Archaeology North. The following background is summarised from the desk-based assessment and should be read in conjunction with the report.

Whitehaven became a focussed settlement in the early 17th century. This settlement was originally situated around the harbour and market place reflecting the growth in trade and as a port. The north of the development site where the evaluation excavations will take place was listed as a freehold tenancy in 1667 and a number of properties were shown within the north of the site on Pellin's map of 1695. Mapping in 1779 (Howard) demonstrates that Albion Street and Rosemary Lane were established and the north of the site had been developed. Buildings fronted Old Town to the east, and Rosemary Lane and Albion Street with associated allotment gardens, fronted the northern boundary. A soapery was depicted in the central area of the site.

By 1865 and first edition map the soapery was no longer described and the density of buildings within the site has increased. The layout of the buildings is more regular, particularly along Albion Street and Rosemary Lane. The range of buildings along the northern boundary is relatively narrow and a number of buildings are located within the central courtyard area.

The Phoenix Foundry was set up in 1866 and covered approximately 3 acres with access from Albion Street and Market Lane. It was fronted by offices and stores whilst to the rear were cranes and hoists. There was a sizable workforce in the milling, bring and turning workshops as well as boiler makers, smiths, pattern making shops and a large iron and brass foundry.

By 1899 the north range was a deeper building that shown previously. In addition the chimney is shown on the western site boundary within the buildings. The arrangement of buildings within the central courtyard had also been modified by this time. The layout of the foundry buildings shown on a plate of approximately 1895 appears to be more simplistic than that shown on the OS map and as the degree of artistic licence is unknown caution should be applied in the use of this plate.

The OS mapping of 1925 shows few changes to the site layout, although the foundry is called Phoenix Foundry. By the 1960s the foundry was not named and a number of buildings had been demolished including the West Range along Rosemary Lane.



4.0 Aim of the Evaluation Excavation

The overall aim of the evaluation excavation is to evaluate the site for identified archaeological remains associated with the industrial uses of the site and previously unrecorded archaeological remains including presence/absence, form, date, survival and significance, within the proposed development area. The results of this evaluation will be utilised to design an informed and effective final mitigation strategy for the development site.

Specific objectives of the evaluation excavation are to:

- Excavate archaeological evaluation trenches as identified in this document;
- Identify archaeological features and deposits of interest;
- Excavate and record identified archaeological features and deposits to a level to enable their extent and significance to be identified;
- Undertake sufficient post-excavation analysis to confidently interpret archaeological features identified during site works;
- Undertake sufficient post-excavation analysis of artefacts and samples to identify the potential scope for detailed analysis in future mitigation;
- Report the results of the evaluation excavation and post-excavation analysis and place them within their local and regional context;
- Compile and deposit a site archive at a suitable repository; and
- Identify areas where significant archaeological potential remains and areas where the archaeological potential is considered to be non-significant.

The archaeological evaluation excavation should be carried out in accordance with Institute for Archaeologists guidelines Standards Guidance for Field Evaluation (1999 rev. 2008) and Standards & Guidance for Archaeological Excavation (1999 rev. 2008).



5.0 Evaluation Excavation Locations

The brief supplied by Cumbria County Council requires a minimum of 100m² of evaluation excavation. To provide a fuller picture of the archaeological conditions within the site and reduce the risk of finding further archaeological remains a total of 176m² of evaluation will take place. Based upon a review of the desk-based assessment, historic mapping and the current conditions on the site the evaluation trenches have been located to assess evidence for the Phoenix Foundry and the development of New Town within the northern half of the development site. They have been located in areas where preservation is believed likely to be greatest, away from services and where features of interest within the buildings might be presumed.

The trench locations can be seen on Figure A075852/4154/597/01 in Appendix C. The locations of the trenches on site may be varied by Oxford Archaeology North on the basis of the visible ground conditions following clearance and demolition works, providing the trenches still assess the intended remains. The trenches have been located as follows:

Trench 1 (2mx15m) – located in the north-west of the site above the foundry chimney to target the North Range and potential flues or other features connected to the chimney which might provide evidence of the industrial systems.

Trench 2 (2mx10m) – located within the central range of buildings to assess the archaeological remains and historical uses, including the soapery.

Trench 3 (2mx10m) – located to the east of North Range and East Range to assess the development of new town as recommended in the desk-based assessment.

Trench 4 (2mx10m) – located within the West Range to assess the archaeological remains and historical uses.

Trench 5 (2mx10m) – located within the central range of buildings to assess the archaeological remains and historical uses, including the soapery.

Trench 6 (2mx3m) – located adjacent to the chimney to assess the foundations of the chimney, evidence of flues and the potential remains associated with a cast iron column.

Trench 7 (2mx10m) – located to assess the foundations of the Dusty Miller public house and the former properties along the eastern boundary.



Evaluation Excavations Written Scheme of Investigation

Trench 8 (2mx15m) – located along the Albion Street frontage to assess the properties along this road.

Trench 9 (2mx5m) – located within the North Range to assess the archaeological remains and historical uses.

6.0 Evaluation Excavation Strategy and Methodology

6.1 Evaluation Strategy

Evaluation excavation locations will only be accessed with the agreement of the landowner and tenant. Access to trench locations will be undertaken through routes agreed in advance with landowners and tenants.

Oxford Archaeology North will be responsible for site establishment and identifying the locations of evaluation excavations in accordance with this written scheme of investigation. Oxford Archaeology North will be responsible for site security and fencing and for providing welfare facilities and tool storage during the project.

Oxford Archaeology North shall be responsible, in advance of any ground works, for identifying services (both buried and overhead), including obtaining service plans and for taking all necessary precautions to avoid damage to these services. Service location plans should not be taken as extensive and appropriate precautions should be adopted with regard to potentially unmapped services. The trenches will be scanned by an archaeologist trained in the use of a cable avoidance tool prior to excavation commencing.

The locations and extent of evaluation trenches are described in Section 5 and shown on Figure A075852/4154/597/01/A, Appendix C.

Topsoil and subsoils will be stripped mechanically using a 360° mechanical excavator fitted with a wide, toothless (flat bladed) grading bucket. The topsoil and subsoils will be separated and stockpiled at a safe working distance from the trench sides.

Mechanical excavation equipment shall be used judiciously under archaeological supervision down to the first significant archaeological horizon or natural subsoil. Under no circumstances will the machine be used to cut arbitrary depths down to natural deposits.



Evaluation Excavations Written Scheme of Investigation

Mechanical excavators and other construction plant should not track or drive over an area that has been stripped until an archaeologist has confirmed that no archaeological remains are present.

Oxford Archaeology North will be required to shore or step trenches as appropriate to allow the aims of the evaluation objective to be achieved without compromising health and safety. Oxford Archaeology North may be required to use a water pump.

The machine should be halted should archaeological deposits be encountered. The top of the first significant archaeological horizon may be exposed by machine, but will then be cleaned by hand as necessary and inspected for features.

A sufficient sample of any archaeological features and deposits revealed will be hand excavated in an archaeologically controlled and stratigraphic manner, in order to establish their extent, form, date, function and relationship to other features. The complete excavation of features is not regarded as necessary; a sufficient sample should be investigated to understand the full stratigraphic sequence of each feature, down to naturally occurring deposits.

The following sampling policy is recommended, however should Oxford Archaeology North believe that this should be varied due to the specific circumstance of the identified remains then they should contact WYG to resolve the issue in line with the contingency procedure in Section 7.2:

- A 100% sample should be taken of all stake-holes;
- A 50% sample should be taken of all post-holes, and of pits with a diameter of up to 1.5m;
- A 25% sample should be taken of pits with a diameter of over 1.5m; but this should include a complete section across the pit to recover its full profile;
- A 20% sample should be taken of all linear features, up to 5m in length; for features greater than this, a 10% sample would suffice. The junctions and intersections of linear features should be removed over a sufficient length to determine the nature of the relationship;
- 100% excavation of all funerary features; and
- Built structures, such as walls, will be examined and sampled to a degree whereby their extent, form, date, function and relationship to other features and deposits can be established.



Evaluation Excavations Written Scheme of Investigation

It is anticipated that 19th century remains will be encountered in the first instance. In order to assess the pre-19th century remains a number of further excavations will be undertaken. These excavations will be in the form of sections or sondages within the evaluation trenches. These will allow the survival of earlier remains to be identified without compromising the survival of the later remains before mitigation.

The area of greatest interest is located in the vicinity of Trenches 3 and 7 and relate to the development of Old Town and Swingpump Lane. Within these trenches it is proposed that three sections will be excavated in the first instance. Within the other trenches one or two sections will be excavated depending on the nature of the identified remains. Should the character and sequence of pre-19th century deposits not be identified and understood from these sections then the area will be expanded. The locations and extents of these sections will be identified in consultation with WYG and Cumbria County Archaeologist.

All artefacts will be retained for processing and analysis, except unstratified 19th and 20th century material, which will be noted and discarded. Deposits which are identified as having the potential for the survival of biological remains should be sampled. If human remains are encountered they should be left *in situ*, unless it is felt that this would compromise their future survival. Samples suitable for scientific dating should be taken if encountered during the evaluation excavation.

The excavation and lifting of human remains should be undertaken under licence from the Ministry of Justice and comply with the requirements of the 1857 Burial Act.

Artefacts classified as Treasure under the Treasure Act (1996) will be reported in accordance with the requirements of the Act.

Upon completion of the evaluation excavations the trenches will be backfilled by Oxford Archaeology North with the excavated material. The separated topsoil should be reinstated. Hardstanding will not be reinstated.

6.2 Contingencies and Unexpectedly Significant or Complex Discoveries

The archaeological features that are anticipated to be identified across the site are evidence of post-medieval industrial activity and pre-19th century remains along the east of the site. Should unexpectedly extensive remains be uncovered the scope of this specification should be reviewed to determine the most appropriate recording and sampling strategy for the remains.



Evaluation Excavations Written Scheme of Investigation

Should there be unexpectedly significant or complex discoveries made that warrant, in the professional judgment of the archaeologist on site, more detailed recording than is appropriate within the terms of this specification, then the scope of this specification will be reviewed.

In the event of a review of the specification being required, Oxford Archaeology North will urgently contact WYG with the relevant information to enable them to resolve the matter with Cumbria County Council and Energy Coast West Cumbria (properties) Ltd. This is likely to require an on-site meeting between the relevant stakeholders to review the archaeological remains on-site and identify a way forward.

Any variations to this specification will be issued in writing and agreed by the relevant stakeholders including WYG, Cumbria County Council, on-site archaeological sub-contractor and Energy Coast West Cumbria.

6.3 Strategy Review

The strategy will be held under continuous review during on-site excavation. Should the strategy be considered unsuitable by Oxford Archaeology North, an alternative strategy will be proposed. This strategy will be communicated to WYG in the first instance and agreed by all parties subject to the procedure in Section 16.

7.0 Recording

An overall plan of the trench locations will be produced with the trench locations tied to Ordnance Survey National Grid and datum. The National Grid tie in information will be included with the site archive to ensure that the trenches can be relocated.

The archaeological features will be recorded according to the normal principles of stratigraphic excavation. The stratigraphy of each feature will be recorded by means of a written, drawn and photographic record. If no features are identified the stratigraphy of trench will be recorded in a written description.

Exposed archaeology must be suitably investigated to establish its nature, extent and date, unless it is considered to be of sufficient importance to require preservation *in situ*. The depth and complexity of archaeological deposits and features across the whole trench will be evaluated. All archaeological features and deposits encountered must be excavated by hand and planned using an appropriate scale. The



Evaluation Excavations Written Scheme of Investigation

features will be investigated employing the sampling strategy outlined above and stratigraphic principles of excavation.

All excavated deposits will be fully recorded by detailed written context records on pro-forma sheets giving details of their location, composition, dimensions, shape, any relationships, finds and samples. The records will be cross referenced to other elements of the record and any other relevant contexts.

All features will be recorded on at least one plan, normally at 1:20 scale and at least one section drawing of a feature, normally at 1:10 scale (1:20 if necessary due to size). A complete post excavation plan of the evaluation trench is to be prepared at an appropriate scale if deemed necessary. All drawings are to include co-ordinate data as is necessary for the accurate location of the area planned or the section drawn and spot-heights related to the Ordnance Survey Datum.

All excavated features and deposits will be photographed using black and white film and colour digital photography with a minimum of a 6 megapixel resolution. It is recommended that a supplementary photographic record is undertaken with a digital camera to allow rapid dissemination of results within the project team. Additional site photographs should be taken as appropriate to place excavated features within the wider context.

All finds recovered will be recorded by context. Any significant artefacts (those dating to the 18th century or earlier) will be retained from the topsoil and subsoil. All retained artefacts shall be removed from site for specialist examination and analysis and, if deemed necessary, conservation. Cleaning of objects may take place on site, or upon removal as is deemed appropriate. All recording, cleaning, storage and conservation of finds will be in accordance with the Institute for Archaeologists Standards and Guidance for the collection, documentation, conservation and research of archaeological materials (2001) and Watkinson and Neal (1997).

If human remains are encountered during the watching brief these should be left in situ, covered and protected, in the first instance. The removal of human remains will only take place under appropriate Department for Justice and environmental health regulations, and in compliance with the Burial Act 1857. A Department for Justice license will need to be obtained prior to the removal of the remains and provision shall be made for the specialist reports on the remains by a recognised osteoarchaeologist.

The terms of the Treasure Act 1996 will be followed with regard to any finds that might fall within its purview. Any finds must be removed to a safe place and reported to the local coroner as required by the



Evaluation Excavations Written Scheme of Investigation

procedures as laid down in the Treasure Act Code of Practice 2002. Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the find(s) from theft. Objects defined as treasure under the Act, must be reported to the local coroner.

Due consideration should be given to the potential for further information to be gained through specialist environmental analysis of deposits, or the application of scientific techniques to the study of artefacts. Specialist advice should be sought as to the potential of sites for the application of analyses. Where it is considered potentially beneficial then appropriate samples will be collected and analysed. The analyses to be considered should include soil pollen analysis, charred plant macrofossils and land molluscs from cut features and dry land palaeosols, faunal remains, especially small mammals and fish and soil micromorphology. The application of specialist analysis of industrial residues should also be considered.

8.0 Archive Consolidation and Post-Excavation Work

The site archive will contain all the data collected during the evaluation excavation, including records, finds and environmental samples. It will be quantified, ordered, indexed and internally consistent. Adequate resources will be provided during fieldwork to ensure that all records are checked and internally consistent. Archive consolidation will be undertaken immediately following the conclusion of fieldwork:

- the site record will be checked, cross-referenced and indexed as necessary; and
- all retained artefacts will be cleaned, conserved, marked and packaged in accordance with any requirements of the recipient museum.

All retained artefacts will be assessed and recorded using pro forma recording sheets, by suitably qualified and experienced staff. Initial artefact dating will be integrated with the site matrix (finds of 19th and 20th century date should be noted, quantified and summarily described, but can then be discarded if appropriate). The potential for further analysis of artefacts will be assessed.

All retained environmental samples will be processed by suitably experienced and qualified staff and recorded using pro forma recording sheets, to identify at this stage presence or absence of environmental remains and the potential for further analysis.

The archive will be assembled in accordance with the specification set out in English Heritage's Management of Archaeological Projects 2 (English Heritage, 1991; Appendix 3). In addition to the site records, artefacts, ecofacts and other sample residues, the archive shall contain:



Evaluation Excavations Written Scheme of Investigation

- site matrices where appropriate;
- a summary report synthesising the context record;
- a summary of the artefact record; and
- a summary of the environment record.

The integrity of the primary field record will be preserved. Security copies will be maintained where appropriate.

9.0 Reporting

Weekly progress reports will be provided to the client (WYG) verbally for the duration of the site works. Additional reports will be provided should unexpectedly significant archaeological remains be recorded.

A preliminary report on the evaluation excavation shall be required within one week of the completion of the fieldwork. This will comprise a written summary of the key findings of the evaluation excavations and initial interpretation of the remains and their potential significance. This report will be supported by drawings and photographs as necessary.

A full report on the evaluation excavation shall be required within three weeks of the completion of the fieldwork, unless there are significantly complex remains. The report shall be prepared in accordance with Institute for Archaeologists guidelines. As a minimum the report shall contain the following information:

- A title page, with the name of the project, the name of the contractor and author(s) of the report, the title of the report and date of the report and grid reference;
- A non-technical summary of the findings;
- A description of and a background to the nature of the works, including dates of fieldwork;
- A brief description of the site location (including grid references) and any previously known archaeology in the survey area;
- Description of the methodology employed and explanation of any agreed variations to the brief and justification for any analyses not undertaken;



Evaluation Excavations Written Scheme of Investigation

- The layout, total area and purpose of the trenches, supported by a location plan;
- The results of the evaluation excavations identified by trench including post-excavation analysis of the stratigraphic and other written, drawn and photographic records;
- A catalogue and brief post-excavation analysis of each category of artefact recovered during excavation and the results of biological samples, including the potential for further analysis;
- Discussion of the evaluation excavation results including site phasing and interpretation and discussion of the results within the local and regional context;
- An impact assessment and identification of a predictive model of surviving archaeological remains detailing zones of relative importance against known development proposals;
- A summary of the contents of the project archive and its location;
- References and bibliography of all sources used; and
- An appendix containing a list and summary descriptions of all contexts recorded.

The report will be supported by an overall plan of each trench, indicating the location of archaeological features and individual plans of features or groups as excavated, with supporting section drawings where appropriate.

The report will be supported by general site photographs to place the trenches and archaeological features within context. The report will also include colour photographs of identified archaeological features and artefacts.

The report will also consider the results of the site investigation monitoring undertaken by Oxford Archaeology North in March 2012.

The post-excavation report will outline the archaeological significance of the deposits identified. The report will provide an interpretation of the results in relation to other sites in the region and make reference to other known archaeological sites in the close vicinity of the site.

Recommendations for further archaeological work should not be included within the report but may be provided within additional accompanying correspondence.



Evaluation Excavations Written Scheme of Investigation

Oxford Archaeology North shall submit one copy of the draft report initially for review by WYG, who may also consult Cumbria County Council during this review period. Oxford Archaeology North shall rectify any defects and make any amendments as identified by WYG and shall subsequently submit the final report within in one week of WYG's comments.

Six final reports will be required. A digital copy of the report shall also be provided. Copies of the report should be produced and submitted to:

- the commissioning body, WYG (two hard copies and pdf);
- Cumbria Historic Environment Record (three hard copies and pdf);
- the museum accepting the archive (hard copy); and
- Archaeological Data Service, OASIS (pdf).

If further archaeological field work is anticipated then the results of the evaluation should be made available in summary to an appropriate regional or national publication.

10.0 Programme

WYG shall inform Cumbria County Council of the commencement of works as soon as practicable prior to the start of works. It is anticipated that works will commence on a date to be confirmed and will last for between one and two weeks depending upon the nature of remains identified.

Oxford Archaeology North shall provide verbal progress reports on a weekly basis, on the completion of fieldwork and on request from WYG during the course of the field work.

A draft post-excavation analysis report will be submitted to WYG three weeks after the completion of fieldwork. A final report shall be submitted to WYG one week after comments on the draft report have been made.

11.0 Contractor and Staffing

Oxford Archaeology North will undertake the evaluation excavation and reporting. The project will be under the overall control of Steven Rowland, Project Manager. The archaeological team on site will be led by an OAN Project Officer or supervisor experienced in this type of project.



Evaluation Excavations Written Scheme of Investigation

The following specialists are proposed:

- Finds analysis – Christine Howard-Davis, OAN;
- Faunal analysis – Andrew Bates, OAN; and
- Environmental analysis – Elizabeth Huckerby, OAN.

12.0 Health and Safety

Health and safety will take priority over archaeological matters. All archaeologists undertaking fieldwork must comply with all Health and Safety Legislation. All archaeologists or archaeological organisations undertaking the fieldwork should ensure that they, or any proposed sub-contractors, are appropriately qualified and adequately insured to undertake such projects.

Oxford Archaeology North will be required to liaise with the client with regard to health and safety matters. Oxford Archaeology North will prepare and abide by a project and site specific method statement and risk assessment. A designer's risk assessment is included in Appendix D of this document.

Measures will be taken by Oxford Archaeology North to locate any drainage pipes, service pipes, cables etc. which may cross any of the trench lines, and necessary measures will be taken to avoid disturbing such services. Service drawings will need to be obtained prior to excavation.

Wherever possible trenches will be opened, recorded and backfilled within one day to minimise the risk to the public. Open trenches will be fenced off using suitably visible fencing and appropriate measures taken to warn the public of the risk. Trench sides will be shored or stepped as necessary to ensure trench stability and safe depth of working.

13.0 Monitoring and Quality Control

Monitoring does not and should not take the place of proper self-regulation. The project will be monitored as necessary and practicable by WYG and Cumbria County Council, in its role as "curator" of the regions archaeology.



Evaluation Excavations Written Scheme of Investigation

A programme for monitoring the fieldwork will be agreed in advance of the commencement of fieldwork. Cumbria County Council will receive as much notice as possible of the intention to start fieldwork confirmed in writing.

The representatives of Cumbria County Council and WYG will be afforded access to the site at any reasonable time. The representative will be provided with a site tour and an overview of the site by the senior archaeologist present and should be afforded the opportunity to view all open areas, any finds made that are still on site, and any records not in immediate use.

A draft of the evaluation excavation report will be submitted to the client (WYG) for comments and consideration prior to the submission of a final report.

14.0 Archive

Provision will be made for the deposition of the archive with a suitable museum. In this instance it is recommended that the archive will be deposited with Tullie House Museum, Carlisle. It is recommended that the specific requirements of the museum are confirmed with the curator prior to deposition. The museum curator will be advised of the timetable of the proposed investigation prior to work commencing and the archaeological contractor will adhere to any reasonable requirements the museum may have regarding the conservation, labelling and storage of the excavated material and the resulting archive. The archive should be compiled with reference to the requirements in Section 8.

A field archive should be compiled consisting of all primary written documents, plans, sections and photographs. Catalogues of contexts, finds, soil samples, plans, sections and photographs should be produced and cross-referenced.

The archive will be prepared in accordance with the guidelines published in Brown, DH *Archaeological Archives A Guide To Best Practice In Creation, Compilation, Transfer and Curation*, (2007) and the IfA Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives (2009).

The archiving of any digital data arising from the project should be undertaken in a manner consistent with professional standards and guidance (Richards and Robinson, 2000). The archaeological contractor should liaise with an appropriate digital archive repository to establish their detailed requirements and discuss the transfer of the digital archive.



Evaluation Excavations Written Scheme of Investigation

The archaeological contractor should also liaise with the HER Officer, Cumbria County Council, to make arrangements for digital information arising from the project to be submitted to the Council for HER enhancement purposes.

15.0 Copyright

Copyright in the documentation prepared by the archaeological contractor and specialist sub-contractors should be the subject of additional licences in favour of the repository accepting the archive and Cumbria County Council to use such documentation for their statutory and educational functions, and to provide copies to third parties as an incidental to such functions.

Under the Environmental Information Regulations 2005 (EIR), information submitted to the HER becomes publicly accessible, except where disclosure might lead to environmental damage, and reports cannot be embargoed as 'confidential' or 'commercially sensitive'.

Requests for sensitive information are subject to a public interest test, and if this is met, then the information has to be disclosed. The archaeological contractor should inform the client of EIR requirements, and ensure that any information disclosure issues are resolved before completion of the work. Intellectual property rights are not affected by the EIR.

16.0 Resolution of Issues

In the event of issues arising regarding the implementation of this specification or the scope of the evaluation excavation these will be resolved in the first instance by contacting WYG who will facilitate a resolution through contact with the key stakeholders. Should the issue not be resolved remotely, a meeting will be held between key stakeholders to facilitate discussion of the issues and identification of a suitable strategy to be agreed by all parties.



17.0 Further Information

Further information on this Written Scheme of Investigation can be obtained from:

Kirsten Holland
Principal Archaeologist
WYG Environment
Arndale Court
Otley Road
Headingley
Leeds
LS6 2UJ

Tel: 0113 278 7111
Kirsten.holland@wyg.com

18.0 References

Brown, DH (2007) *Archaeological Archives A Guide To Best Practice In Creation, Compilation, Transfer and Curation*

CFA Archaeology Ltd (2010) *Albion Square, Whitehaven, Cumbria Desk-Based assessment & Level 1 Building Survey*. Report No. 1741

Cracknell P (2012) *Report on a Historic Building Survey at Albion Street, Whitehaven, Cumbria*.

English Heritage (1991) *Management of Archaeological Projects 2*

Institute for Archaeologists (1999 rev. 2008) *Standards & Guidance for Archaeological Excavation*.

Institute for Archaeologists (1999 rev. 2008) *Standards & Guidance for an Archaeological Evaluation Excavation*.

Institute for Archaeologists (2009) *Standard and Guidance for the creation, compilation, transfer and deposition of archaeological archives*.

Museums and Galleries Commission (1994) *Standards in the Museum care of archaeological collections*

Richards J and Robinson D (2000) *Archives from Excavation and Fieldwork: Guide to Good Practice*. AHDS
<http://ads.ahds.ac.uk/project/goodguides/excavation/>

United Kingdom Institute for Conservation (1990) *Guidelines for the preparation of Excavation Archives for long-term storage*



Evaluation Excavations Written Scheme of Investigation

Watkinson D. and V. Neal, (1997) *First Aid for Finds*. Rescue and United Kingdom Institute for Conservation Archaeology Section, 3rd Edition.



Appendices



Appendix A – Report Conditions



Evaluation Excavations Written Scheme of Investigation

Evaluation Excavations Written Scheme of Investigation, Albion Square, Whitehaven

This report is produced solely for the benefit of Energy Coast West Cumbria (Properties) Ltd and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYG. In time improved practices, fresh information or amended legislation may necessitate a re-assessment. Opinions and information provided in this report are on the basis of WYG using due skill and care in the preparation of the report.

This report refers, within the limitations stated, to the environment of the site in the context of the surrounding area at the time of the inspections. Environmental conditions can vary and no warranty is given as to the possibility of changes in the environment of the site and surrounding area at differing times.

This report is limited to those aspects reported on, within the scope and limits agreed with the client under our appointment. It is necessarily restricted and no liability is accepted for any other aspect. It is based on the information sources indicated in the report. Some of the opinions are based on unconfirmed data and information and are presented as the best obtained within the scope for this report.

Reliance has been placed on the documents and information supplied to WYG by others but no independent verification of these has been made and no warranty is given on them. No liability is accepted or warranty given in relation to the performance, reliability, standing etc of any products, services, organisations or companies referred to in this report.

Whilst skill and care have been used, no investigative method can eliminate the possibility of obtaining partially imprecise, incomplete or not fully representative information. Any monitoring or survey work undertaken as part of the commission will have been subject to limitations, including for example timescale, seasonal and weather related conditions.

Although care is taken to select monitoring and survey periods that are typical of the environmental conditions being measured, within the overall reporting programme constraints, measured conditions may not be fully representative of the actual conditions. Any predictive or modelling work, undertaken as part of the commission will be subject to limitations including the representativeness of data used by the model and the assumptions inherent within the approach used. Actual environmental conditions are typically more complex and variable than the investigative, predictive and modelling approaches indicate in practice, and the output of such approaches cannot be relied upon as a comprehensive or accurate indicator of future conditions.

The potential influence of our assessment and report on other aspects of any development or future planning requires evaluation by other involved parties.

The performance of environmental protection measures and of buildings and other structures in relation to acoustics, vibration, noise mitigation and other environmental issues is influenced to a large extent by the degree to which the relevant environmental considerations are incorporated into the final design and specifications and the quality of workmanship and compliance with the specifications on site during construction. WYG accept no liability for issues with performance arising from such factors

November 2008

WYG Environment Planning Transport Ltd



Appendix B – Project Brief from Cumbria County Council

ALBION SQUARE, WHITEHAVEN, CUMBRIA

Watching Brief Project Design



Oxford Archaeology North

March 2012

White Young Green Engineering

NGR: NX 9713 1791

1. INTRODUCTION

1.1 PROJECT BACKGROUND

- 1.1.1 White Young Green Engineering (WYG, hereafter ‘the Client’), has requested that Oxford Archaeology North (OA North) submit proposals for a programme of archaeological work to be undertaken during site investigation (SI) works on land at Albion Square, Whitehaven, Cumbria (NGR NX 9713 1791). The development site is located within an area of archaeological potential and, consequently, Cumbria County Council Historic Environment Service (CCCHES) requested that a watching brief be conducted during the programme of test-pitting at the northern end of the site. The following document represents a project design to carry out the above programme of work and has been prepared in accordance with standard CCCHES requirements.

1.2 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

- 1.2.1 The development site has been the subject of a desk-based assessment and EH Level 1 historic building investigation (CFA 2010), and more recently, a comprehensive building survey. These reports should be consulted for a full background. In brief, concentrated settlement in Whitehaven dates to the early seventeenth century, and the northern part of the development site, within which the archaeologically monitored SI works will take place, was listed as a freehold tenancy in 1667. By the end of the seventeenth century the site was occupied by buildings fronting Albion Street, to the south, and by 1799, along Rosemary Lane, to the west. These buildings, one of which is labelled a ‘soapery,’ are shown together with courtyards, and also associated gardens/allotments, at the northern end of the plot. These gardens had been built upon by 1865. By 1899, much of the site was occupied by the Phoenix Foundry, now in turn derelict and largely demolished, with some upstanding walls remaining in the investigation area (CFA 2010).

1.3 OXFORD ARCHAEOLOGY NORTH

- 1.3.1 OA North has considerable experience of excavation of sites of all periods, having undertaken a great number of small and large scale projects throughout Northern England during the past 25 years. Evaluations, desk-based assessments, watching briefs and excavations have taken place within the planning process, to fulfil the requirements of clients and planning authorities, to very rigorous timetables. OA North has the professional expertise and resources to undertake the project detailed below to a high level of quality and efficiency. OA North is an **Institute for Archaeologists (IfA) registered organisation, registration number 17**, and all its members of staff operate subject to the IfA Code of Conduct.

2. OBJECTIVES

2.1 The following programme has been designed to identify and record any archaeological deposits revealed during the SI works, in order that they can be preserved by record. To this end, the following programme has been designed, in accordance with normal CCCHES standards, to provide a watching brief. The required stages to achieve these ends are as follows:

2.2 *Archaeological Watching Brief*

To undertake a programme of observation and recording during SI works within the northern plot of the development site to determine the presence, quality, extent and importance of any archaeological remains on the site.

2.3 *Report and Archive*

A report will be produced for the Client within eight weeks of completion of the fieldwork. A site archive will be produced to English Heritage guidelines (1991) and in accordance with the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (UKIC 1990).

3. METHOD STATEMENT

3.1 WATCHING BRIEF

3.1.1 **Methodology:** a programme of field observation will accurately record the location, extent, and character of any surviving archaeological features and/or deposits revealed during the SI works within the northern plot of the development site. This work will comprise observation during all ground reduction and excavations for the proposed development, the systematic examination of any subsoil horizons exposed during the course of the groundworks, and the accurate recording of all archaeological features and horizons, and any artefacts, identified during observation.

3.1.2 Putative archaeological features and/or deposits identified during the observation of groundworks, together with the immediate vicinity of any such features, will be cleaned by hand, using either hoes, shovel scraping, and/or trowels depending on the subsoil conditions and, where appropriate, sections will be studied and drawn. Any such features will be sample excavated (*ie* selected pits and postholes will normally only be half-sectioned, linear features will be subject to no more than a 10% sample, and extensive layers will, where possible, be sampled by partial rather than complete removal).

3.1.3 During this phase of work, recording will comprise a full description and preliminary classification of features or materials revealed, and their accurate location (either on plan and/or section, and as grid co-ordinates where appropriate). Features will be planned accurately at appropriate scales and annotated on to a large-scale plan provided by the Client. A photographic record will be undertaken simultaneously.

3.1.4 A plan will be produced of the areas of groundworks showing the location and extent of the ground disturbance and one or more dimensioned sections will be produced.

- 3.1.5 **Treatment of finds:** all finds will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) and the recipient museum's guidelines.
- 3.1.6 **Treasure:** any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.
- 3.1.7 All identified finds and artefacts will be retained, although certain classes of building material can sometimes be discarded after recording if an appropriate sample is retained on advice from the recipient museum's archive curator.
- 3.1.8 **Human Remains:** any human remains uncovered will be left *in situ*, covered and protected. No further investigation will continue beyond that required to establish the date and character of the burial. CCCHES and the local Coroner will be informed immediately. If removal is essential, the exhumation of any funerary remains will require the provision of a Home Office license, under section 25 of the Burial Act of 1857. The removal of human remains will be carried out with due care and sensitivity under the environmental health regulations.
- 3.1.9 **Contingency plan:** in the event of significant archaeological features being encountered during the watching brief, discussions will take place with the Planning Archaeologist or his representative, as to the extent of further works to be carried out. All further works would be subject to a variation to this project design. In the event of environmental/organic deposits being present on site, it would be necessary to discuss and agree a programme of palaeoenvironmental sampling and or dating with the Planning Archaeologist.

3.2 REPORT AND ARCHIVE

- 3.2.1 **Report:** one bound and one unbound copy of a written synthetic report will be submitted to the Client, and a further three copies submitted to the Cumbria HER within eight weeks of completion. Copies of the desk-based assessment, and interim statements on the results of the watching brief can be issued within three weeks of the completion of these elements. The report will include:
- a front cover to include the planning application number and the NGR
 - a site location plan, related to the national grid
 - the dates on which the fieldwork was undertaken
 - a concise, non-technical summary of the results
 - a description of the methodology employed, work undertaken and results obtained
 - plans and sections at an appropriate scale, showing the location of features

- other illustrations and photographic plates showing, as appropriate, features of interest or to demonstrate the absence of archaeological features.
 - a description of any environmental, finds, or other specialist work undertaken, and the results obtained
 - the report will also include a complete bibliography of sources from which data has been derived.
 - a copy of this project design in the appendices, and indications of any agreed departure from that design
- 3.2.2 This report will be in the same basic format as this project design; a copy of the report can be provided on CD, if required.
- 3.2.3 **Archive:** the results of all archaeological work carried out will form the basis for a full archive to professional standards, in accordance with current English Heritage guidelines (Management of Archaeological Projects, 2nd edition, 1991). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. It will include summary processing and analysis of all features, finds, or palaeoenvironmental data recovered during fieldwork, which will be catalogued by context. All artefacts will be processed to MAP2 standards and will be assessed by our in-house finds specialists.
- 3.2.4 The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the IFA in that organisation's code of conduct. OA North conforms to best practice in the preparation of project archives for long-term storage. This archive will be provided in the English Heritage Centre for Archaeology format and a synthesis will be submitted to the Cumbria HER (the index to the archive and a copy of the report). OA North practice is to deposit the original record archive of projects with the County Record Office, Kendal. The material archive (artefacts and ecofacts) will be deposited with an appropriate museum following agreement with the client.
- 3.2.5 **Collation of data:** the data generated will be collated and analysed in order to provide an assessment of the nature and significance of the known surface and subsurface remains within the designated area. It will also serve as a guide to the archaeological potential of the area to be investigated, and the basis for the formulation of any detailed field programme and associated sampling strategy, should these be required in the future.
- 3.2.6 The Arts and Humanities Data Service (AHDS) online database project Online Access to index of Archaeological Investigations (OASIS) will be completed as part of the archiving phase of the project.
- 3.2.7 **Confidentiality:** all internal reports to the client are designed as documents for the specific use of the client, for the particular purpose as defined in the project brief and project design, and should be treated as such. They are not suitable for publication as academic documents or otherwise without amendment or revision. Any requirement to revise or reorder the material for submission or presentation to third parties beyond the project brief and

project design, or for any other explicit purpose, can be fulfilled, but will require separate discussion and funding.

4. HEALTH AND SAFETY

- 4.1 OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers (1997). A risk assessment will be completed in advance of any on-site works and copies will be made available on request to all interested parties.

5. WORK TIMETABLE

- 5.1 **Archaeological Watching Brief:** the duration of this element is dependant upon the duration of any ground disturbing activities on the site, which are thought to take one day on 26/3/12.
- 5.2 **Report and Archive:** an evaluation report will be submitted within eight weeks of the completion of the fieldwork. However, should an interim statement be required this can be issued within two weeks but instruction must be received from the client prior to completion of the fieldwork.
- 5.3 **Written Instruction:** OA North can execute projects at very short notice once written confirmation of commission has been received from the Client. One weeks notice would be sufficient to allow the necessary arrangements to be made to commence the task and inform CCCHES.

6. PROJECT MONITORING

- 6.1 **Access:** liaison for site access during the evaluation will be arranged with the client unless otherwise instructed prior to commencement of the archaeological investigation.
- 6.2 Whilst the work is undertaken for the client, the County Archaeologist will be kept fully informed of the work and its results, and will be notified a week in advance of the commencement of the fieldwork. Any proposed changes to the project design will be agreed with CCCHES in consultation with the Client.

7. STAFFING PROPOSALS

- 7.1 The project will be under the direct management of **Stephen Rowland** (OA North project manager) to whom all correspondence should be addressed.
- 7.2 All elements of the archaeological investigation will be supervised by either an OA North project officer or supervisor experienced in this type of project. Due to scheduling requirements it is not possible to provide these details at the present time. All OA North project officers and supervisors are experienced field archaeologists capable of carrying out projects of all sizes.

- 7.3 Assessment of the finds from the evaluation will be undertaken under the auspices of OA North's in-house finds specialist **Christine Howard-Davis BA MIFA** (OA North project officer). Christine has extensive knowledge of all finds of all periods from archaeological sites in northern England. However, she has specialist knowledge regarding glass, metalwork, and leather, the recording and management of waterlogged wood, and most aspects of wetland and environmental archaeology.
- 7.4 Assessment of any palaeoenvironmental samples which may be taken will be undertaken by **Elizabeth Huckerby MSc** (OA North project officer). Elizabeth has extensive knowledge of the palaeoecology of the North West through her work on the English Heritage-funded North West Wetlands Survey. Assessment of any faunal material will be undertaken by **Andrew Bates MSc** (OA North Supervisor).

8. BIBLIOGRAPHY

CFA, 2010 *Albion Square, Whitehaven, Cumbria: Desk-based assessment and Level 1 building survey*, unpubl rep

Institute of Field Archaeologists (IFA), 1992, *Guidelines for data collection and compilation*

SCAUM (Standing Conference of Archaeological Unit Managers), 1997, *Health and Safety Manual*, Poole

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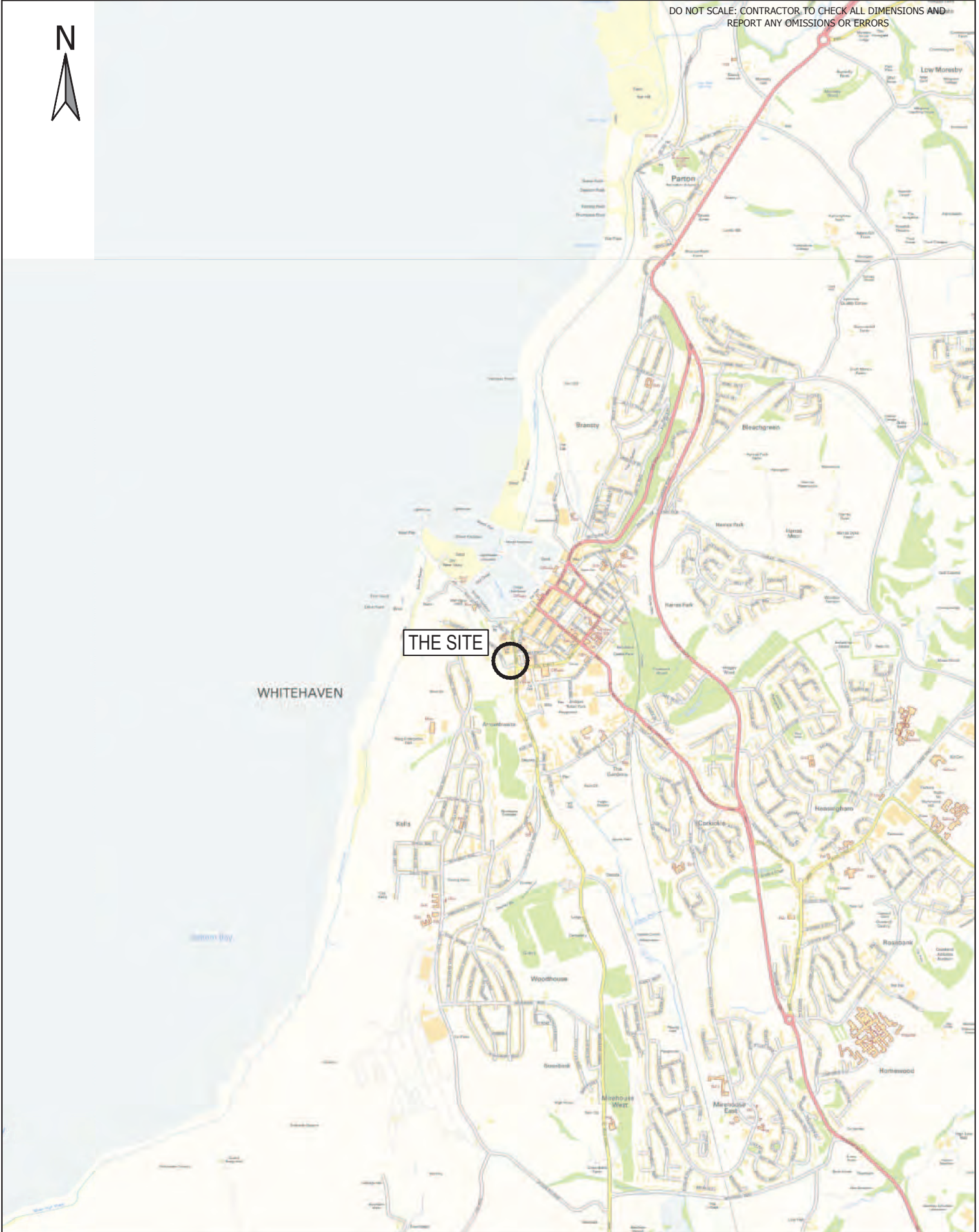
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Appendix C – Trench Location Plan



DO NOT SCALE: CONTRACTOR TO CHECK ALL DIMENSIONS AND
REPORT ANY OMISSIONS OR ERRORS



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Client:
**ENERGY COAST CUMBRIA
WEST (PROPERTIES) LTD**

Project: A075852
**ALBION SQUARE DEVELOPMENT
WHITEHAVEN**

Drawing Title:
SITE LOCATION PLAN

REV	DESCRIPTION				BY	CHK	APP	DATE
	Scale @ A4 1:25,000	Drawn PMC	Date 05.04.12	Checked KRH	Date 24.04.12	Approved PH	Date 24.04.12	
	Project No. A075852	Office 41	Type 54	Drawing No. Fig 1	Revision			



KEY

Archaeological Trench Location

- | | |
|--|--|
| ① 2m x 15m North Range & Power Systems | ⑥ 2m x 3m Flues and Chimney Foundation |
| ② 2m x 10m Central Range | ⑦ 2m x 10m Dusty Miller Foundations and Properties |
| ③ 2m x 10m Development of New Town | ⑧ 2m x 15m Albion Street Frontage |
| ④ 2m x 10m West Range | ⑨ 2m x 5m North Range |
| ⑤ 2m x 10m Central Range & Soapery | |

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Client:
**ENERGY COAST CUMBRIA WEST
(PROPERTIES) LTD**

Project: A075852
**ALBION SQUARE DEVELOPMENT
WHITEHAVEN**

Drawing Title:
TRENCH LOCATION PLAN

A		TRENCHES 3 AND 9 AMENDED		PMC	KRH	KRH	24.04.12
REV	DESCRIPTION	BY	CHK	APP	DATE		
1	Scale @ A3	Drawn	Date	Checked	Date	Approved	Date
	1:400	PMC	13.04.12	KRH	13.04.12	PG	13.04.12
Project No.		Office	Type	Drawing No.		Revision	
A075852		41	54	Fig 2		A	



Appendix D – CDM Designers Risk Assessment

Evaluation Excavations Written Scheme of Investigation



WYG Office Address:	WYG ENVIRONMENT Arndale Court, Otley Road, Headingley, Leeds, LS6 2UJ	Tel:	0113 278 7111	E-mail:	Kirsten.holland@wyg.com	Prepared by:	Kirsten Holland
		Fax:	0113 275 0623	Web:	www.wyg.com	Approved by:	Peter Harrison
Project Name:	Albion Square, Whitehaven	Project Number:	A075852	Scope of Design Work:	Archaeological Evaluation Excavation	Issue Number:	1
						Issue Date:	23/04/12

Hazard Ref No.	Project Stage	Hazard Description <small>(transfer all hazards from Form 1 identified in potential significant risk column and provide project specific detail of hazard)</small>	Risk Level Before Design Mitigation	Design Alteration / Action <small>(to eliminate hazard or reduce risk)</small>	Risk Level After Design Mitigation	Significant Residual Risk <small>Comments / Additional Information for the Contractor and Others (including information on who might be harmed and how)</small>	Shown On
1	C	Contact with moving plant, vehicles and machinery	M	Method Statement to be provided to client identifying plant, machinery requirements and access clearly defined to reduce risk.	L	All equipment must be appropriately guarded. All staff must be briefed. Personnel at risk: contractors.	
2	C	Live Services (inc. underground and overhead)	M	Service plans for site have been obtained and trenches located away from known services. Requirement for CAT scanning and comparison of ground works with service locations required.	L	Statutory Service Plans provided to the Contractor in advance of works commencing at the site. The potential exists for unknown service runs and pipework. Personnel at risk: contractors, public and engineers.	
3	C	Manual handling	M	None	M	The contractor will be required to provide evidence of manual handling training for its staff. Personnel at risk: contractors	
4	C	Deep excavations	M	Specification includes requirement to step or shore trenches.	M	The contractor to fence deep excavations with high visibility fencing and attach appropriate warning signs. Trenches to be stepped where necessary to limit depth. Trenches to be inspected by a competent person for stability at the beginning of each shift. Personnel at risk: contractors, public	

***KEY:**

Project Stage		Determining Risk – PART 1 (Potential Significant Risk)						Determining Risk – PART 2 (Confirm Significant Risk)		Risk Control Hierarchy		Residual Risk Shown On
(When risk will occur)		Foreseeable consequences		Likelihood of exposure to hazard				<div><div></div> Potential Significant Risk (consider questions below)</div> <div><div></div> Not Significant Risk</div> <u>Is the risk?</u> <ul style="list-style-type: none">- Not likely to be obvious to a competent contractor / designer- Unusual- Likely to be difficult to manage effectively		Consider ERIC <ul style="list-style-type: none">- If possible ELIMINATE the hazard completely- REDUCE the risk to a more acceptable level- INFORM workforce/others- As a last resort, CONTROL the residual risk Also consider the 'Principles of Prevention' (see WYG Designer Procedure or CDM ACoP: Appendix 7)		D Drawing(s) O Other (specify)
C	Construction			Frequent	Probable	Occasional	Remote					
M	Maintenance/Use/Cleaning*	Ill Health	Injury	Exposure to the hazard will occur frequently during the activity.	Exposure to the hazard can be expected to occur during the activity; it will occur several times.	Exposure to the hazard will occur occasionally during the activity.	Exposure to the hazard will seldom occur during the activity. (freak event – no known history)					
D	Demolition	Multiple fatalities	Multiple fatalities									
	* consider Workplace (Health, Safety & Welfare) Regulations	Single fatality	Single fatality									
		Chronic or acute ill health	Major injury / permanent									
		Minor health effects	Minor injury									
		No known health effect	No injury									

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Date: 05/08/2010 Issue: 01



Evaluation Excavations Written Scheme of Investigation

Hazard Ref No.	Project Stage	Hazard Description <small>(transfer all hazards from Form 1 identified in potential significant risk column and provide project specific detail of hazard)</small>	Risk Level Before Design Mitigation	Design Alteration / Action <small>(to eliminate hazard or reduce risk)</small>	Risk Level After Design Mitigation	Significant Residual Risk	
						Comments / Additional Information for the Contractor and Others <small>(including information on who might be harmed and how)</small>	Shown On
5	C	Interface with public including traffic and access	M	Site access points will be detailed by the Contractor. Site to be secured by the contractor with appropriate signs to warn the public from entry.	L	Contractor to abide by access requirements. Personnel at risk: contractors	
6	C	Vandalism and theft of equipment	M	The Contractor will be required to secure the site and/or equipment. The site is currently secure fenced.	L	Personnel at risk: contractors	
7	C	Contaminated land	M	Appropriate welfare facilities to be provided. Results of site investigations to be provided to contractor. No known significant chemical hazards. Asbestos found on site and details to be provided by the project contamination specialist.	L	Contractor to provide appropriate welfare facilities and have appropriate PPE (masks, gloves, overalls) available. Appropriate asbestos controls to be implemented. Should potential contamination be encountered work will cease and specialist advice sought. Personnel at risk: contractors	

*KEY:													
Project Stage		Determining Risk - PART 1 (Potential Significant Risk)				Determining Risk – PART 2 (Confirm Significant Risk)		Risk Control Hierarchy		Residual Risk Shown On			
(When risk will occur)		Foreseeable consequences		Likelihood of exposure to hazard				<div><div></div> Potential Significant Risk (consider questions below)</div> <div><div></div> Not Significant Risk</div> <p>Is the risk?</p> <ul style="list-style-type: none">Not likely to be obvious to a competent contractor / designerUnusualLikely to be difficult to manage effectively		<p>Consider ERIC</p> <ul style="list-style-type: none">If possible ELIMINATE the hazard completelyREDUCE the risk to a more acceptable levelINFORM workforce/othersAs a last resort, CONTROL the residual risk <p>Also consider the 'Principles of Prevention' (see WYG Designer Procedure or CDM ACoP: Appendix 7)</p>		<p>D Drawing(s)</p> <p>O Other (specify)</p>	
C	Construction	Ill Health	Injury	Frequent	Probable	Occasional	Remote						
				Exposure to the hazard will occur frequently during the activity.	Exposure to the hazard can be expected to occur during the activity; it will occur several times.	Exposure to the hazard will occur occasionally during the activity.	Exposure to the hazard will seldom occur during the activity. (freak event – no known history)						
				Multiple fatalities	Multiple fatalities								
				Single fatality									
M	Maintenance/Use/Cleaning*	Ill Health	Injury	Chronic or sub-acute ill health	Major injury / permanent								
				Minor health effects	Minor injury								
				No known									
				No injury									
D	Demolition	Ill Health	Injury										

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Date: 05/08/2010 Issue: 01

APPENDIX 2: SUMMARY OF CONTEXTS

Context	Intervent'n	Interpretation	Description
100	Trench 1	Overburden	Modern dump including tyres
101	Trench 1	Demolition layer	Demolition material including rubble and tile
102	Trench 1	Machine base	Concrete machine base associated with northern range of foundry (NW end)
103	Trench 1	Machine base	Concrete machine base associated with northern range of foundry (SE end)
104	Trench 1	Sandstone wall	E/W oriented pink sandstone wall
105	Trench 1	Sandstone wall	E/W orientated pink sandstone wall
106	Trench 1	Natural geology	Orange/yellow compact sandy clay
107	Trench 1	Modern cut	Modern cut for deposition of tyre dump 100
108	Trench 1	Modern surface	Modern concrete hard standing
200	Trench 2	Overburden	Modern made ground
201	Trench 2	Sandstone wall	N/S orientated pink sandstone wall
202	Trench 2	Sandstone wall	E/W orientated pink sandstone wall
203	Trench 2	Sandstone wall	N/S orientated sandstone wall
204	Trench 2	Sandstone wall	E/W orientated sandstone wall
205	Trench 2	Sandstone wall	N/S orientated sandstone wall
206	Trench 2	Refractory brick surface	Refractory brick surface associated with foundry
207	Trench 2	Sandstone wall	N/S sandstone wall at west side of trench
208	Trench 2	Cobbled surface	Exterior cobbled courtyard surface
209	Trench 2	Mixed material wall	E/W orientated wall constructed of pink sandstone, beach cobbles and brick infill
210	Trench 2	Domestic type hearth	Brick structure abutting wall 209
211	Trench 2	Indurated moulding sand	Black sand layer
212	Trench 2	Sandstone wall	E/W orientated wall possibly a continuation of 202
213	Trench 2	Modern surface	Modern concrete surface
214	Trench 2	Brick surface	Brick surface
215	Trench 2	Industrial residue	Layers of indurated moulding sand
216	Trench 2	Make up layer	Heterogeneous make up layer
217	Trench 2	Grey beach sand	Imported sand layer
300	Trench 3	Overburden	Modern make up layer consisting of recent demolition materials
301	Trench 3	Brick wall	E/W orientated red brick wall
302	Trench 3	Brick wall stub	N/S orientated stub of red brick wall
303	Trench 3	Flagstone	Flagstone surface
304	Trench 3	Demolition layer	Rubble from recent demolition
305	Trench 3	Natural geology	Yellow sand
400	Trench 4	Modern concrete slab	Modern poured concrete surface
401	Trench 4	Bedding/make up layer	Clinker and clay mixed bedding layer
402	Trench 4	Concrete stanchion with I-beam	Concrete stanchion with cut off remains of steel I-beam
403	Trench 4	Pink sandstone wall	N/S orientated pink sandstone wall representing part of western range of buildings associated with foundry and dwellings
404	Trench 4	Eastern pink sandstone wall	N/S orientated pink sandstone wall representing part of western range of buildings associated with foundry and dwellings
405	Trench 4	Cut	Cut for modern service
406	Trench 4	Fill	Fill of 405

Context	Intervent'n	Interpretation	Description
407	Trench 4	Cut	Cut for modern service
408	Trench 4	Fill	Fill of 407
409	Trench 4	Natural geology	Brown-yellow sandy clay
500	Trench 5	Cobble surface	Cobble surface associated with foundry/soapery courtyard
501	Trench 5	Industrial debris	Ashy soil and clinker bedding for cobble surface
502	Trench 5	Demolition	Brick rubble mixed with lime mortar and moulding sand suggesting foundry demolition layer
503	Trench 5	Moulding sand	Black moulding sand layer
504	Trench 5	Make-up layer	Crushed slate - possibly laid down as a bedding or drainage material?
505	Trench 5	Garden soil	Dark brown-grey clay layer
506	Trench 5	Clay layer	Soapy textured natural clay layer
507	Trench 5	Natural geology	Yellow sand mixed with small rounded cobbles
508	Trench 5	Garden soil	Organic garden soil layer - remains of allotments and gardens
509	Trench 5	Construction cut	Foundation cut for wall
510	Trench 5	Sandstone wall	N/S orientated pink sandstone wall
511	Trench 5	Sandstone wall	E/W orientated pink sandstone wall
512	Trench 5	Sandstone wall	E/W orientated pink sandstone wall
513	Trench 5	Sandstone wall	E/W orientated pink sandstone wall
514	Trench 5	Sandstone wall	E/W orientated pink sandstone wall
515	Trench 5	Brick kiln or hearth	Brick structure with draw hole
516	Trench 5	Sandstone wall	E/W orientated pink sandstone wall
517	Trench 5	Bricked up window	Brick infill within window
518	Trench 5	Backfill of Room 3	Mixed demolition materials
519	Trench 5	Brick surface	Later brick surface in front of 515
520	Trench 5	Infill	Fill of Room 3, to the east of 515
521	Trench 5	Sandstone wall	E/W orientated wall constructed of sandstone and beach cobbles
522	Trench 5	Refractory tile surface	Refractory tile surface associated with foundry processes
523	Trench 5	Platform	Brick and sandstone platform in Room 2
524	Trench 5	Sandstone wall	Pink sandstone wall/structure
525	Trench 5	Sandstone wall	Pink sandstone wall in Room 2
526	Trench 5	Brick wall	N/S orientated brick wall
527	Trench 5	Sandstone block with channel	Pink sandstone block with carved channel - labelled as 2007 in evaluation - relates to soapery
528	Trench 5	Grey/black sand	Mixed moulding sand and natural sand
529	Trench 5	Sandstone wall	Pink sandstone wall
600	Trench 6	Concrete surface	Modern concrete surface
601	Trench 6	Overburden	Made ground under 600
602	Trench 6	Stacked bricks	Layer of stacked bricks under 601
603	Trench 6	Sandstone wall	Pink sandstone wall -associated with base of chimney/flues
604	Trench 6	Sandstone wall	Pink sandstone wall at western limit of trench
605	Trench 6	Cut	Cut for post (post medieval)
606	Trench 6	Fill	Fill of 605
607	Trench 6	Compact clay surface	Compacted clay surface or sealing layer
608	Trench 6	Wall	E/W orientated wall
609	Trench 6	Industrial surface	Mixed surface constructed of bricks, refractory brick and refractory tile
610	Trench 6	Pink sandstone ashlar blocks	Associated with base of chimney and flues?
611	Trench 6	Void	Void
612	Trench 6	Clinker layer	Backfill over service
613	Trench 6	Cut	Cut for service at NW side of trench

Context	Intervent'n	Interpretation	Description
614	Trench 6	Service	Modern ceramic drain
615	Trench 6	Brick lined channel	Brick lined channel associated with base of chimney and flues?
616	Trench 6	Clay layer	Grey-yellow clay layer - natural? - same as 607 but much cleaner
700	Trench 7	Mixed overburden	Mixed levelling layer of sand, tarmac and clay
701	Trench 7	Sandstone wall	E/W orientated pink sandstone wall
702	Trench 7	Cobble surface	Patchy cobbled surface (exterior courtyard?)
703	Trench 7	Cobble surface	Patchy cobbled surface (exterior courtyard?)
704	Trench 7	Sandstone wall	N/S orientated pink sandstone wall
705	Trench 7	Flagstone floor	Fragmentary flagstone floor
706	Trench 7	Brick boundary	Brick boundary line - not substantial enough to be wall
707	Trench 7	Mixed rubble layer	Sand and rubble layer
708	Trench 7	Natural geology	Fine yellow sand
709	Trench 7	Concrete slab	Modern concrete slab surface set with ceramic tiles (part of external drain?)
710	Trench 7	Ceramic drain	Ceramic drainage channel set into 709
711	Trench 7	Cobble surface	Patchy cobbled surface (exterior courtyard?)
712	Trench 7	Cobble surface	Larger cobbled surface
713	Trench 7	Sandstone wall	E/W orientated pink sandstone wall
714	Trench 7	Bedding layer	Sandy bedding beneath cobbled surfaces
800	Trench 8	Brick cellar wall	West wall of cellar
801	Trench 8	Brick cellar wall	North wall of cellar
802	Trench 8	Brick cellar wall	East wall of cellar
803	Trench 8	Stone spiral stairs	Stone staircase from ground floor to cellar level
804	Trench 8	Natural geology	Natural yellow sand
805	Trench 8	Demolition layer	Demolition infill of cellar
900	Trench 9	Overburden	Made ground/levelling
901	Trench 9	Garden soil	Dark brown/black friable soil relating to gardens/allotments
902	Trench 9	Clay layer	Orange-brown sandy clay layer with clinker
903	Trench 9	Sandstone wall	Rough hewn yellow and pink sandstone wall with grey cement mortar bond
1000	Excavation	Modern spoil/overburden layer	Overburden
1001	Excavation	Made ground/levelling	Concrete Layer at SW end of Trench 2
1002	Excavation	Surface	Brick surface(?) under 1001 , one course thick
1003	Excavation	Made ground/levelling	Black vitrified / fired moulding sand (0.32m thick), under 1002
1004	Excavation	Surface	Refractory tile surface under 1003
1005	Excavation	Surface	Pink sandstone surface under 1003
1006	Excavation	Wall	Pink sandstone wall at N-end of Room 16a, E / W orientated
1007	Excavation	Steps	Pink sandstone boiler base blocks / Steps at N-end of Room 16a in wall 1006
1008	Excavation	Surface	Pink sandstone and brick floor surface at N-end of Room 16a
1009	Excavation	Wall	W-boundary wall to Room 16a
1010	Excavation	Surface	Patchy brick surface at centre of Room 16a
1011	Excavation	Retaining wall	Pink sandstone threshold / wall dividing Rooms 16a and 16b
1012	Excavation	Packing layer	Rubble surface / infill of Room 16b
1013	Excavation	Modern spoil/overburden layer	Cut of water service
1014	Excavation	Fill	Fill of 1013
1015	Excavation	Wall	Cut of drain

Context	Intervent'n	Interpretation	Description
1016	Excavation	Fill	Fill of 1015
1017	Excavation	Made ground/ levelling	Bedding deposit in Room 16a
1018	Excavation	Modern spoil/ overburden layer	Backfill / demolition rubble layer
1019	Excavation	Wall	North wall of bay 7 of the central warehouse
1020	Excavation	Wall	South wall of bay 7 of the central warehouse
1021	Excavation	Wall	East wall of bay 7 of the central warehouse
1022	Excavation	Wall	West wall of bay 7 of the central warehouse, equivalent to 510 in evaluation
1023	Excavation	Post pad	Brick post pad A in south wall 1020
1024	Excavation	Post pad	Brick post pad B in south wall 1020
1025	Excavation	Deposit	Dark brown loamy soil over natural
1026	Excavation	Cobbles	Cobble surface over top of building
1027	Excavation	Cobbles	Cobbled floor surface extending across Room 9
1028	Excavation	Wall	N / S orientated wall at E-side of Room 9 and Room 10
1029	Excavation	Wall	E / W orientated wall (N-wall of Room 9, S-wall of Room 10), pink sandstone
1030	Excavation	Wall	NE / SW orientated pink sandstone wall
1031	Excavation	Wall	N / S orientated brick and sandstone wall in Room 9 (at floor level only)
1032	Excavation	Wall	E / W orientated sandstone wall at S-side of Room 9
1033	Excavation	Made ground/ levelling	Bedding for setts 1027
1034	Excavation	Fill	Fill of room 9 – number assigned for finds retrieval purposes
1035	Excavation	Doorway	Possible doorway in wall 1028
1036	Excavation	Cut	Construction cut for 1031
1037	Excavation	Fill	Fill of 1036
1038	Excavation	Cut	Cut - purpose unknown – at East-side of 1027
1039	Excavation	Fill	Fill of 1038
1040	Excavation	Cobbles	Cobble surface
1041	Excavation	Made ground/ levelling	Bedding for 1040
1042	Excavation	Wall	N-wall of room 10 and R11, brick and sandstone
1043	Excavation	Fill	Fill of R10 over cobbles
1044	Excavation	Surface	Sandstone, brick and refractory tile surface in Room 12
1045	Excavation	Cut	Flue / Gully feature limiting Room 12 and Room 1
1046	Excavation	Shaft	Brick-lined shaft against the W-edge of Room 2 and the E-side of Room 12, possibly modern?
1047	Excavation	Cut	Modern service cut, SE / NW orientated
1048	Excavation	Fill	Fill of 1047
1049	Excavation	Wall	S-sandstone wall or threshold
1050	Excavation	Cut	Brick-lined refuse pit or limit thereof
1051	Excavation	Fill	Crushed pink sandstone, fill of 1050
1052	Excavation	Made ground/ levelling	Concrete seal layer over 1050 and 1051
1053	Excavation	Wall	E / W orientated wall, N of Room 13
1054	Excavation	Wall	N / S orientated brick wall behind furnace 1055
1055	Excavation	Furnace	Furnace
1056	Excavation	Furnace	Furnace
1057	Excavation	Wall	Sandstone wall, N / S orientated, E of Room 13
1058	Excavation	Furnace	Furnace against wall 1059
1059	Excavation	Wall	E / W orientated wall, sandstone, S of Room 13
1060	Excavation	Wall	Sandstone and brick wall
1061	Excavation	Threshold	Doorway / Threshold in wall
1062	Excavation	Fill	Fill of Room 13

Context	Intervent'n	Interpretation	Description
1063	Excavation	Fill	Fill of furnace 1055
1064	Excavation	Fill	Fill of furnace 1056
1065	Excavation	Fill	Fill of furnace 1058
1066	Excavation	Cut	Cut for gas pipe
1067	Excavation	Fill	Fill of 1066
1068	Excavation	Wall	Brick wall south of room 3. Divides Rooms 3 and 4
1069	Excavation	Fireplace	Fireplace in Room 3 at the western end
1070	Excavation	Fireplace	Fireplace in Room 3 at the eastern end
1071	Excavation	Wall	Bricked-up portion of wall 1032 at the western end
1072	Excavation	Wall	Bricked-up portion of wall 1032 at the eastern end
1073	Excavation	Wall	Brick-facing of wall 1032 at the north side of room 3
1074	Excavation	Fill	Fill of Room 3
1075	Excavation	Wall	Southern wall of Room 4
1076	Excavation	Brick support	Brick column support in 1075
1077	Excavation	Cut	Cut for 1076
1078	Excavation	Fill	Fill of Room 4
1079	Excavation	Wall	Southern wall of Room 5
1080	Excavation	Brick support	Brick column support in wall 1079
1081	Excavation	Cut	Cut for 1080
1082	Excavation	Fill	Fill of Room 5
1083	Excavation	Cut	Cut of ditch
1084	Excavation	Fill	Fill of 1083
1085	Excavation	Cut	Cut of potential feature truncating 1083
1086	Excavation	Fill	Fill of 1085
1087	Excavation	Brick support	Brick support pad in 1019
1088	Excavation	Cut	Cut of 1087
1089	Excavation	Cut	Cut of linear, same as 1083
1090	Excavation	Fill	Fill of 1089
1091	Excavation	Cut	Cut of feature at the eastern end of Room 7
1092	Excavation	Fill	Fill of 1091
1093	Excavation	Cut	Cut for 1023
1094	Excavation	Cut	Cut for 1024
1095	Excavation	Brick support	Group number for brick support pads
1096	Excavation	Fill	Fill of Room 6
1097	Excavation	Culvert	Kiln or fireplace on the western side of Room 11
1098	Excavation	Wall	West wall of Room 11, 1097 (built in)
1099	Excavation	Wall	East wall of Room 11, continuation of 1031
1100	Excavation	Wall	Southern wall of Room 17, boundary between 17 and 14
1101	Excavation	Wall	Eastern portion of boundary wall in Room 17, broken by threshold 1102
1102	Excavation	Threshold	Threshold of Room 17, between 1100 and 1101
1103	Excavation		Large opening in wall 1100
1104	Excavation		Smaller opening in wall 1100 with pipe
1105	Excavation	Rails	Rails in Room 17
1106	Excavation	Pipe	Gas pipe in Room 17
1107	Excavation	Pipe	Pipe feeding brick structure in Room 14
1108	Excavation		Black sand deposit
1109	Excavation	Fill	Fill (backfill) of Room 11
2001	Excavation	Natural	Yellow / gray sandy clay natural at the base of a sondage
2002	Excavation	Fill	Mid-brown organic silty clay over 2001 . Pottery was retained during the evaluation
2003	Excavation	Made ground/ levelling	Black layer of moulding sand
2004	Excavation	Wall	East wall of R1 / R2, N / S orientated, made of pink sandstone
2005	Excavation	Wall	North wall of Room 1, south wall of Room 14, E / W orientated, made of pink sandstone

Context	Intervent'n	Interpretation	Description
2006	Excavation	Wall	West wall of Room 1, east wall of Room 12, N / S orientated, made of pink sandstone and brick
2007	Excavation	Channel	Pink sandstone channel – worked sandstone – soapery?
2008	Excavation	Channel	Sloping brick and refractory brick channel
2009	Excavation	Wall	North wall of Room 1, south wall of Room 14, E / W orientated, made of pink sandstone
2010	Excavation	Wall	North wall of Room 1, E / W orientated
2011	Excavation	Platform	Brick platform at SW side of Room 2
2012	Excavation	Wall	West wall of Room 2, east wall of R12, made of pink sandstone and brick
2013	Excavation	Void	Void
2014	Excavation	Bricks	Unfrogged red brick lining at the east side of Room 2
2015	Excavation	Sandstone block	Pink sandstone block / step at the east side of Room 2
2016	Excavation	Cut	Construction cut for 2011
2017	Excavation	Fill	Brown sandy clay under walls = to 2002
2018	Excavation	Made ground/ levelling	Black moulding sand = to 2003
2019	Excavation	Made ground/ levelling	Mixed material floor surface
2020	Excavation	Cut	Brick-lined shaft cut
2021	Excavation	Shaft	Brick-lined rectangular shaft at the southern end of Room 12
2022	Excavation	Fill	Crushed sterile pink sandstone, fill of 2021
2023	Excavation	Made ground/ levelling	Concrete capping over 2022, within 2021
2024	Excavation	Void	Void
2025	Excavation	Cut	Cut for 2021
2026	Excavation	Shaft	Brick-lined square shaft/ box culvert
2027	Excavation	Cut	Post hole
2028	Excavation		2 Metal grates or covers
2029	Excavation	Void	Probable voids under Floor
2030	Excavation	Cut	Modern service cut
2031	Excavation	Fill	Fill of 2030
2032	Excavation	Cut	Cut through wall 1028 for Flue #1
2033	Excavation	Repair	Repair to 1028 over 2032
2034	Excavation	Flue	Flue #1
2035	Excavation	Wall	E / W orientated central wall dividing Rooms 8a and 8b
2036	Excavation	Doorway	Probable doorway in Room 8b (not seen)
2037	Excavation	Lining	Clay lining of cistern in Room 8A
2038	Excavation	Wall	South wall of Room 8, E / W orientated
2039	Excavation	Fill	Fill of Room 8B
2040	Excavation	Fill	Fill of Room 8A
2041	Excavation	Wall	N / S orientated west-wall of Room 8
2042	Excavation	Cobbles	Cobbled surface across Room 14
2043	Excavation	Made ground/ levelling	Bedding for cobbles 2042
2044	Excavation	Machine base	Central brick structure in Room 14, machine base?
2045	Excavation	Sandstone block	N / E orientated brick-bordered machine base (arch-shaped)
2046	Excavation	Cut	Brick-lined channel at the NE-limit of site
2047	Excavation	Cut	Possible sandstone-covered drain, NE / SW orientated
2048	Excavation	Platform	Brick platform in N-wall
2049	Excavation	Made ground/ levelling	Mid-brown-yellow sandy bedding layer
2050	Excavation	Made ground/ levelling	Mid-brown gritty clay with small pebbles and manganese inclusions
2051	Excavation	Made ground/ levelling	Slate under bedding 2007

Context	Intervent'n	Interpretation	Description
2052	Excavation	Made ground/levelling	Light-brownish grey plastic clay
2053	Excavation	Made ground/levelling	Light-grey / yellow bedding sand under 1060
2054	Excavation	Made ground/levelling	Dark brown gritty clay under 2053 = to 2050
2055	Excavation	Made ground/levelling	Concrete slab structure under 2045
2056	Excavation	Made ground/levelling	Contaminated sandy clay under floor of Room 14
2057	Excavation	Made ground/levelling	Dark brown / grey silty clay
2058	Excavation	Fill	Fill of circular feature
2059	Excavation	Fill	Fill of 2058
2060	Excavation	Dump	Iron object dump at S-central area of Room 14
2061	Excavation	Sandstone block	Two sandstone blocks, possibly an earlier machine base
2062	Excavation	Sandstone block	E/W orientated sandstone wall parallel to 1100 – earlier and sealed by floor 2042 and 2043
530	Excavation	Well	Well
2500	Watching Brief (WB)	Wall	E/W-aligned brick wall
2501	WB	Sandstone plinth	Possible base for an iron pillar or support
2502	WB	Cut	Cut for foundation of brick wall 2500
2503	WB	Layer	Mortar and sandstone fragment spread, possible foundry wall foundation
2504	WB	Structure	Possible brick remains of flue
2505	WB	Floor	Remains of a sandstone flag floor
2506	WB	Cut	Cut for sewer pipe
2507	WB	Fill	Dark-greyish-black clay silt backfill of pipe trench 2506
2508	WB	Surface	Indurated dark greyish black material, working surface/floor
2509	WB	Made ground	Mix of redeposited natural clay with fragments of broken brick and sandstone fragments
2510	WB	Natural geology	Boulder clay/glacial till
2511	WB	Bedrock	Heat-affected bedrock, base of flue 2520
2512	WB	Post	Wooden post in floor 2508
2513	WB	Posthole	Cut for post 2512
2514	WB	Wall	Western retaining wall on Rosemary Lane
2515	WB	Iron plate	Plate in floor 2508
2516	WB	Floor	Sandstone flag floor
2517	WB	Layer	Compacted clay, levelling for a machine base
2518	WB	Layer	Friable clay, levelling for a machine base
2519	WB	Surface	Brick and sandstone floor
2520	WB	Structure	Flue
2521	WB	Structure	Sandstone cap over pipe cut 2506
2522	WB	Well	Sandstone-lined well
2523	WB	Well	Sandstone-lined well

APPENDIX 3: FINDS CATALOGUE

Room	Context	ORN	Material	Category	No frags	Description	Date
8	0	1017	Bone	animal	8	Animal bone, clearly butchered	Not closely dateable
8	0	1016	Ceramic	tobacco pipe	1	Fragment of stem	Not closely dateable
8	0	1014	Ceramic	vessel	3	Three (joining?) fragments self-glazed redware plate with simple slip decoration	Nineteenth century
8	0	1014	Ceramic	vessel	1	Rim fragment fine black-glazed redware	Late eighteenth – early nineteenth century
8	0	1014	Ceramic	vessel	1	Rim fragment, hard- fired self-glazed redware plate.	Nineteenth century
8	0	1014	Ceramic	vessel	1	Base fragment, plate or bowl, plain refined white earthenware	Nineteenth century on
8	0	1014	Ceramic	vessel	3	Base and body fragments black-glazed redware, coarsewares. Probably two vessels.	Late eighteenth - nineteenth century
8	0	1015	Glass	vessel	1	Base tall cylindrical wine/beer bottle in dark olive green.	Late eighteenth - nineteenth century
8	0	1013	Mollusc	marine	2	Fitting valves of single well-preserved oyster	Not closely dateable
9	0	1039	Bone	animal	1	Animal bone, clearly butchered.	Not closely dateable
9	0	1038	Ceramic	vessel	2	Two body fragments black-glazed redware, one very abraded. One possibly Buckley.	Late eighteenth - nineteenth century
10	1043	1021	Ceramic	vessel	1	Base (?) fragment, plain refined white earthenware.	Late eighteenth century on
10	1043	1021	Ceramic	vessel	2	Body fragments, relatively thin black- glazed redware.	C18 on
10	1043	1022	Glass	vessel	9	Body fragments wine/beer bottle in dark olive green.	Late eighteenth - nineteenth century
11	0	1036	Ceramic	vessel	1	Base fragment black- glazed cream fabric.	Late eighteenth - nineteenth century
11	0	1036	Ceramic	vessel	2	Body fragments, black- glazed redware.	Eighteenth - nineteenth century
11	0	1036	Ceramic	vessel	1	Base fragment, unglazed whiteware, poorly made. Possibly Roman or medieval.	
12		1025	Ceramic	vessel	1	Rim fragment refined white earthenware bowl with blue sponge decoration.	Nineteenth century on
12	0		Ind debris		9	Metalworking slags.	Not closely dateable
12	2050	1027	Ceramic	vessel	1	Body fragment black- glazed cream fabric.	Late eighteenth - nineteenth century
12	2050	1028	Ceramic	tobacco pipe	3	Stem fragments.	Nineteenth century on
12	2050	1027	Ceramic	vessel	1	Rim fragment refined white earthenware ?cup with underglaze transfer- printed ?willow pattern.	Late eighteenth century on
12	2050	1027	Ceramic	vessel	1	Small body fragment Westerwald stoneware with cobalt decoration.	Eighteenth century
13	1056		Ceramic	building material	1	Vitrified fire brick from vaulted structure.	Not closely dateable
13	1062		Bone	animal	2	Burnt bone.	Not closely dateable
13	1062		Copper alloy	gas tap?	1	Possible small gas tap.	Nineteenth century on
13	1062		Iron		14	Mixed ironwork, including fire tongs.	Not closely dateable
13	1064		Iron		1		Not closely dateable
13	1064		Ind debris		6	Slag	Not closely dateable
14	0		Iron		33	Mixed ironwork, includes small parts of machinery and large hand-forged nails.	Not closely dateable
14	2057	1018	Ceramic	vessel	1	Nineteenth century	Nineteenth century

Room	Context	ORN	Material	Category	No frags	Description	Date
16	1017	1023	Ceramic	vessel	1	Rim fragment white bone china jug with underglaze transfer- printed decoration.	Nineteenth century
16	1017	1023	Ceramic	vessel	1	Body fragment black- glazed redware.	Eighteenth - nineteenth century
16	1017	1023	Ceramic	vessel	1	Rim fragment self- glazed redware.	Nineteenth century?
16	1017	1024	Ceramic	tobacco pipe	1	Stem fragment.	Not closely dateable
17	1108	1030	Glass	pipe	1	Length or narrow-bore glass tube.	Not closely dateable
17	1108		Iron		5	Mixed ironwork including file and horseshoe.	Not closely dateable
-	211	1003	Ceramic	vessel	2	Body fragments black-glazed redware.	Nineteenth century on
-	300	1002	Ceramic	vessel	2	Body fragments black-glazed redware.	Nineteenth century on
-	300	1002	Ceramic	vessel	5	Rim and body fragments blue and white underglaze transfer-printed white earthenware.	Nineteenth century on
-	508	1004	Ceramic	vessel	1	Rim fragment tin-glazed plate.	Eighteenth century
-	508	1004	Ceramic	vessel	2	Body fragments black-glazed redware.	Nineteenth century on
-	714	1000	Ceramic	vessel	1	Base fragment white salt-glazed stoneware.	Eighteenth century
-	714	1000	Ceramic	vessel	1	Late grey stoneware jar rim.	Nineteenth century on
-	714	1000	Ceramic	vessel	1	Body fragment porcelain.	Nineteenth century on
-	714	1000	Ceramic	vessel	1	Body fragment refined white earthenware.	Nineteenth century on
-	714	1000	Ceramic	vessel	1	Body fragment internally slipped redware.	Nineteenth century on
-	714	1001	Glass	vessel	1	Rim fragment colourless bottle.	Late nineteenth-early twentieth century
-	901	1006	Ceramic	tobacco pipe	1	Stem fragment	Not closely dateable
-	901	1005	Ceramic	vessel	3	Rim and body fragments black-glazed redware.	Nineteenth century on
-	901	1005	Ceramic	vessel	3	Rim and body fragments self-glazed redwares, includes chamber pot and complete profile of shallow bowl.	Nineteenth century on
-	901	1005	Ceramic	vessel	1	Body fragment slip-decorated black-glazed redware.	Nineteenth century?
-	901	1005	Ceramic	vessel	2	Body fragments Industrial slipwares.	Nineteenth century on
-	901	1005	Ceramic	vessel	1	Rim fragment Pearlware.	Nineteenth century
-	901	1005	Ceramic	vessel	1	Body fragment white porcelain.	Nineteenth century on
-	901	1005	Ceramic	vessel	1	Base fragment blue and white underglaze transfer-printed white earthenware.	Nineteenth century on
-	901	1005	Ceramic	vessel	1	Body fragment brown stoneware.	Nineteenth century on
-	901	1005	Ceramic	vessel	2	Body fragment internally slipped redware.	Nineteenth century on
-	2054	1020	Ceramic	tobacco pipe	1	Fragment of stem, from close to bowl.	Nineteenth century
-	2054	1019	Ceramic	vessel	1	Rim, self-glazed redware plate with simple slip decoration.	Nineteenth century

ILLUSTRATIONS

LIST OF FIGURES

- Figure 1: Site location
- Figure 2: Site plan showing areas of excavation, including evaluation trenches, and the watching brief area
- Figure 3: Plan of buildings and rooms within the excavation area
- Figure 4: Excavation superimposed on Howard's Plan of Whitehaven, 1792
- Figure 5: Excavation superimposed on Wood's Plan of Whitehaven, 1830
- Figure 6: Excavation superimposed on Ordnance Survey first edition 6":1mile, 1865
- Figure 7: Excavation superimposed on Ordnance Survey first edition 25":1 mile map, 1899
- Figure 8: Albion Square excavation plan, north area showing foundry and furnaces
- Figure 9: Albion Square excavation plan, south area showing warehouse and boiler room
- Figure 10: Plan of features beneath the foundry surfaces
- Figure 11: Plan of features observed during the watching brief

LIST OF PLATES

- Plate 1: South-facing view across site prior to excavation work
- Plate 2: Western site boundary with chimney
- Plate 3: Aerial view of the excavated area
- Plate 4: Pellin's Map of 1699
- Plate 5: Pellin's Map of 1705
- Plate 6: Hodkinson's Map of 1783
- Plate 7: Howard's Map of 1790
- Plate 8: Plans by architect JS Moffat, 1892, showing proposed alterations to the north range of the Phoenix Foundry
- Plate 9: Drawings by architect JS Moffat, 1892, showing proposed alterations to the north range of the Phoenix Foundry including moulding shop and casting shop
- Plate 10: Evaluation Trench 1, showing machine base
- Plate 11: Evaluation Trench 9, showing sandstone wall and a substantial garden soil deposit
- Plate 12: Evaluation Trench 2, showing the remains of Building 2
- Plate 13: Boundary ditch **1083** sealed by warehouse Building 1
- Plate 14: Wall **1030** as revealed in Room 11, Building 5

- Plate 15: Evaluation Trench 3; general shot showing structural remains seated on the sandy natural geology
- Plate 16: Evaluation Trench 7/7X; the remains domestic dwellings to the rear of Old Town
- Plate 17: Well **2522**, east-facing view
- Plate 18: Well **2523**, east-facing view
- Plate 19: Building 5; Rooms 9-11
- Plate 20: Adaptation of west wall **1098** in Room 11 to accommodate industrial feature **1097**
- Plate 21: North wall (**1100**) of courtyard 14 (southern wall of Room 17) with doorway/threshold
- Plate 22: East-facing aerial view of warehouse Building 1
- Plate 23: Building 4 (Rooms 8A/8B); a possible cistern
- Plate 24: Building 2; pink sandstone block **2007** (possibly a support for the ash mill) and flue **2029**
- Plate 25: Sandstone block **2007** showing damage caused by insertion of foundry flue
- Plate 26: L-shaped courtyard 14
- Plate 27: Building 3; Boiler Room (Rooms 16A/16B)
- Plate 28: Evaluation Trench 4; the levelled remains of the west range
- Plate 29: Sandstone plinth **2501**, wooden post **2512** and iron plate **2515** in floor **2508**, north-facing view (0.5m scale)
- Plate 30: Evaluation Trench 8; the remains of a cellared building on Albion Street
- Plate 31: The nineteenth-century bread oven, photographed by Wilson Irving of WYG prior to the demolition of structures on the site
- Plate 32: Room 1, Building 2
- Plate 33: Room 2, Building 2
- Plate 34: Room 12, Building 2, showing foundry floor
- Plate 35: Flue system including brick box chamber and ceramic flue **2029** beneath foundry floor **1044**
- Plate 36: Room 13, Building 6, showing floor surfaces and the cupola furnaces
- Plate 37: Paired cupola furnaces
- Plate 38: Brick-lined channel **1107** and brick-edged arch-shaped base **2045** in courtyard 14
- Plate 39: South-facing view of foundry remains observed in the watching brief
- Plate 40: South-facing view of flue **2520**, later sewer pipe within
- Plate 41: North-facing elevation of wall **1020** showing inserted brick column bases **1023** and **1024**
- Plate 42: Sandstone-lined well **530**

Plate 43: Object 1 (marked scale 300mm)

Plate 44a-c: Head of swage from above (a) and from the side (b) and a modern example

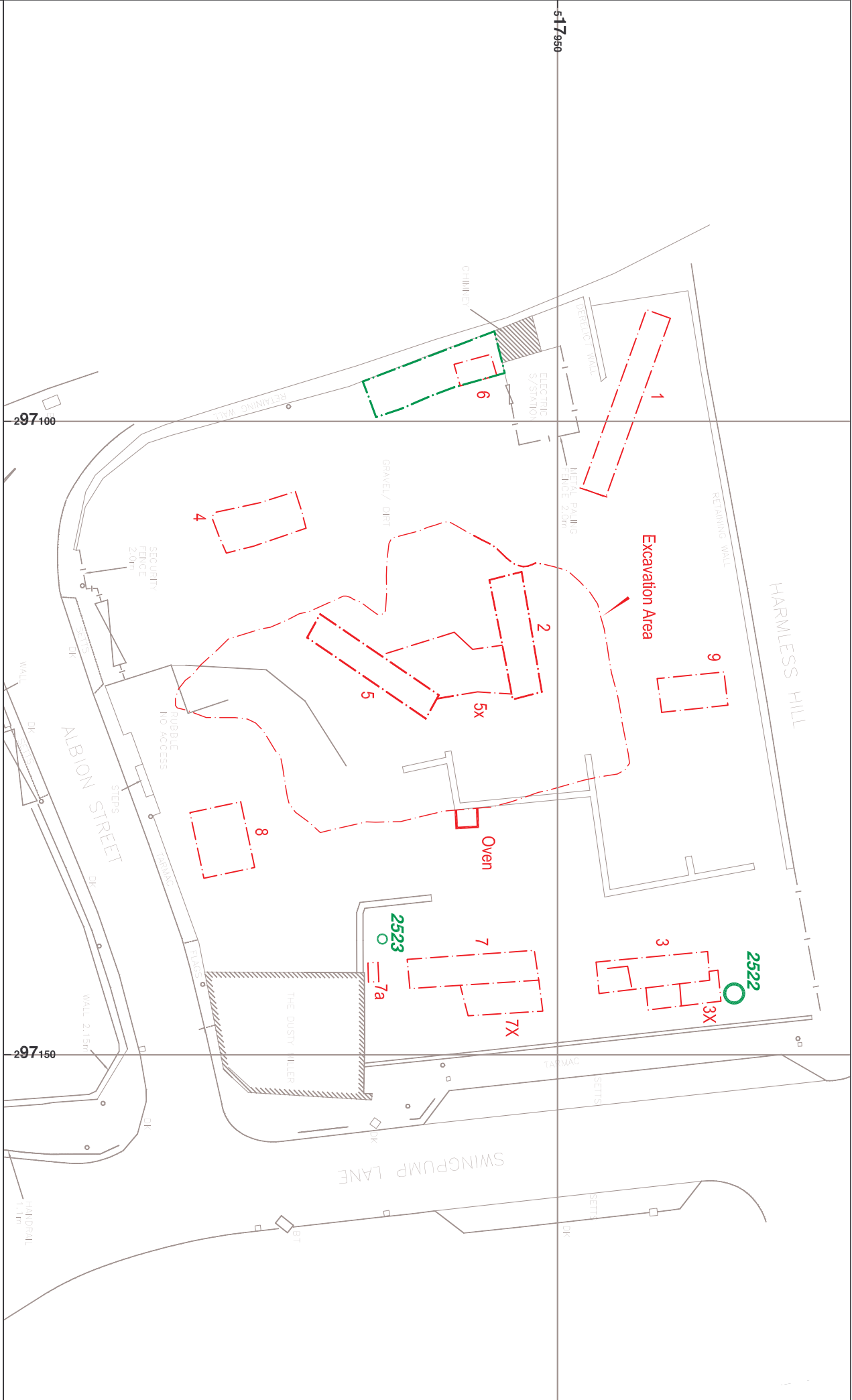
Plate 45: Object 2 (marked scale 300mm)

Plate 46a-c: Head of object 2 from above (a) and from the side (b) and loop (c)

Plate 47: Possible bow tongs, with fragments of coarse fabric adhering to corrosion products on one side (marked scale 300mm)



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Excavation and evaluation
Watching brief

Figure 2: Site plan showing areas of excavation, including evaluation trenches, and the watching brief area

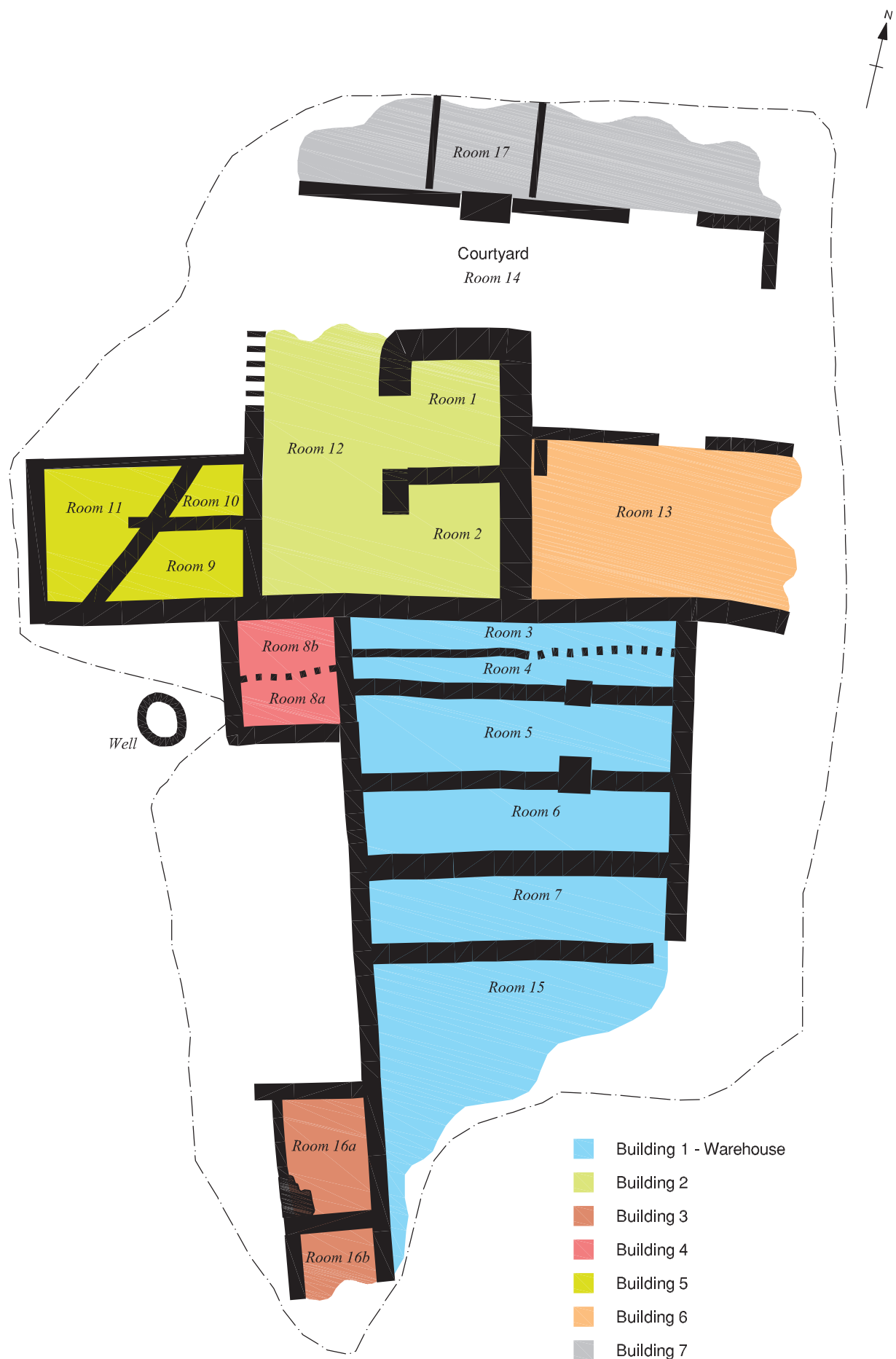


Figure 3: Plan of Buildings and Rooms within the excavation area

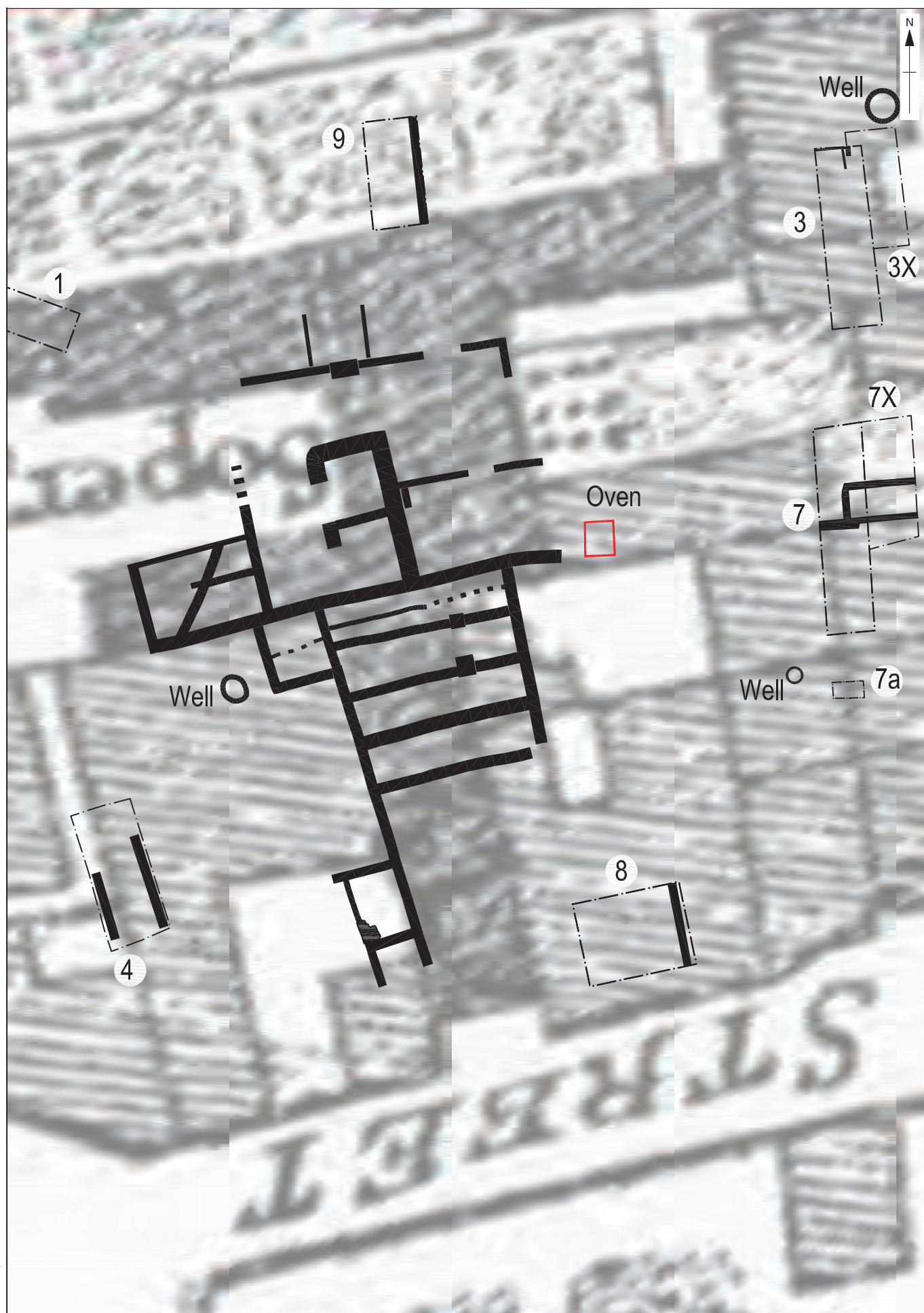


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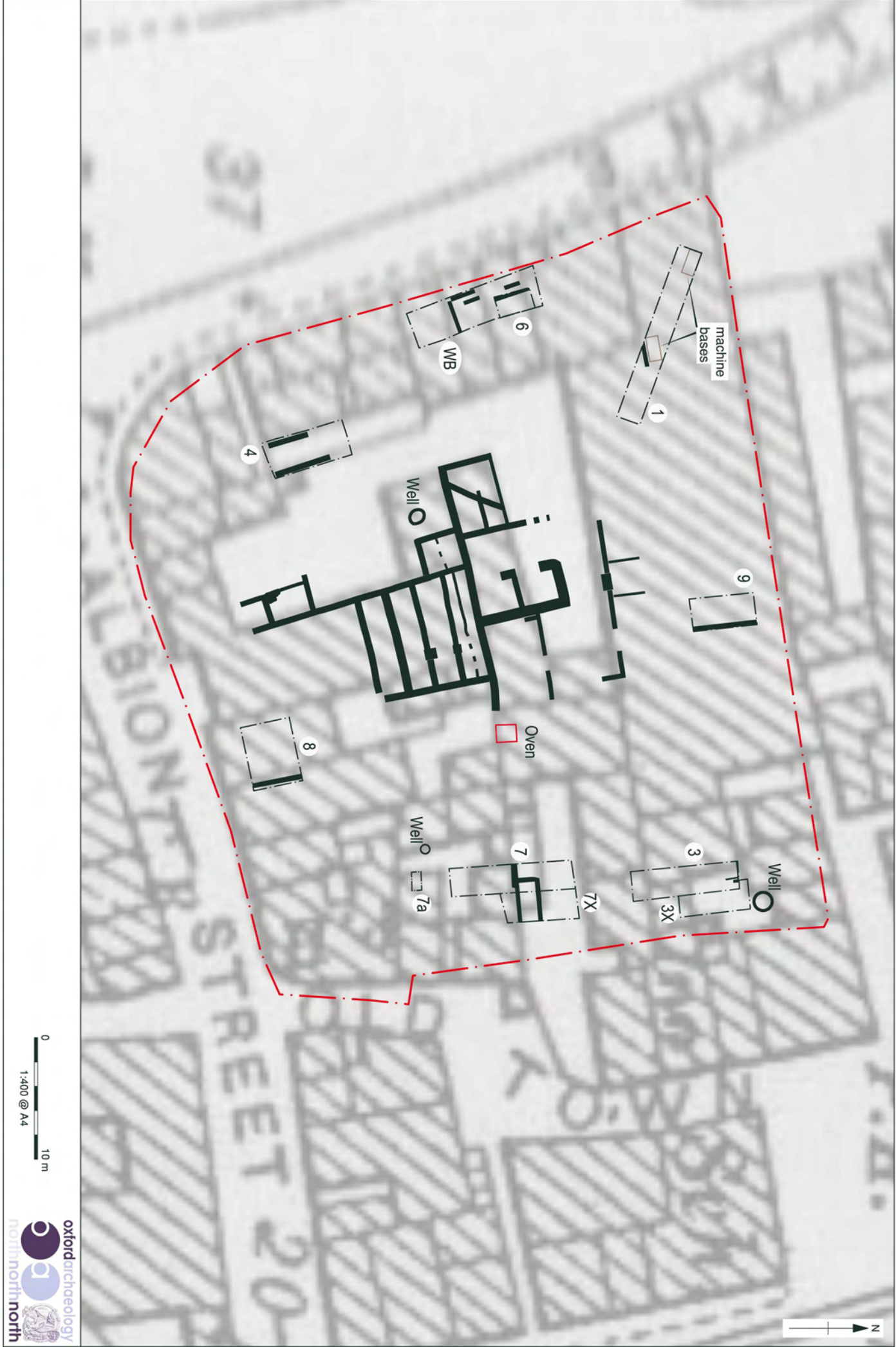


Figure 7: Excavation superimposed on Ordnance Survey second edition 25":1 mile map, 1899

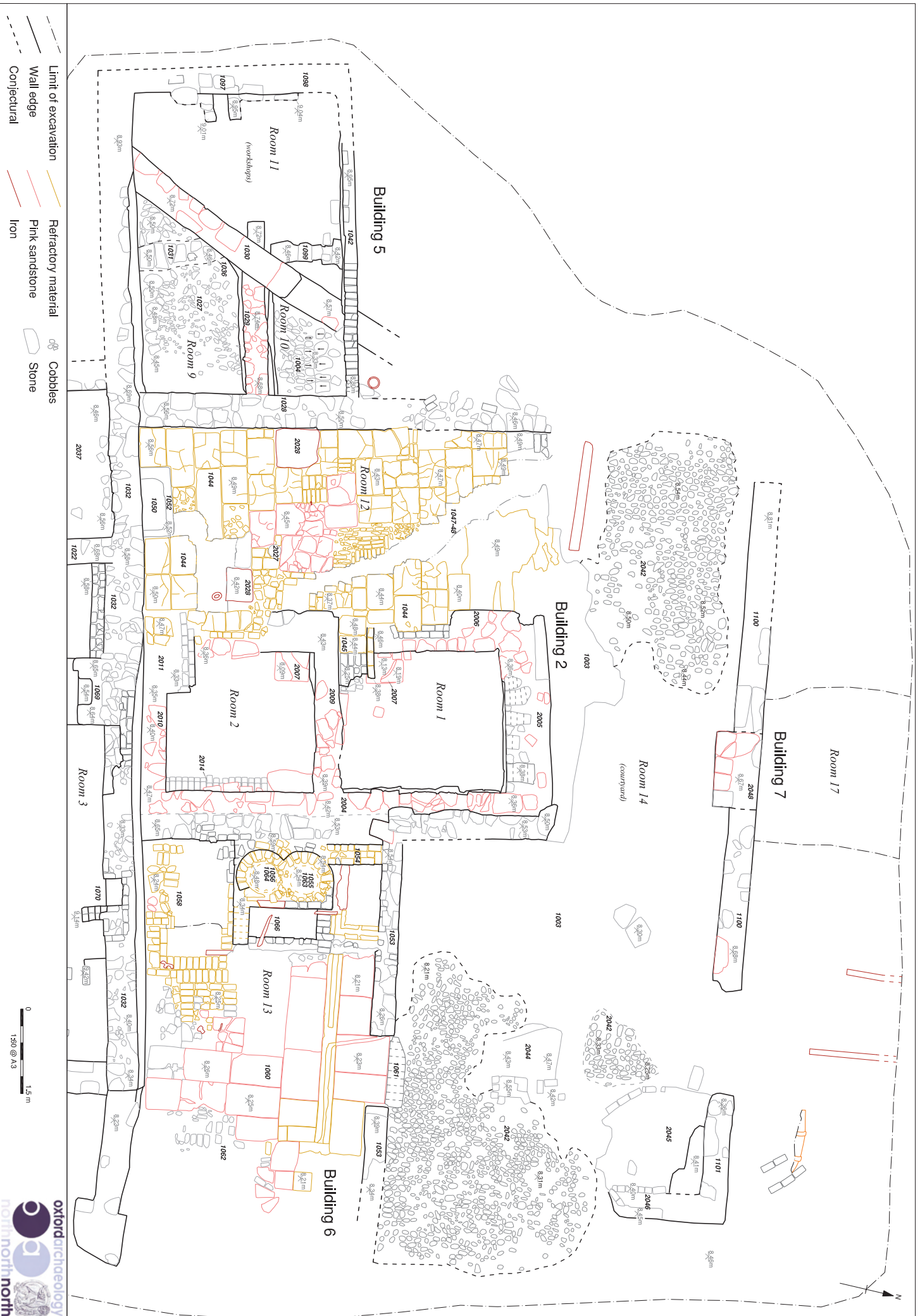


Figure 8: Albion Square excavation plan, north area showing foundry and furnaces

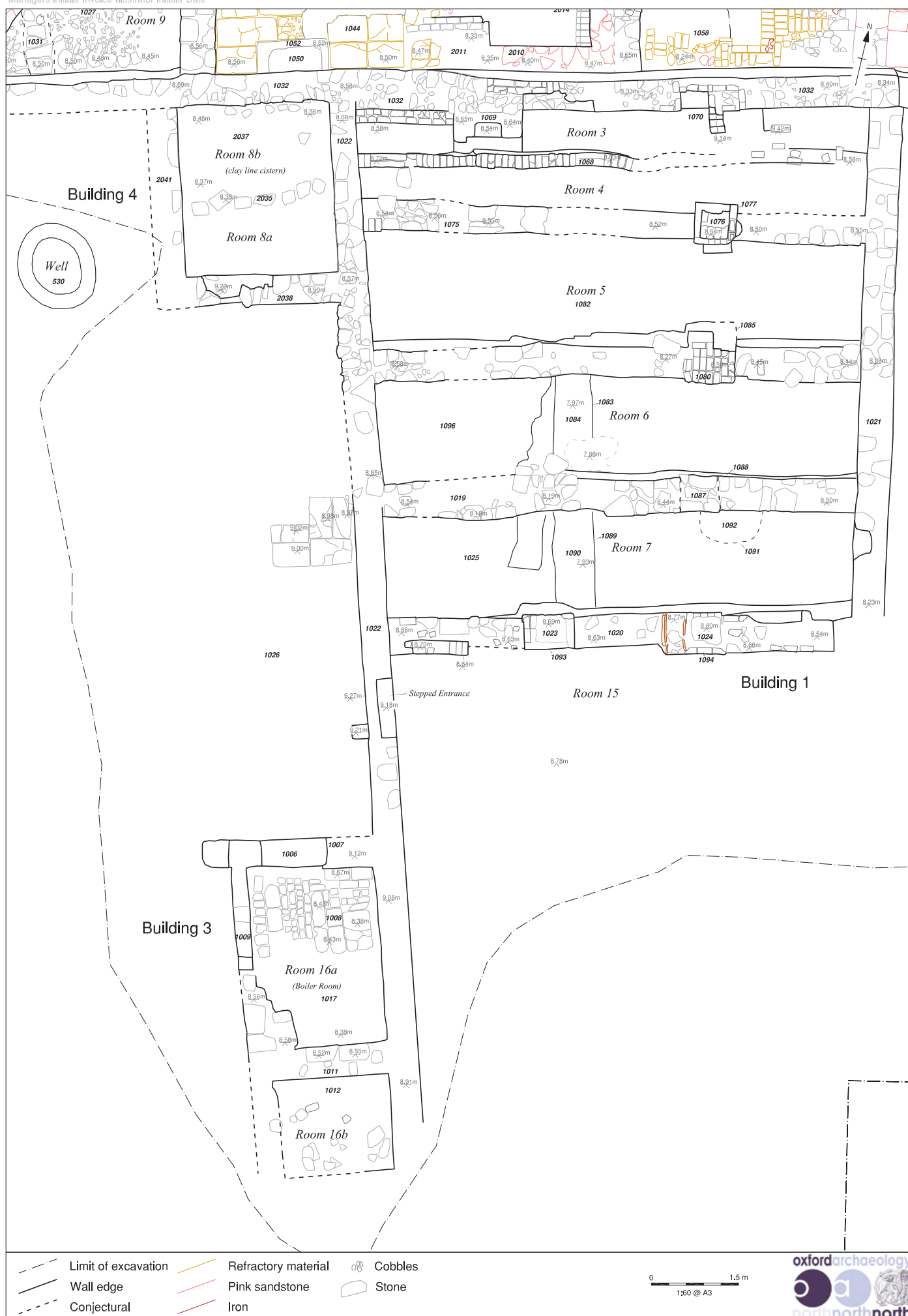


Figure 9: Albion Square excavation plan, south area showing warehouse and boiler room

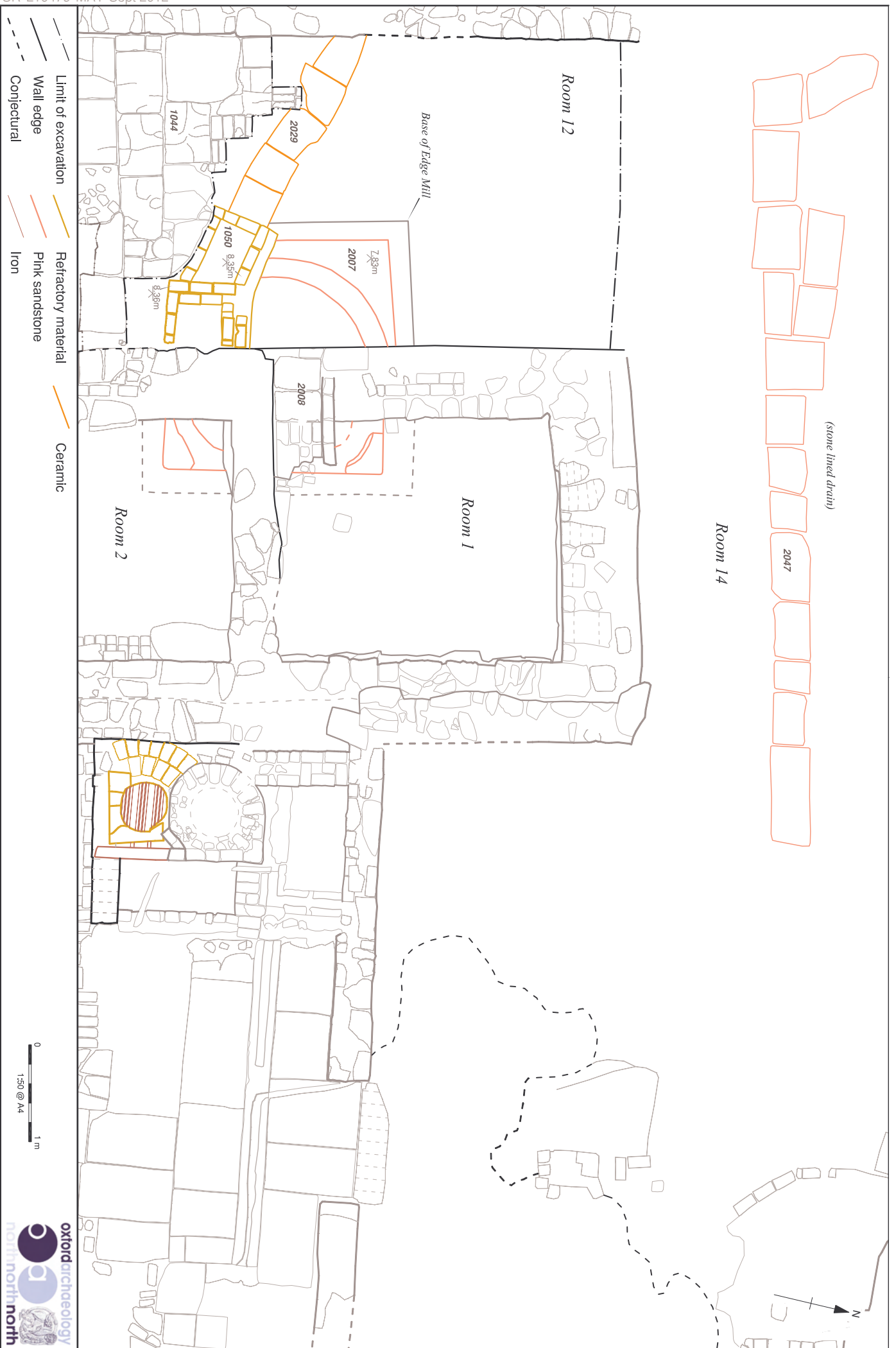


Figure 10: Plan of features beneath the foundry surfaces

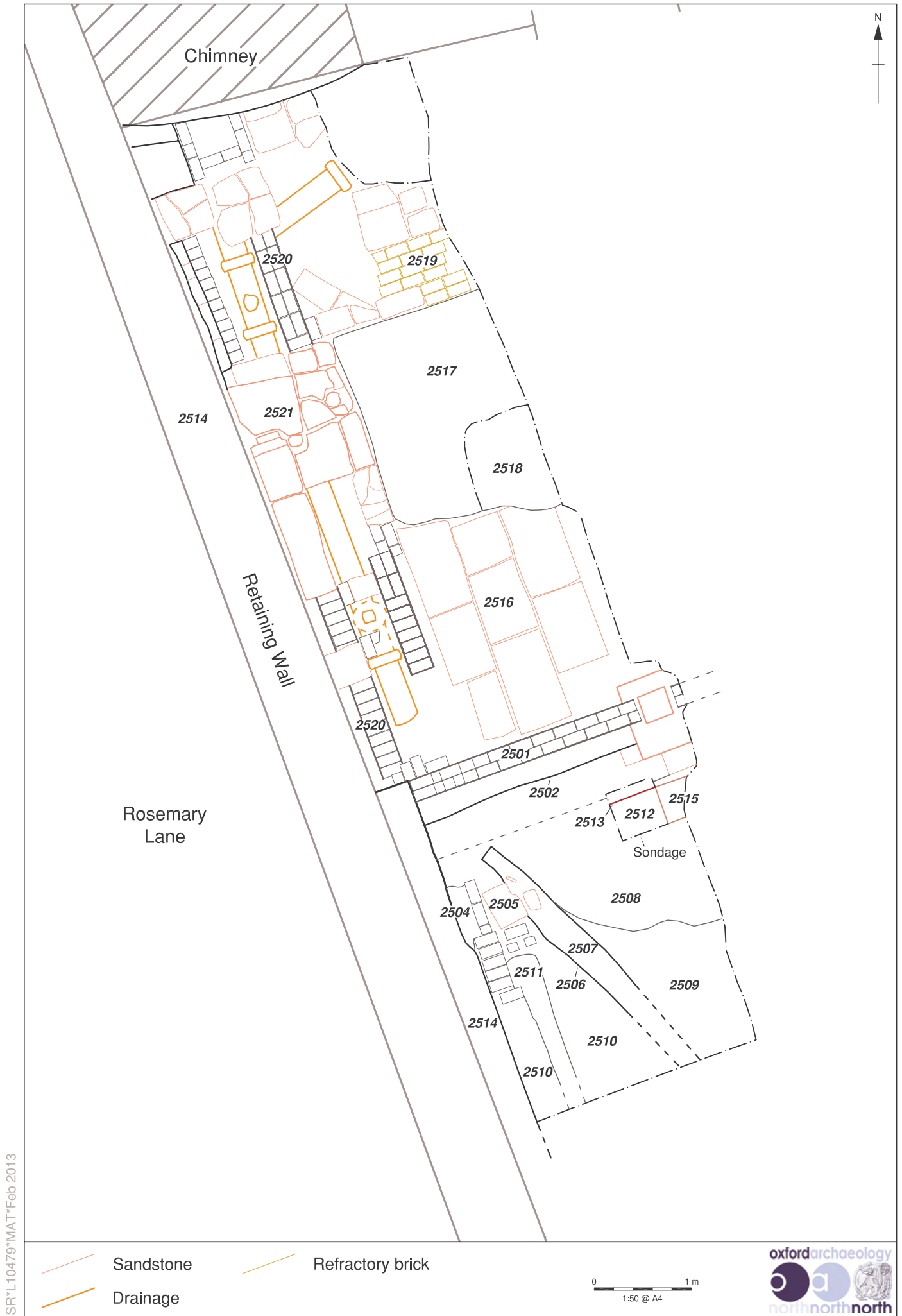


Figure 11: Plan of features observed during the watching brief

PLATES



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Plate 2: Western site boundary with chimney

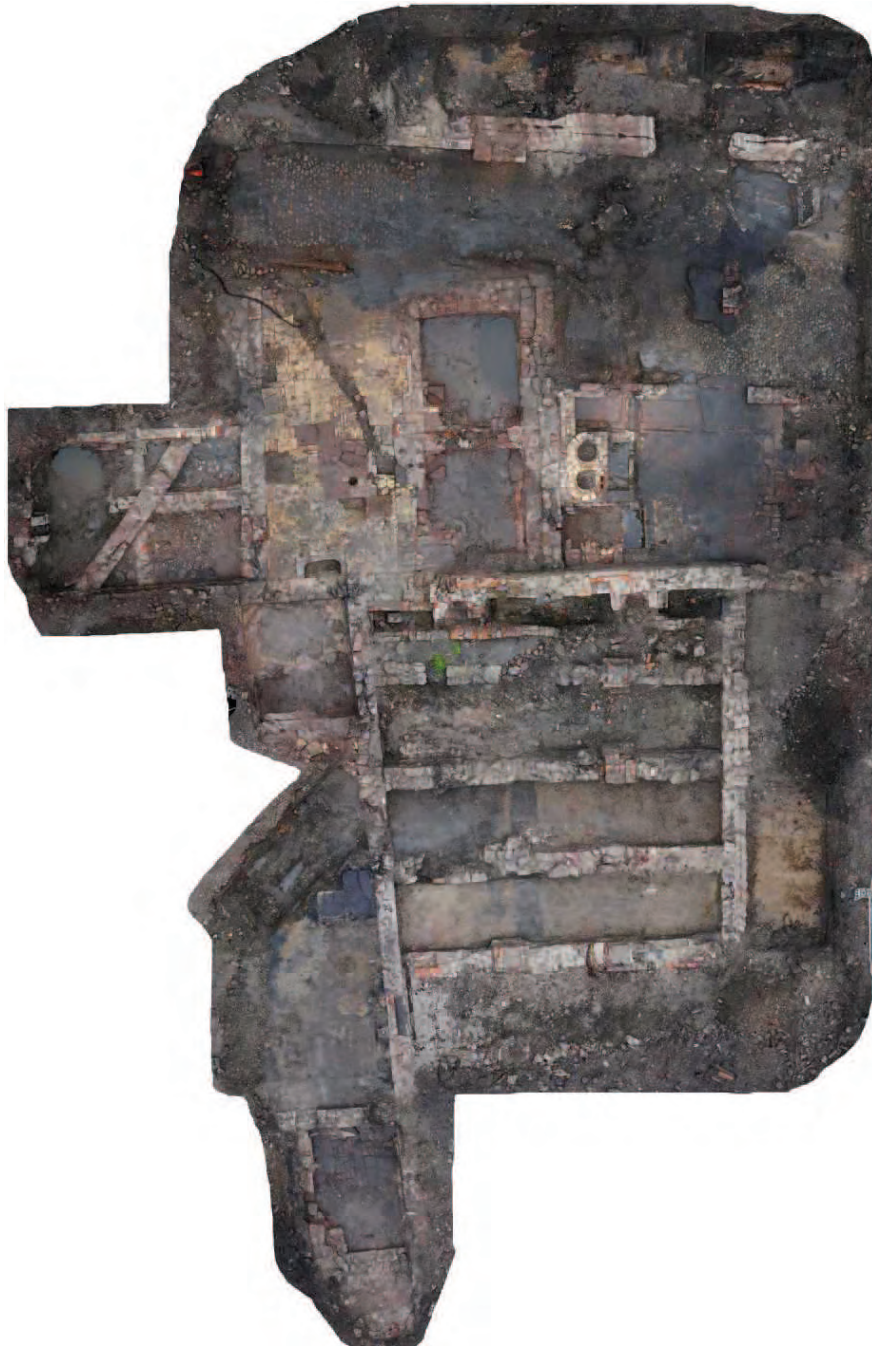


Plate 3: Aerial view of the excavated area



Plate 4: Pellin's Map of 1699



Plate 5: Pellin's Map of 1705

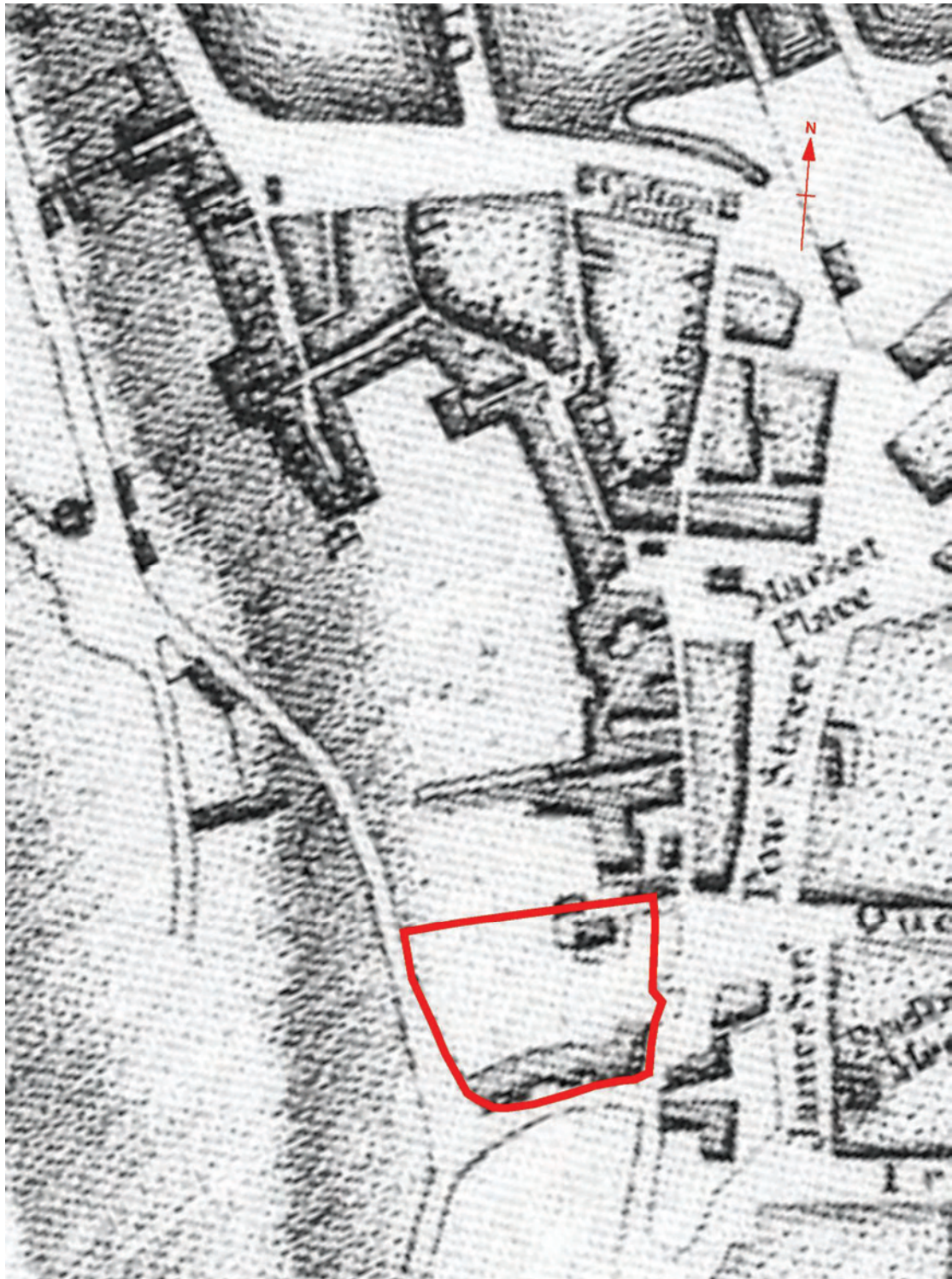


Plate 6: Hodkinson's Map of 1783

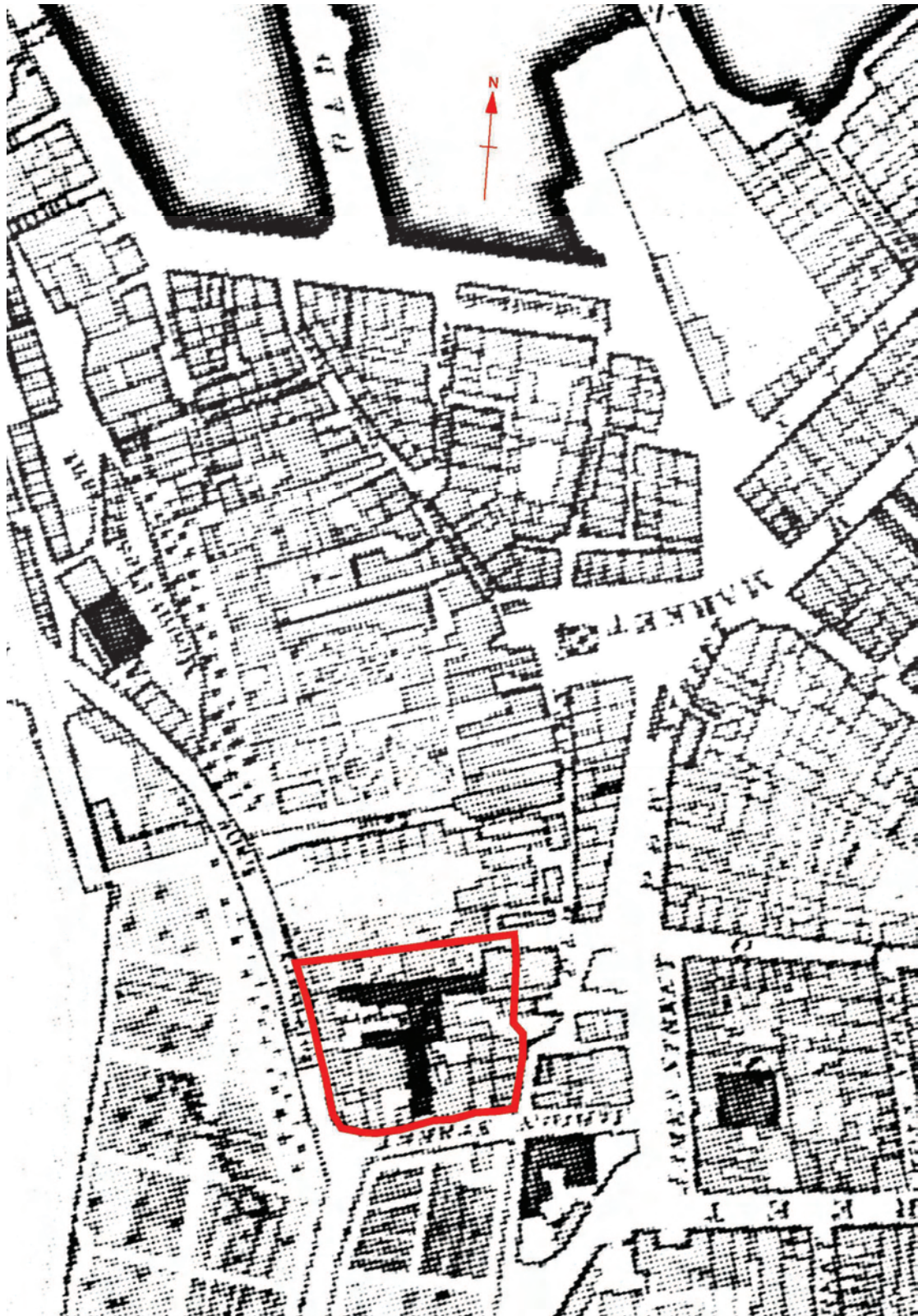


Plate 7: Howard's Map of 1790

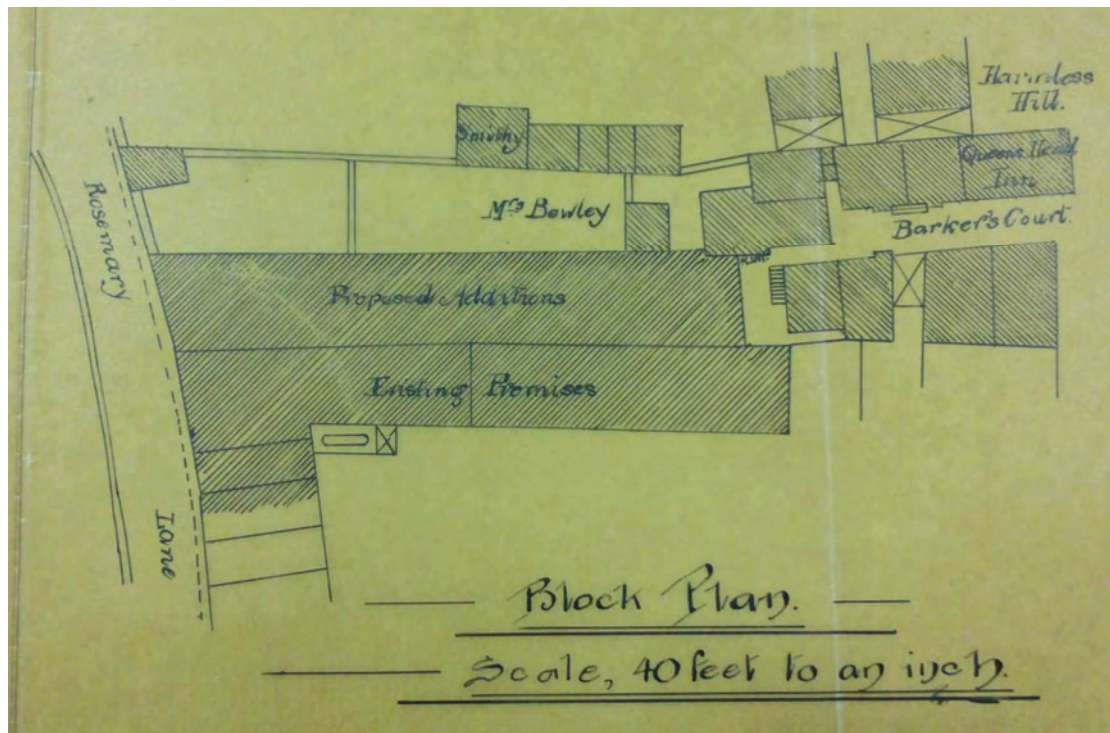


Plate 8: Plans by architect JS Moffat, 1892, showing proposed alterations to the north range of the Phoenix Foundry

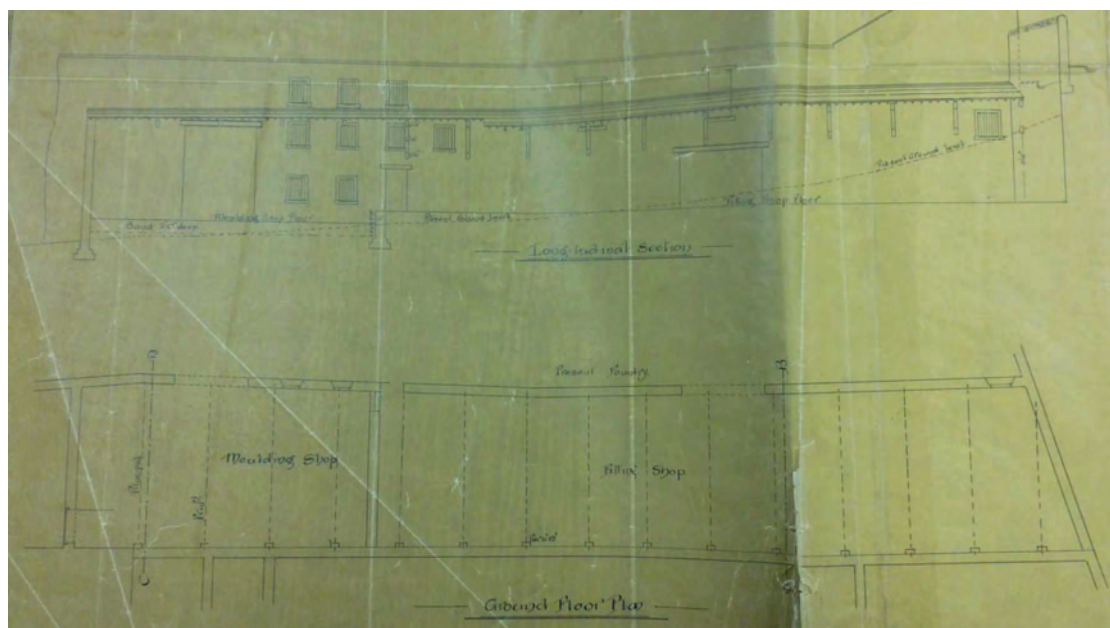


Plate 9: Drawings by architect J.S Moffat, 1892, showing proposed alterations to the north range of the Phoenix Foundry including moulding shop and casting shop



Plate 10: Evaluation Trench 1, showing machine base



Plate 11: Evaluation Trench 9, showing sandstone wall and a substantial garden soil deposit



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Plate 13: Boundary ditch **1083** sealed by warehouse Building 1



Plate 14: Wall **1030** as revealed in Room 11, Building 5



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Plate 17: Well 2522, east-facing view



Plate 18: Well **2523**, east-facing view



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Plate 40: South-facing view of flue **2520**, later sewer pipe within



Plate 41: North-facing elevation of wall **1020** showing inserted brick column bases **1023** and **1024**



Plate 42: Sandstone-lined well 530



Plate 43: Object 1 (marked scale 300mm)



Plate 44a-c: head of swage from above (a) and from the side (b) and a modern example



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