AN ARCHAEOLOGICAL EXCAVATION AT THE FORMER CPS HAULAGE SITE, HAWKS ROAD, SALTMEADOWS, GATESHEAD, TYNE AND WEAR

Assessment Report

PCA

PRE-CONSTRUCT ARCHAEOLOGY

An Archaeological Excavation at the Former CPS Haulage Site, Hawks Road, Saltmeadows, Gateshead, Tyne and Wear

Assessment Report

Central National Grid Reference: NZ 2595 6379

Site Code: HRG 10

Commissioning Client:

Prospect Archaeology Limited
Prospect House
Garden Lane
Sherburn-in-Elmet
North Yorkshire
LS25 6AT

Tel: 01977 681 885

Contractor:

Pre-Construct Archaeology Limited
Northern Office
Unit N19a Tursdale Business Park
Durham
DH6 5PG

Tel: 0191 377 1111

CONTENTS

List of Figures and Plates

page

Figures

Plates (Appendix 3)

PART A: PROJECT SUMMARY

1. NON-TECHNICAL SUMMARY

1.1 An archaeological excavation was undertaken by Pre-Construct Archaeology on land off Hawks Road in the Gateshead Quays area of Gateshead, Tyne and Wear. The area of investigation lay within the yard of the former depot of CPS Haulage Limited, located on the north side of Hawks Road at National Grid Reference NZ 2595 6379. The fieldwork, undertaken September-October 2010, was commissioned by Prospect Archaeology, as part of the planning process ahead of re-development of the site.

1.2 The site is located in an area of archaeological sensitivity, this being the historic 'New Greenwich' area on Gateshead's South Shore developed in the mid 18th century by industrialist William Hawks for his successful iron manufactory. By the mid 19th century – when Hawks' works were generally known simply as 'Gateshead Ironworks' - the overall concern became the successful heavy engineering firm Hawks, Crawshay and Sons, made famous for supplying the wrought iron for the High Level Bridge over the River Tyne. Archaeological remains of Hawks' Ironworks comprise a regionally significant part of the industrial heritage resource for Tyneside.

1.3 An archaeological evaluation undertaken earlier in 2010 recorded - in evaluation Trench 2, located in the southern central part of the site - a well-preserved sequence of deposits dating from the medieval period onwards and including 19th-century structures associated with Gateshead Ironworks. Further archaeological investigation was therefore required in mitigation of the re-development and this took the form of an open area excavation covering *c.* 205m^2 encompassing evaluation Trench 2. Elsewhere, the site had either seen considerable disturbance and no archaeological remains were recorded by the evaluation or, where remains were encountered, they were of low archaeological significance and no further work was considered necessary.

1.4 The earliest deposits encountered in the open area excavation comprised natural sand and gravel characteristic of the floodplain and lower valley side of the Tyne. This was overlain by a developed agricultural soil from which medieval and early post-medieval pottery was recovered. No evidence of structures or high-density occupation was recorded, indicating that the site likely constituted farmland until the establishment of Hawks' Ironworks in the mid 18th century.

1.5 Two sections of a hitherto unknown timber waggonway were recorded running on a NE-SW alignment across the southern part of the excavation area. The timbers had evidently been left to rot *in situ* and the sleepers and rails were visible as deep impressions in the underlying ballast. Artefactual material recovered from the waggonway suggests that it was of late 18th/early 19th century date and this is broadly supported by cartographic evidence which indicates that it was probably in use sometime after 1772. It is likely to have been a branch line constructed to carry coal directly to an iron foundry – part of Hawks' works - which is known to have lain immediately to the east of the site in this period.

1.6 Following the abandonment of the waggonway, various deposits were dumped over that area, presumably to consolidate the ground. Artefactual material of 19th-century date was recovered from these deposits. Iron pipe work was then installed across the excavation area on an ENE-WSW alignment, this possibly associated with water supply to and drainage of the ironworks.

1.7 Subsequently, a NE-SW aligned rectilinear sandstone building was constructed; part of its south-eastern wall was exposed within the excavation area and two internal sandstone features likely formed elements of one or more machine bases within the building. Slag and other ironworking debris was used for internal floor surfaces and external yard surfaces. Specialist analysis of this material demonstrated that it was produced in a cupola furnace (used for melting down pig iron to produce finished castings). Historical records for Hawks' Ironworks describe the manufactory as importing pig iron and bar iron to produce castings and forgings, therefore it seems likely that the analysed industrial residues relate to this type of production activity. However, there was no evidence to suggest that the investigated building had a primary function in the iron manufactory process, and the residues probably more likely originated from the nearby foundry. The precise function of the building was not established, although it almost certainly formed part of the ironworks and was likely constructed in the early to mid 19th century.

1.8 Alterations to the building occurred in the second half of the 19th century, with the partial demolition of the external south-eastern wall to accommodate a substantial subterranean brick structure. This is interpreted as a machine base, probably associated with the finishing of iron products; steel bars within the walls may have formed the support or anchoring mechanism for an engine or machine and the subterranean element may have been a wheel pit. Where the original sandstone wall had been demolished, a brick floor had been laid down adjacent to the brick structure, suggesting that external access to its interior was created. The additional structure was, in the main, built with handmade bricks, although some firebricks were also included and the majority of the stamped examples of these were from manufactories first recorded as working in 1868 or later, providing a *terminus post quem* for construction. A brick structure, possibly a drain, was built at the south-western end of the original building. Further alterations to the building comprised the addition of an external brick drain to the south-east, this largely replaced by a sectional large-bore ceramic drain pipe running along much of the length of the excavated structure.

1.9 This Assessment Report has three parts. Part A, the Project Summary, begins with an introduction to the site, describing its location, geology and topography, as well summarising the planning and archaeological background to the project. The aims and objectives of the work are then set out, followed by full descriptions of the archaeological methodologies employed during both the fieldwork and the subsequent post-excavation work. It concludes with an illustrated summary description of the archaeological remains allocated to sequential phases of activity.

1.10 Part B, the Data Assessment, quantifies the written, graphic and photographic elements of the Site Archive and contains specialist assessments, including quantification, of all categories of artefactual evidence, with recommendations for any further work in each case. This part then sets out a summary discussion of the archaeological evidence, before summarising the potential for further analysis of all elements of the collected project data.

1.11 Part C of the report contains full references and a section of acknowledgements. There are four appendices to the report, the third containing a selection of photographs from the fieldwork and the fourth being the Project Design for the excavation.

2. INTRODUCTION

2.1 General Background

2.1.1 This report details the methodology and results of an archaeological excavation undertaken by Pre-Construct Archaeology (PCA) 20 September–22 October 2010 on land off Hawks Road, Gateshead. The area of investigation lay within the yard of the former depot of CPS Haulage Limited on the north side of Hawks Road in the Gateshead Quays area (Figure 1). The work was commissioned by Prospect Archaeology, ahead of re-development of the site.

2.1.2 Planning permission was granted in 2008 for a hotel and office development on the site. The archaeological excavation – part of a phased programme of research and fieldwork - was undertaken as a condition of planning permission on the recommendation of the Tyne and Wear Specialist Conservation Team.

2.1.3 The site is located in an area of archaeological sensitivity, this being the 'New Greenwich' area on the South Shore at Gateshead developed in the mid 18th century by industrialist William Hawks for his successful iron manufactory. In the mid 19th century the overall concern – generally known then simply as 'Gateshead Ironworks' - became the renowned heavy engineering firm Hawks, Crawshay and Sons. Archaeological remains of Hawks' Ironworks comprise a regionally significant part of the industrial heritage resource for Tyneside.

2.1.4 The archaeological potential of the site was established by a desk-based assessment (DBA) undertaken in 2008,[1] and the presence of important remains was confirmed in the south-eastern portion of the site by a two-phase archaeological evaluation carried out by PCA between July and September 2010.[2] Of particular note were remains exposed in Trench 2 - located within the open yard forming the eastern part of the site (Figure 2) - where a well-preserved sequence of deposits dating from the medieval period onwards was recorded, including mid 19th-century structures associated with Gateshead Ironworks. Archaeological remains exposed in standing buildings occupying the western part of the site, and within a trench in the extreme south-eastern corner of the site, were considered to be of lesser importance, while the north-eastern portion of the site was much disturbed, with no archaeological remains of importance surviving there.

2.1.5 The excavation herein described was therefore undertaken to expose more of, then examine and record, the remains encountered in evaluation Trench 2. Irregular in shape and covering *c.* 205m^2, the excavation area was effectively an extension of the evaluation trench and was sited wholly within the open yard forming the eastern part of the site.

2.1.6 The archaeological project herein described was designed according to the guidelines set out in *Management of Research Projects in the Historic Environment* (MoRPHE).[3] A Project Design[4] for the excavation was prepared by PCA and approved by the Tyne and Wear Specialist Conservation Team in advance of the fieldwork. In line with MoRPHE guidelines, this Assessment Report sets out a formal review of the data collected during the fieldwork.

[1] Under Construction Archaeology 2008.
[2] PCA 2011.
[3] English Heritage 2006.
[4] PCA 2010a. This is included as Appendix 4 to this report.

2.1.7 At the time of writing, the Site Archive, comprising written, drawn, and photographic records and all artefactual material recovered during the investigations, is housed at the Northern Office of PCA, Unit N19a Tursdale Business Park, Durham, DH6 5PG. When complete, the Site Archive will be deposited with Tyne and Wear Museums and Archives at Arbeia, South Shields, Tyne and Wear under the site code HRG 10.

2.1.8 The Online Access to the Index of Archaeological Investigations (OASIS) reference number for the project is: preconst1-85228.

2.2 Site Location and Description

2.2.1 The site is located on the south bank of the River Tyne within what was historically the 'Salt Meadows' (more recently this has generally become 'Saltmeadows') area of Gateshead, east of the town centre. Following recent and ongoing regeneration, the area in which the site lies is now more generally referred to as 'Gateshead Quays'.

2.2.2 The site comprises a roughly trapezoidal block of land covering *c.* 4,700m^2 on the north side of Hawks Road at central National Grid Reference NZ 2595 6379 (Figure 1). It is bounded to the south by Hawks Road, which runs on a WSW-ENE alignment, and to the north by a steep bank overlooking Mill Road, which runs SW-NE and continues north-eastwards to South Shore Road running along the bank of the Tyne. Warehouse facilities lie to the west and industrial units to the east, demonstrating that the area retains much of its industrial and commercial nature.

2.2.3 At the time of the archaeological project, the western portion of the site was occupied by various buildings, the main element being the former warehouse/works building of CPS Haulage, while its eastern portion was a large tarmac yard for vehicular parking, part of the same premises. The excavation area was sited within the tarmac yard, close to the southern boundary of the site, to the east of the entrance gate (Figure 2).

2.3 Geology and Topography

2.3.1 The site lies in the valley of the River Tyne, *c.* 200m from the present southern edge of the river. The solid geology of the area is formed by Upper Carboniferous rock of the Pennine Middle Coal Measures formation, comprising interbedded mudstone, siltstone, sandstone and coal seams. The superficial geology of the area is characterised by glaciofluvial deposits, including sand and gravel, and Till of Devensian age, associated with the natural floodplain and lower valley side of the River Tyne.[5]

2.3.2 At the time of the archaeological work, the site occupied an almost level platform at *c.* 16.0m OD on the north side of Hawks Road but with a steep bank along its northern edge, this falling away to Mill Road, as previously described. The surface of the yard forming the eastern part of the site sloped gradually downwards to the south-east, with the extreme south-eastern corner at *c.* 15.0m OD. Hawks Road to the south of the site lay at a lower level than the yard and the height difference was most pronounced adjacent to the south-eastern corner of the site.

[5] Information from the *British Geological Survey* website.

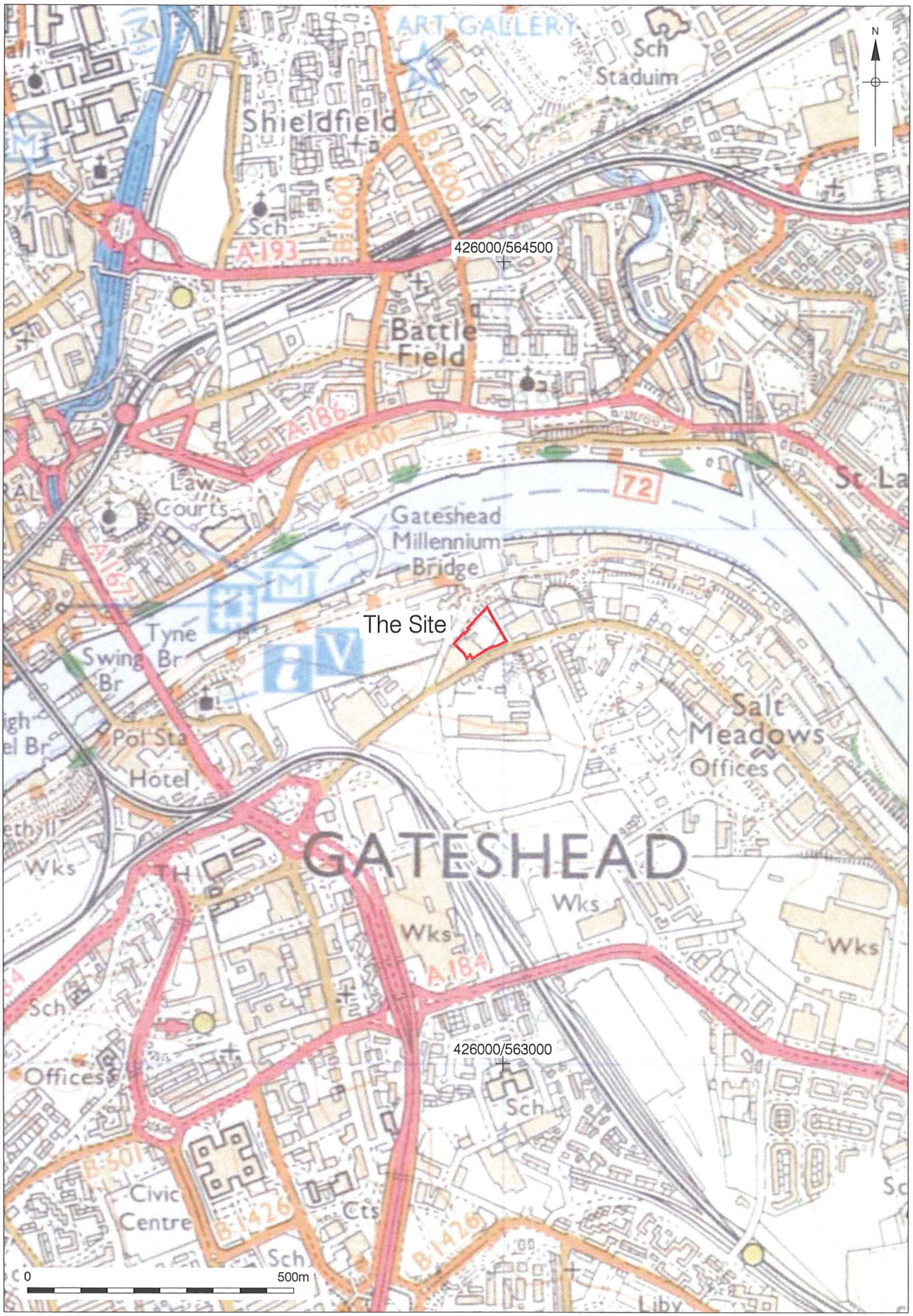


Figure 1
Site Location
1:10,000 at A4

Figure 2
Excavation Area Location Plan
1:800 at A4

2.4 Planning Background

2.4.1 Planning permission for re-development of the former CPS Haulage site was granted by the Local Planning Authority (LPA), Gateshead Metropolitan Borough Council (GMBC) in 2008 (GMBC planning application reference DC/08/01288/FUL). The applicants were Priority Sites Limited/Starboard Hotels Three LLP/CPS Haulage Tyneside Limited.

2.4.2 The main elements of the development scheme involve construction of a 6-7 storey hotel and a 4-5 storey office block. Associated works are required, such as new vehicular access to Hawks Road and the creation of 67 car parking spaces. The programme of archaeological work was undertaken as a condition (no. 16) of planning consent for the scheme, on the recommendation of the Tyne and Wear County Archaeology Officer, a member of the Specialist Conservation Team. The condition stated:

> *No ground works or development work shall take place until a programme of archaeological work (to include evaluation and where appropriate, mitigation) has been completed. This shall be carried out in accordance with a specification(s) provided by the County Archaeologist. Within one year of the completion of the archaeological work, archaeological report(s) shall be submitted to and approved writing by the Local Planning Authority.*
>
> *Reason: The site is located within an area identified as being of potential archaeological importance. The investigation is required to ensure that any archaeological remains on the site can be preserved wherever possible and recorded in accordance with policies ENV21 and ENV22 of the Unitary Development Plan.*

2.4.3 Government guidance on archaeology and heritage conservation is now set out in *Planning Policy Statement 5: Planning for the Historic Environment* (PPS5).[6] At a local level, GMBC has various policies within its Unitary Development Plan (UDP) concerning archaeology and cultural heritage. The relevant policies – as mentioned in the justification for the planning condition for the scheme - are:

> *ENV21. Where archaeological remains survive, whether designated as a scheduled ancient monument or not, there will be a presumption in favour of their preservation in situ. However, where the significance of archaeological remains is such that their preservation in situ is not essential, or is not feasible, a programme of archaeological works aimed at achieving preservation by record will be required, the findings of which should be published.*
>
> *ENV22. Where there is the likelihood that archaeological remains will be encountered as the result of development, and on all developments over 0.5ha in size, the Council will require a programme of investigative research and/or fieldwork to determine whether the remains, that might exist, merit preservation in situ or by record. Research and fieldwork findings should be published.*

2.4.4 The UDP policies not only deals with sites, monuments and areas which have scheduled monument status - these being worthy of preservation because of their national significance – but also other important known sites, monuments and areas and sites and areas which have considerable potential archaeological interest.

[6] Department for Communities and Local Government 2010.

2.4.5 Following the granting of planning permission, two phases of archaeological evaluation were carried out at the site by PCA between July and September 2010. The first phase was undertaken according to a Specification[7] provided by the Tyne and Wear Archaeology Officer. This work demonstrated that although much of the site was either truncated by modern activity or contained deposits of low archaeological significance, remains of regional significance survived in the area of evaluation Trench 2.

2.4.6 Accordingly, excavation of an area to the south and east of evaluation Trench 2 was required in order to mitigate the impact of the development on the archaeological resource – specifically regionally significant archaeological remains associated with Gateshead Ironworks - in line with the condition of planning consent. The work was carried out in accordance with the aforementioned Project Design prepared by PCA.

2.5 Archaeological and Historical Background

The 2008 desk-based assessment has been used as the basis of the following summary and the research and writing of those responsible is gratefully acknowledged. Other information has been added as required, including from 'Sitelines', the online Tyne and Wear Historic Environment Record (HER), as well as other sources. Information regarding the archaeological and historical background of the site and broader Gateshead area prior to the late medieval period - when the town's industrial origins began - has largely been omitted from this report – further details can be found in the desk-based assessment.

2.5.1 It seems likely that the Bishop of Durham encouraged the economic development of Gateshead in direct competition with Newcastle and one source considers the town to have been a borough by 1153.[8] However, the medieval town lay to the west of the site herein described, along Oakwellgate and Pipewellgate, and the eastern part of the manor was reserved as a park for the Bishop's uses, including hunting for sport, farming of game, possibly fisheries on the streams feeding the Tyne, as well as on the river itself, growing timber and the rental of rights of pannage and grazing.

2.5.2 Towards the end of the medieval period, the Bishop's Park was increasingly subdivided for agricultural purposes and by the 15th century coal extraction had begun within the parkland, with the coal transported to 'staiths' (elevated staging on a wharf) on the River Tyne for export. Coal staiths are documented in Gateshead from an early date; 'Rock Staith' – documented from the 17th century - occupied the site of the present Tyne Bridge, while further east was 'Dock Staith'.[9] The space between the two was possibly a 'wet dock' referred to in a lease document of 1705 and these staiths were collectively known as the 'Bishop's Staiths'.

2.5.3 From the late 16th century to late 17th century, the manor of Gateshead rested with the burgesses of Newcastle and it is thought that Newcastle saw advantage in limiting Gateshead's expansion during this period. But with the manor's return to the Bishops of Durham and their tenants, growth appears to have accelerated rapidly.

[7] Tyne and Wear Specialist Conservation Team 2009.
[8] Beresford and Finberg 1973.
[9] Tyne and Wear HER Nos. for these facilities are: Rock Staith, 4862; Dock Staith, 4863.

2.5.4 William Hawks (1708-1755) was just one of several early industrialists who sought to exploit the obvious maritime trade opportunities on Tyneside and he was responsible for establishing the 'New Greenwich' development area on the South Shore at Gateshead and built what became a successful ironworks there in *c.* 1747. Hawks had been previously employed by the Winlaton based iron manufactory operated by Ambrose Crowley. Although an experienced blacksmith, Hawks also appears to have held a more managerial role in Crowley's London warehouse at Greenwich on the Thames, hence the naming of the site of his operations in Gateshead. Hawks' early works on the South Shore at Gateshead comprised a few '*…blacksmiths' shops at New Greenwich…*'.[10] Hawks exploited his contacts to secure a supply of scrap iron from London and this connection may have been a significant reason for locating his works on the Tyne. Positioned in the vicinity of the aforementioned staiths (Rock and Dock), there would have been a steady traffic in colliers keen to carry a paying return cargo of scrap iron from London.[11]

2.5.5 By 1772, by which time William Hawks Junior (1730-1810) was running the operation, the company was importing slit rods, probably manufactured in Shropshire or Wales, from London, demonstrating that the importance of the trade connection with the capital continued for some time.[12] The ready supply of coal, from which coke could be made, would also have added to the attraction of a site by the Tyne. However, it is likely that until the introduction of the puddling furnace after 1784, Hawks' works would have been reliant on charcoal to smith wrought iron via the finery/chafery process, At this time Hawks' works manufactured a variety of ironmongery, including shovels and spades. In a later document, it is stated that, in the earliest works, the anchor smith's bellows were worked by horsepower.[13]

2.5.6 The available evidence suggests that the core of Hawks' works at New Greenwich lay north and east of the site herein described, above the Tyne shore and indeed archaeological fieldwork in that area – notably at the former Kelvin Works site - has recorded significant remains of these facilities.[14]

2.5.7 A lease of 1795 states that a '…*dam and reservoir had recently*…' been constructed as an '…*added convenience to the forge, mill and mill race'*. Charles Hutton's map of 1772 shows a large 'comma' shaped feature occupying a significant proportion of the central part of the site and this is likely to be the aforementioned reservoir/mill pond, possibly crossed by a bridge.[15] Land adjacent to the reservoir/mill pond occupying the southern margin of the site appears to be set out as gardens. The shape of the reservoir/mill pond, with a wide fore-dam to the north and narrow tail to the south, indicates that powered workings were located below the site, on South Shore. The map appears to depict a watercourse running roughly northwards from the north-western corner of the site. A ravine, possibly the stream or tailrace, was located during the aforementioned archaeological work on the former Kelvin Works site, a manufactory which had gone out of use by the 1850s.[16]

[10] Historical Publishing Company 1889.
[11] Read no date.
[12] Bell 1863.
[13] Historical Publishing Company 1889.
[14] Tyne and Wear Museums Archaeology 2006 and 2007.
[15] Hutton's map is Figure 2 in the UCA desk-based assessment.
[16] Tyne and Wear Museums Archaeology 2006.

2.5.8 The first steam engine (by Boulton and Watt) was installed at Hawks' works during 1790. Two more followed in quick succession and initially the motive force was put to work in boring, drilling, grinding, rolling and screwing.[17] It seems likely that blowing engines would also have been introduced to increase the efficiency of puddling furnaces and reheating furnaces in the rolling mills, foundry and forge. Hawks' works continued to innovate and lead their local and national competitors with a chain testing house by 1812 and the commissioning of Nasmyth's Patent Steam Hammers by the mid 19th century.

2.5.9 Cole and Roper's map is thought to show Newcastle and Gateshead around *c.* 1800,[18] and while this does not appear to show the reservoir/mill pond, the adjacent area of gardens occupying the south-westernmost portion of the site is depicted, as is the watercourse running roughly northwards from the north-western corner of the site. Thomas Oliver's map of 1830 shows the majority of the site developed, with what is evidently a relatively small remnant of the reservoir/mill pond surviving amongst a layout of buildings. The south-westernmost portion of the site is still shown occupied by gardens.[19] A broadly similar arrangement is shown on John Wood's map of 1827,[20] which also annotates the 'Foundery' [sic].

2.5.10 An undated plan by Thomas Bell and Sons shows premises held on lease by Hawks' company on the South Shore.[21] This plan – thought to date to the mid 19th century[22] - does not show the reservoir/mill pond, which had presumably been infilled by then. It depicts the site set in the angle of two branches of 'Occupation Road' (now Hawks Road and Mill Road) and largely unoccupied, which is somewhat at odds with Wood's and Oliver's maps, unless it pre-dates the developments shown on those maps. A foundry, part of 'Hawks and Co.'s Manufactory', is depicted on the Bell and Sons' plan to the immediate east of the site, with its western end just extending onto the site, while a short row of cottages is illustrated on the southern road frontage. A three-bay forge building associated with Hawks' works is depicted just beyond the northernmost point of the site.

2.5.11 The Ordnance Survey 1st edition map of *c.* 1862 (6 inches to 1 mile scale) shows the site lay within a relatively undeveloped area of the overall ironworks complex above the South Shore, specifically taking in part of an open yard bisected by a SW-NE aligned railway (or possibly a tramway).[23] The main track of this railway contionued north-eastwards to riverside facilities on South Shore, while various spurs served, for example, the forge and foundry buildings of 'Gateshead Iron Works' [sic], as the works in the vicinity of the site are annotated on the map. It seems likely that raw materials, worked pieces and finished goods were being delivered to and moved around the complex, prior to dispatch by rail.

[17] Historical Publishing Company 1889.
[18] This map can be viewed on the *Pictures of Gateshead* website.
[19] PCA holds a copy of Oliver's map in its files.
[20] This map can be viewed on the *Pictures in Print* website.
[21] Bell and Sons' plan is Figure 3 in the UCA desk-based assessment.
[22] The Tyne and Wear Museums and Archives reference for this plan is 'DT.BEL/2/193'. The online catalogue suggests a date *c.* 1850.
[23] The Ordnance Survey 1st edition map (6 inch scale) is Figure 4 in the UCA desk-based assessment.

2.5.12 By the use of hachures, the 1st edition Ordnance Survey map suggests that there were noticeable height differences between the various divisions of the works. The railway is shown entering the site on an embankment and, to the north, one spur is supported on a raised gantry or viaduct over South Shore Road, ending at a rolling mill. To the south-west, this railway connected with the North Eastern Railway and then swung round to serve a subsidiary working of Tyne Main Colliery located south of Ballast Hill which overlooked Hawks Road. This hill - depicted on 19th and 20th century maps immediately to the south of the site - suggests links with the coastal trade, although it was more probably a waste heap associated with Tyne Main, rather than a ballast hill *per se* since it appears on mapping at the same time as that working. Actual ballast hills were a feature of the area in the industrial era, accumulating at specific riverside locations as gravel ballast was off-loaded from empty colliers returning from the ports and cities of southern England.

2.5.13 By the mid 19th , Hawks' company had amalgamated with the business of former competitor George Crawshay to form Hawks, Crawshay and Sons, which became a renowned heavy engineering company. It specialised in bridges (most famously supplying the ironwork for Stephenson's High Level Bridge over the Tyne), as well as iron and steel for the shipbuilding industry, ironwork for lighthouses and piers and steam engines for land and maritime use.

2.5.14 It is interesting to note that Stephenson demanded that Hawks provide sample of materials for testing while designing the High Level Bridge. This shows an awareness of materials and scientific methods unusual for the day.[24] In 1863 the plant at the works included 33 puddling furnaces.[25] In less than 10 years (by 1871) the number of puddling furnaces had more than doubled, this period marking a high point both for the company and for the wrought iron industry in the north of England as a whole.[26]

2.5.15 It is generally believed that Hawks, Crawshay and Sons went into liquidation suddenly in 1889, and that a failure to specialise, compared to their competitors, forced the closure.[27] However, economic factors that were affecting the entire malleable iron industry at this time also likely contributed to this decline.

2.5.16 The site remained vacant for much of the early 20th century. Some indication of the ironworks' lingering influence is apparent in street names such as Hawks Road, Mill Road, Nailor's [sic] Bank, and other facilities, such as the Patent Hammer Inn, the Vulcan Tavern and the New Deptford Inn.

[24] Bailey 2003.
[25] Bell 1864, quoted in Harrison 1979.
[26] Griffiths 1873, quoted in Harrison 1979.
[27] Atkinson 1974.

3. PROJECT AIMS AND RESEARCH OBJECTIVES

3.1 Project Aims

3.1.1 The project at the former CPS Haulage premises was threat-led with potential to disturb or destroy important sub-surface archaeological remains of the 18th and 19th centuries in particular. Therefore, the broad aim of the project was to achieve preservation by record of any archaeological remains of significance threatened by construction groundworks. The term 'remains' refers to any buried archaeological structures, deposits and features and any associated artefactual and ecofactual evidence.

3.1.2 Additional aims of the project were:

- to compile a Site Archive consisting of all site and project documentary and photographic records, as well as all artefactual and paleoenvironmental material recovered.
- to compile a report that contains an assessment of the nature and significance of all data categories, stratigraphic, artefactual, *etc.*

3.2 Research Objectives

3.2.1 The project was considered to have good potential to make a significant contribution to existing knowledge of South Tyneside's heritage in general and of the 18th and 19th-century industrial archaeology of east Gateshead in particular. Specific research objectives to be addressed by the project were formulated with reference to the existing archaeological research framework for north-east England, namely *Shared Visions: The North-East Regional Research Framework for the Historic Environment* (NERRF),[28] which highlights the importance of research as a vital element of development-led archaeological work. The NERRF identifies the following key priority within the research agenda for the post-medieval (PM) period which is of direct relevance to the project: 'PMii – Industrialisation'. This research priority observes that:

> *Compared with the coal and lead industries, relatively little work has been undertaken on the region's important iron and steel industry. Further work on early (18th-century or earlier) industrial technology is a priority……The development of urban foundries in the 18th century, and forges, rolling mills and engineering works in the later 18th and 19th centuries is also of considerable interest.*
>
> *Linsley (2002, 210) notes the requirement for further research into the region's iron and steel industries, including.….the larger-scale integrated iron and steel works of the 19th century. He particularly mentions the potential of Ridsdale, Brinkburn and Lemmington. The national importance of these 19th-century sites, and of the later 19th/20th-century Cleveland industry, was stressed in the MPP coverage of the iron and steel industry.*

[28] Petts and Gerrard 2006.

4. ARCHAEOLOGICAL METHODOLOGIES

4.1 Fieldwork

4.1.1 Following on from the two-phase evaluation, described in a previous report, the excavation fieldwork was undertaken 20 September-22 October 2010. All fieldwork was undertaken in accordance with the relevant standard and guidance document of the Institute for Archaeologists (IfA).[29] PCA is an IfA-Registered Organisation. A Project Design for the work was prepared by PCA and this set out the research Aims and Objectives of the excavation and, in a series of detailed Methods Statements, described the techniques and approaches to be employed to achieve the Aims and Objectives of the project. The Project Design should be consulted for full details of methodologies employed regarding archaeological excavation, recording and sampling.

4.1.2 The excavation area covered 205m^2, being an area with maximum dimensions *c*. 17.50m x 13.0m encompassing the majority of evaluation Trench 2. This was located within the open yard forming the eastern portion of the former CPS haulage premises. The excavation area was located in the south-eastern part of the yard, to the east of the entrance gate.

4.1.3 The tarmac yard surface was stripped from the excavation area by a 360° tracked excavator using a toothed bucket. Overburden was then removed by machine, using a toothless ditching bucket, down to the first archaeologically sensitive deposits. All work was undertaken under direct archaeological supervision.

4.1.4 Structural remains associated with the 19th-century ironworks were exposed across the north-western part of the excavation area, as evaluation Trench 2 had indicated. In addition, earlier archaeological deposits survived between the foundations of industrial era structural remains. To the south-east, evidence of substantial landscaping activity in more recent times was encountered and modern dump deposits were recorded at considerable depth in this area.

4.1.5 Five 'slots' were hand-excavated through archaeological deposits down to the level of the underlying natural sub-stratum (Figure 3). Slot 1, located adjacent to and south-west of the main structure under investigation, was a roughly rectangular area measuring *c*. 2.0m NE-SW x 1.70m NW-SE with a narrow projection 1.10m long to the east. Slot 2, located south-east of the main structure, was roughly rectangular in plan and measured *c*. 3.80m NW-SE x 3.50m NE-SW. Slot 3 was located adjacent to the north-eastern side of the main structure and measured *c*. 1.0m NE-SW x 0.80m NW-SE. Slot 4, located to the south-east of a 19th-century wall, close to the north-eastern limit of excavation, measured *c*. 2.50m NE-SW x 1.30m NW-SE. Slot 5, located to the north-west of the same wall, measured *c*. 4.0m NW-SE x 1.30m NE-SW. Structural archaeological remains were excavated within Slots 2 and 4 to reveal the underlying stratigraphic sequence.

4.1.6 The entire excavation area was cleaned using appropriate hand tools and deposits and features were subsequently excavated and recorded using a single context recording system utilising *pro forma* context and masonry recording sheets. Plans were drawn at 1:20 and sections at 1:10.

[29] IfA 2008a.

4.1.7 A photographic record of the investigations was compiled using a digital camera, illustrating in both detail and general context the principal features and finds discovered. The photographic record also included 'working shots' to illustrate more generally the nature of the archaeological operation mounted. All photographs included a legible graduated metric scale.

4.1.8 Two Temporary Bench Marks (TBMs) were established using existing survey data; the TBMs had values of 18.09m OD and 17.21m OD; the height of all principal strata and features were calculated relative to Ordnance Datum and indicated on the appropriate plans and sections.

4.2 Post-excavation

4.2.1 The stratigraphic data generated by the project is represented by the written, drawn and photographic records. A total of 158 archaeological contexts were defined in the excavation area (Appendix B) and some context numbers relating to structural remains were retained from the evaluation. The contents of the paper and photographic elements of the Site Archive are quantified in Section 6. Post-excavation work involved checking and collating site records, grouping contexts and phasing the stratigraphic data (Appendix A). A written summary of the archaeological sequence was then compiled, as described below in Section 5.

4.2.2 The artefactual material from the excavation comprised hand-collected assemblages of pottery, ceramic building material, glass, clay pipe and industrial residues. For each category of material an assessment has been undertaken, including a basic quantification of the material and a statement of its potential for further analysis. The results are given in Sections 7-11. No other categories of inorganic artefactual material were represented.

4.2.3 The palaeoenvironmental sampling strategy of the project was to recover bulk samples where appropriate, from well-dated (where possible), stratified deposits covering the main periods or phases of occupation and the range of feature types represented, with specific reference to the objectives of the excavation. To this end, no appropriate deposits were encountered and therefore no bulk samples were recovered. No other biological material was recovered.

4.2.4 None of the material recovered during the excavation required specialist stabilisation or an assessment of its potential for conservation research.

4.2.5 The complete Site Archive, in this case comprising the written, drawn and photographic records (including all material generated electronically during post-excavation) will be packaged for long term curation. Only some artefactual material – all of the pottery and clay pipe, along with selected industrial residues and brick samples - will be retained in the Site Archive; the remainder of the material will be discarded.

4.2.6 In preparing the Site Archive for deposition, all relevant standards and guidelines documents referenced in the Archaeological Archives Forum guidelines document[30] will be adhered to, in particular a well-established United Kingdom Institute for Conservation (UKIC) document[31] and a more recent IfA publication.[32] The depositional requirements of the body to which the Site Archive will be ultimately transferred will be met in full. At the time of writing this will be Tyne and Wear Museums and Archives, Arbeia, South Shields.

[30] Brown 2007.
[31] Walker, UKIC 1990.
[32] IfA 2008b.

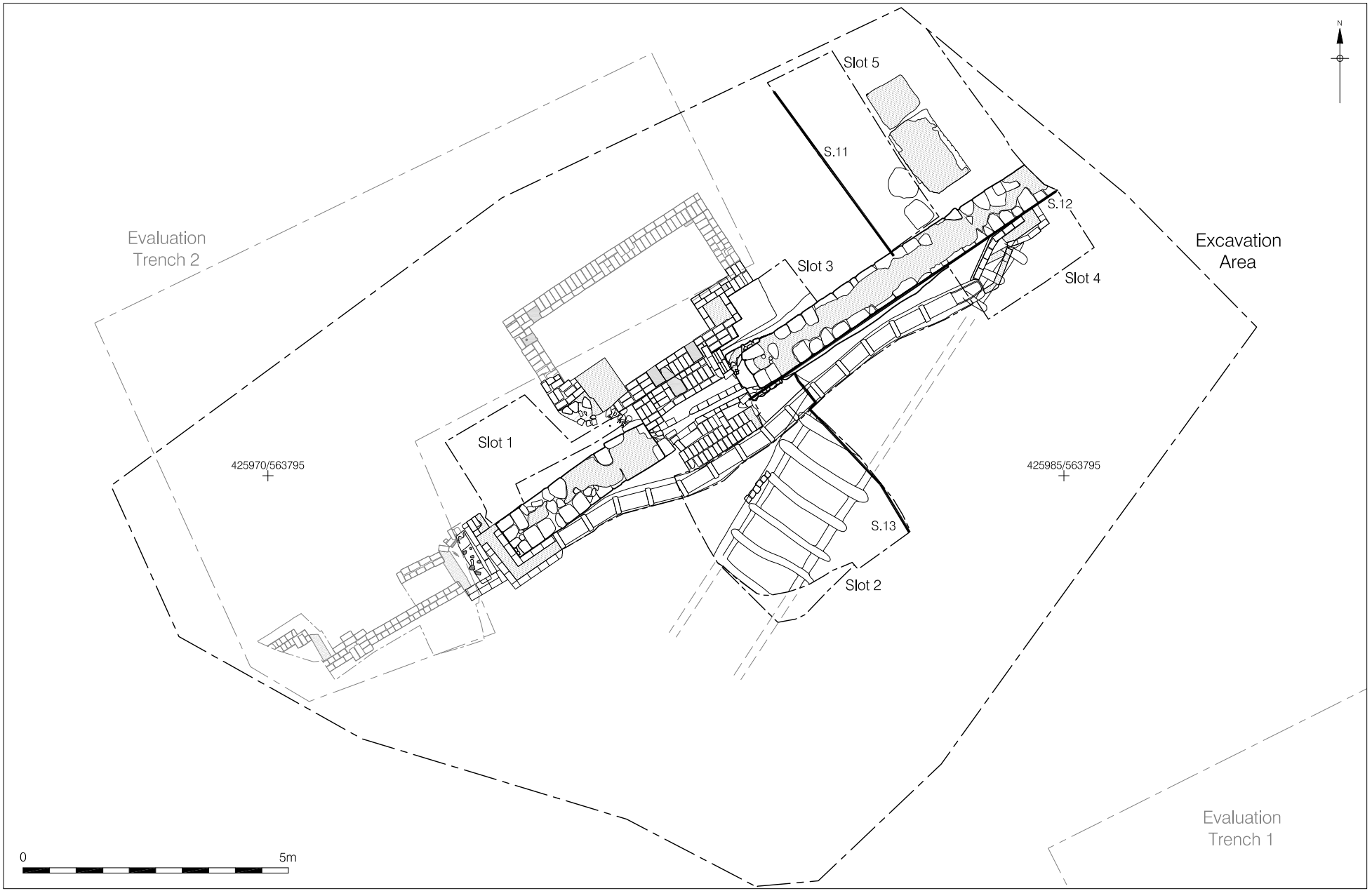


Figure 3
Plan of Excavation Area
1:100 at A4

5. RESULTS: THE ARCHAEOLOGICAL SEQUENCE

During the excavation, separate stratigraphic entities were assigned unique and individual 'context' numbers, which are indicated in the following text as, for example [1001].

The sequence of numbering contexts during the excavation phase of work began at [1000], while during the preceding phase of work contexts in the evaluation trenches were numbered so that Trench 1 was assigned numbers beginning at [100], Trench 2 was assigned numbers beginning at [200], etc. As the excavation area encompassed evaluation Trench 2, some context numbers assigned to structural remains during the evaluation were retained (see Appendix 1) and thus appear in the following discussion, which also includes a small number of other contexts from evaluation Trench 2, which produced important relevant information.

The archaeological sequence is described by placing stratigraphic sequences within broad phases, assigned on a site-wide basis in this case. An attempt has been made to add interpretation to the data, and correlate these phases with recognised historical and geological periods.

5.1 Phase 1: Natural Sub-stratum

5.1.1 Phase 1, which represents natural geological material, was exposed as the basal deposit in all five slots within the excavation area (*e.g.* Section 11, Figure 7 and Plate 1).

5.1.2 The natural sub-stratum comprised compact, light brownish yellow sand and gravel, [1132]. The sand was medium to coarse grained, and the gravel ranged from fine to coarse. Included throughout were sandstone cobbles up to *c.* 250mm diameter. This deposit represents the drift geology of this part of the Tyne Valley, the material being of glaciofluvial origin.

5.1.3 The height at which natural sand and gravel was encountered varied across the area of investigation. The highest value encountered was 16.24m OD in Slot 5 in the northernmost part of the area. It was encountered at a similar height to the west in Slot 1, 16.17m OD being the maximum height recorded there. In Slot 2, in the southern central part of the excavation area, natural sand and gravel was recorded at a maximum height of *c.* 16.05m OD, this lower height probably the result of ground preparation for a colliery waggonway, [1131], as described below in Phase 3.

5.2 Phase 2: Medieval and Post-Medieval Developed Soils

5.2.1 Phase 2 represents activity attributed to the medieval and early post-medieval periods, prior to the use of the site as part of Hawks' Ironworks. The earliest human activity recorded during the investigation is of medieval date, likely representing agricultural use of the floodplain and lower valley side. This activity is likely to have continued into the post-medieval period, until the development of site for Hawks' ironworks.

5.2.2 Within Slot 1, the natural sand and gravel was overlain by a layer, [1122], of soft, mid greyish brown sandy silt. Up to 0.20m thick, it survived across Slot 1 where not truncated by later features. The maximum height at which it was recorded was 16.39m OD. The deposit was the equivalent to that recorded as layer [215] in the evaluation. The deposit is probably also the same as a layer, [1075], of friable mid greyish brown silty sand, recorded in both Slots 3 and 5 (Section 11, Figure 7), this recorded at a maximum height of 16.45m OD.

5.2.3 These layers, which are interpreted as elements of the same developed agricultural soil horizon, produced pottery of medieval and early post-medieval date. The earliest pottery recovered comprised one sherd of medieval buff whiteware from layer [1075] and a sherd of reduced greenware from layer [1122], broadly datable to the 13th/14th centuries (see Section 7, below). Layer [1122] also produced five sherds of 17th-century redware. Two fragments of clay pipe stem were also recovered from the same deposit, the large bore of one of which was consistent with a 17th-century date (see Section 8, below). During the evaluation phase of work, layer [215] produced five sherds of medieval pottery, broadly datable to the 13th/14th centuries. The same deposit also produced two sherds of early post-medieval pottery dating to the 16th/17th century, and five sherds of 17th-century redware. A fragment of clay pipe stem was also recovered from layer [215], the large bore of which was consistent with a 17th-century date. In sum, this developed soil horizon likely accumulated as a result of agricultural activity over the course of several centuries, as evidenced by the finds recovered from its various constituent contexts.

5.2.4 Overlying developed soil [215] in evaluation Trench 2 was a layer, [214], of soft, dark brownish grey sandy silt with frequent flecks of degraded limestone throughout. This material was up to 0.32m thick, and produced six sherds of pottery and two clay pipe stems. The earliest potsherd was a jar rim in an oxidised fabric, broadly dated to the 13th/14th century, but probably residual in context. The latest pottery consisted of three sherds of creamware dating to the 18th or early 19th century. The lime flecks within the deposit could represent the use of lime fertiliser, therefore the deposit is interpreted as a probable garden soil, possibly associated with occupation of the site at the time the ironworks was established in the mid 18th century.

5.3 Phase 3: Late Post-Medieval Colliery Waggonway (Figures 4 and 7; Plates 2-4)

5.3.1 Phase 3 represents activity relating to construction and use of a colliery waggonway, [1131]. It is likely that the waggonway was associated with an early (possibly the earliest) phase of the ironworks established by Hawks, although there is no clear indication of a waggonway at the site on Hutton's map of 1772. The route could potentially be a branch line from a main waggonway leading to staiths on the Tyne, similar to the route shown to the west of the site on Bell and Sons' plan thought to date to *c.* 1850. The location and alignment of the excavated waggonway suggests that its function was to supply coal/coke to the ironworks foundry which Bell and Sons' plan depicts to the immediate east of the site. No waggonway is actually shown within the site on the plan (which as previously mentioned depicts the site as being largely undeveloped) or on Wood's and Oliver's maps of 1827 and 1830, respectively. Collectively, therefore, the map evidence suggests that the waggonway was operational either before *c.* 1770 or in the late 18th to early 19th century.

5.3.2 The earliest element of waggonway [1131] was a linear cut, [1164], aligned NE-SW, recorded across Slot 2 cutting into natural sand and gravel at a maximum height of 16.05m OD.(Figure 4). It was *c*. 0.30m deep and was recorded only on the north-western side of the waggonway, suggesting that its purpose was to create a level platform for the track by terracing into the naturally sloping ground.

5.3.3 The track of the waggonway survived as a series of negative impressions in a layer of primary ballast, [1149], which comprised a 0.25m thick deposit of compact, light yellowish brown sand and gravel, likely to represent natural material extracted from trackbed cut [1164] and re-deposited subsequent to the laying of the sleepers. It was recorded at a maximum height of 15.94m OD. Pottery recovered from the ballast largely comprised later glazed red earthenwares and refined whitewares, only broadly datable to the late 18th or 19th century (see Section 7). The deposit also produced two undiagnostic fragments of clay pipe stem.

5.3.4 Six sleeper impressions, [1134], [1136], [1138], [1140], [1142] and [1144] (the last shown on Section 13, Figure 7) were recorded in Slot 2 and parts of a further three impressions, [1153], [1155] and [1157], were recorded *c*. 3.40m to the north-east in Slot 4 (Figure 4). Dimensions are given in Table 5.1, below. It must be noted that in some cases (marked as '*'), the depths given are greater than the thickness of the sleepers, as they represent the measurement between the base of the impression and the top of the secondary ballast, which would have covered the sleepers.

Sleeper No.	***Length (m)***	***Width (m)***	***Depth (m)***
1134	>1.19	0.15	0.24*
1136	>1.80	0.15	0.28*
1138	1.85	0.14	0.12
1140	1.76	0.18	0.12
1142	2.00	0.22	0.17
1144	>1.38	0.22	0.33*
1153	>0.48	0.14	0.12
1155	>0.44	0.16	0.11
1157	>0.52	0.18	0.13

Table 5.1. Dimensions of sleeper impressions, Waggonway [1131]

5.3.5 All the sleeper impressions were slightly irregular in plan, suggesting that the sleepers comprised split branches, and largely consisted of voids within the ballast. However, thin layers of fill [1133], [1135], [1137], [1139], [1141], [1143], [1152], [1154] and [1156], 0.10m or less in thickness, were recorded at the base of each impression. The fills comprised soft, mid greyish brown sandy silt with occasional flecks and fragments of rotted timber, deriving from decayed sleepers. Only one fill, [1139], produced pottery, this was a single sherd of refined whiteware that was not closely datable. The distance between the sleepers, measured centre to centre, was on average 0.56m.

5.3.6 To the north-west of the trackway was a posthole, [1159], 0.30m in diameter and 0.26m deep, recorded at a maximum height of 16.09m OD. This was associated with a shallow, 0.14m wide, slot, [1161], running approximately parallel to the north-western side of the waggonway. The fills of both features, [1158] and [1160], respectively, comprised mixed coal fines and ash. To the north-east, in Slot 5, a posthole, [1079], also cut into the natural sub-stratum. This was sub-circular in plan, up to 0.62m in diameter and 0.37m deep. Its fill, [1078], comprised soft, dark grey sandy silt. The location, form and position in the stratigraphic sequence indicate that slot [1161], along with postholes [1159] and [1079], represent part of an earlier phase (Phase 3a) of fenceline associated with the wayleave of the waggonway.

5.3.7 The sleeper impressions of the waggonway were overlain by a 0.20m thick layer, [1121], of compact. black coal fines and ash, interpreted as secondary ballast dumped during construction of the waggonway (Section 13, Figure 7). It was recorded at a maximum height of 16.32m OD. This deposit produced 34 sherds of pottery, all later glazed red earthenwares and refined whitewares. Also recovered was part of a clay pipe bowl decorated with a coat of arms and broadly datable to the late 18th to 19th century (see Section 8). Five glass fragments recovered from the ballast were not closely datable. A fragment of brick from the deposit is likely to date to the mid 18th century, *c*. 1740-1760 (see Section 10). Within Slots 3 and 5, a 60mm thick deposit, [1074], of mixed ash and coal fines was probably the equivalent of the secondary ballast (Section 11, Figure 7). This was also recorded at a maximum height of 16.32m OD.

5.3.8 Two NE-SW aligned rail impressions, [1125] and [1127], were recorded within the secondary ballast in Slot 2. The north-western rail impression, [1125], was recorded in plan for a length of 3.30m. It was 0.15m wide and 0.15m deep, and was partially filled by a deposit, [1124], of soft, dark brownish grey mixed silt, coal fines and fine sand, with occasional fragments of decayed wood. The south-eastern impression, [1127], was recorded in plan for a length of 2.80m. A further rail impression, [1151], in Slot 4 represents the continuation of the south-eastern rail; this was recorded in plan for a length of 1.48m and was 0.20m wide and 0.20m deep. Therefore, the waggonway was recorded for a total distance of just over 8m.

5.3.9 The distance between the inner edges of the rail impressions was around 1.30m or *c*. 4 feet 3 inches. This is the approximate gauge of the waggonway, although the measurement is not exact, as the timber of the rails was completely decayed, as mentioned.

5.3.10 Immediately to the north-west of the north-western rail impression were the remains of small brick structure, [1128], comprising six partial bricks laid parallel to the rail impression. The bricks were unbonded, and were hand-pressed, of a broadly late 18th/early 19th-century form. The function of the structure is unclear, but its position and alignment indicates that it was associated with the waggonway. It was recorded at a maximum height of 16.11m OD. Further to the north-west of the north-western rail impression, two postholes were recorded, cutting into the secondary ballast. The south-western posthole, [1148], measured 0.59m NE-SW x 0.36m NW-SE and was 0.40m deep. The form of the feature suggests that it was a double post setting, or two phases of a single post setting, although if this was the case it was not clear which was later, due to the homogeneity of the fill, [1147]. The north-eastern posthole, [1146], was sub-circular in plan and was *c*. 0.45m in diameter and 0.40m deep. A shallow slot aligned approximately NE-SW, [1163], was recorded to the immediate south-west of posthole [1148]. These features are interpreted as representing a phase (Phase 3b) of repair or development of the fenceline associated with the wayleave of the waggonway.

5.3.11 Within Slots 3 and 5, waggonway ballast [1074] was overlain by two thin layers of dumped material. The lower deposit, [1073], comprised a 60mm thick layer of soft, dark greyish brown clayey silt, and the upper deposit, [1072], was a 70mm thick layer of yellow clay (Section 11, Figure 7). These two deposits are likely to represent part of the ballast of the waggonway, although they were different in composition to the main deposit of coal fines. The upper deposit within Slot 5 was cut by a sub-circular posthole, [1071], which was 0.48m in diameter and 0.31m deep. The posthole is interpreted as being associated with the later phase of the fenceline along the north-western side of the waggonway.

5.3.12 Within Slot 1, a deposit, [1111], of soft, dark grey silty clay is interpreted as possibly belonging to Phase 3, as it pre-dated construction of the ironworks' buildings of Phase 5. Finds recovered from the deposit included 17th/early 18th-century redwares, as well as refined whitewares of 18th to 19th-century date. The latter made up the majority of the finds assemblage from the deposit, suggesting that the redwares may be residual sherds from deposit [1122] below.

5.3.13 Layer [1111] was cut by a posthole, [1086], which was sub-oval in plan, measuring 0.88m x 0.61m and 0.40m deep. Its primary fill, [1068], comprised solidified drossy iron slag, into which was set a timber block, [1085], measuring *c.* 0.30m^3. The timber possibly represented the base of a post. Its upper surface - recorded at a height of 16.83m OD - was sawn, and this may have occurred at the time of demolition of the structure represented by the post. Although the post was not associated with the fenceline to the north-west of the waggonway, it may have been associated with the waggonway in some capacity, although it precise function is not clear.

5.4 Phase 4: 19th Century Dumping and Service Installation (Figures 5 and 7)

5.4.1 Phase 4 represents 19th century activity at the site, post-dating use of the waggonway, but pre-dating construction of buildings associated with the expansion of the ironworks (Phase 5). It relates to a series of dump deposits and services installed across the northern part of the area of excavation.

5.4.2 To the south-east of the waggonway, in Slot 2, secondary ballast layer [1121] was cut by the construction trench, [1118], for a brick-lined drain, [1117], aligned ENE-WSW (Figure 5). This comprised a single course foundation of bed-laid hand-pressed bricks, above which were four courses of hand-pressed bricks laid in stretcher bond forming the side of the drain. The bricks measured *e.g.* 230mm x 110mm x 70mm, although there was some variation in size, and were bonded with soft, light whitish grey lime mortar. A 1.40m length of the drain was revealed within the south-eastern extent of Slot 2. The maximum height to which the drain survived was 0.30m and it was recorded at a maximum height of 16.01m OD. At its south-western end, the structure returned to the south-east, 0.30m short of the end of sleeper impression [1136]. This return meant that the drain did not cross the line of the waggonway track, possibly suggesting that the feature was contemporary with the waggonway. However, the misalignment of the drain with the track probably more likely confirms that it was not related to the waggonway and it may in fact have been associated with buildings within the ironworks complex, possibly the cottages depicted in the southern part of the site on Bell and Sons' plan of *c.* 1850.

5.4.3 The earliest deposit, [1120], sealing the waggonway remains in Slot 2 was a 0.20m thick dump of mixed dark grey and orange-brown silt and sand (Section 13, Figure 7). It was recorded at a maximum height of 16.32m OD. The deposit produced finds ranging from the 17th to the 19th centuries, including a fragment of clay pipe attributable to John Hastings, a Gateshead manufacturer active from *c.* 1672 to 1720 (see Section 8). Some of the earlier material was certainly residual, and the deposit probably dates to the early part of the 19th century. This layer was interpreted as being the equivalent of a 0.20m thick deposit, [1092], which overlay the waggonway impressions to the north-east, in Slot 4.

5.4.4 Within Slot 2, a series of deposits, [1115], [1114], [1112], [1113], [1116] and [1103], with an overall depth of *c*. 0.30m overlay dump deposit [1120], which sealed the waggonway, as described (Section 13, Figure 7). These deposits comprised mixed lenses of loose coal fines and dark grey silty sand. Finds recovered from the deposits predominantly consisted of 19th-century refined whitewares, with occasional fragments of residual 17th to 18th-century redware. The latest of the deposits, [1103], contained frequent inclusions of brick rubble, and was cut by a NW-SE aligned feature [1107], 0.35m in depth and recorded at a maximum height of 16.69m OD. This was filled by two deposits, [1108] and [1102], both comprising silty sand. The uppermost fill was overlain by a deposit, [1106], of compact, dark grey ashy silt with brick and iron slag inclusions.

5.4.5 Within Slot 4, deposit [1092] was cut by a 0.40m deep construction trench, [1091], for an iron pipe, [1082], pre-dating construction of the Phase 5 buildings (Figure 5). The pipe had a diameter of 0.23m and was aligned roughly ENE-WSW across the northern part of the excavation area. The backfill, [1090], of the pipe trench comprised coal fines, and this was cut by a 0.25m deep construction trench, [1100], for a later iron pipe, [1099], immediately to the south. This trench - recorded at a maximum height of 16.63m OD - also cut layer [1106] in Slot 2. Pipe [1099] was 0.12m in diameter, and continued to the south-west, where it was recorded as pipe [1041] in Slot 1.

5.4.6 Within Slot 2, deposit [1106] was partially overlain by a thin deposit, [1105], comprising compact coal fines and ash, with iron slag inclusions, up to 50mm thick. This deposit and backfill [1098] of pipe trench [1100] were overlain by a deposit, [1076], comprising mixed silty sand, ash, coal fines and crushed slag, which extended across the slot and was up to 0.18m thick and was recorded at a maximum height of 16.89m OD. Deposit [1066], recorded to the south-west beyond a later structural feature, is likely to represent a continuation of this deposit. Deposit [1076] was cut by another ENE-WSW aligned pipe trench, [1089], 0.20m deep, housing an iron pipe, [1088], 55mm in diameter. The backfill, [1087], of the pipe trench comprised coal fines and ash. The pipe was truncated at its eastern end by a modern intrusion, and thus could be contemporary with the Phase 5 building, but the similarity in alignment and form of the pipe suggests that it is part of the series of pipes pre-dating Phase 5 structures and it is thus assigned to Phase 4.

5.4.7 Within Slot 1, timber post [1085] was overlain by a mixed silty ash and coal fines deposit, [1069], up to 0.10m in thickness and recorded at a maximum height of 16.87m OD. This spread was cut by a 0.17m deep construction trench, [1063], for an ENE-WSW aligned iron pipe, [1065], 0.28m in diameter, that was truncated at its eastern end by the construction trench for the Phase 5 building. The backfill, [1062], of the pipe trench was overlain by a 0.16m thick deposit, [1057], of very compact, mixed ash, coal fines and crushed slag. This layer was overlain by a thin spread, [1047], up to 70mm thick, of compact, silty sand and ash, which was cut by another ENE-WSW aligned pipe trench, [1051], up to 0.40m deep, housing iron pipe, [1101], which was 0.26m in diameter. This pipe was interpreted as being equivalent to pipe [1040] in Slot 2 and pipe [1082] in Slot 4.

5.4.8 Within Slots 3 and 5, Phase 3 posthole [1071] and ballast layer [1072] were overlain by a 0.18m thick deposit, [1067], of dark grey sandy silt recorded at a maximum height of 16.55m OD. (Section 11, Figure 7). This produced pottery ranging from the medieval period to the 19th century, although the earlier material was certainly residual. The majority of the pottery comprised refined whitewares and later redwares datable to the late 18th/early 19th century. Ten fragments of clay pipe from this deposit were also broadly datable to this period. A worn coin of George III (1760-1820) and a copper alloy button were also recovered from this layer, presumed to be a dump deposit for ground raising and consolidation.

5.4.9 Overlying this spread was a 0.18m thick deposit, [1061], of greyish brown sandy clay. This deposit also produced pottery predominantly comprising 18th to 19th-century whitewares and later redwares. The overlying layer, [1052], which comprised greyish brown sandy silt, produced pottery and clay pipe fragments of 19th-century date. In Slot 5, this deposit was cut by a series of four possible wheel ruts, [1053], varying in length from 0.30m to 1.10m, and generally 80mm wide and 60mm deep and recorded at a maximum height of 16.87m OD. Deposit [1052] was also truncated by an ash-filled feature, [1055], partially recorded in section (Section 11, Figure 7).

5.4.10 The possible wheel ruts were filled by an overlying deposit, [1045], which also sealed feature [1055], as recorded in section. This was a 0.10m thick layer of very compact ash and coal fines with iron slag inclusions. This spread was overlain by a 0.13m thick deposit, [1018]=[1034], recorded in Slots 3 and 5, of indurated mixed ash, crushed slag and coal fines, recorded at a maximum height of 17.08m OD. This was cut by the construction trench for wall [1009] of a Phase 5 building.

5.5 Phase 5a: 19th-Century Ironworks Building (Figures 6 and 7; Plates 4-6, 10, 13 and 14)

5.5.1 Phase 5 represents activity in the early or mid 19th century on the site, when an expansion of Hawks' Ironworks saw the construction of a building within the excavation area. The original structure, Structure [1165], assigned to Phase 5a, was represented by two fragments of a sandstone wall that formed the south-eastern wall of the building. Separate structure numbers, [217] and [236], were assigned to later brick additions to the building assigned to Phase 5b, these first identified in the evaluation phase of work. The function of the structure could not be ascertained precisely, although it was certainly an industrial, rather than a domestic, building. It was not associated with any primary processes of iron manufacture, as no remains of furnace structures were identified, and it was therefore likely associated with secondary processes for finishing cast iron products which originated in the main foundry building located to the immediate east of the site, as depicted on 19th century mapping.

5.5.2 In the central northern part of the excavation area, the earliest activity associated with Structure [1165] was a construction trench, [1056]=[1094], which on its north-western side, as feature [1056], had a gradually sloping side at the top of the cut, breaking to vertical towards the base, which was flat (Figure 6; Section 11, Figure 7). To the south-east, as feature [1094], the construction trench had a vertical side. The trench had a maximum depth of 0.52m and was 1.45m wide at the top. The construction trench contained a substantial NE-SW aligned wall, [1009], built with roughly dressed, random coursed yellow sandstone, bonded with hard, light grey mortar (Figure 6; Section 12, Figure 7). The facing stones of the wall measured on average 300mm x 260mm x 70mm, and the space between the faces was filled by a sandstone rubble and mortar core. The wall was recorded for a length of *c.* 6.80m, extending beyond the limit of excavation to the north-east, and was 0.86m wide, surviving to a height of 0.58m. It was recorded at a maximum height of 16.94m OD. At its south-western end the wall was abutted by the brickwork of the aforementioned later brick addition, Structure [217].

5.5.3 To the south-west, wall [1020] is interpreted as representing the continuation of wall [1009], with the section between the two walls having been removed to allow construction of the aforementioned Structure [217]. The form and construction materials of wall [1020] were identical to wall [1009]. Only a single course of facing stones survived, and no construction cut for the wall was apparent, with the wall recorded as directly overlying the backfill of Phase 4 iron pipe [1101]. This section of the wall was 3.35m long, giving an overall length of just over 12m for the south-eastern wall of the building within the limits of excavation. It was recorded at a maximum height of 16.91m OD. There was no return at the south-western end of wall [1020], suggesting that the building may have been open-fronted along its south-western side.

5.5.4 In the central part of the excavation area, construction trench backfill [1093] was overlain to the south-east of wall [1009] by a 0.12m thick deposit, [1042], of indurated ash, coal fines and crushed iron slag, which abutted the south-eastern face of the wall. This deposit also sealed the trench for iron pipe [1088] to the south-east of the wall, and is likely to represent an exterior yard surface associated with use of the building. It was recorded at a maximum height of 16.85m OD. This surface was overlain at its south-western extent by a small patch of compacted sand, ash and slag, [1035], in turn overlain by a deposit, [1028], of similar composition, these possibly representing repairs to the yard surface.

5.5.5 Another area of possible external yard surface, [1060], was recorded to the south-east of wall [1020], at its north-eastern end, surviving in a small area between the angle of the wall and a later drain. This was up to 0.15m in thickness and comprised compacted slag and ironworking residues. It was overlain by another deposit of ironworking residues, [1059], which was up to 0.10m thick and was recorded at a maximum height of 16.87m OD.

5.5.6 To the north-west of wall [1009], at its south-western end, its construction trench was overlain by a small patch, [1110], of loose crushed sandstone. This was overlain by a layer, [1109], just 40mm thick, of mixed crushed mortar and sandstone chippings. It is likely that these two deposits (not illustrated on Figure 6) were associated with construction of the wall.

5.5.7 To the north-west of wall [1009], Phase 4 deposits [1018]=[1034] were overlain by two structural features interpreted as being internal features associated with the building. The north-westernmost of the structures, [1014], comprised a 0.80m^2 sub-square area of strongly cemented light grey mortar, up to 0.10m thick (Figure 6). Immediately to the south-east was a sub-rectangular brick plinth, [1015], with its long axis aligned NW-SE. The plinth measured 1.46m x 0.89m and had a maximum height of 0.17m (two courses) recorded at a maximum height of 17.07m OD. It comprised a mixture of common bricks and firebricks, predominantly the latter, bonded with hard light grey mortar. The upper surface was mortared, and contained a 60mm diameter hole, presumably a bolt hole. The two structures are interpreted as representing a base for machinery. The north-eastern edge of plinth [1015] was partially overlain by a deposit, [1011], of solidified metal-working residue, which extended north-eastwards beyond the limits of excavation. Two further small areas of slag, [1032] and [1033], were recorded to the south-west of the machinery base. These are likely to represent areas of internal floor surfaces, constructed with waste material from the ironworks.

5.6 Phase 5b: Alterations to the Ironworks Building (Figures 6 and 7; Plates 4-12)

5.6.1 Phase 5b represents alterations to the 19th-century ironworks building, of which there were two principal elements, firstly the addition of a substantial internal subterranean brick structure, Structure [217], towards the south-western end of the excavated part of the building and, secondly, the addition of another brick structure, Structure [236], beyond the south-western end of the original sandstone wall. Both were first identified in the evaluation phase of work and their numbering (both overall structure numbers and the numbers of individual elements) was retained.

5.6.2 The construction cut, [1097]=[1049]=[1123]=[279] (this form the evaluation phase of work), for Structure [217] cut through deposit [1109], which was associated with the construction of wall [1009], the original sandstone wall of the building, demonstrating that the brick structure was a later addition to Structure [1165]. The main element of the new brick structure consisted of a subterranean rectangular chamber, with its four sides formed by brick walls. The internal dimensions of Structure [217] were 3.50m NE-SE x 1.20m NW-SE with a central projection on the south-eastern side measuring 2.0m NE-SW x 0.70m NW-SE, this fitted between the two surviving portions of Structure [1165], *i.e.* walls [1009] and [1020]. The maximum exposed depth of Structure [217] was just over 1.80m, although the base could not be reached safely.

5.6.3 The north-eastern wall, [218], of Structure [217] was more than 1.60m long and 0.38m (one and a half bricks) wide. It stood to a height of more than 1.83m (20 courses). The wall was built from handmade common bricks, measuring *e.g.* 210mm x 100mm x 70mm, although there was some variation in the brick dimensions. The bonding material comprised hard, brittle light greyish white lime mortar. The bricks were laid in 3:1 English Garden Wall bond, although it is notable that in the internal face the ninth visible course from the base of the excavation comprised a course of edge-set stretchers.

5.6.4 There was a 0.13m wide cavity within the centre of wall [218], 0.70m from the northern corner of the structure, which contained a wrought iron or steel rod, circular in section, with a diameter of 20mm. A 0.10m^2 plate was welded to the base of the rod, which was *c*. 1m long. The base of the cavity was above the tenth visible brickwork course from the base of the excavation, at a height of 16.12m OD. At the base of the cavity there was a gap in the brickwork of the internal face of the wall 0.11m (half a brick) wide and 0.18m (two courses) high. Although the base plate of the steel rod was resting on the base of the cavity, evidence from elsewhere within the structure indicated that its original position would have been level with the top of the gap in the internal brickwork, at a height of 16.30m OD. Another rod is likely to have been positioned *c*. 0.48m from the corner of the structure, in the centre of the wall. The function of the steel rods may have been simply to reinforce the walls of the structure, although it seems more likely that they represent the support/anchoring mechanism for an engine or machine.

5.6.5 The north-western wall, [219], of Structure [217] was bonded into the north-eastern and south-western walls, [218] and [220] respectively, and was of similar construction in terms of materials and brick bonding. The wall was 4.46m long NE-SW and 0.36m wide and there was a 0.25m x 0.24m cavity within the brickwork, this 0.12m from the internal corner with south-western wall [220]. The cavity was filled with solidified iron slag, and represents the base for a steel rod such as those recorded in the north-eastern and south-western walls of the structure. It is likely that another such cavity would have existed in a similar position at the north-eastern end of the wall.

5.6.6 The south-eastern wall, [1019], was very similar to the other walls of Structure [217] in terms of materials and construction. It was 2.67m long and 0.37m wide and survived to a height of more than 1.80m (20 courses), the lower courses of the wall being obscured by a solidified slag deposit, which was recorded in the evaluation phase of work. At the top of the wall there were two recesses through the entire width of the wall, both 0.23m (one brick) in width and up to 0.34m (four courses) deep. The wall was recorded at a maximum height of 16.89m OD.

5.6.7 Bonded into the south-eastern end of wall [218] and the north-eastern end of wall [1019] was a brick-built pier, [221], which measured 0.60m NE-SW x 0.67m NW-SE. A corresponding pier, [226], of the same dimensions was bonded into the angle between walls [220] and [1019]. Both these elements of the structure were contemporary with the external walls, and were of similar construction with regard to materials and brick bonding. Both of the piers had gaps in the brickwork, measuring 0.14m-0.16m wide and 0.18m high, at the bases of internal cavities containing steel rods corresponding to those within the external walls. The height at the tops of the openings was around 16.30m OD.

5.6.8 The backfills of construction trench [1097] for Structure [217], these recorded in the excavation adjacent to its south-eastern corner, comprised yellow sand, [1096], and brownish grey sandy clay [1095]. Adjacent to its south-western corner the backfills comprised sandy silt, rubble and slag, [1104], and sand, ash, and rubble, [1048].

5.6.9 The base of each wall of Structure [217] was not reached because an indurated deposit, [269], of dark reddish brown ash and slag was exposed across the base of the feature during the evaluation phase of work, and this could not be removed due to its nature. Its upper surface was exposed at heights varying from 15.62m OD at the north-eastern end of the structure to 15.02m OD in the middle of the excavated part of the building. This extremely hard deposit was interpreted as possibly being a primary deposition associated with usage of the structure. Above this layer the evaluation recorded a series of deposits assigned to Phase 6, these seemingly representing waste material tipped into the structure after it had gone into disuse.

5.6.10 On the south-east side of wall [1019] was a surface, [1023]=[1024], comprising bed-laid common bricks, bonded with hard light grey lime mortar. The surface measured 1.70m NE-SW by 1.65m NW-SE and it was recorded at a maximum height of 16.84m OD. Towards its south-eastern edge were two NE-SW aligned recesses in the brickwork, measuring 0.40m x 0.18m and 0.50m x 0.20m. To the south-east of the recesses, deposits of mortar at the corners of the surface indicated that further brick superstructure had been removed. The surface was laid over two Phase 4 pipes, [1040] and [1041], which were visible through gaps in the surface.

5.6.11 Surface [1023]=[1024] was overlain at its south-western edge by a wall, [1021], 0.55m long NW-SE and 0.37m wide, and surviving to a maximum height of 0.14m (two courses) and recorded at a maximum height of 16.92m OD. This was constructed with hand-moulded common bricks, laid in stretcher bond with hard light grey lime mortar. The north-western end of the wall abutted the south-eastern face of wall [1019]. At the north-eastern edge of the surface a half brick (0.11m) thick wall, [1022], one course (70mm) high, overlay the surface and wall [1019].

5.6.12 The precise function of Structure [217] is uncertain. The preferred interpretation is that it was a substantial machine base, and that its subterranean element was probably the wheel pit for a large flywheel.

5.6.13 A short distance beyond the south-western end of wall [1020] was the second addition to Structure [1165], namely Structure [236], the majority of which was exposed in evaluation Trench 2. The excavation exposed its surviving north-eastern end, brick wall [1058]. This comprised five courses of brickwork in English Garden Wall bond above a wider foundation consisting of a single course of roughly dressed sandstone blocks. The bricks were predominantly hand-moulded common bricks measuring 230mm x 110mm x 70mm, although occasional firebricks were also present. The bonding material was hard, light grey lime mortar. Wall [1058] was 1.10m long NW-SE and 0.60m high and was recorded at a maximum height of 16.72m OD. The width of the brick part of the wall was 0.34m, with the footing extending a further 90mm beyond the south-western face of the brick wall.

5.6.14 The south-western face of the sandstone footing was abutted by a horizontal timber beam, [1039], this 0.20m^2 in section. The timber was partially decayed, with a length of *c.* 1m surviving, recorded at a maximum height of 16.23m OD. The upper surface of the timber had a 0.44m long and 15mm deep recess with the corroded remains of five iron bolts set in an 'X' pattern within it. Another timber beam [227], this 0.16m^2 in section and *c.* 1m in length, was situated 0.35m to the south-west of beam [1039] and this had been first exposed adjacent to the limit of excavation in evaluation Trench 2.

5.6.15 The north-western and south-eastern ends of both timbers were overlain by brick walls, both first recorded in the evaluation, which at their north-eastern ends were bonded into wall [1058]. This suggests that the walls and timber beams were part of a single phase of construction. Both the north-western wall, [223], and the south-eastern wall, [224]=[1043], were of similar materials and construction to wall [1058], and together the walls formed the terminal of Structure [236], which had an internal width of 1.05m.

5.6.16 Abutting wall [224] and timber beam [227] was a NE-SW aligned wall, [222], also built from hand-pressed bricks, predominantly firebricks, laid in 3:1 English Garden Wall bond, and bonded with similar lime mortar to the other walls of the structure. A brick was sampled from this wall, this a firebrick stamped POTTE[…], indicating that it was manufactured at the brickworks of Addison Potter, active between *c*. 1847 and the late 1880s (see Section 9). The wall measured more than 3m in length, continuing beyond the limit of excavation to the south-west. It was 0.23m (one brick) wide, and survived to a maximum height of 0.32m. At its south-western end, aligned at right angles to the north-western edge, was another timber beam, [228], originally *c*. 1m long and 0.16m^2 in section. All these elements were recorded in the evaluation.

5.6.17 At the north-western end of timber beam [228] was the final element of Structure [236], wall [225], built of handmade bricks measuring *e.g.* 240mm x 120mm x 80mm, with some variation. The bricks were laid in a random bond, with many partial bricks, with hard, light yellowish grey lime mortar. The wall continued beyond the limits of excavation to the south-west and at its north-eastern end there was a dog-leg. In total, wall [225] was *c.* 0.70m long NE-SW. A fragment of firebrick in a pale yellow fabric recovered from the wall was stamped COW[…]. The full stamp would likely have been COWEN, and the brick was thus likely made at the Blaydon Burn Brickworks of Joseph Cowen. This is of limited value in terms of dating the structure, as the works was founded in the 18th century and remained in production until the 20th century. The construction trench, [238], for brick wall [225] had a near vertical side to the north-west, and a flat base. Its loose, black sandy silt backfill, [237], yielded a single, possibly residual, sherd of 18th/19th century redware. Again, these south-westernmost elements of Structure [236] were recorded in the evaluation.

5.6.18 Three infills, [1038], [1037], and [1029], were recorded within Structure [236] during the excavation, these likely corresponding with deposits [235], [229] and [230], respectively, recorded in the evaluation. These deposits probably accumulated in the structure when it fell into disuse and thus should more properly be assigned to Phase 5c (see Appendix 1) or even Phase 6. The earliest of these was a compact, black sandy silt deposit, [1038], only 60mm thick, with coal fragments and grains of iron slag throughout, overlain by fill [1037], a loose, dark brownish grey silty sand deposit, up to 0.30m thick, with fragments of coal and iron slag throughout, in turn overlain by fill [1029], a compact, mid yellowish brown silty sand and gravel deposit, up to 0.32m thick. A possible small intrusion, [1031], up to 0.25m deep, into fill [1029] contained a compact, dark greyish brown silty sand fill, [1030], with iron slag and clinker throughout. This was overlain by a sandstone slab, [1027] (recorded as [232] in the evaluation), with patchy lime mortar on its upper face. It measured 600mm x 550mm x 80mm, and was recorded at a maximum height of 17.00m OD. This could represent a possible capping to the abandoned structure.

5.7 Phase 5c: Drainage (Figures 6 and 7; Plates 10, 13 and 14)

5.7.1 At the south-western end of wall [1020], an L-shaped brick drain, [1013], had been constructed with machine-pressed firebricks measuring 240mm x 110mm x 60mm. It partially overlay wall [1058] of Structure [236]. The drain closely abutted the end of wall [1020] and returned along its south-eastern edge for a short distance before being replaced by a large-bore ceramic drain, [1002]. Drain [1013] therefore measured 1.10m NE-SW x 1.15m NW-SE and was 0.44m wide and 0.18m high; its infill, [1012], comprised ash and masonry rubble. The drain was recorded at a maximum height of 16.88m OD.

5.7.2 Another short length of brick drain, [1077], was situated on the south-eastern side of wall [1009] of Structure [1165], at its north-eastern end. Excavation within Slot 4 revealed a steep-sided and flat-based construction cut, [1081]. This drain was built with handmade bricks measuring 240mm x 110mm x 50mm, bonded with sand and lime mortar. It ran NE-SW then kinked to run in a more southerly direction before also being replaced by aforementioned ceramic drain [1002]. In sum, brick drain [1077] measured *c.* 1.80m long and was 0.45m wide and 0.50m high.

5.7.3 The aforementioned ceramic drain, [1002], had been constructed within a vertical-sided and flat-based trench, [1003]. It comprised cylindrical sections of ceramic salt-glazed pipe, each 0.65m in length with an external diameter of 0.25m and an internal diameter of 0.20m. It was recorded at a maximum height of 16.74m OD. The pipe ran external to the sandstone walls of Structure [1165] and, crucially, respected brick floor [1024], of Structure [217], running alongside its south-western edge. This indicates that this external drain was probably in use while the building was still extant.

5.8 Phase 6: Modern

5.8.1 This phase represents the limited amount of activity recorded during the excavation which post-dates closure of the ironworks in 1889. This activity relates largely to demolition of the 19th century buildings, and to later terracing and infilling of the site in the 20th century. Appendix 1 shows stratigraphic relationships and Appendix 2 catalogues the remains in summary fashion. Full details of deposits, features and structures can be found in the Site Archive.

5.8.2 Of note amongst the modern era activity was a substantial NW-SE aligned intrusion, [1005], recorded along the southern extent of the excavation area at a maximum height of 17.41m OD. This feature was identified during the evaluation phase of work and was initially excavated within Trench 2, where it was recorded as feature [208]. Infilled with successive dump layers of loose ash, sand and rubble, it was excavated to a maximum depth of 1.30m, but it was not possible to ascertain its full depth for safety reasons. This intrusion broadly corresponds with the edge of the reservoir/mill pond depicted on Hutton's 1772 map, although it was clearly cut from a level that post-dated construction of the mill pond by a considerable amount. The possibility is acknowledged, however, that some parts of the retaining walls of the mill pond survived until after the closure of the ironworks, so that the intrusion could conceivably represent extraction of masonry associated with those walls in the 20th century.

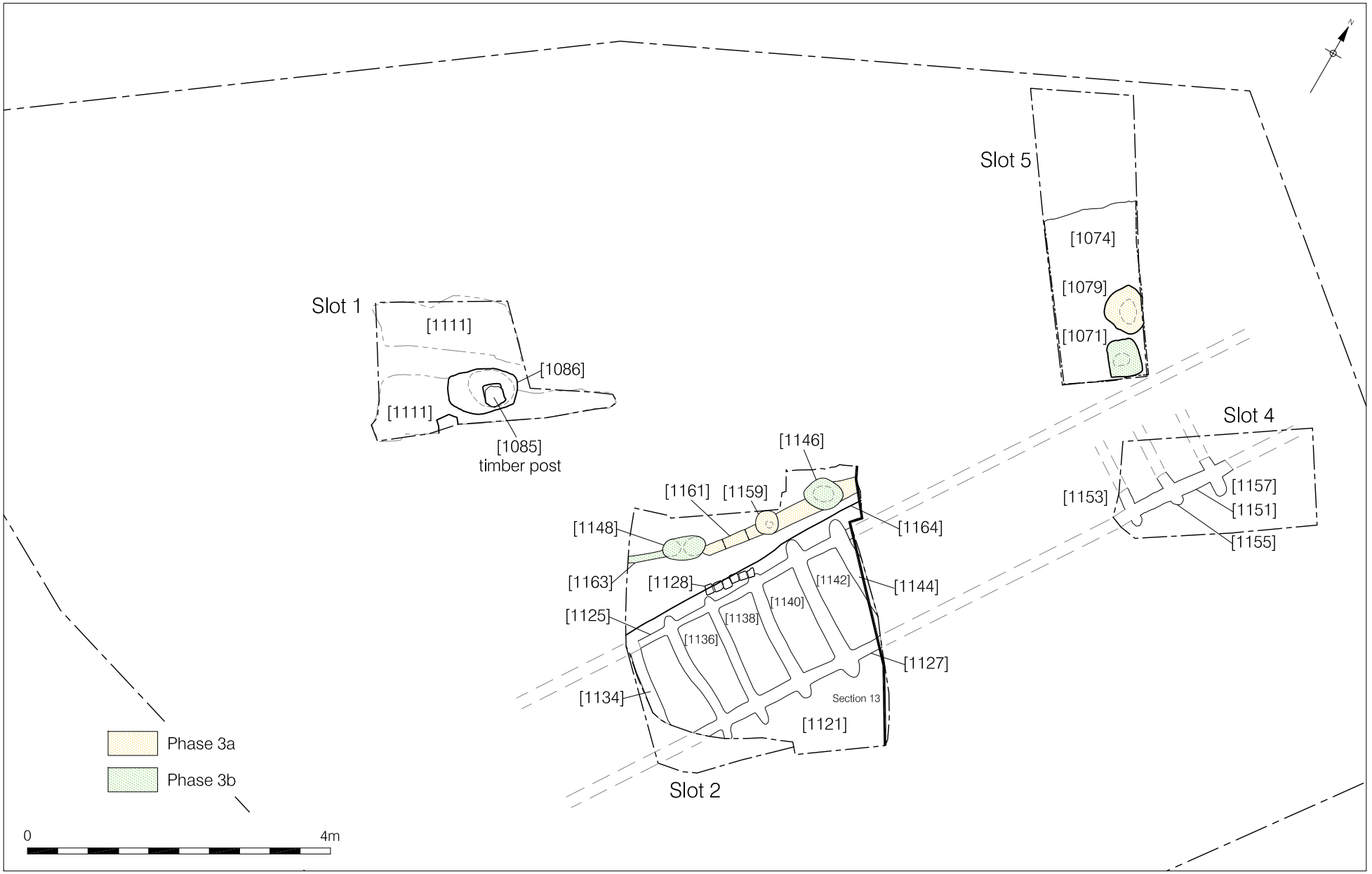


Figure 4
Phase 3 Plan
1:70 at A4

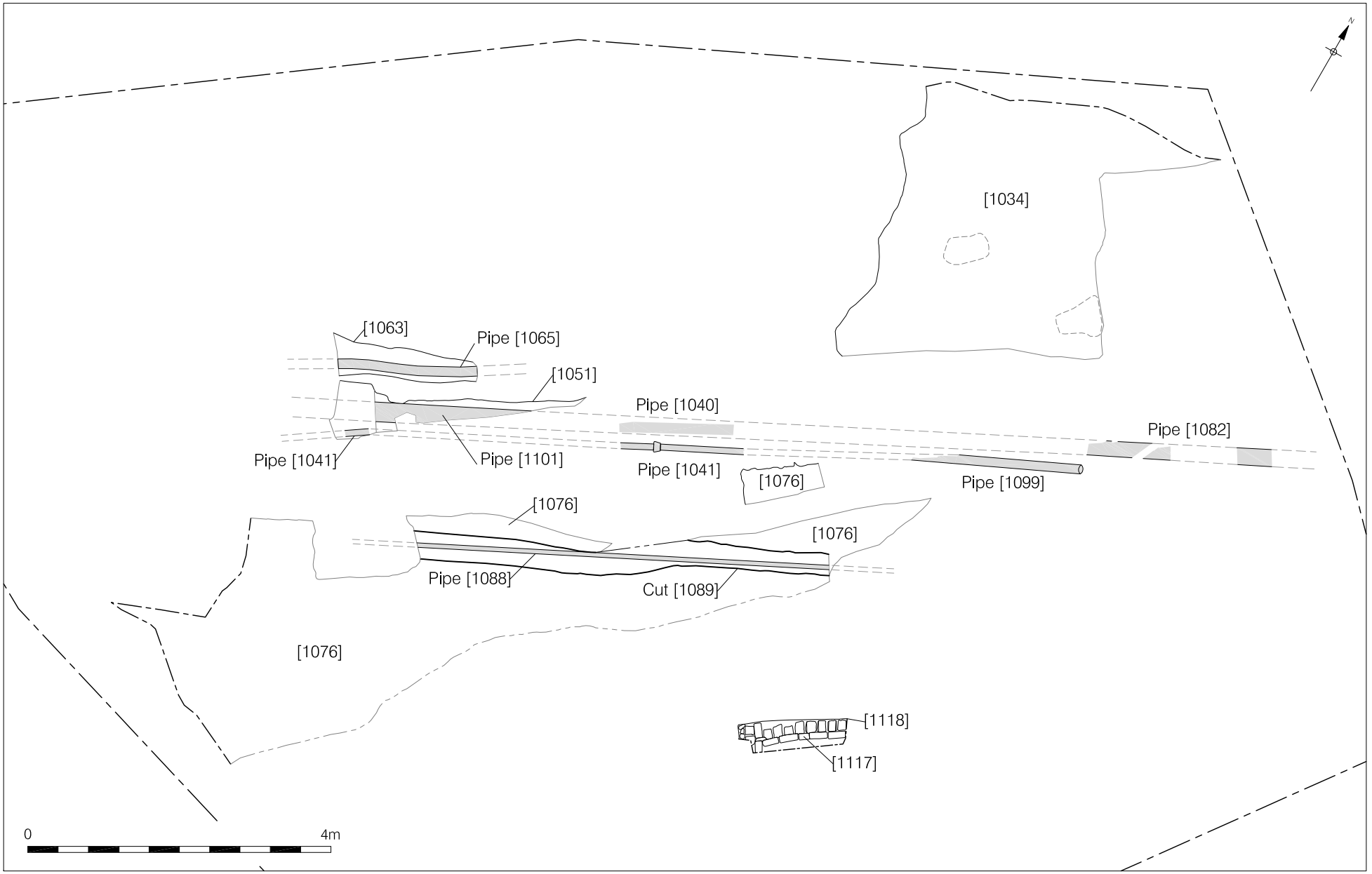


Figure 5
Phase 4 Plan
1:70 at A4

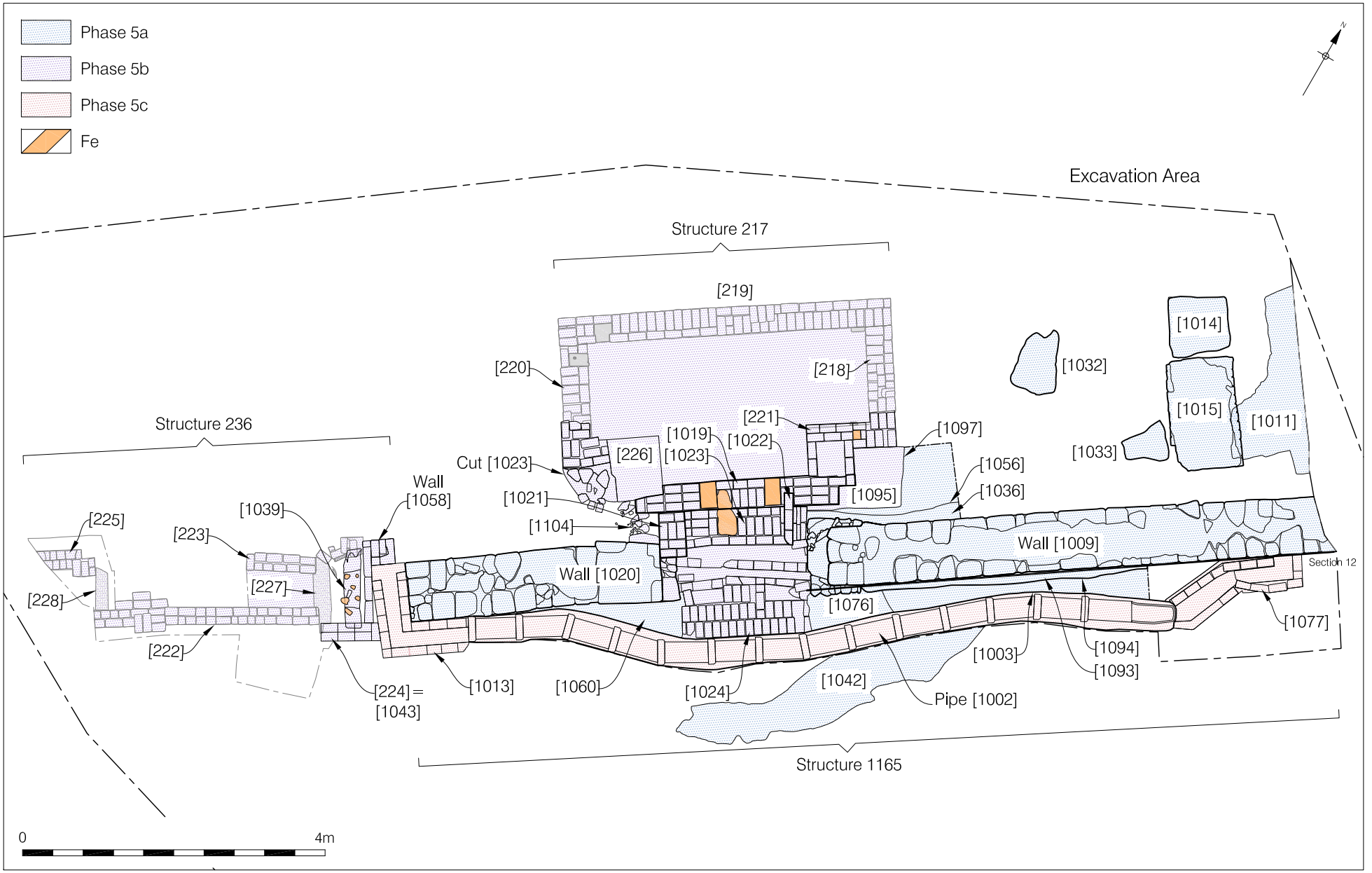
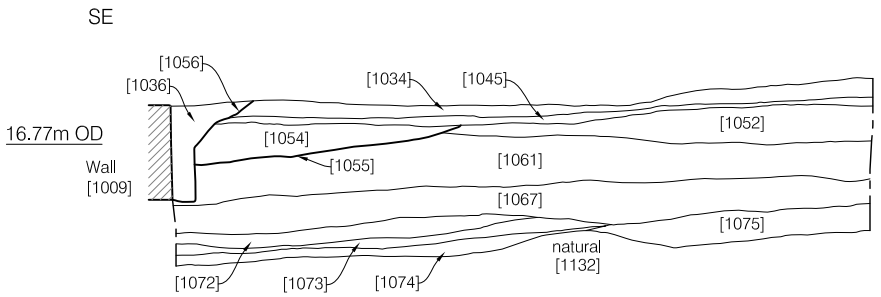
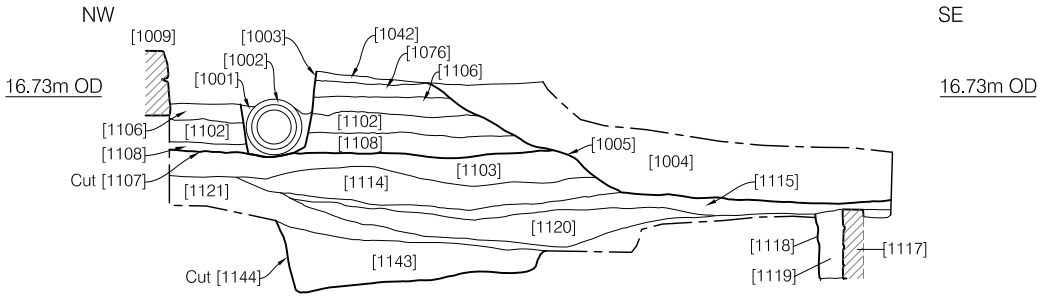


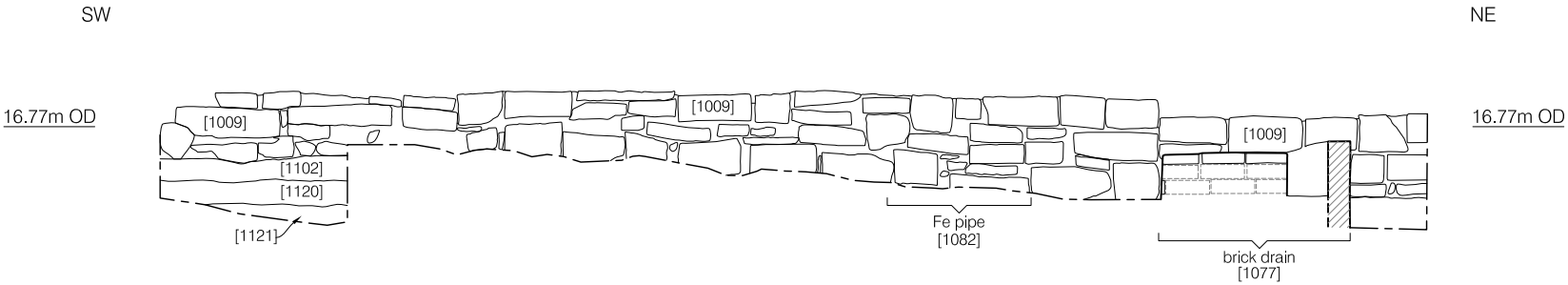
Figure 6
Phase 5 Plan
1:70 at A4



Section 11
Excavation Area
North-east Facing



Section 13
Excavation Area
South West Facing



Section 12
Excavation Area
South East Facing

0 2.5m

Figure 7
Sections 11, 12 and 13
1:40 at A4

PART B: DATA ASSESSMENT

6. STRATIGRAPHIC DATA

6.1 Paper Records

6.1.1 The paper element of the Site Archive is as follows:

Item	*No.*	*Sheets*
Context register	1	5
Context sheets	158	158
Section register	1	1
Section drawings	3	6
Plan register	1	2
Plans	64	110

Table 6.1. Contents of the paper archive

6.2 Photographic Records

6.2.1 The photographic element of the Site Archive is as follows:

Item	*No.*	*Sheets*
Digital photograph register	1	3
Digital photographs	100	N/A

Table 6.2. Contents of the photographic archive

6.2.2 Digital photography was used exclusively. A Hewlett Packard SB360 camera was employed, capable of 12 MegaPixel resolution. The Joint Photographic Experts Group (JPEG) setting was used, with the camera set for the largest image size with least compression.

6.2.3 After downloading, the digital images were sorted as necessary, then the final 'batch' was renumbered and captioned appropriately, incorporating the site code and employing a consistent file naming strategy.

6.2.4 The digital images will be converted as a batch to Tagged Interchangeable File Format (TIFF) prior to editing in Adobe *Photoshop*, as necessary, before being burnt to archive quality CD, which will be added to the Site Archive for deposition with Tyne and Wear Archives and Museums. During batch conversion to TIFF, any white balance adjustments will be done as part of the conversion process, sharpening settings will be set to zero and the maximum colour information will be retained. Editing may require tonal adjustments (colour, contrast) to be made to images, as well as rotating and cropping, as necessary, then cleaning to remove post-capture irregularities and dust. A register of the images will be included on the CD and this will list: date taken, direction of view, scale size, if appropriate, and summary of content. The CD will be written to appropriate standards to ensure maximum compatibility with current and future systems.

6.3 Site Archive

6.3.1 The complete Site Archive, including the paper and photographic records, is currently housed at the Northern Office of PCA.

6.3.2 The Site Archive will eventually be deposited with Tyne and Wear Museums and Archives, Arbeia, South Shields, for permanent storage and the detailed requirements of the repository will be met prior to deposition.

7. POTTERY *(Jenny Vaughan)*

7.1 Introduction

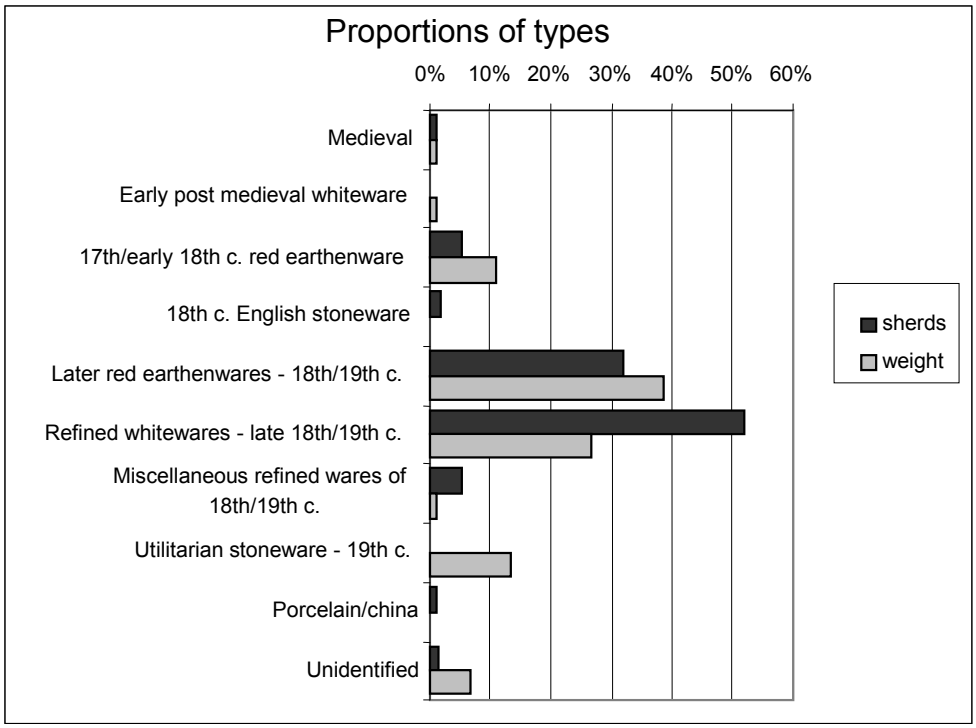
7.1.1 An assemblage of 445 sherds of pottery weighing 3.565 kgs was recovered from the evaluation and subsequent excavation. There were a few medieval sherds and some early post-medieval (17th century) material present, but the majority of the assemblage was of broadly late 18th to 19th-century date.

7.2 Methodology

7.2.1 The assemblage was sorted into types and catalogued using Microsoft *Access*, recording counts and weights per context and noting form sherds where present. The fabric group numbers are those used by the current writer for recording other assemblages from the region.

7.3 Range and Variety

7.3.1 The assemblage is summarised in chart below (see Table 7.1 for details).



7.3.2 Refined whitewares were the largest group present by sherd count, but the average weight was just over 4g and the majority of sherds were smaller than this. Over a third had a cream coloured glaze. It seems likely that some of this material is 'creamware' of 18th/early 19th-century type but the fragmentation, and there were few large parts of vessels present, makes confident identification difficult. There was, however, one rim of possible Queen's shape (with scalloped edge) and a green shell-edge rim. Other sherds had the blue tint to the glaze typical of pearlware which also appears in the 18th century, though somewhat later than creamware.

7.3.3 Slip decoration, which first appears on refined wares in the last quarter of the 18th century, is used on both pearlware and creamware bodies. A small number of fragments of these 'factory-made slipwares' were present here. The 'cable' or 'wormed' effect (in context [1103]) and cat's eye (a circle with three wedges of colour present in context [268]) did not appear until the 19th century. Transfer printed and painted sherds were also present.

7.3.4 The other main type present was glazed red earthenware. The 'later' type (see chart) can be equated with the 'brownwares' made in large quantities in the region from the 18th century up to the early 20th. Most numerous were sherds with internal white slip coat, many of them with brown mottling. The vessels represented are various sizes of bowls with flanged rims. Nearly 30% of the later red earthenware sherds were black glazed. This is an unusually large proportion for the North East of England, where most of the brownwares are either slip coated or plain brown glazed. However, it is likely that in fact only a few vessels are represented, possibly storage jars. A small number of red earthenware sherds were of 17th to early 18th-century type and included a few with slip trailed decoration. One sherd (from context [1112]) was possibly from an imported dish with greenish glaze over a white slip coating in the central zone.

7.3.5 Another 17th century vessel was a white earthenware base with some yellow, and some green mottled, glaze.

7.3.6 Small numbers of refined wares of later post-medieval date were mainly present as very small sherds and included white salt-glazed stoneware, porcelain, china, and (in the 'miscellaneous' group) black basalt ware, lustre ware and two sherds with encrusted decoration.

7.3.7 A large stoneware jar (from [640]) was stamped with a maker's mark which, after some study was deciphered as Doulton and Co. Limited (of Lambeth). One other large item was a hard-fired stopper like object (from [639]), possibly from an industrial vessel of some type.

7.4 Discussion

7.4.1 Most of the assemblage was heavily fragmented which suggests the material has been much disturbed and perhaps re-deposited. There is clearly a 17th-century element present in some contexts, which is confirmed by the clay pipe assemblage. Much of the rest of the assemblage could date to the late 18th/early 19th century and there is little that can necessarily be dated to the second half of the 19th century. However, although the production of the coarsewares (*i.e.* later red- or brownwares) is documented in the region from the first half of the 18th century, it continues into the 20th century, and, because well dated assemblages of this period have not been studied, it is not clear if there are any developments in the vessels being produced which would distinguish, say, late 18th from late 19th-century material. Developments in refined wares are better understood but, as stated above, the degree of fragmentation makes identification and dating here uncertain. These factors, and the relatively small size of the group, mean that there is no potential for further work.

Context No.	Fabric No.	Fabric Name	Sherd Count	Weight (g)	Comments
268	33	fact sl	3	27	Bowl rim with cat's eye and bands of chevrons. Possibly pearlware.
total			***3***	***27***	
639	33	refww dec	1	143	Profile of bowl on ring base. Purple border pattern and three green lines. Border seems too even to be cut sponge.
	50	coarse st	1	213	Large stopper-like object; perhaps lid for an industrial ves of some type.
total			***2***	***356***	
640	35	util st	2	476	Large brown gl jar base with impressed maker's mark. 'DOULTON & CO LIMITED/LAMBETH' with '8' between.
total			***2***	***476***	
1001	33	cream	2	12	Handle and part of ring base.
total			***2***	***12***	
1036	33	fact sl	2	7	Ring base with brown bands.
	33	refww	2	9	
	33	refww dec	1	2	Shell edge rim.
total			***5***	***18***	
1047	33	refww tp	1	0	Possibly from a teapot.
	34	lustre	1	2	Blue gl with pink lustre band (also in other contexts). Small part of ring base.
	34	ref misc	2	3	One brown, one orange ext.
total			***4***	***5***	
1050	32	lgre	1	2	
	32	lgresl	1	3	
	33	cream?	4	4	
	33	refww dec	4	4	Misc.
	34	encrusted ware	1	6	Also in context [1111]. Buff ew with fine white quartz grains and red fragments encrusted.
	50	orange	1	1	
total			***12***	***20***	
1052	32	lgresl	4	33	One with brown mottling.
	33	refww	2	5	Rim.
	33	refww tp	2	4	
	34	lustre	1	1	Ref red fabric.
total			***9***	***43***	
1061	27	red sl	2	24	Trailed dec.
	31	wsgst	1	1	
	32	blgre	3	17	
	32	gre	1	2	Brown gl, ?date.
	32	lgresl	5	61	Flanged rim of bowl, rim and base.
	32	unglre	1	16	
	33	fact sl	1	2	
	33	fact sl	1	3	Brown ?rouletting filled in with brown. Cream coloured fabric. Rim.
	33	refww	6	12	Plain. Two rims.
	33	refww dec	1	2	Green shell edge rim - may be creamware.
	34	yellow gl	1	1	
	50	red ew	2	8	Flakes - may be pottery.
total			***25***	***149***	
1067	10	rg	1	18	
	26	white ew	1	2	Green gl, ?early post-medieval.
	27	red coarse	1	123	Large jar rim with thumbed band.
	27	red sl	2	10	Rim - dish/plate.
	32	blgre	14	132	Three rims, one base chip. Two flanged rims - one has

Context No.	Fabric No.	Fabric Name	Sherd Count	Weight (g)	Comments
					gl over cut edge, one is slightly everted/rounded.
	32	gre	9	46	Some have an internal deposit. One very small part of rim with white (yellow) edge.
	32	lgresl	24	151	Three bowl rims (flanged). Most fragments are brown mottled.
	33	cream?	20	81	Two rims.
	33	refww	4	32	Base of large dish, sherd with brown line. Two are small.
		painted dec			
	33	refww tp	1	10	Plate rim.
	36	porc	1	2	Rim (?cup) with red and dark brown painting.
total			***78***	***607***	
1069	32	lgresl	3	10	
	33	cream	6	4	
	33	pearl?	4	10	Base.
	33	refww tp	4	4	
	34	ref misc	3	3	Banded, buff gl, yellow gl.
total			***20***	***31***	
1070	32	lgresl	1	2	
	33	cream?	1	2	
total			***2***	***4***	
1072	32	blgre	1	2	
	33	refww tp	1	1	
total			***2***	***3***	
1073	10	med?	1	2	Possibly early post-medieval. Grey/buff fabric with green glx2.
	32	blgre	1	3	
	32	lgresl	2	38	Ring base. One is mottled.
	33	cream?	2	4	
	50	ew	1	6	Flake of orange/buff earthenware.
total			***7***	***53***	
1075	10	bw	2	9	
total			***2***	***9***	
1076	32	lgresl	1	31	Rim.
	33	refww	1	2	
	34	yellow gl	1	4	
total			***3***	***37***	
1102	27	red	1	28	Rim.
	32	blgre	2	30	
	33	cream	7	13	
	33	refww tp	4	14	Possibly pearlware.
total			***14***	***85***	
1103	26	white ew	1	38	Base. Early post-medieval type.
	33	cream?	4	78	Two bases.
	33	fact sl	2	14	Rim. Some 'worm' (cabled) decoration.
total			***7***	***130***	
1106	33	refww	1	4	Rim.
total			***1***	***4***	
1108	33	fact sl	1	3	Rim - same ves in context [1112]. Shades of brown.
	33	refww	1	1	
	33	refww dec	1	2	Rim, some painted dec.
total			***3***	***6***	
1111	27	red	4	45	Misc.
	27	red sl	1	14	
	31	wsgst	1	1	

Context No.	Fabric No.	Fabric Name	Sherd Count	Weight (g)	Comments
	32	blgre	3	6	
	32	lgresl	6	37	
	33	fact sl	1	2	Not whiteware.
	33	fact sl	2	5	See contexts [1108] and [1112].
	33	refww	23	69	Plain. Two rims – one plate, one bowl.
	33	refww	6	4	With bright yellow gl – ribbed.
	33	refww dec	3	15	Three edge decorated rims.
	33	refww misc	4	6	Misc. decorated. One has fine brown mottling.
	33	refww tp	13	52	Plate rim, cup rim with handle. Most are blue, one pink, one purple.
	34	black basalt	1	2	
	34	encrusted ware	1	3	Probably same vessel as in context [1050].
	34	lustre	11	13	Blue with purple/pink lustre band as in context [1047]. Ring base.
	36	china	3	4	One rim ?cup.
total			***83***	***278***	
1112	27	imp red?	1	16	Red earthenware ?dish with white slip inside covered by green gl.
	32	lgresl	4	62	Three mottled.
	33	cream	3	12	
	33	fact sl	2	7	See context [1108].
	33	pearl?	1	5	
	33	refww	3	42	Plain - flat fragments.
	33	refww tp	1	9	Same ves in context [1102], ?pearlware.
	50	burnt	1	4	
total			***16***	***157***	
1114	27	red	1	41	
	31	wsgst	2	6	Rim of hollow ves.
	32	blgre	3	37	
	32	gre	3	16	
	32	lgresl	2	12	Rim with mottling, other plain.
	32	unglre	2	63	Flower pot base.
	33	cream	1	4	With holes - ?strainer.
	33	refww tp	4	19	Rim of hollow ves, small part of base.
total			***18***	***198***	
1115	33	cream?	2	7	One with band of orange.
total			***2***	***7***	
1120					
	27	black gl red	1	2	Flake ?early blackware.
	27	red	4	33	Rim, base.
	31	Notts st?	1	3	Brown gl stonew with fine ridging.
	31	wsgst	2	6	
	32	blgre	8	128	Handle, base, rolled rim, one small rim.
	32	lgresl	17	159	Some mottling. Rim and three chipped bases.
	32	o/f blgre?	1	30	Overfired/reduced black glazed base.
	33	cream	13	38	Includes rim with green shell edge.
	33	pearl	9	22	
	33	refww	10	34	Plain. Base.
	33	refww dec	4	22	Three bases, one rim .
	33	refww tp	2	13	Rim and base - blue tinged ?pearlware.
total			***72***	***490***	
1121	32	blgre	7	121	Handle and everted rim.
	32	lgresl	8	124	Two rims ?same ves, two bases.

Context No.	Fabric No.	Fabric Name	Sherd Count	Weight (g)	Comments
	33	cream	12	29	Rim - scalloped, part of lid.
	33	pearl	6	11	Painted dec.
	33	refww tp	1	2	
total			***34***	***287***	
1122	10	rg	1	2	
	27	red	4	33	
	27	red sl	1	1	Small hollow ves rim with slip trail
total			***6***	***36***	
1139	33	refww	1	1	R
total			***1***	***1***	
1145	33	cream	2	3	
total			***2***	***3***	
1147	33	pearl	1	4	
total			***1***	***4***	
1149	27	red	1	16	Very abraded light red fabric- base.
	32	gre	1	3	?date
	32	lgresl	2	6	
	33	refww	3	4	
total			***7***	***29***	

Table 7.1. Pottery catalogue

Fabric No.	Type	Abbreviations used
10	Medieval	Med, rg (reduced greenware), bw (buff white ware)
26	Early post-medieval white earthenware	ew (earthenware)
27	17th/early 18th c. red earthenware	..sl (with slip trailing), imp (imported)
31	18th c. English stoneware	wsgst (white salt glazed stoneware), Notts st (Nottingham type stoneware)
32	Later red earthenwares - 18th/19th c.	re (red earthenware), lgre (later glazed red earthenware), ..sl (with slip coat), blgre (black glazed redware), ungl (unglazed), o/f (overfired)
33	Refined whitewares - late 18th/19th c.	refww (refined whiteware), tp (transfer printed), dec (with decoration), fact sl (factory-made slipwares)
34	Miscellaneous refined wares of 18th/19th c.	ref misc (miscellaneous refined wares), ew (earthenware)
35	Utilitarian stoneware - 19th c.	util st
36	Porcelain/china	porc
50	Unidentified	

Table 7.2. Key for pottery catalogue

Abbreviations dec, ew, gl and ref are used elsewhere (*e.g.* in comments) with same meaning. Other abbreviations used are:

- ext external, exterior
- frags fragments
- glx2 glazed inside and out
- ves vessel

8. CLAY TOBACCO PIPE *(Jenny Vaughan)*

8.1 Introduction

8.1.1 A small assemblage of 113 fragments of clay pipe was recovered, all but one from the excavation phase of work. Some of the fragments joined so the assemblage consisted of six complete (or nearly complete) bowls, eight bowl fragments and 90 fragments of stems. The date range was early 17th to late 19th century.

8.2 Methodology

8.2.1 The assemblage was recorded in a simple *Access* table, see Table 8.1 below.

8.3 Range and Variety

8.3.1 One of the bowls was a small early 17th-century type (from context [1111]) with a flat round base though no maker's mark. One of the bowl fragments (from context [1115]) was a large flat base typical of what are known as Yorkshire bulbous forms. These date to the second half of the 17th century. Another fragment of bowl with base was of late 17th/early 18th-century type. The base was marked with the initials 'I/H'. This is probably John Hastings, a Gateshead maker operating about 1672 to 1720.[33] There were two other marks of this type on ribbed bowls with spurs. One (from context [1067]) read 'I/N'. Parsons lists two makers with these initials: John Norris (1801-1841) and John Nugent (1844-58).[34] Edwards cites an earlier (parish record) reference of 1793 for John Norris.[35] The other spur mark was identified as probably belonging to Thomas Elsdon (from context [1120]). Parsons lists two Thomas Elsdons spanning the years 1811 to 1890.[36] This pipe is likely to belong to the first half of the 19th century. There were two late 19th-century items. One was a large briar copy type bowl. Part of a stem mark was visible – '…HEAD', so this was a Gateshead maker but the name is missing. A stem from context [1000] was marked 'HAMILTON/GATESHEAD'. This maker's dates are 1883 to 1902.[37]

8.3.2 A number of the stems had wide bores of 7 or 8/64" and are a further indication that 17th century material is present. Most bores however were between 4/64" and 6/64" and cannot be closely dated.

8.4 Discussion and Potential

8.4.1 There are very few complete or marked items in this small group and it has no potential for further work.

[33] Edwards 1988, 41.
[34] Parsons 1964, 252.
[35] Edwards 1988, 91.
[36] Parsons 1964 250.
[37] Parsons 1964, 251.

Context No.	*Object*	*Count*	*Bore (mm)*	*Detail*	*Date*
639	bowl	1	5	Eight joining fragments of large briar copy type. Marked on stem, maker not visible but is Gateshead.	l. 19th c.
1000	stem	1	<6	Marked 'HAMILTON/GATESHEAD'.	1883-1902
1001	bowl frag	1	5	Decorated and spurred bowl.	l. 18th/19th c.
1050	stem	1	8		
1050	stem	4	5		
1052	bowl	1		Plain bowl.	19th c.
1052	stem	1	6		
1052	stem	1	5		
1061	stem	1	6		
1061	stem	2	7		
1061	stem	1	4		
1062	bowl	1		Plain 19th c. bowl in two parts.	19th c.
1067	bowl frag	1		Ribbed with swags. Spur marked 'I/N'.	l. 18th/19th c.
1067	stem	5	7		
1067	stem	4	5		
1069	stem	2	5		
1073	stem	1	6		
1102	stem	4	7		
1102	stem	1	6		
1103	stem	1	5		
1108	stem	1	7		
1111	bowl	1	5	Decorated bowl in two parts.	l. 18th/19th c.
1111	bowl	1		Type 1 with a round base.	1635-50
1111	stem	2	4		
1111	stem	16	5		
1111	stem	4	8		
1111	stem	5	6-7		
1112	bowl frag	1		Decorated.	l. 18th/19th c.
1112	bowl frag	1		With spur.	l. 18th/19th c.
1112	stem	3	5		
1112	stem	1	6		
1112	stem	1	7		
1114	stem	1	6		
1114	stem	3	4-5		
1115	bowl frag	1	7	Very large flat base of Yorkshire bulbous type.	1650 - 1690
1115	stem	1	6		
1120	bowl	1		Ribbed - marked 'T/?E'.	19th c.
1120	bowl frag	1		?Type 10 with mark 'I/?H'.	l. 17th/18th c.
1120	bowl frag	1		With spur with star. Large.	18th c.
1120	stem	2	8		
1120	stem	5	7		
1120	stem	4	6		
1120	stem	4	4-5		
1121	bowl frag	1		With coat of arms.	l. 18th/19th c
1121	stem	3	5		
1122	stem	1	8		
1122	stem	1	6		
1149	stem	1	6		
1149	stem	1	5		

Table 8.1. Clay tobacco pipe catalogue

9. BRICKS *(John Nolan)*

9.1 Introduction

9.1.1 Eighteen samples of whole, half, or quarter bricks recovered from the evaluation and subsequent excavation. were submitted for assessment. Of these, nine were firebricks and nine were common or house bricks. In addition there was a quantity of small fragments of ceramic building material, some of which derived from bricks.

9.2 Methodology

9.2.1 The samples were examined, described, and their dimensions recorded. Where maker's marks were present, these were identified to source and potential date by reference to Davison (1986) and other reference material held by NCAS.

9.2.2 The small fragments of brick were considered too fragmentary for meaningful analysis beyond basic identification and quantification.

9.2.3 The recorded data was entered into a simple database table (Table 9.1).

9.3 Range and Variety

9.3.1 All the firebricks carried maker's stamps. Three (contexts [219], [516] and [660]) were marked 'LINTZ', a product of Lintz Colliery Brickworks, which is recorded as working between 1868 and 1924.[38] Two of these were wedges, used in forming arches. The stamp of 'J.GRAHAM & Co.', recorded at Blaydon Haugh in 1875,[39] occurred on two, possibly three, bricks (contexts [1013] and [1077]). Other makers were 'ROBSON' (context [1024]), made by W.C.Robson, Lister's Yard, Scotswood, working 1869-1872,[40] 'COWEN' (context [225]), made by J. Cowen & Co., Blaydon Burn, working 1855-1975,[41] and 'POTTER' (context [222]) made by Addison Potter's Firebrick Works, Walbottle and Willington Quay, working between *c.* 1847 and the early 1880s.[42]

9.3.2 The nine house or common brick samples ranged in date from the mid-18th century to the early 20th century. None had frogs. The two earliest were associated with a waggonway likely used broadly between 1770 and 1830. Of these, the brick from context [1121] - the waggonway ballast - could belong to the period 1740-60. The other - numbered as context [1121.1] – was from a brick feature abutting two sleepers, and this is of broadly late 18th to early 19th-century type. The next earliest, possibly from between 1825 and 1850, came from context [218]. The remainder (from contexts [223], [660], [1019] and [1023]) span the period 1850-1900.

[38] Davison 1986, 171.
[39] *ibid*., 131.
[40] *ibid*., 84
[41] *ibid*. 133,145-152.
[42] *ibid*, 59-60.

9.4 Discussion

9.4.1 Apart from four bricks associated with the waggonway, the samples described above derived from two structures, the first, Structure [217] (contexts [218], [219], [222], [223], [225], [516], [1013], [1019], [1023], [1024] and [1077]) which map evidence indicates was in existence by *c.* 1862, the second, context [660] (from evaluation Trench 6), which likely dates to *c.* 1890. With one exception, context [218], the dating suggested on typological grounds for the remaining five house or common bricks is consistent with the map evidence.

9.4.2 The majority of the stamped firebricks represented in Structure [217] ('LINTZ', 'ROBSON' and 'GRAHAM') are all first recorded as working in 1868 or later. This fits with the archaeological evidence which indicates that this structure was a later addition to the original building, Structure [1165], which was of sandstone construction and likely dates to the early to mid 19th century.

9.5 Potential

9.5.1 No further work is recommended on the building material. It is recommended that one good example of each brick stamp from Structure [217] and one housebrick (*e.g.* from context [1019]) is retained as part of the Site Archive. Surplus stamped bricks can be offered to the Tyne and Wear Archaeology Officer for possible inclusion in her regional brick reference collection.

Context No.	Brick Type	Length (mm)	Width (mm)	Thickness (mm)	Comments	Maker	Date
218	house/common	219	108	65	Mid red. Hand moulded. No frog. Pale yellow wash over all faces. Grey lime mortar on all faces except one side.		?1825-50
219	firebrick wedge	227	130	75	Taper wedge, broken. Yellow buff gritty fabric well sorted. Grey mortar on all faces. Impressed maker's mark in rectangular frog of Lintz Colliery Brickworks near Burnopfield, 1868-1924.	LINTZ	1868-1924
222	firebrick	0	113	65	Yellow/buff gritty fabric. White lime mortar on all faces except one header. Mortar covers broken end, suggesting brick is reused or a 'second'. Maker Addison Potter's Firebrick Works, Walbottle and Willington Quay, *c.* 1847-early 1880s.	POTTE(R)	c.1847-e.1880s
223	house/common	230	115	80	Mid red. ?Hand moulded, could be pressed. No frog. White lime mortar on one face.		?1850-1890
225	firebrick	0	0	62	Yellow/buff gritty fabric, well sorted. White lime mortar on all faces, some vitrified. Impressed maker's mark of Cowen of Blaydon Burn, 1820-1901.	COWEN	1820-1901
516	firebrick	231	117	63	Yellow/buff gritty fabric. Soft grey lime mortar on all but one side, which is discoloured by heat.	LINTZ	1868-1924
660	house/common	237	118	79	Light-mid red. Pressed and wirecut. Well sorted with occasional ironstone grits/ nodules. No frog. Grey lime mortar on both bedding and header faces.		1850-1890
660	firebrick wedge	0	113	48-66	Side wedge, broken at one end. Yellow buff gritty fabric well sorted. Grey lime mortar on all but the two sides. Impressed maker's mark in rectangular frog of Lintz Colliery Brickworks near Burnopfield ,1868-1924.	LINTZ	1868-1924
1013	firebrick	226	112	62	As [1077]. Mortar on all but one side.	J.GRAHAM & CO	
1019	house/common	235	113	70	Light-mid red, ?hand moulded or pressed. No frog. White lime mortar on both bedding faces.		1850-1890
1023	house/common	220	117	68	Mid red. Hand moulded. No frog. Poorly sorted with occasional shale and grit inclusions. White lime mortar on all but one header end. Attached to one face with mortar is a flat iron bar 172 x 76 x 7mm with two holes 17mm diameter.		
1024	firebrick	233	112	36	Yellow/buff gritty fabric with occ. small flint/quartz and ironstone nodule inclusions. Impressed maker's mark of W. Robson, Lister's Yard, Scotswood, *c.* 1869-1872.	ROBSON (the'S' and 'N' are reversed)	
1077	firebrick	230	110	62	Buff/grey, no visible inclusions. White lime mortar on all faces. Impressed maker's mark in rectangular frog of J. Graham & Co., Blaydon Haugh, *c.* 1875.	J.GRAHAM & CO	
1121	house/common	0	107	50	Half brick. Mid red exterior margins reduced core. Hand moulded. Well sorted. No frog, upper face wiped, lower sanded.		mid-18th C

Table 9.1. Catalogue of bricks

10. GLASS *(Jenny Vaughan)*

10.1 Introduction

10.1.1 A small assemblage of 40 fragments of glass was recovered during the excavation. Most of the fragments were very small. The possible date range was 18th to early 20th century. The assemblage is listed below.

10.2 Range and Variety

10.2.1 Most of the fragments were of bottle or vessel glass with the dark green wine bottle type predominating. Two joining fragments from contexts [1114] and [1115] had a metallic patina and were from the neck of a wine bottle of the squatter early type (17th/early 18th century). This is probably the earliest glass item in the group. Part of a neck and lip of a later type came from context [1120]. Other fragments were too small to tell the form of bottle but their condition suggested they were more likely to be 19th century than earlier.

10.2.2 There were ten fragments of window glass. Apart from one of the four fragments of finely ridged vision-proof glass (from contexts [1006] and [1046]) all were small.

10.3 Potential

10.3.1 This small assemblage has no potential for further work.

Context No.	*No.*	*Type of Fragment*
1006	2	Ridged window glass.
1046	2	Small ridged window glass.
1067	2	Dark green bottle chunks.
1067	1	Thin dark green.
1072	1	Small clear ?window.
1103	1	Clear vessel.
1106	1	Small dark green.
1111	1	Opaque white vessel.
1111	1	Green bottle.
1111	2	Small dark green bottle.
1111	5	Small clear/light green window.
1111	1	Dark green glass waste.
1114	1	Dark green bottle neck with patina.
1115	1	Dark green bottle - joins [1114].
1120	1	Small white/clear ?vessel.
1120	2	White vessel.
1120	5	Light green vessel.
1120	3	Dark green bottle, including top.
1121	4	Small dark green.
1121	1	Small green.
1145	1	Small dark green.
1149	1	Small clear vessel.

Table 10.1. Glass catalogue

11. SLAG AND INDUSTRIAL PROCESS RESIDUES *(Dr R. Mackenzie)*

11.1 Introduction

11.1 A small assemblage of slag and industrial process residues were recovered from the investigations. The aim of the archaeometallurgical assessment of this material has been to identify the slag and residues, and determine whether further analysis could provide additional information about the site, or specific processes carried out there.

11.2 Methodology

11.2.1 The slag and residues have been visually examined and the results of the assessment are described in Table 11.1 below.

11.3 Results

Context No.	No. of pieces/volume	Weight (g)	Description of Material
267	*c.* 2.5 litres	4,500	Bulk sample largely composed of fragments of fuel ash slag and drossy cupola/blast furnace slag, small fragments of burnt coke, ash and earth/sand. Typical 19th to early/mid-20th-century iron foundry debris.
268	*c.* 5 litres	7,700	Bulk sample largely composed of fine fragments fuel ash slag and possible metalliferous slag, small fragments of burnt coke and soot, ash and earth/sand. General foundry floor debris.
269	8 fragments	6,930	Similar composition to material in previous bulk sample from context [268], but compacted into solid. Possible compacted foundry floor material.
269	2 fragments	3,100	Drossy furnace slag. Probably from a cupola furnace.
269	1 fragment	150	Lump of partially burnt coke fuel.
515	4 fragments	3,600	Drossy furnace slag. Probably from a cupola furnace.
515	1 fragment	400	Piece of broken refractory brick with slagged surface.
656	2 fragments	6,600	Dense tap slag, dark graphite grey to black in colour, probable cupola furnace slag.
1029	5 fragments	2,180	Drossy furnace slag. Probably from a cupola furnace.
1029	3 fragments	340	Heavily corroded ferrous metal structural fixings (bolts).
1042	5 fragments	2,640	Drossy furnace slag. Probably from a cupola furnace.
1068	4 fragments	5,600	Undiagnostic concretion/residue, one with large fragment of wood embedded within it.
1076	24 fragments	6,600	Dense furnace tap slag, dark graphite grey to black in colour, probable cupola furnace slag.
1076	4 fragments	400	Drossy furnace slag/possible highly vesicular tap slag, probably from cupola furnace.

Table 11.1. Results of assessment of slag and industrial process residues

11.4 Discussion

11.4.1 As one might expect from a former ironworks, the assemblage is predominated by residues relating to iron production. As well as general foundry floor type debris, two types of furnace slag are also present. The most diagnostic of these are the fragments of very dense, dark grey to black tap slag that is a common type produced by cupola furnaces. The colour of the tap slag suggests that the furnace was probably being run in an oxidising state, and the low vesicularity suggests good control over the amount of flux in the furnace charge. The flow pattern on the underside of some fragments strongly suggests that the slag was tapped into an earth/sand pit or channel in the foundry floor. The slag would have originally solidified into one piece, and this would have broken up during disposal; the fragmentary nature of the tap slag in the assemblage reflects this.

11.4.2 The other type of metallurgical slag present in the assemblage is a less dense 'drossy' furnace slag, which has the appearance of slag that was raked out of a coke fired furnace at the end of a firing. The morphology of the slag, together with presence of cupola furnace tap slag, suggests that the two types of slag probably originated from the same source.

11.4.3 Cupola furnaces were, and still are, used to melt iron, including scrap and cast iron, to produce iron castings. The furnace itself is a vertical cylinder lined with refractory material, and it is charged with alternating layers of fuel (coke), iron and flux (limestone). Reactions between the liquid iron, refractory lining, fuel and flux produce slag as a by-product. Metallurgical analysis of cupola slag can provide detailed information on the conditions within the furnace, although it should be borne in mind that this type of analysis may only provide a 'snap-shot' of furnace operating conditions, unless numerous specimens are analysed.

11.4.4 It is interesting to note that the historical records of Hawks' Ironworks mention it was a manufactory that was importing pig iron and bar iron, and producing castings and forgings. Cupola furnaces are exactly the type of furnace that would be employed for the melting down of pig iron to produce finished castings, and it therefore seems likely that the cupola slag found relates to this type of production activity at the site.

11.5 Potential

11.5.1 Given the type and archaeological contexts of the material in the assemblage, and what is already known about the site, further analysis of the material is not recommended. However, it is recommended that a representative selection of cupola tap slag from the potentially most secure context, *i.e.* context [1076], is retained as part of the Site Archive.

12. SUMMARY DISCUSSION OF THE ARCHAEOLOGICAL FINDINGS

12.1 Phase 1: Natural Sub-stratum

12.1.1 The natural sand and gravel sub-stratum encountered across the investigated areas represents the drift geology of the floodplain and southern side of the Tyne Valley, the material being of glaciofluvial origin.

12.1.2 The level at which the sand and gravel was encountered sloped down from a maximum height of 16.35m OD, recorded in Trench 2 in the south-eastern part of the site during the evaluation phase of work, to 15.35m OD recorded in Trench 3 to the north-west. This slope reflects the natural underlying topography of the valley side of the River Tyne.

12.2 Phase 2: Medieval and Post-Medieval Developed Soil

12.2.1 A developed soil horizon represents the earliest evidence for human activity recorded at the site, this probably representing agricultural use of the area over a considerable period of time. The developed soil – excavated at different locations across the site where not truncated by later activity - produced medieval pottery, broadly datable to the 13th/14th centuries, along with early post-medieval pottery dating to the 16th and 17th centuries and clay tobacco pipe of 17th-century date. The maximum recorded thickness of the developed soil, in evaluation Trench 2, was 0.30m.

12.2.2 The desk-based assessment of the site established that during the medieval period this area was situated within the Bishop's Park and the site was therefore likely used for a variety of activities such as hunting, farming of game, pannage, grazing livestock, as well as fishing in streams feeding the Tyne, as well as in the river itself, and growing timber. Towards the end of the medieval period, the Bishop's Park was increasingly subdivided for agricultural purposes and the excavated evidenced suggests that the site itself was used for such activity from the later medieval period and into the post-medieval period, until the development of site in the later post-medieval industrial era.

12.3 Phase 3: Late 18th/Early 19th Century Waggonway

12.3.1 A hitherto unknown timber waggonway was recorded running on a SW-NE alignment across the south-eastern portion of the excavation area. Artefactual material recovered from the waggonway suggests that its period of use was the late 18th to early 19th century, as discussed further below, and cartographic evidence broadly supports this. Specifically, there are no indications of a waggonway on the site on Hutton's map of 1772 or on later cartographic material, *e.g.* Thomas Oliver's map of 1830 or on the plan - relating to certain premises of Hawks' company on the South Shore at Gateshead - drawn by Thomas Bell and Sons *c.* 1850, although the latter plan does show a SW-NE aligned waggonway skirting Occupation (later Mill) Road to the north-west of the site. Hutton's map shows a rectangular building with central projection, part of Hawks' works, just beyond the north-eastern boundary of the site and probably the same building is annotated on the Bell and Sons' plan as 'Foundry'. Therefore, it is considered likely that the waggonway recorded at the site was a minor branch line from a main colliery waggonway, possibly constructed specifically to supply coal/coke to this foundry.

12.3.2 The wider area around the site would have been criss-crossed with waggonways from the mid 18th century. Several collieries operated on higher ground to the south of the site and waggonways would have been built to transport their produce down the valley side to staiths on the Tyne at Gateshead, with branch lines feeding associated riverfront manufactories. The main 18th-century workings in the broader vicinity of the site were Sheriff Hill (founded in the 1780s, later known as Ellison or Ellison's Main), Tyne Main (sunk in 1798), Gateshead Park (where large-scale production started in the 1740s) and, to the south-east, Brandling Main (opened in 1779) and a complex of collieries, Low Felling, High Felling with Heworth and Carr Hill.[43] There was also a later working at Oakwellgate (opened in 1842),[44] to the south-west of the site but much closer than any of the earlier, main workings. By the 1860s, a smaller working of Tyne Main was operational, on the higher ground beyond 'Ballast Hill',[45] south of Hawks Road, as depicted on the Ordnance Survey 1st edition map. Another working of Tyne Main operated at Friar's Goose, east of Salt Meadows in Gateshead.[46]

12.3.3 Lambert's plan of 1807[47] – compiled to illustrate collieries, waggonways and staiths on the rivers Tyne and Wear - shows main waggonway routes running northwards from Sherriff Hill and Ellison's Main and north-westwards from Tyne Main meeting to the south of the site then continuing to riverfront staiths in Gateshead. All the larger colliery workings in the Gateshead area built designated waggonways to transport their produce and for the most part these became identified with the colliery which they served, with some of the earlier main routes in the area being Sheriff Hill Way, Bensham Way, Friar's Goose Way and Gateshead Park Way.[48] The Tyne and Wear HER also has an entry for 'a branching waggonway system' in the Salt Meadows area of Gateshead.[49]

12.3.4 The waggonway identified within the area of excavation had a single track. The presence of a fenceline along its the north-western side indicates that another track was not situated there, but to the south-east the effects of modern truncation meant that it was not possible to establish whether or not a second track had been present, thereby forming a double track. The earliest waggonway routes in the coalfields of north-east England were single track, with passing loops to allow movement in both directions.[50] Although some of the less intensively used routes continued to be built in this way throughout the 18th century, by the mid 18th century most waggonways in the region comprised a two-track system. However, if, as suspected, this waggonway had been constructed specifically as a branch line to transport coal to the foundry from a main waggonway route, then it is likely that only a single track would have been necessary for the relatively short distance.

[43] Tyne and Wear HER Nos. for these collieries are: Sheriff Hill, 3844; Tyne Main, 3532, Gateshead Park, 5944; Brandling Main, 3801.
[44] Tyne and Wear HER No. 5616.
[45] Tyne and Wear HER No. 3513.
[46] Tyne and Wear HER No. 3538.
[47] This map can be viewed on the *Pictures in Print* website.
[48] Tyne and Wear HER Nos. for these waggonways are: Sheriff Hill Way, 5947; Bensham Way, 5946; Friar's Goose Way, 5963; Gateshead Park Way, 5944.
[49] Tyne and Wear HER No. 3522.
[50] Lewis 1970, 144.

12.3.5 Early waggonways exclusively had tracks of wooden construction with flat wooden rails attached to regularly spaced sleepers. At Hawks Road a level platform had been created for the waggonway track by terracing into naturally sloping ground. Sand and gravel ballast, probably re-deposited natural material from the creation of the platform, was laid down, this up to 0.25m thick. The ballast would have played an important role in ensuring the adequate drainage that was essential for the solidity of waggonways.[51]

12.3.6 At Hawks Road the track of the waggonway was recorded as a series of negative impressions in the primary ballast. The sleeper impressions were slightly irregular in plan, suggesting that untrimmed branches had been used for the sleepers. Previous archaeological investigations have shown that this was the common construction method for waggonways of the late 18th/early 19th century, for example, roughly-trimmed oak branches were used for sleepers at Lambton D Pit near Sunderland,[52] Rainton Bridge, Houghton-le-Spring[53] and Harraton Outside, Washington.[54]

12.3.7 Before the introduction of iron rails, the purpose of sleepers was primarily to ensure that the rails maintained the required gauges, rather than to take the weight of the vehicles as with modern sleepers, therefore often the branches were only squared at their ends leaving their centres untrimmed.[55] The length of sleepers was to some extent dependant on the width of the gauge, but the average size for sleepers in waggonways in the region was 6 feet in length and 4 to 8 inches square, but on average 6 inches square.[56] Unlike modern railways, where sleepers are twice the length of the gauge of the track, on 18th century waggonways sleeper lengths were rarely more than one and a half times the gauge. At Hawks Road the sleeper impressions measured between 1.76 and 2.0m in length (5 feet 9 inches to 6 feet 7 inches) and 0.14m to 0.22m wide (5½ inches to 8½ inches). At Rainton Bridge, the sleepers were up to 1.90m long (6 feet 2 inches) and at Harraton Outside, they were up to 2.10m long (6 feet 11 inches). The distance between the sleepers at Hawks Road was on average 0.56m (1 foot 10 inches). On double-tracked waggonways, main ways were more solidly built than bye ways and generally had their sleepers set at 1 foot 6 inches between centres, but up to 2 feet.[57] The fact that the Hawks Road waggonway was constructed with sleepers in the 'closely-set' range suggests that either it was a main way, designed to take full wagons, or that this was a single track line. As there was no surviving timber, it was not possible to determine the type of wood utilised for the construction of the waggonway. However, a late 18-century description of waggonway construction describes how oak branches were typically used for sleepers[58] and of the excavated examples of waggonways in the region, those with surviving timbers had oak sleepers, for example at Lambton D Pit and Harraton Outside.

[51] *ibid*., 163.
[52] Ayris *et al*. 1998.
[53] Glover 2005.
[54] PCA 2010b.
[55] Lewis 1970, 164.
[56] *ibid*.
[57] *ibid*., 165.
[58] Jars 1765, in Lewis 1970.

12.3.8 The distance between the inner edges of the rail impressions at Hawks Road was around 1.30m, *c*. 4 feet 3 inches. This is the approximate gauge of the waggonway, although the measurement is not exact, as the timber of the rails had completely decayed. This is consistent with the known gauge range for waggonways in the region, which ranges from 1.22m (4 feet) to 1.52m (5 feet).[59] This measurement is comparable to the gauge of the waggonway recorded at Lambton D Pit, and the second phase of waggonways at Harraton Outside. Again there was no surviving rail timber to determine what type of wood had been used. Oak was the preferred wood for the rails on early single tracks due to its strength, and it was common for main ways to be built with oak rails and bye way rails with fir or ash.[60]

12.3.9 The function of the brickwork situated adjacent and parallel to the north-western rail was not ascertained. Check rails were necessary to prevent derailment when tracks curved but these were situated on the inner side of the rail and comprised an additional timber rail, as at Lambton D Pit.[61]

12.3.10 Ballast, usually comprising crushed coal, ash and stones was packed around the sleepers and under the rails and this was essential to the functioning of waggonways as this material bore the weight of the vehicles transmitted through the rails and sleepers. At Hawks Road this ballast comprised compact coal fines and ash, up to 0.20m thick, overlying the sleeper impressions. The deposit produced 34 sherds of pottery, all later glazed red earthenwares and refined whitewares. Four fragments of clay pipe were also recovered, including a bowl fragment decorated with a coat of arms, broadly datable to the late 18th to early 19th century. A fragment of brick from the deposit was likely to date to the mid-18th century, *c*. 1740-1760. This artefactual dating evidence suggests that the waggonway was constructed and in use during the late 18th to early 19th century, which is broadly supported by cartographic evidence, as previously discussed. In some areas, further deposits of clayey silt and clay had also been used as ballast material.

12.3.11 Postholes and linear slots demonstrate that a continuous fenceline ran along the north-western edge of the waggonway and the fact that two phases of this feature were recorded indicates the importance of maintaining this barrier throughout the use of the waggonway. The construction of such barriers was necessary not only to prevent animals and people from accessing the track, but also to mark out the limits of the waggonway wayleave, and hedges or fencelines were built from the earliest days of wooden waggonways.[62] At Rainton Bridge, the waggonways were bounded either by fencelines built with closely set stakeholes, or widely spaced substantial postholes.[63]

[59] *ibid*., 183.
[60] *ibid*., 170.
[61] Ayris *et al*. 1998, 11
[62] Lewis 1970, 160.
[63] Glover 2005.

12.3.12 As mentioned, there was no surviving timber at Hawks Road but the fact that the sleeper and rail impressions were undisturbed, along with the presence of decayed fragments of timber within the fills of the impressions, demonstrates that the waggonway was not dismantled after it fell into disuse, but instead was left to rot *in situ*. By the time of the Ordnance Survey Map 1st edition map of *c*. 1862 much of the site was occupied by an open yard that was bisected by a railway (or tramway) that connected with the North Eastern Railway to the south-west and then swung round to serve the aforementioned subsidiary working of Tyne Main Colliery located south of Ballast Hill overlooking Hawks Road. The main track of this line continued north-eastwards to riverside facilities on South Shore, while various spurs served, for example, the forge and foundry of the ironworks in the immediate vicinity of the site. Given its location, it seems likely that this railway was a successor to the earlier timber waggonway excavated at the site.

12.4 Phase 4: 19th-Century Activity

12.4. Phase 4 activity comprised features post-dating the use of the waggonway. The remains of the waggonway were overlain by deposits of dumped material, presumably laid down to consolidate the ground, from which artefactual material of 19th century date was recovered. A series of iron pipes crossed the main area of excavation on an ENE-WSW alignment, and it is assumed that these were associated with water supply to and/or drainage of the ironworks.

12.5. Phase 5: 19th-Century Ironworks

12.5.1 Structural remains from the 19th-century ironworks have been assigned to three sub-phases of activity relating to the expansion of the ironworks from the early to mid 19th century.

12.5.2 The earliest structural remains (Phase 5a) comprised two segments of a NE-SW aligned sandstone wall built within a narrow construction trench. These are interpreted as represented the south-eastern wall of a building exposed for distance of just over 12m within the limits of excavation. There was no return at the south-western end of the wall, suggesting that the building may have been open-fronted along this side. Floor levels and external yard surfaces associated with the structure comprised crushed, rammed furnace waste, and remains interpreted as internal machine bases were also recorded.

12.5.3 Specialist examination of samples of industrial residues recovered from the surfaces identified two types of slag which probably originated from the same source; one produced by cupola furnaces and another typical of slag that has been raked out of a coke-fired furnace at the end of a firing. The historical records for Hawks' Ironworks describe the manufactory as importing pig iron and bar iron, and producing castings and forgings. As cupola furnaces would have been the type of furnace used for melting down pig iron to produce finished castings, it therefore seems likely that the cupola slag found relates to this type of production activity at the site. This material presumably originated nearby and cartographic evidence demonstrates that a foundry was situated just beyond the site boundary to the east. Therefore, the material likely represents waste material utilised in the construction of external yard surfaces and internal floor levels at the building examined during the excavation.

12.5.4 The use of industrial waste material for floor and yard surfaces within ironworks has been recorded at other sites in the region, such as at Crowley's Ironworks in Swalwell.[64] At Swalwell, slag and foundry floor deposits had been used for make-up deposits and floor surfaces within a warehouse building that formed part of the ironworks, as well as for surfacing an external area. Ironworking residues proved ideal for constructing surfaces as they were readily available and could be compacted into a very hardwearing surface. Use of such material also meant that ironworking debris was disposed of at a convenient nearby location.

12.5.5 The precise function of the Phase 5a 19th-century sandstone structure – along with its brick alterations, discussed below - could not be determined, although it was certainly of industrial function rather than domestic or administrative and clearly formed part of Hawks' Ironworks in its mid to late 19th century form. It was probably constructed in the first half of the 19th century but cartographic evidence does not clarify the situation particularly. For example, Oliver's map of 1830 shows the site developed, while Bell and Sons' plan from roughly the same period shows the site largely unoccupied. A rectangular building on a SW-NE alignment in this part of the site on the Ordnance Survey 1st edition map of c. 1862, can be confidently equated to the excavated structure and thus it can be concluded that building was constructed sometime before the map was surveyed.

12.5.6 Alterations to the sandstone building were assigned to Phase 5b. A subterranean brick structure was constructed internal to the building, necessitating demolition of a section of the original external wall. The precise function of the brick structure could not be determined, although it is interpreted as a probable machine base likely associated with the finishing of iron products. Its substantial subterranean element may have been a wheel pit. Steel bars seen within the walls probably formed the support or anchoring mechanism for an engine or machine. Where the original wall had been demolished, a brick floor was laid down between the wall and the brick structure, suggesting that external access to the internal structure was created. The structure was mainly built with handmade bricks, with some firebricks and the majority of the stamped examples of these were from manufactories first recorded as working in 1868 or later, providing a *terminus post* quem for construction of the putative machine base and wheel pit.

12.5.7 The function of another brick structure added to the south-western end of the original sandstone building was not determined. Its general form, with timber beams in its lowermost part, indicates that it might have been a drain.

12.5.8 Further alterations to the original building (Phase 5c) included the addition of brick drains, one spanning the south-western end of the building and turning to run externally to its wall, the other external to the wall at the north-eastern limit of excavation. At some stage, probably during the late 19th century, the central part of this drain was replaced by a sectional large-bore salt-glazed ceramic drain pipe, the alignment of which, respecting the original sandstone wall and diverting around the Phase 5b brick floor, demonstrates that it was contemporary with later use of the building.

[64] Proctor in press.

13. SUMMARY OF POTENTIAL FOR FURTHER ANALYSIS

13.1 The archaeological excavation at the Hawks Road site revealed a short stretch of a hitherto unknown, probable late 18th or early 19th-century, waggonway, interpreted as having been constructed as a branch line specifically to supply coal to a foundry within the western part of Hawks Ironworks. This may be the first excavated evidence in the north-east region for a timber waggonway associated with the supply of coal to a large manufactory, rather than directly supplying staiths for export. While these archaeological remains are of no little significance, because only a very short section survived within the excavated area, and no timber elements survived *in situ*, it is considered that no further analytical work is necessary on the archaeological data associated with the waggonway remains.

13.2 The archaeological work also uncovered structural remains associated with Hawks' Ironworks, these representing part of a probable early to mid 19th-century building, with later 19th-century alterations. Again, while these archaeological remains are of some significance, because of their limited survival and the conclusion that this building was not associated with any primary phase in the ironworking process, it is considered that no further analytical work is necessary on the archaeological data associated with the 19th-century buildings associated with Hawk's Ironworks.

13.3 The specialist assessments of the artefactual assemblages recovered from the investigations have all concluded that no further analytical work is warranted on any of the material and that the limited significance of the assemblages means that specific publication is not necessary.

13.4 While it is concluded that no further analytical work is warranted for the archaeological data-set from Hawks Road, it is recommended that a short paper on the significant findings of the excavation is prepared for inclusion in the journal *Industrial Archaeology Review* (IAR). The results of this assessment should be used to provide the majority of the necessary material for the paper, although a small amount of additional research is likely to be required regarding the function of the 19th-century buildings. If IAR do not wish to publish the paper, then *Industrial Archaeology News*, which is a magazine rather than an academic journal, would be an alternative option. The length and scope of the paper will be agreed with the relevant editor. A copy of the final paper will be added to the Site Archive ahead of deposition and this will form the permanent record of the work.

PART C: REFERENCES AND ACKNOWLEDGEMENTS

14. REFERENCES

Bibliography

Atkinson, F., 1974. *Industrial Archaeology of North East England,* David and Charles.

Ayris, I., Nolan, J., and Durkin, A., 1998. 'The Archaeological Excavation of Wooden Waggonway Remains at Lambton D Pit, Sunderland', *Industrial Archaeology Review*, Volume XX, 5-21.

Bailey, M R., 2003. *Robert Stephenson, the Eminent Engineer,* Ashgate.

Bell, I L., 1863. 'Industrial Resources of Newcastle and its Neighbourhood', in Bruce 1863.

Bell, I l., 1864. 'On the Manufacture of Iron in Connection with the Northumberland and Durham Coalfield'*, Transactions of the North of England Institute of Mining Engineers*, Vol. 13.

Beresford, M.W. and Finberg, H.P.R., 1973. *English Medieval Boroughs: A Handlist,* David and Charles.

Brown, D. H., 2007. *Archaeological Archives. A guide to best practice in creation, compilation transfer and curation,* Archaeological Archives Forum.

Davison, P.J., 1986. *Brickworks of the North-East*, Gateshead Public Library.

Department for Communities and Local Government, 2010. *Planning Policy Statement 5, 'Planning for the Historic Environment'*, HMSO.

Edwards, L., 1988. 'Seventeenth and Eighteenth Century Tyneside Tobacco Pipe Makers and Tobacconists', in *The Archaeology of the Clay Tobacco Pipe,* (ed. Davey, P.), BAR British Series 192.

English Heritage, 2006. *Management of Research Projects in the Historic Environment*, English Heritage.

Glover, G., 2005. 'Rainton Bridge South Waggonway', *Industrial Archaeology Review*, Volume XXVII, 235-244.

Harrison, J.K., 1979. 'The Production of Malleable Iron in North East England and the Rise and Collapse of the Puddling Process in the Cleveland District', in Hempstead, C.A. (ed.) 1979.

Hempstead, C.A. (ed.)., 1979. *Cleveland Iron and Steel: Background and Nineteenth Century History,* The British Steel Corporation.

Historical Publishing Company, 1889. *Tyneside Industries*: *Newcastle and District. An Epitome of Results and Manual of Commerce, Businessmen and Mercantile Interests, Wealth and Growth, Historical, Statistical, Biographical.*

Institute for Archaeologists, 2008a. *Standard and guidance for archaeological excavation*, IfA.

Institute for Archaeologists, 2008b. *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives,* IfA.

Lewis, M.J.T., 1970. *Early Wooden Railways*, Routledge and Kegan Paul.

Parsons, J.E., 1964. 'The Archaeology of the Clay Tobacco Pipe in North East England', *Archaeologia Aeliana* Series 4, XLII, 231-254.

Petts, D. and Gerrard, C., 2006. *Shared Visions: The North-East Regional Research Framework for the Historic Environment*, Durham County Council.

Pre-Construct Archaeology, 2010a. *Project Design for Open Area Archaeological Excavation at the Former CPS Haulage Limited Site, Hawks Road, Saltmeadows, Gateshead, Tyne and Wear,* PCA unpublished.

Pre-Construct Archaeology, 2010b. *An Archaeological Excavation at the Former Goodyear Dunlop Tyre Factory Site, Wear Industrial Estate, Birtley Road, Washington, Tyne and Wear*, PCA unpublished.

Pre-Construct Archaeology, 2011. *An Archaeological Evaluation at the Former CPS Haulage Site, Hawks Road, Saltmeadows, Gateshead, Tyne and Wear*, PCA unpublished.

Read, no date. *Some notable members of the Hawks Family,* Gateshead and District Local History Society, Vol. 1.

Tyne and Wear Museums Archaeology, 2006. *Kelvin Works Site, South Shore Road, Gateshead. Archaeological Excavation*, Report No. 445, TWM Archaeology unpublished.

Tyne and Wear Museums Archaeology, 2007. *Former Ingersoll Rand Site, South Shore Road, Gateshead. Archaeological Excavation,* Report No. 657, TWM Archaeology unpublished.

Tyne and Wear Specialist Conservation Team, 2009. *Specification for Preliminary Archaeological Evaluation at CPS Haulage Limited, Hawks Road, Saltmeadows, Gateshead, NE8 3AD*, TWSCT unpublished.

Under Construction Archaeology, 2008. *Proposed Development at Land off Hawks Road, Gateshead, Tyne and Wear*. *Archaeological Desk-Based Assessment,* UCA unpublished.

Walker, K., 1990. *Guidelines for the Preparation of Excavation Archives for Long-term Storage,* UKIC.

Online Sources

The following websites were consulted:

The *British Geological Survey* website at: *www.bgs.ac.uk*

The *Pictures in Print* website: *www.dur.ac.uk/picturesinprint/*

The *Pictures of Gateshead* website: *www.picturesofgateshead.co.uk*

Sitelines, the Tyne and Wear Historic Environment Record, at *www.twsitelines.info/*

15. ACKNOWLEDGEMENTS AND CREDITS

Acknowledgements

Pre-Construct Archaeology would like to thank Prospect Archaeology for commissioning the archaeological work herein described. The role of Nansi Rosenberg is acknowledged.

The roles of Jennifer Morrison, the Tyne and Wear Archaeology Officer, and Ian Ayris, the Tyne and Wear County Industrial Archaeologist, are acknowledged.

PCA Credits

Project Management: Robin Taylor-Wilson

Fieldwork: Alan Telford (Site Supervisor), Sophie Laidler, Derek Moscrop, Carys Thorn, Scott Vance

Report: Jennifer Proctor, Alan Telford and Robin Taylor-Wilson

Illustrations: Mark Roughley

Other Credits

Pottery, Glass and Clay Tobacco Pipe: Jenny Vaughan (Northern Counties Archaeological Services)

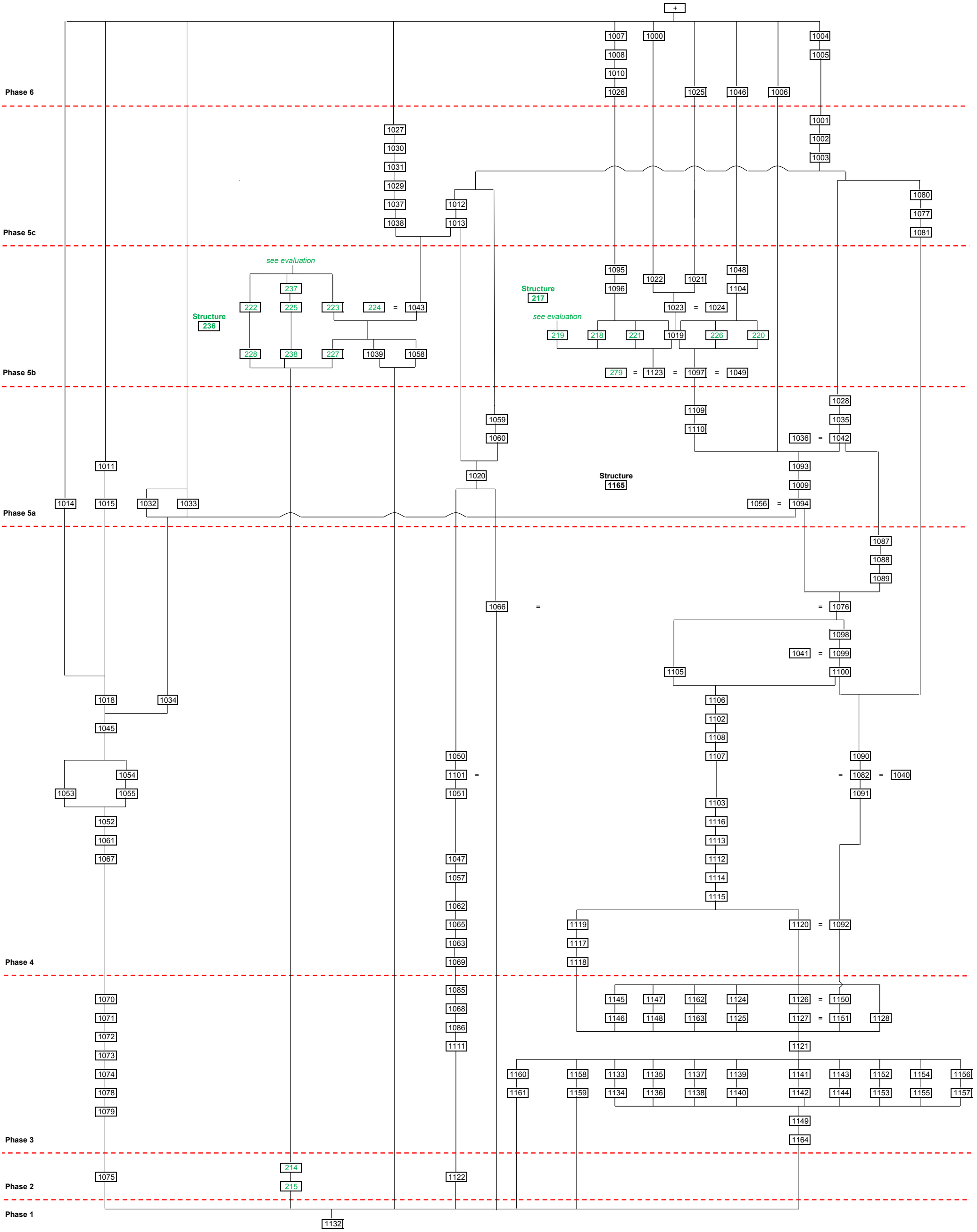
Bricks: John Nolan (Northern Counties Archaeological Services)

Slag and Industrial Process Residues: Dr. Roderick Mackenzie

APPENDIX 1

STRATIGRAPHIC MATRIX

HRG 10: STRATIGRAPHIC MATRIX



Numbers shown in green are retained from the evaluation phase of work

APPENDIX 2
CONTEXT INDEX

HRG 10 (EXCAVATION): CONTEXT INDEX

Context	*Area*	*Phase*	*Type 1*	*Type 2*	*Interpretation*
1000	A	6	Deposit	Layer	Spread of demolition material
1001	A	5c	Deposit	Fill	Backfill of pipe trench [1003]
1002	A	5c	Other	Pipe	Ceramic drain pipe in trench [1003]
1003	A	5c	Cut	Linear	Pipe trench; contains pipe [1002]
1004	A	6	Deposit	Fill	Fill of feature [1005]
1005	A	6	Cut	Linear	Intrusion
1006	A	6	Deposit	Layer	Dump layer
1007	A	6	Deposit	Fill	Fill of feature [1008]
1008	A	6	Cut	Linear	Pipe trench?
1009	A	5a	Masonry	Structure	Sandstone wall, part of structure [217]
1010	A	6	Deposit	Layer	Spread of crushed slag
1011	A	5a	Deposit	Layer	Spread of crushed slag
1012	A	5c	Deposit	Fill	Fill of drain [1013]
1013	A	5c	Masonry	Structure	Brick drain, part of structure [217]
1014	A	5a	Masonry	Structure	Mortared machine base
1015	A	5a	Masonry	Structure	Brick plinth for machine base
1016	VOID				
1017	VOID				
1018	A	4	Deposit	Layer	Spread of crushed slag, possible external surface
1019	A	5b	Masonry	Structure	Brick wall, part of Structure [217]
1020	A	5b	Masonry	Structure	Sandstone wall, part of Structure [217]
1021	A	5b	Masonry	Structure	Brick wall, part of Structure [217]
1022	A	5b	Masonry	Structure	Brick wall, part of Structure [217]
1023	A	5b	Masonry	Surface	Brick floor surface, part of Structure [217]
1024	A	5b	Masonry	Surface	Brick floor surface, part of Structure [217]
1025	A	6	Deposit	Layer	Dump layer
1026	A	6	Deposit	Layer	Mortar spread
1027	A	5c	Masonry	Structure	?Stone capping of Structue [236]
1028	A	5a	Deposit	Layer	Spread of crushed slag, possible external surface
1029	A	5c	Deposit	Fill	Fill of Structure [236]
1030	A	5c	Deposit	Fill	Fill of feature [1031]
1031	A	5c	Cut	Discrete	Intrusion
1032	A	5a	Deposit	Layer	Spread of crushed slag
1033	A	5a	Deposit	Layer	Spread of crushed slag
1034	A	4	Deposit	Layer	Spread of crushed slag, possible external surface
1035	A	5a	Deposit	Layer	Spread of crushed slag, possible external surface
1036	A	5a	Deposit	Fill	Fill of construction trench [1056]
1037	A	5c	Deposit	Fill	Fill of Structure [236]
1038	A	5c	Deposit	Fill	Fill of Structure [236]
1039	A	5b	Timber	Horizontal	Sleeper beam with iron fittings
1040	A	4	Other	Pipe	Iron pipe in trench [1091]; equates to [1082]
1041	A	4	Other	Pipe	Iron pipe in trench [1100]; equates to [1099]
1042	A	5a	Deposit	Layer	Spread of crushed slag, possible external surface
1043	A	5b	Masonry	Structure	Brick wall, part of Structure [236]
1044	VOID				
1045	A	4	Deposit	Layer	Spread of ash/coal fines
1046	A	6	Deposit	Layer	Spread of sandy silt
1047	A	4	Deposit	Layer	Spread of sandy silt
1048	A	5b	Deposit	Fill	Fill of construction trench [1049]
1049	A	5b	Cut	Linear	Construction trench for subterranean elements of Structure [217]
1050	A	4	Deposit	Fill	Backfill of pipe trench [1051]
1051	A	4	Cut	Linear	Pipe trench; contains pipe [1101]
1052	A	4	Deposit	Layer	Spread of sandy silt
1053	A	4	Cut	Discrete	Wheel ruts?
1054	A	4	Deposit	Fill	Fill of [1055]
1055	A	4	Cut	Linear	Pipe trench?
1056	A	5a	Cut	Linear	Construction trench for wall [1009]
1057	A	4	Deposit	Layer	Spread of crushed slag, possible external surface
1058	A	5b	Masonry	Structure	Brick wall, NE wall of Structure [236]
1059	A	5a	Deposit	Layer	Spread of crushed slag
1060	A	5a	Deposit	Layer	Spread of crushed slag
1061	A	4	Deposit	Layer	Spread of clay

HRG 10 (EXCAVATION): CONTEXT INDEX

Context	*Area*	*Phase*	*Type 1*	*Type 2*	*Interpretation*
1062	A	4	Deposit	Fill	Backfill of pipe trench [1063]
1063	A	4	Cut	Linear	Pipe trench; contains pipe [1065]
1064	VOID				
1065	A	4	Other	Pipe	Iron pipe in trench [1063]
1066	A	4	Deposit	Layer	Spread of sandy silt
1067	A	4	Deposit	Layer	Spread of sandy silt
1068	A	3	Deposit	Fill	Fill of posthole [1086]
1069	A	4	Deposit	Layer	Spread of sandy silt
1070	A	3	Deposit	Fill	Fill of posthole [1071]
1071	A	3	Cut	Discrete	Posthole associated with waggonway [1131]
1072	A	3	Deposit	Layer	Spread of clay
1073	A	3	Deposit	Layer	Spread of clayey silt
1074	A	3	Deposit	Layer	Spread of ash/coal fines
1075	A	2	Deposit	Layer	Developed soil
1076	A	4	Deposit	Layer	Spread of crushed slag, possible external surface
1077	A	5c	Masonry	Structure	Brick drain, part of structure [217]
1078	A	3	Deposit	Fill	Fill of posthole [1079]
1079	A	3	Cut	Discrete	Posthole associated with waggonway [1131]
1080	A	5c	Deposit	Fill	Backfill of construction trench [1081]
1081	A	5c	Cut	Linear	Construction trench for drain [1077]
1082	A	4	Other	Pipe	Iron pipe in trench [1091]; equates to [1040]
1083	VOID				
1084	VOID				
1085	A	3	Timber	Vertical	Base of timber ?post
1086	A	3	Cut	Discrete	Posthole
1087	A	4	Deposit	Fill	Backfill of pipe trench [1089]
1088	A	4	Other	Pipe	Iron pipe in trench [1089]
1089	A	4	Cut	Linear	Pipe trench; contains pipe [1088]
1090	A	4	Deposit	Fill	Backfill of pipe trench [1091]
1091	A	4	Cut	Linear	Pipe trench; contains pipe [1082]
1092	A	4	Deposit	Layer	Spread of sandy silt
1093	A	5a	Deposit	Fill	Fill of construction trench [1094]
1094	A	5a	Cut	Linear	Construction trench for wall [1009]
1095	A	5b	Deposit	Fill	Backfill of construction trench [1097]
1096	A	5b	Deposit	Fill	Backfill of construction trench [1097]
1097	A	5b	Cut	Linear	Construction trench for subterranean elements of Structure [217]
1098	A	4	Deposit	Fill	Backfill of pipe trench [1100]
1099	A	4	Other	Pipe	Iron pipe in trench [1100]; equates to [1041]
1100	A	4	Deposit	Linear	Pipe trench; contains pipe [1099]
1101	A	4	Other	Pipe	Iron pipe in trench [1051]
1102	A	4	Deposit	Fill	Fill of feature [1107]
1103	A	4	Deposit	Layer	Spread of demolition material
1104	A	5b	Deposit	Fill	Backfill of construction trench [1049]
1105	A	4	Deposit	Layer	Spread of ash/coal fines
1106	A	4	Deposit	Layer	Spread of sandy silt
1107	A	4	Cut	Discrete	Intrusion
1108	A	4	Deposit	Fill	Fill of feature [1107]
1109	A	5a	Deposit	Layer	Dump layer
1110	A	5a	Deposit	Layer	Dump layer
1111	A	3	Deposit	Layer	Developed soil
1112	A	4	Deposit	Layer	Spread of sandy silt
1113	A	4	Deposit	Layer	Spread of ash/coal fines
1114	A	4	Deposit	Layer	Spread of silty sand
1115	A	4	Deposit	Layer	Spread of ash/coal fines
1116	A	4	Deposit	Layer	Spread of silty sand
1117	A	4	Masonry	Structure	Brick drain
1118	A	4	Cut	Linear	Construction trench for drain [1117]
1119	A	4	Deposit	Fill	Backfill of construction trench [1118]
1120	A	4	Deposit	Layer	Spread of silty sand
1121	A	3	Deposit	Layer	Spread of ash/coal fines, associated with waggonway [1131]
1122	A	2	Deposit	Layer	Developed soil
1123	A	5b	Cut	Linear	Construction trench, same as [1049]

HRG 10 (EXCAVATION): CONTEXT INDEX

Context	*Area*	*Phase*	*Type 1*	*Type 2*	*Interpretation*
1124	A	3	Deposit	Fill	Fill of [1125]
1125	A	3	Cut	Linear	Rail impression
1126	A	3	Deposit	Fill	Fil of [1127]
1127	A	3	Cut	Linear	Rail impression
1128	A	3	Masonry	Structure	Brick 'check rail'
1129	VOID				
1130	VOID				
1131	A	3	Group No.	Structure	Waggonway
1132	A	1	Deposit	Layer	Natural sub-stratum
1133	A	3	Deposit	Fill	Fill of sleeper impression [1134]
1134	A	3	Cut	Discrete	Sleeper impression
1135	A	3	Deposit	Fill	Fill of sleeper impression [1136]
1136	A	3	Cut	Discrete	Sleeper impression
1137	A	3	Deposit	Fill	Fill of sleeper impression [1138]
1138	A	3	Cut	Discrete	Sleeper impression
1139	A	3	Deposit	Fill	Fill of sleeper impression [1140]
1140	A	3	Cut	Discrete	Sleeper impression
1141	A	3	Deposit	Fill	Fill of sleeper impression [1142]
1142	A	3	Cut	Discrete	Sleeper impression
1143	A	3	Deposit	Fill	Fill of sleeper impression [1144]
1144	A	3	Cut	Discrete	Sleeper impression
1145	A	3	Deposit	Fill	Fill of sleeper impression [1146]
1146	A	3	Cut	Discrete	Posthole, associated with waggonway [1131]
1147	A	3	Deposit	Fill	Fill of posthole [1148]
1148	A	3	Cut	Discrete	Posthole, associated with waggonway [1131]
1149	A	3	Deposit	Layer	Ballast dump associated with waggonway [1131]
1150	A	3	Deposit	Fill	Fill of rail impression [1151]
1151	A	3	Cut	Discrete	Rail impression
1152	A	4	Deposit	Fill	Fill of sleeper impression [1153]
1153	A	4	Cut	Discrete	Sleeper impression
1154	A	4	Deposit	Fill	Fill of sleeper impression [1155]
1155	A	4	Cut	Discrete	Sleeper impression
1156	A	3	Deposit	Fill	Fill of sleeper impression [1157]
1157	A	3	Cut	Discrete	Sleeper impression
1158	A	3	Deposit	Fill	Fill of posthole [1159]
1159	A	3	Cut	Discrete	Posthole
1160	A	3	Deposit	Fill	Backfill of slot [1161]
1161	A	3	Cut	Linear	Slot associated with fenceline
1162	A	3	Deposit	Fill	Backfill of slot [1163]
1163	A	3	Cut	Linear	Slot associated with fenceline
1164	A	3	Cut	Linear	Trackbed of waggonway
1165	A	5	Group No.	Structure	Building

APPENDIX 3
PLATES

Plate 1: Phase 1, natural sub-stratum in base of Slot 5 (Phase 5a structural remains in section), looking south-east *(scales 2m and 1m)*

Plate 2: Phase 3, waggonway [1131], looking south-west *(scales 2m and 1m)*

Plate 3: Phase 3, waggonway [1131], looking north-west *(scales 2m and 1m)*

Plate 4: Working shot, Phase 3 waggonway and Phase 5 structural features, looking north-west

Plate 5: Phase 5, structural features, looking south-west *(scales 2 x 2m)*

Plate 6: Phase 5, structural features looking north-east *(scales 2 x 2m)*

Plate 7: Phase 5b, Structure [217], looking SSE *(scales 2m horizontal & 1m vertical)*

Plate 8: Phase 5b, Structure [217], looking south-east *(scales 2m x2 horizontal & 1m vertical)*

Plate 9: Phase 5b, Structure [217], looking ENE *(scales 2m x 2 horizontal & 1m vertical)*

Plate 10: Phase 5b, detail of west end of brick floors [1023] and [1024], looking north-west *(scale 1m)*

Plate 11: Working shot, Phase 3 waggonway [1131] and Phase 5b Structure [217], looking north

Plate 12: Phase 5b, timber beam [1039] within Structure [236], looking north-west *(scale 1m)*

Plate 13: Phase 5c, brick drain [1077] and ceramic drain [1002], looking NNE *(scale 1m)*

Plate 14: Phase 5c, brick drain [1077] and ceramic drain [1002], looking north-east *(scale 2m)*

APPENDIX 4
PROJECT DESIGN

PROJECT DESIGN FOR OPEN AREA ARCHAEOLOGICAL EXCAVATION AT THE FORMER CPS HAULAGE LIMITED SITE, HAWKS ROAD, SALTMEADOWS, GATESHEAD, TYNE AND WEAR

Title	Project Design for an Archaeological Excavation at the Former CPS Haulage Limited Site, Hawks Road, Saltmeadows, Gateshead, Tyne and Wear	
Author	Robin Taylor-Wilson	
Derivation	Request from the Tyne and Wear Specialist Conservation Team	
Original Version & Date	Version 1.0	16 September 2010
This Version & Date	N/A	N/A
Reviser (if applicable)		
Summary of Changes (if applicable)	N/A	
Status of this Version	Final	
Circulation	Nansi Rosenberg (Prospect Archaeology), Jennifer Morrison (Newcastle City Council, Tyne and Wear Archaeology Officer)	
Required Action		
File Name	HRG10 Excav ProjDesign v1.0 16Sep10	
File Location	C drive PCANorth1	
Approval	Final, approved	

PART 1: DESCRIPTION OF THE PROJECT

1.1 Project Name

1.1.1 The project is known as Hawks Road, Gateshead.

1.2 Summary Description of Project

1.2.1 The project entails an open area archaeological excavation to be undertaken to investigate archaeological remains found during an earlier two-phase field evaluation of land to be affected by the proposed re-development of the former premises of CPS Haulage Limited on Hawks Road, Gateshead. This phase of work is to be undertaken in the southern portion of the site adjacent to evaluation Trench 2. A first phase of evaluation, undertaken on an open yard forming the eastern portion of the site, identified archaeological remains of significance from the late post-medieval industrial era. The second phase of evaluation identified limited structural remains and deposits tentatively associated with a later phase of the ironworks, as well as substantial structural remains of a building shown on the 1898 Ordnance Survey map and very fragmentary remains of the railway. The main archaeological interest of the site stems from the fact that this part of Gateshead was developed in the 1740s by William Hawks, as part of his 'New Greenwich' ironworks'.

1.3 Background

1.3.1 The proposed development site – the former premises of CPS Haulage Limited - is centred at National Grid Reference NZ 2595 6379. The site occupies relatively high ground on the south bank of the River Tyne in Gateshead. Notably, Hawks Road, skirting the southern side of the site, lies at a lower level than the entire site.

1.3.2 Planning permission has been granted for a hotel, an office building, with new vehicular access from Hawks Road and car parking. The site is to be reduced in level by 2m then built back up. New build foundations will be piled. Boreholes indicate a depth of up to 6m of 'made ground' at the site, which could include archaeological remains.

1.3.3 A desk-based assessment (DBA) of the archaeological and historical potential of the proposed development site was undertaken by Under Construction Archaeology in 2008. The area of the site was developed in 1747 as part of the 'New Greenwich' ironworks' of William Hawks. By 1774 a small stream was employed to power the works and this stream fed a mill pond and dam, depicted on Hutton's plan of Newcastle and Gateshead from the early 1770s and suspected as lying within the site. Into the 19th century, with the mill pond evidently infilled, the site was occupied by buildings and a railway within the western part of the complex of what was by then known as 'Gateshead Ironworks'.

1.3.4 A first phase of field evaluation was undertaken July-August 2010, with four trenches investigated on an open yard forming the eastern portion of the site. This work identified notable archaeological remains of the late post-medieval industrial era in one trench, sited close to the access off Hawks Road. The remains represent one or more industrial building likely depicted on 19th century mapping of the site and thus probably part of Gateshead Ironworks. The first phase of evaluation was undertaken according to Specification prepared by the Tyne and Wear Specialist Conservation Team.

1.3.5 A second phase of field evaluation was undertaken in September 2010 inside a standing warehouse/workshop building occupying the western portion of the site to establish whether or not archaeological remains survive in the most recently developed portion of the site. Limited remains of later 19th century industrial buildings were present, along with remains of the aforementioned railway, as depicted on 19th century mapping.

1.4 Research Aims and Objectives

1.4.1 The project is threat-led with potential to disturb or destroy important sub-surface archaeological remains of the late post-medieval industrial era period in particular. The broad Aim of the overall project is to inform the Local Planning Authority regarding the character, date, extent and degree of survival of archaeological deposits at the proposed development site.

1.4.2 The site lies outside the presumed extent of the Roman bridgehead settlement and Gateshead's medieval town, but is within the presumed extent of the medieval Bishop's Park.

1.4.3 Industries were set up in the 17th and 18th centuries in an area of the aforementioned park known as Saltmeadows. The waterfront area in which the site lies was developed in 1747 as part of the 'New Greenwich Ironworks' of William Hawks. Hawks was a blacksmith and manager at Ambrose Crowley's London warehouse at Greenwich and he secured a supply of scrap iron from London for his Tyneside operation. The Gateshead works were located close to Rock and Dock Staiths on the Tyne, which would have aided the delivery of scrap iron and finished ironmongery goods (such as shovels and spades). William Hawks died in 1755 and William Hawks Junior (died 1810) expanded the works. By 1774 a stream was employed to power the works and this fed a mill pond and dam, all as depicted on Hutton's plan of Newcastle and Gateshead from the 1770s. The stream ran along the western edge of the site, close to the modern Mill Road. A lease of 1795 states that a dam and reservoir had been constructed at the forge, mill and mill race. As depicted, the mill pond is comma shaped and crossed by a bridge or track, with a wide fore-dam to the north and a narrow tail dam to the south. The mill pond and dam were suspected as lying within the proposed development site.

1.4.4 Into the 19th century, the site was occupied by buildings and a railway within the western part of the complex of what was by then generally known as Gateshead Ironworks. Thomas Oliver's plan of 1830 depicts just a small remnant of the reservoir survived. A plan of the area from *c.* 1850 does not show the reservoir at all. Steam engines had been installed from 1790 onwards. Gateshead Ironworks continued to expand and innovate. A chain testing house was built by 1812 and Nasmyth's 'Patent Steam Hammers' were in use by the mid 19th century.

1.4.5 The Ordnance Survey 1st edition map shows the site to be an open yard within Gateshead Ironworks, bisected by a railway. By the mid 19th century the company became Hawks Crawshay and Sons. It specialized in heavy engineering, bridges (included the High Level Bridge), iron and steel for shipbuilding, piles and ironwork for lighthouses and piers and steam engines. In the 1880s the anchor smith's bellows were worked by horse power. It is believed that the company went into liquidation in 1889 because they failed to specialize like their competitors.

1.4.6 The proposed development site remained vacant for much of the early 20th century before becoming the premises of CPS Haulage Limited in the modern era.

1.4.7 Previous archaeological work in Gateshead has recorded many important elements of the area's industrial heritage. For example, a ravine, possibly the stream or tail race, was revealed during archaeological excavations at the nearby site of the Kelvin Works (Tyne and Wear Museums 2006), while a mill race, pool and watercourse were recorded at the site of Sir Ambrose Crowley's ironworks at Swalwell (Pre-Construct Archaeology Limited 2005) and substantial remains of ironworks were recorded at Ingersoll Rand, South Shore Road (Tyne and Wear Museums 2007).

1.4.8 There follows an interim report on the findings of the first and second phases of evaluation at the site:

Trench 1

The earliest deposit encountered in Trench 1 was of probable natural origin, comprising alluvial yellow sand and coarse gravel/cobbles – assumed to be river gravels - recorded at a maximum level of 15.37m AOD.

At the north-eastern end of the trench, natural material was cut by the construction trench of a brick wall which ran across the width of the trench on a NW-SE alignment. The wall was made of hand pressed common bricks, laid in 3:1 English Garden Wall bond, and survived to a maximum of six courses (0.52m). The north-eastern face of the wall was abutted by a concrete floor, the base of which rested on an offset course of bricks. A further offset was recorded two courses below the base of the floor surface. A deposit of loose ash and cinder lay below the floor and was possibly associated with the original function of the building, suggesting that the floor may have been a later alteration to the building.

At the south-western end of the trench, a series of deposits cut by a linear ditch or gully were interpreted as representing 18th-19th century activity on the site, almost certainly associated with Hawks' Ironworks. The ditch ran across the width of the trench on a roughly north-south alignment. The fills of the ditch produced 19th century material.

Trench 2

The same probable natural sub-stratum was recorded in Trench 2 at a maximum level of 16.35m AOD. It is notable that this represents an increase in the level of 'natural' of a full metre between Trench 2 and Trench 1.

The river gravels were overlain by a developed soil, interpreted as an agricultural soil horizon, which contained pottery of medieval date. The recovery of medieval and early post medieval material from this horizon would appear to demonstrate that the gravels below were not dumped ballast of recent date.

A series of deposits overlying the agricultural soil were interpreted as representing 18th and early 19th century activity on the site, associated with the early phase of the ironworks. These deposits were cut by the foundation trenches of a number of walls recorded in the southern part of the trench. It was not evident whether all of the walls were associated with the same structure, although this seems likely. The most substantial structure was recorded at the south-eastern edge of the NE-SW aligned arm of the trench. This comprised a brick built underground structure cut into the ground by at least 2.07m. Abutting the north-eastern and south-western walls of the building were two substantial brick piers, which were recorded in section.

Because the structure was only partially exposed within the trench, its exact function was not clear, although a layer of solidified iron slag in the base suggests an industrial function associated with the ironworks.

On the south-eastern edge of the NW-SE part of the trench, a number of walls were recorded, the construction of which appeared to be contemporaneous, and which formed part of the same structure. The structure comprised two walls running almost parallel to one another, with deposits of coal fines and ash/cinder between them. Evidence was recorded in section to suggest that the feature may have originally been capped with sandstone slabs.

The structural remains recorded in Trench 2 were overlain by deposits associated with the demolition of the buildings. These deposits were cut adjacent to the north-western edge of the trench, by an intrusion that ran the length of the trench and continued beyond the limit of excavation to the north-east and south-west. The intrusion was backfilled with a number of deposits, the most notable of which comprised demolition rubble containing substantial blocks of sandstone masonry. The position of the intrusion may relate to the edge of the 18th century mill pond, as its location and alignment are close to where the mill pond is depicted on the 1770s map. The intrusion however cut dates from the late 19th century at the earliest. It is possible that the cut represents the robbing of retaining walls associated with the mill pond many years after it had gone out of use.

Trench 3

The natural sub-stratum was recorded in Trench 3 at a maximum level of 15.31m AOD. The sand and gravel was overlain by a series of dumped deposits interpreted as representing the gradual infilling of the site, largely in the 20th century. No archaeologically significant deposits or features were recorded in Trench 3.

Trench 4

The natural sub-stratum was recorded in Trench 4 at a maximum level of 15.45m AOD. Deposits overlying the sand and gravel were interpreted as being dumped material of recent origin. The deposits in Trench 4 were more homogeneous than those recorded in Trench 3, suggesting a more rapid infilling of this area of the site. No archaeologically significant features or deposits were recorded in Trench 4.

The preliminary conclusions of the evaluation were:

Much of the northern part of the site, to the north of the intrusion recorded in Trench 2, has been 'terraced away' and infilled with modern material. The evaluation did not identify any archaeologically significant features or deposits in this part of the site.

South of the terracing cut, the evaluation demonstrated that the remains of industrial buildings of *c*. 1860 survive below ground in relatively good condition. The full extent of the structures was not established by the evaluation, and the precise function of the buildings was unclear. Further research at the post excavation stage or further exposure by open area excavation may clarify the function.

Trench 5

Limited structural remains and horizontal deposits were encountered within this trench, indicating that while there was some preservation of the later Iron works buildings, most had been heavily truncated in recent years.

Trench 6

Substantial structural remains were found within trench 6. These have been potentially identified as the remains of a building shown on the 1898 Ordnance Survey map. It is suggested that this building relates to the railway line. Very fragmentary remains were encountered of the railway line itself within this trench.

The preliminary conclusions of the evaluation were:

The evaluation did not reveal any substantial remains relating to the earlier Ironworks buildings, but did reveal limited evidence for the location of the railway line and later buildings. Further works in this area would not significantly aid the characterisation of the ironworks buildings.

1.4.9 Following the field evaluation phases, the project is considered to have considerable potential to make a significant contribution to existing archaeological knowledge of the late post-medieval industrial era in Gateshead in particular. Specific research objectives to be addressed by the project have been formulated with reference to an existing archaeological research framework, Shared Visions: The North-East Regional Research Framework for the Historic Environment (NERRF) (Petts and Gerrard 2005) that highlights the importance of research as a vital element of development-led archaeological work. It sets out key research priorities for all periods of the past allowing commercial contractors to demonstrate how their fieldwork relates to wider regional and national priorities for the study of archaeology and the historic environment. The aim of NERRF is to ensure that all fieldwork is carried out in a secure research context and that commercial contractors ensure that their investigations ask the right questions.

1.4.10 The NERRF identifies the following key priorities within the research agenda for the post-medieval period which are of direct relevance to this project: 'PMii, Industrialisation' and 'Pmviii, Industrial intensification 1790-1830'.

1.5 Business Case

1.5.1 The project Sponsor is the developer. The project is being undertaken ahead of development of the site for a 6-7 storey hotel and a -5 storey office building, with new vehicular access from Hawks Road and 67 car parking spaces. The site is to be reduced in level by 2m then built back up. New build foundations will be 20m deep piles. Planning permission has been granted for the scheme (planning application: DC/08/01288/FUL). The results of the archaeological evaluation were required as a condition of planning permission and the excavation is to be undertaken in mitigation of the scheme.

1.5.2 The requirement to undertake the archaeological investigation is in line with planning policy at a national and local level. At a national level, *Planning Policy Statement 5 'Planning for the Historic Environment'* (PPS5) has now replaced former Planning Policy Guidance Note 15 ('*Planning and the Historic Environment*', published in September 1994) and Note 16 ('*Archaeology and Planning'*, published in November 1990). PPS5 is now a material planning consideration in the determination of planning applications. A key component of PPS5 is that those parts of the historic environment that have significance because of their historic, archaeological, architectural or artistic interest are now called 'heritage assets'.

1.5.3 At a local level, the archaeological policies of the local authority are set out in the *Gateshead Unitary Development Plan,* adopted in 2007. This is the statutory land use plan for the Borough of Gateshead and Policies ENV 21 and 22 (in UDP Section 11 'The Environment' and both 'saved' as of July 2010) deal with 'Sites and Areas of Archaeological Importance.

ENV21 Where archaeological remains survive, whether designated as a scheduled ancient monument or not, there will be a presumption in favour of their preservation in situ. However, where the significance of archaeological remains is such that their preservation in situ is not essential, or is not feasible, a programme of archaeological works aimed at achieving preservation by record will be required, the findings of which should be published.

ENV22 Where there is the likelihood that archaeological remains will be encountered as a result of development, and on all developments over 0.5ha in size, the Council will require a programme of investigative research and/or fieldwork to determine whether the remains, that might exist, merit preservation in situ or by record. Research and fieldwork findings should be published.

1.5.4 On behalf of the developer, Prospect Archaeology (the Client) has appointed Pre-Construct Archaeology Limited (PCA) to undertake the open area archaeological excavation at the site. PCA - www.pre-construct.com - is one of the largest archaeological contractors in the UK, operating a nationwide service from offices in London, Cambridgeshire and Durham. PCA is a 'Registered Organisation' (RO 23) with the Institute for Archaeologists (IfA).

1.5.5 An appropriately specified archaeological investigation, comprising an open area field excavation, is the preferred strategy to provide adequate information on the archaeological resource at the site. The aim is present this information in the form of an archaeological Assessment Report.

1.6 Project Scope

1.6.1 The open area excavation comprises a further Execution Stage of the project, as described in *Management of Research Projects in the Historic Environment* (MoRPHE) (English Heritage 2006). The aim of this Project Design is to provide sufficient detail to permit authorisation of the project.

1.6.2 The Project Design sets out the research Aims and Objectives of the archaeological excavation and, in a series of detailed Methods Statements, describes the techniques and approaches that will be employed to achieve the Aims and Objectives of the project.

1.7 Interfaces

1.7.1 It is intended that the open area archaeological excavation will commence in September 2010 with reporting to follow.

1.7.2 PCA will undertake and coordinate the work on behalf of the Client, with the Tyne and Wear Archaeology Officer fulfilling the role of archaeological curator and archaeological advisor to the LPA, Gateshead Council.

1.8 Communications

1.8.1 Every PCA project has a designated Project Manager and, where fieldwork is required, there will also be a Site Supervisor/Site Director. Other members of the Project Team are identified below. The Project Manager is the person responsible for preparation of the Project Design and ensuring that execution and monitoring of project activities follow the general procedures of PCA and are in accordance with the Project Design.

1.8.2 PCA's Project Team will communicate internally via scheduled meetings, both office-based and on site during the fieldwork element of the archaeological excavation.

1.8.3 PCA's Project Team will communicate externally with the Client and other Stakeholders (those parties with an active interest in the project, for example, the developer, and Gateshead Council – through the Tyne and Wear Archaeology Officer – as the LPA) via scheduled meetings, email discussions, telephone conversations and written correspondence, as appropriate.

1.8.4 Principal points of contact:

Pre-Construct Archaeology Limited - Robin Taylor-Wilson: 0191 377 1111; 07710 517 599; rtaylor-wilson@pre-construct.com

Prospect Archaeology Limited – Nansi Rosenberg: 01977 681 885; 07748 327 956; nansi@propsectarc.com

Newcastle City Council, Tyne and Wear Archaeology Officer – Jennifer Morrison: 0191 281 6117; jennifer.morrison@newcastle.go.uk

Marshall Construction WY Limited - Chris Simms; 01422 375533; CSimms@mcwy.com

1.9 Project Review

1.9.1 Progress of the project will be reviewed at Review Point 'R3.2', conducted at the conclusion of the **Execution Stage** of the project, namely at circulation of an Updated Project Design, if necessary.

1.10 Health and Safety

1.10.1 A project-specific Health and Safety (H&S) Plan will be compiled to accompany this Project Design. At its core is PCA's H&S Policy, the starting point for managing H&S at all locations where PCA carries out its operations.

1.10.2 This project will not be 'H&S Executive (HSE) notifiable' due to its anticipated short duration.

1.10.3 In general, all PCA staff are required to:

- take care of their own safety and that of any other person on the site or in the vicinity;
- co-operate with the Site Supervisor and the Directors of PCA to allow them to comply with their statutory obligations;
- be mindful of the requirements of the Sponsor;
- be careful to minimise the environmental impact of their operations and activities.

PART 2: RESOURCES AND PROGRAMMING

2.1 Project Team Structure

2.1.1 The Project Manager for PCA will be Robin Taylor-Wilson, BSc MA MIfA. In broad terms, he will have ultimate responsibility for the outcome of the project, as well as overseeing day-to-day operations with responsibility for preparation of the Project Design, project planning, identification of Risk, monitoring of costs and timetable and, in essence, ensuring that the project produces the work agreed in the Project Design.

2.1.2 Various Experts will be added to the Project Team as appropriate. Central amongst these will be the Site Supervisor, an archaeologist with a requisite amount of experience. As is the case with every project where fieldwork is to be undertaken, the Project Manager will also appoint a Site H&S and Environmental Supervisor, and in this instance this role will be fulfilled by the Site Supervisor, Alan Telford.

2.1.3 Fieldwork will be undertaken by the Site Supervisor and a field team comprising one or more archaeologists, with office-based Experts providing support, as appropriate, in areas such as computer-aided design (CAD) and surveying.

2.1.4 Appropriate specialists will examine all categories of artefactual and palaeoenvironmental materials recovered during the fieldwork.

2.1.5 PCA generally use a combination of in-house and external specialists. Likely external specialists for this project are set out below:

- Assessment of medieval and post-medieval pottery from the site would be co-ordinated by Jenny Vaughan, a ceramic specialist based in Newcastle.
- Rod Mackenzie an archaeometallurgical specialist based in Sheffield, would undertake assessment of post-medieval industrial residues from the site.
- Archaeological Services Durham University (ASDU) would undertake processing and assessment of bulk samples for palaeoenvironmental data and the assessment of faunal remains. Scientific dating would be co-ordinated by ASDU.
- Archaeological conservation, including on-site conservation advice, would be co-ordinated by Karen Barker, a freelance archaeological conservator based in Hexham.

2.1.6 All groundworks (excluding archaeological supervision, cleaning, excavation and recording) will be undertaken by D&K Plant on behalf of PCA.

2.2 Method Statement Part A: Fieldwork

2.2.1 Overall Excavation Methodology

2.2.1.1 The research Aims and Objectives of the project will be achieved by the undertaking of what will be the third phase of archaeological field investigation, open area excavation. This will comprise the final element of Data Collection and will complete the second Execution Stage of the project.

2.2.1.2 The fieldwork will be undertaken in accordance with *Standard and guidance for archaeological excavation* (Institute for Archaeologists 2008).

2.2.1.3 An area of 15m by up to 12m is proposed to characterise and identify structural and other archaeological remains found in Trench 2 during the first phase of archaeological evaluation.

2.2.1.4 The area will be excavated to the natural geological sub-stratum, if this can be reached safely.

2.2.1.5 The fieldwork is programmed to take four weeks.

2.2.1.6 All groundworks, excluding archaeological supervision of work and archaeological cleaning excavation, recording and sampling in the trenches, will be undertaken by D&K Plant.

2.2.1.7 The existing surface treatment – tarmac - will be broken out initially under the direction of PCA staff. All subsequent ground level reduction will be undertaken by mechanical excavator under the direction of PCA staff. All subsequent activity– apart from backfilling - will be undertaken by hand by PCA staff. Spoil will be mounded beside the area. Backfilling will be undertaken on completion of the archaeological investigation.

2.2.2 Archaeological Cleaning, Excavation and Recording Methodology

2.2.2.1 Ground level across the open area will be reduced by machine to an acceptable level under PCA supervision. This level will either be the top of the first significant archaeological horizon or the top of the natural geological sub-stratum, whichever is reached soonest. PCA will then clean, record and excavate exposures, as appropriate.

2.2.2.2 The base and sections of the open area will be cleaned by PCA using hand tools, as appropriate. The majority of investigation of archaeological levels will be by hand, with cleaning, examination and recording both in plan and in section.

2.2.2.3 Investigations will follow the normal principles of stratigraphic excavation and will be conducted in accordance with the methodology set out in *Fieldwork Induction Manual. Operations Manual I* (PCA 2009) and *Archaeological Site Manual, Third Edition* (Museum of London 1994). All archaeological features will be recorded. Deposits and feature cuts will be individually recorded on *pro-forma* 'Context Recording Sheets'. Structural remains will be individually recorded on *pro-forma* 'Masonry Recording Sheets'. All site records will be marked with the unique-number PCA 'Site Code', HRG 10.

2.2.2.4 Archaeological excavation may require work by 'pick and shovel' or occasionally by further use of the machine. Such techniques will be used only for the removal of homogeneous and 'low grade' layers where it can reasonably be argued that more detailed attention would not produce information of value, and their removal provides a 'window' onto the underlying archaeological levels. They will not be employed on complex stratigraphy, and the deposits to be removed will be fully recorded prior to excavation.

2.2.2.5 All archaeological features (layers, cuts, fills, structures) that do not merit preservation *in situ* will be excavated by hand tools and recorded in plan at 1:20 or in section at 1:10 using standard ‘single context recording’ methods. Drawings will be on polyester based drawing film, and will be related to survey points established in trenches. Descriptions of all archaeological strata and features excavated and exposed will be entered onto prepared *pro-forma* recording sheets.

2.2.2.6 The height of all principal strata and features will be calculated in metres above Ordnance Datum (m AOD) and indicated on the appropriate plans and sections.

2.2.2.7 ‘Harris Matrix' stratification diagrams will be used to record stratigraphic relationships and these records will be compiled and fully checked during the course of the work.

2.2.2.8 A detailed photographic record of the investigations will be prepared using digital photography, using a Hewlett Packard SB360 digital cameras (capable of 12 megapixel resolution). The JPEG (Joint Photographic Experts Group) setting will be used, with the camera set for the largest image size with least compression.

2.2.2.9 All photographs will include a legible graduated metric scale. The photographic record will illustrate both in detail and general context archaeological exposures and specific features and structures in all trenches. The photographic record will also include 'working shots' to illustrate more generally the nature of the archaeological operation mounted.

2.2.2.10 All upstanding structural remains will be exposed and recorded, including any post-medieval and industrial surfaces encountered. A further percentage of the structural remains will be removed to allow full characterisation of the remains. All horizontal stratigraphic deposits will be fully recorded.

2.2.2.11 All Stakeholders will be informed immediately if archaeological remains of possible national significance are encountered. Any such remains will be protected on completion of the archaeological work.

2.2.3 Health & Safety and Welfare Methodologies

2.2.3.1 The HSE does not consider archaeological investigations to fall within the definition of 'construction work' in the *Construction (Design and Management) (CDM) Regulations 2007*. Nevertheless PCA will prepare a site-specific H&S Plan and this should be consulted for full details of H&S matters.

2.2.3.2 The site has been inspected by PCA's Project Manager with a view to establishing all Risks likely to be associated with the work, so that all such hazards can be mitigated prior to staff starting work. A 'Hazard Check/Risk Assessment' *pro-forma* has been completed and a copy added to the 'Project H&S and Environmental File'.

2.2.3.3 The PCA Project Manager will discuss all specific H&S issues with the PCA Site Supervisor prior to a start on site. The Site Supervisor will be deemed responsible for the H&S at the site under their control, meaning that they will be responsible for the implementation of safe working practices and the implementation of statutory legislation and PCA's site-specific H&S Plan throughout the duration of site operations. The Site Supervisor will be responsible for site-specific induction talks to all PCA staff and site visitors (for archaeological purposes) before they start work or gain access to an area of investigation.

2.2.3.4 All PCA personnel will use safety equipment. For each member of staff this will comprise: hard hat, hi-visibility garment, safety boots (steel toe-cap and insole).

2.2.3.5 The fieldwork is anticipated to be of *c.* 4 weeks. Welfare will be provided by PCA for their staff.

2.2.3.6 If, during the course of the work, it is suspected that sub-surface deposits are contaminated, all archaeological personnel will be required to wear appropriate PPE.

2.2.4 Finds and Samples: On-Site Methodology

2.2.4.1 High priority will be given to dating any archaeological remains; therefore all artefacts and finds will be retained. Consideration will also be given to the recovery of specialist samples for scientific analysis, particularly samples for cultural/environmental evidence, structural materials and absolute dating. Different sampling strategies may be employed according to the perceived importance of the strata under investigation.

2.2.4.2 Deposits will be assessed for their potential for radiocarbon and archaeomagnetic dating and, if appropriate, samples will be recovered for these purposes. Specialist analysis of material recovered for scientific dating would, therefore, be a requirement in post-excavation.

2.2.4.3 Human remains are not anticipated at this location. If *in situ* human remains were encountered they would be recorded to an appropriate level by the use of photography and the *pro forma* 'Skeleton Recording Sheet' and including *in situ* examination by a palaeo-pathologist, if required, then protected and retained *in situ*. If *in situ* preservation were not an option at this stage, for whatever reason, the remains would be removed following receipt of the appropriate exhumation licence from the Ministry of Justice.

2.2.4.4 It may be necessary to seek advice regarding lifting and/or preservation of vulnerable objects or other remains during the work. Specialist on-site advice regarding archaeological conservation will be sought as appropriate. All gold and silver will be removed to a safe place and reported to the local coroner according to the procedures relating to the *Treasure Act 1997*. Where removal cannot be effected on the same working day as the discovery suitable security measures will be taken to protect the finds from theft.

2.2.4.5 The overall aim of the excavation with respect to archaeological science will be to determine the types of material preserved and in what quantity and condition, thus enabling the aims and objectives of the project as a whole to be addressed. The advice of English Heritage's Regional Advisor for Archaeological Science (RAAS) will be sought and, if appropriate, arrangements for a site visit will be made in order to determine the importance and sampling requirements for all deposits exposed during the investigation.

2.2.4.6 In general, the environmental sampling policy on the site will entail recovery of bulk material from well-dated (although palaeoenvironmental material recovered by sampling can itself provide the only evidence for dating), stratified deposits covering the main periods or phases of occupation.

2.2.4.7 Sample size will take into account the frequency with which material is likely to occur. In general, however, samples will be of the order 20–30 litres although with the expectation that smaller quantities (*c*. 5-10 litres) will be processed and assessed initially.

2.2.4.8 Assessment of sufficient samples will be undertaken to cover the range of feature types and dates represented.

2.3 Method Statement Part B: Post-Fieldwork

2.3.1 Finds and Samples: Off-Site Methodology

2.3.1.1 Specialists will examine all levels of finds (*e.g.* organic, ceramic, metallic) recovered during the fieldwork. All finds will be treated in a proper manner and will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the guidelines set out in *First Aid for Finds, 3rd edition* (Watkinson and Neal 1998), *Conservation Guidelines No.2. Packaging and storage of freshly excavated artefacts from archaeological sites* (United Kingdom Institute for Conservation (UKIC) Archaeology Section 1983) and *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (IFA 2001).

2.3.1.2 Preliminary conservation and stabilisation of all objects will be undertaken as soon as possible during or upon completion of the fieldwork. Vulnerable materials that require immediate specialist archaeological conservation will be transported to appropriate facilities without delay. There will be an assessment of long-term conservation and storage needs of all excavated material.

2.3.1.3 All metal objects will be X-rayed and then selected for conservation. All iron objects will be X-rayed, along with a selection of non-ferrous artefacts (including all coins) and a sample of any industrial debris relating to metallurgy.

2.3.1.4 Waterlogged organic materials will be dealt with following guidelines set out in the English Heritage documents, *Guidelines for the care of waterlogged archaeological leather* (1995) and *Waterlogged wood. Guidelines on the recording, sampling, conservation and curation of waterlogged wood* (1996).

2.3.1.5 All processing of artefacts and ecofacts will be undertaken away from the site. Assessment of artefactual and ecofactual material will be undertaken by suitably qualified personnel. For each category of artefact and ecofact an assessment report will be produced that will include a basic quantification of the material, a statement of its potential for further analysis and recommendations for such work.

2.3.1.6 Techniques of laboratory processing for material recovered through sampling are likely to vary depending upon the nature of the deposit. There will be assessment in respect of:

- the approximate proportions and types of mineral and organic components, including comments relating to presence/absence of industrial spatter and hammerscale or other technological material;
- the nature of biological remains;
- qualitative estimates of the amounts of each type of remains and their states of preservation;
- a broad indication of habitats represented;
- indications of origin of material;
- research questions that should be formulated if full analysis of any material is recommended;
- recommendations for additional sampling, specifically if/when further excavation is undertaken.

2.3.1.7 PCA's nominated specialist(s), will undertake a programme of pottery dating and analysis, as necessary

2.3.1.8 PCA will employ external specialists to undertake analysis and interpretation of materials recovered through sampling of archaeological and environmental deposits and structures (which can include soils, timbers, faunal remains and human remains).

2.3.2 Site Archive

2.3.2.1 Through Data Collection, the undertaking of fieldwork results in the establishment of a Site Archive. In preparing the Site Archive for deposition all relevant standards and guidelines documents referenced in the Archaeological Archives Forum guidelines document *Archaeological Archives. A guide to best practice in creation, compilation transfer and curation* (Brown 2007) would be adhered to, in particular *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (IFA forthcoming) and *Guidelines for the preparation of excavation archives for long term storage* (Walker, UKIC 1990).

2.3.2.2 The Site Archive will include all materials recovered (or a comprehensive records of such materials) and all written, drawn, and photographic records generated by the Data Collection Stage(s) of the project. In line with *MoRPHE. PPN3: Archaeological Excavation. Appendix 1* the site archive will be quantified, ordered, indexed, and internally consistent before transfer to the recipient museum. It will also contain a site matrix, a site summary and brief written observations on the artefactual and environmental data.

2.3.2.3 Prior to the Closure Stage of the project, the Site Archive (which by then may comprise an integrated Site and Research Archive) will be deposited with Tyne and Wear Museums and Archives. The Archive will be organised as to be compatible with the other archaeological archives produced in the County and will include all artefacts and ecofacts recovered during the project. An accession number for the Site Archive will be assigned in advance of the work, in accordance with the requirements of the recipient body.

2.3.2.4 The Site Archive will be presented to the archive officer or relevant curator as soon as is practically possible following of the completion of the final fieldwork associated with the project. Appropriate guidance set out in *Standards in the museum care of archaeological collections* (Museum and Galleries Commission 1992) and *Selection, retention and dispersal of archaeological collections* (Society of Museum Archaeologists 1993) will be followed in all circumstances.

2.3.3 Assessment Report

2.3.3.1 The results of the excavation will be disseminated in the form of written and illustrated Assessment Report, to be compiled following completion of the open area excavation fieldwork. At least an interim statement (of no more than 400 words) on the work will be compiled for planning purposes, within 2 weeks after completion of the fieldwork, with the full report to be produced within 6 months after completion of fieldwork.

2.3.3.2 The report will include:

- an introductory section setting out the general background to the project, details of the planning history, a summary of the site geology and topography, and the archaeological and historical background of the site;
- a section outlining the Aims and Objectives of the project;
- a section detailing the methods adopted during the fieldwork;
- a section describing the archaeological findings, including the nature, extent, date, condition and significance of the archaeological remains;
- assessments, including quantifications and summaries of potential for further analysis, of artefacts, technological residues and palaeoenvironmental remains by appropriate specialists;
- illustrative material including maps, plans, sections, drawings, photographs, as necessary;
- as an appendix, a list of archaeological contexts, with summary descriptions of each.

2.3.3.3 The report will include a location plan of the site, tied into the Ordnance Survey National Grid and at an appropriate scale. The report will also include a plan at an appropriate scale showing the location of the open area excavation within the overall site.

2.3.3.4 The report will include a statement regarding the location of the Site Archive at the time of writing, and the intended depository of the Site Archive.

2.3.3.5 The Historic Environment Section of Newcastle City Council supports the '**O**nline **A**cces**S** to the **I**ndex of archaeological investigation**S**' (OASIS) project. Therefore, the existing OASIS entry would be updated and the reference number included in the introductory section of the report.

2.3.3.6 Copies of the Assessment Report will be sent to all project Stakeholders. The Tyne and Wear Historic Environment Record (HER) requires a copy in electronic (pdf) format on CD, in addition to hardcopy. Gateshead Council requires a copy in electronic (pdf) format on CD.

2.4 Stages, Products and Tasks

2.4.1 The table below shows how the project will proceed up to Review Point R3. Estimated dates for completion of key stages are included. These are subject to revision.

2.4.2 Any Updated Project Designs will detail additional stages of the project through to Closure.

Stage	Research Products	Archive Products	Dissemination Products
Start-up	Project Proposal	UCA DBA	UCA DBA
Review Point R1: Have clear Aims and Objectives been established? **Yes, through discussion with the Tyne and Wear Archaeology Officer and Prospect Archaeology.**			
Initiation	Phase 1; Newcastle City Council Specification for evaluation. Site access agreed Phase 2: PCA Project Design Site access agreed	Project Management Archive created Archive repository identified	Communications with Stakeholders (including the Tyne and Wear Archaeology Officer being notified of the start dates of both phases of evaluation fieldwork)
Review Point R2: Is the Specification/Project Design achievable? Yes, through the undertaking of the fieldwork.			
Execution: Data Collection through Phase 1 of the field evaluation (19 July–10 August 2010) Data Collection through Phase 2 of the field evaluation (1 –10 September 2010)	 Draft Evaluation Report Final Evaluation Report Updated Project Design	 Site Archive established Site Archive enhanced	 OASIS entry created Evaluation Report circulated
Review Point R3: Does evaluation justify further fieldwork? Notified by the Tyne and Wear Archaeology Officer that further work is required			
Execution Stage 3: Data Collection through open area excavation Assessment of potential	Project Design for archaeological excavation Assessment Report Updated Project Design reflects Assessment Report	Site Archive updated	OASIS entry updated Report drafted Dissemination plan drafted

2.5 Ownership

2.5.1 The finds (*i.e.* the artefactual and palaeoenvironmental material) recovered by archaeological fieldwork contribute data of immeasurable academic worth towards the Site and Research Archive, but the bulk of the material is of little or no financial value. In this instance, the legal owner of the site, and consequently the owner of any material that is recovered during the course of the archaeological project, agrees to donate all finds to Tyne and Wear Museums and Archives as part of the Site Archive.

2.5.2 PCA is committed to respecting the intellectual property rights of its staff and others.

2.6 Budget

2.6.1 The Client has been provided with and agreed a fee proposal for the undertaking of the open area excavation and compilation of the Assessment Report.

P C A

PCA SOUTHERN
UNIT 54
BROCKLEY CROSS BUSINESS CENTRE
96 ENDWELL ROAD
BROCKLEY
LONDON SE4 2PD
TEL: 020 7732 3925 / 020 7639 9091
FAX: 020 7639 9588
EMAIL: info@pre-construct.com

PCA NORTHERN
UNIT 19A
TURSDALE BUSINESS PARK
DURHAM DH6 5PG
TEL: 0191 377 1111
FAX: 0191 377 0101
EMAIL: info.north@pre-construct.com

PCA CENTRAL
7 GRANTA TERRACE
STAPLEFORD
CAMBRIDGESHIRE CB22 5DL
TEL: 01223 845 522
FAX: 01223 845 522
EMAIL: mhinman@pre-construct.com