



# **SHARLSTON COLLIERY RECLAMATION SITE, NEW SHARLSTON, West Yorkshire**

## **Final Report**



**Oxford Archaeology North**

February 2013

**UK Coal Mining Ltd**

Issue No: 2012-13/1363

OA North Job No: L10136

NGR: SE 3834 2024

**Document Title:** SHARLSTON COLLIERY RECLAMATION SITE, NEW  
SHARLSTON, WEST YORKSHIRE

**Document Type:** Final Report

**Client Name:** UK Coal Mining Ltd

**Issue Number:** 2012-13/1363

**OA Job Number:** L10136

**National Grid Reference:** SE 3834 2024

**Prepared by:** Richard Gregory  
**Position:** Senior Project Manager  
**Date:** December 2012

**Approved by:** Rachel Newman  
**Position:** Senior Executive Officer:  
Research and Publication  
**Date:** February 2013

Signed 

**Oxford Archaeology North**

Mill 3  
Moor Lane Mills  
Moor Lane  
Lancaster  
LA1 1QD  
t: (0044) 01524 541000  
f: (0044) 01524 848606

w: [www.oxfordarch.co.uk](http://www.oxfordarch.co.uk)  
e: [info@oxfordarch.co.uk](mailto:info@oxfordarch.co.uk)

**© Oxford Archaeology Ltd (2013)**

Janus House  
Osney Mead  
Oxford  
OX2 0EA  
t: (0044) 01865 263800  
f: (0044) 01865 793496

Oxford Archaeology Limited is a Registered Charity No: 285627

**Disclaimer:**

*This document has been prepared for the titled project or named part thereof and should not be relied upon or used for any other project without an independent check being carried out as to its suitability and prior written authority of Oxford Archaeology being obtained. Oxford Archaeology accepts no responsibility or liability for the consequences of this document being used for a purpose other than the purposes for which it was commissioned. Any person/party using or relying on the document for such other purposes agrees, and will by such use or reliance be taken to confirm their agreement to indemnify Oxford Archaeology for all loss or damage resulting therefrom. Oxford Archaeology accepts no responsibility or liability for this document to any party other than the person/party by whom it was commissioned.*

---

## CONTENTS

---

<b>SUMMARY</b> .....	<b>4</b>
<b>ACKNOWLEDGEMENTS</b> .....	<b>5</b>
<b>1. INTRODUCTION</b> .....	<b>6</b>
1.1 Project Background.....	6
<b>2. BACKGROUND</b> .....	<b>7</b>
2.1 Site Location, Topography, and Geology .....	7
2.2 Historical Background I: The West Yorkshire Coalfield.....	7
2.3 Historical Background II: Coalmining at Sharlston.....	10
<b>3. ARCHAEOLOGICAL INVESTIGATION</b> .....	<b>20</b>
3.1 Principal Aims and Objectives .....	20
3.2 Open-area Excavation .....	20
3.3 Watching Brief.....	31
<b>4. THE FINDS</b> .....	<b>36</b>
4.1 Introduction .....	36
4.2 Post-medieval Pottery .....	36
4.3 Ceramic and Non-ceramic Building Material.....	38
4.4 Clay Tobacco Pipes.....	38
4.5 Iron Objects .....	39
4.6 Glass.....	39
4.7 Industrial Residues.....	39
4.8 Wood.....	40
<b>5. DISCUSSION</b> .....	<b>42</b>
<b>6. THE ARCHIVE</b> .....	<b>47</b>
<b>7. REFERENCES</b> .....	<b>48</b>
7.1 Cartographic Sources .....	48
7.2 Secondary Sources .....	48
<b>APPENDIX 1: PROJECT BRIEF</b> .....	<b>51</b>
<b>APPENDIX 2: SUMMARY CONTEXT LIST</b> .....	<b>52</b>
<b>APPENDIX 3: FINDS CATALOGUE</b> .....	<b>56</b>
<b>APPENDIX 4: REASSESSMENT OF THE CAST-IRON PLATES</b> .....	<b>63</b>
<b>ILLUSTRATIONS</b> .....	<b>65</b>
List of Figures .....	65

## LIST OF PLATES

Plate 1: Extract from 1823/4 Badsworth Hunt map, showing the Sharlston Colliery, the open-area excavation site being highlighted in red.....	12
Plate 2: Extract from the 1837 township plan, the open-area excavation site being denoted as ‘New Engine’ .....	13
Plate 3: Extract from the 1849 OS 6 inch to 1 mile map, the open-area excavation site being denoted as ‘Old Coal Pit’ .....	14
Plate 4: Extract from Greaves’s 1861 plan, showing the above- and below-ground form of the open-area excavation site.....	15
Plate 5: Extract from the 1849 OS 6 inch to 1 mile map, with the locations of the pit-shafts, mineral railway, and ‘old workings’ highlighted, as derived from Greaves’ 1861 plans of the Lower Bed (Sharlston Low Seam).....	16
Plate 6: Extract from the 1849 OS 6 inch to 1 mile map, with the locations of the pit-shafts, mineral railway, and ‘old workings’ highlighted, as derived from Greaves’ 1861 plans of the Upper Bed (Sharlston Top Seam).....	17
Plate 7: Extract from Greaves’ 1861 plans of the Lower Bed, showing the arrangement of the below-ground workings in the vicinity of the ‘Old Engine Pit’.....	18
Plate 8: Extract from the 1906 1:2500 OS map, showing New Sharlston Quarry, the area of the open-area excavation being to the north, denoted as ‘Old Shafts’.....	19
Plate 9: Pit-shaft 2, as exposed during the watching brief.....	22
Plate 10: Post <b>251</b> and timber arrangement <b>220</b> , looking north.....	23
Plate 11: A whim-gin.....	24
Plate 12: The engine setting within engine house <b>131</b> , looking east.....	25
Plate 13: Structure <b>171</b> , looking west towards Pit-shaft 1 .....	26
Plate 14: The remains of the boiler house, including platform <b>127</b> , surface <b>128</b> , and wall <b>150</b> , looking north-east .....	27
Plate 15: Setting <b>239</b> , looking north.....	28
Plate 16: East-facing elevation of wall <b>132</b> .....	29
Plate 17: Wall <b>132</b> , butted by wall <b>122</b> , looking west.....	30
Plate 18: Building <b>140</b> , looking south-east.....	31
Plate 19: Bord-and-pillar workings uncovered in Area C1 .....	32
Plate 20: Line of depressions in Area C, marking the position of pit props.....	34

Plate 21: Unlined ventilation shaft uncovered in Area C ..... 35  
Plate 22: The Yorkshire ‘narrow-work’ system..... 43

**LIST OF TABLES**

Table 1: Nomenclature, depth, and thickness of the main coal seams at Sharlston..... 7  
Table 2: Quantitative record of the artefactual remains ..... 36  
Table 3: Distribution of pottery between contexts..... 37  
Table 4: Details of timbers recovered during the open-area excavation ..... 41  
Table 5: Details of timbers recovered during the watching brief..... 41

---

## SUMMARY

---

Oxford Archaeology North was commissioned by UK Coal Mining Ltd to undertake a programme of archaeological investigation at Sharlston Colliery Reclamation Site, New Sharlston, West Yorkshire (centred on SE 3834 2024). This work was undertaken between April 2007 and February 2009 and was designed to mitigate the impact of opencast coal extraction on potential archaeological remains. It followed the requirements outlined in a project brief, prepared by the West Yorkshire Archaeology Advisory Service. The programme of investigation included open-area excavation at the site of an early nineteenth-century pit-head, and an archaeological watching brief over areas of known historical coal working that would be subject to opencast extraction.

The open-area excavation identified regionally significant structural remains dating from the late 1820s to the late 1860s. These included two adjacent pit-shafts, providing access to the Sharlston Top and Sharlston Low seams; a timber whim-gin; a winding engine, which might have been driven by a Newcomen-type beam engine; a boiler house, potentially associated with two egg-ended boilers; and several additional structures, including the putative base for coal-grading screens and the remains of a drying room, store, or workshop. In addition, later remains were also present, which related to the gradual decline and eventual abandonment of the pit-head during the later nineteenth and twentieth centuries.

Similarly, the watching brief also identified regionally significant below-ground remains relating to late eighteenth- and early nineteenth-century coal extraction. These specifically related to the workings of the Sharlston Top seam, and included pillar-and-stall workings, and also evidence for underground haulage, ventilation, and a variety of timber pit props.

Following the completion of the fieldwork, post-excavation assessment was undertaken, which examined the results of the excavation, and assessed the potential for further analysis of each category of data with regard to the project's research aims. The results obtained from this assessment concluded that the dataset had some potential for further analysis and this, in turn, led to recommendations for a further phase of post-excavation work. This report represents the outcome of these recommendations and presents the final results of the archaeological investigation undertaken at Sharlston Colliery. This report will form the basis for an academic article, which will be submitted to the journal, *British Mining Memoirs*.

## ACKNOWLEDGEMENTS

---

Oxford Archaeology North (OA North) would like to thank UK Coal Mining Ltd for commissioning the project. Thanks are also due to Andrea Burgess and Jason Dodd of the West Yorkshire Archaeology Advisory Service, and Helen Gomersall, former Senior Archaeological Adviser for West Yorkshire. OA North is also grateful to Michelle Ball, Anton Fix, and Graeme Hindmarsh of UK Coal Mining Ltd, for their individual efforts during the project. In addition, OA North would like to thank John Goodchild for his invaluable assistance with historical and cartographic information, and Jennifer Jones, Conservator, Durham University, for her invaluable comments.

Alison Plummer was responsible for overall project management. The excavation was directed by Chris Healey and Sean McPhillips, who were assisted by Alex Beben, Thomas Mace, and Chris Ridings, whilst the site was surveyed by Caroline Bulcock and Marc Storey. The watching brief was undertaken by Sean McPhillips. With regard to the artefacts, analysis of the pottery and wood was by Christine Howard-Davis, whilst analysis of the clay tobacco pipe, glass, metalwork, industrial residues, and building material was undertaken by Sean McPhillips. In addition, Roderick Mackenzie undertook specialist assessment of the ferrous plates. The report was written by Richard Gregory and the drawings were produced by Anne Stewardson and Adam Parsons.

---

## 1. INTRODUCTION

---

### 1.1 PROJECT BACKGROUND

- 1.1.1 In July 2007, the West Yorkshire Archaeology Advisory Service (WYAAS) issued a brief for a programme of archaeological investigation at Sharlston Colliery Reclamation Site, New Sharlston, West Yorkshire (centred on SE 3834 2024; Fig 1). This brief was prepared on behalf of Wakefield Metropolitan District Council, at the request of UK Coal Mining Ltd, and outlined specifications for a scheme of archaeological work designed to mitigate the impact of opencast coal extraction on potential archaeological remains found at this reclamation site (*Appendix 1*). More specifically, this work was designed to examine those below-ground archaeological remains relating to potential eighteenth- and early nineteenth-century coal mining, which had been initially identified during an archaeological desk-based assessment, that formed part of an Environmental Impact Statement for the site (May 2004).
- 1.1.2 Subsequently, Oxford Archaeology North (OA North) was commissioned by UK Coal Mining Ltd to undertake this work which, in line with the WYAAS brief, entailed targeted open-area excavation at the site of an early nineteenth-century pit-head, and an archaeological watching brief over three areas that were subject to opencast extraction (Fig 1).
- 1.1.3 Following the completion of the fieldwork, an assessment was undertaken of the resultant site archive, following guidelines and recommendations found in the project brief (*Appendix 1*) and within English Heritage's (1991) *Management of Archaeological Projects (MAP 2)*. This resulted in the production of a post-excavation assessment report (OA North 2010). This briefly presented the results of the open-area excavation and watching brief, and included a series of specialist assessment reports, detailing the significance and potential of the artefacts recovered during the course of the excavations. It also contained a statement of the archaeological potential of the site archive, in terms of national, regional and local research priorities. This was then followed by recommendations for a further phase of post-excavation work, which were based on a series of revised research aims and objectives. An associated method statement was then presented, outlining the scope of work which would be required to fulfil these objectives (*op cit*, 84-7). Finally, the post-excavation assessment report recommended that the results of the excavation, and the additional phase of post-excavation work, should be disseminated in the form of an academic publication, and that, once completed, the archive should be deposited with Wakefield Museum.
- 1.1.4 This report represents the outcome of these recommendations and details the final results of the archaeological investigation undertaken at Sharlston Colliery Reclamation Site. In addition, this report forms the basis for an academic article, which will be submitted to the journal, *British Mining Memoirs*.



---

## 2. BACKGROUND

---

### 2.1 SITE LOCATION, TOPOGRAPHY, AND GEOLOGY

2.1.1 The Sharlston Colliery Reclamation Site is located at New Sharlston, in the Wakefield District of West Yorkshire (Fig 1). The site lies at *c* 64m above Ordnance Datum (aOD) and is situated within a gently undulating landscape (Countryside Commission 1998, 97). Significantly, this landscape, including the Sharlston Colliery Reclamation Site, is covered by numerous spoil tips, which form a visual legacy of twentieth-century coal mining, which, prior to the late 1980s, formed the dominant industry within this region (*ibid*).

2.1.2 Geologically, the site, as mapped by the British Geological Survey (Sheet 78; Lake 1999), lies within the Pennine Middle Coal Measure Formation, dating to the Carboniferous period. This geological formation is composed of mudstone, siltstone, and sandstone, and it also contains a number of workable coal seams, with additional fireclay deposits, found at various depths (Table 1).

Height above OD 64m, Dip of Strata 1 in 40		
Seam	Approximate Depth	Approximate Thickness
Shafton	17m	0.3m
Sharlston Top	53m	0.9m
Sharlston Muck	64m	0.4m
Sharlston Low	69m	0.9m
Sharlston Yard	95m	0.9m
Scale	288m	0.9m
Stanley Main	306m	1m
Haigh Moor	464m	1.3m (banded)

*Table 1: Nomenclature, depth, and thickness of the main coal seams found at Sharlston (information derived from Goodchild 1988; Lake 1999)*

2.1.3 Historically, most of the workable coal at Sharlston was used in manufacturing and for household purposes (Boulton 1910). However, some of the seams were also suitable for more specialist uses, such as gas-making, powering locomotives and bunkering steam vessels, and also for coking purposes (*ibid*).

### 2.2 HISTORICAL BACKGROUND I: THE WEST YORKSHIRE COALFIELD

2.2.1 The West Yorkshire Coalfield forms a continuous geological feature, stretching from Leeds to Denby Dale in Kirklees, which underlies the Wakefield area (Galloway 1898, 26). It has been argued that within this coalfield the earliest

working may date to the Roman period, when coal was perhaps worked from the north-east corner of a large exposed coalfield at Garforth (Goodchild 2003, 8). However, more conclusive, documentary, evidence for early coal working dates to the thirteenth century, and this indicates that medieval exploitation of coal, through the digging of bell pits, was comparatively widespread across West Yorkshire (*ibid*; Galloway 1898, 33).

- 2.2.2 Within the Wakefield area, the first documentary evidence for the working of coal dates to the fourteenth century, when there are various references to coal, and its exploitation, contained within court rolls dating to this period (*op cit*, 59). For instance, a court roll dating to 1308 records that a licence was granted to ‘Richard the nailer’, to dig for coals in the greaveship of Hipperhome, whilst a slightly later court roll entry, dating to 1335, also gives reference to the exploitation of coal. However, in this latter instance, the entry details a fine imposed on Richard Gibson for the illegal extraction of coal (*ibid*). Indeed, the illegal working of coal appears to have become increasingly widespread at the beginning of the fifteenth century, as evinced by further references in the 1401 court rolls to the illegal digging and selling of coal (*op cit*, 76). During this period, monetary fines were also introduced, by the Wakefield Manorial Court, against those found digging coal pits across the public highway, in an attempt to curb illegal coal extraction (Thorpe 2009, 8).
- 2.2.3 Although coal was undoubtedly extracted during the medieval period, it was a burgeoning industry that was handicapped, in no small measure, by the poor, often seasonally impassable, system of medieval roads, which limited the distribution of coal solely to local markets (Gomersall 2005, 3). This was further compounded by monetary constraints, as it was not economically viable to transport coal any great distance from its point of extraction due to its bulk (*ibid*). As a result, early coal mining was a small-scale, unintensified, affair, which was largely undertaken as a means of supplying coal to those areas within the immediate vicinity of the coal workings (Thornes 1987, 34).
- 2.2.4 In the sixteenth century, the use of coal increased, particularly as a domestic source of fuel, and during this period Wakefield formed an important centre for the coal industry (Galloway 1898, 112). Indeed, this significance was certainly apparent to the great Tudor antiquarian John Leland, who visited the area in the 1530s, during one of his antiquarian tours of Northern Britain (Smith 1909). Leland makes explicit reference to the abundant veins of sea coal and the collieries within the area, and also the use of coal for domestic purposes (*ibid*). Furthermore, Leland observed several coal pits within an area lying between Wakefield and Pontefract, which roughly equates with the position of Sharlston (*ibid*).
- 2.2.5 Although the price of coal increased during the seventeenth century, coal extraction continued unabated within West Yorkshire, particularly as there was an increasing demand in the region for domestic coal, and for the use of coal by the glass, pottery, and brick-making industries (Thornes 1987, 34). At a national level, the demand for coal also encouraged numerous late seventeenth-century entrepreneurs to finance improvements in the waterways of the region, in order to transport coal more effectively, and also over greater distances than

had previously been possible (Gomersall 2005, 3). One of the more significant of these improvements was made by the Aire and Calder Navigation Company, which, by 1704, had made the Rivers Aire and Calder navigable, through the construction of a series of weirs and locks (*ibid*). This navigation allowed relatively easy access between Leeds, Wakefield, and the Humber Estuary, and enabled the West Yorkshire coal producers to access those markets in this area, and beyond (*ibid*). Furthermore, the West Yorkshire coal producers had a competitive advantage over their rivals in North-East England, as they were not subject to the same duties that were levied on the entrepreneurs operating in this area (*ibid*).

- 2.2.6 During the eighteenth century, the more general improvements in transport which characterised this period led to an expansion in the coal industry and, more specifically, an increase in the number of collieries in West Yorkshire (Goodchild 2003, 6). Further technological improvements were also to have a significant influence on the coal industry of the region. For instance, the demand for coal greatly increased, following the introduction of steam power and its widespread adoption within regional textile manufacturing during the latter decades of the eighteenth century (Giles and Goodall 1992). In addition, the burgeoning textile industry created an influx of labour which, in turn, led to an increasing demand for coal that was used for domestic heating and cooking (Thorpe 2009, 9).
- 2.2.7 Another important outcome of the harnessing of steam power, during the eighteenth century, was that it was used directly by the coal-extraction industries of the region. Importantly, steam power could be used to drive pumping engines, such as the Newcomen-type atmospheric steam engine, which allowed deeper, previously inaccessible, coal seams to be exploited, following the pumping of ground water (Gomersall 2005, 4). These deeper seams were also made more accessible, during this period, by the initial introduction of directed ventilation and, in the late eighteenth century, by the adoption of ventilation furnaces, which increased the flow of fresh air within the deepest pits (*ibid*).
- 2.2.8 The nineteenth century witnessed increasing exploitation of the deeper coal seams, which was partially driven by the need for good-quality coal, and which was assisted by the development of the railway network (Thorpe 2009, 9). Of particular significance was the opening of the Great Northern Railway in 1850 from Askern and Doncaster to Kings Cross, which allowed access to the large markets of London and South-East England (Goodchild 1988, 6). However, the nineteenth-century collieries across the region were not uniform, but ranged in scale and output. Some, for example, merely supplied coal to a single, local, textile mill, whilst others may have supplied a large town, or supplied coal for national or even international markets (Goodchild 2003, 6).
- 2.2.9 In the late nineteenth and early twentieth centuries, the demand for coal continued to increase, and this resulted in a concomitant increase in mining technology, allowing the deeper, previously inaccessible, seams to be exploited (Gomersall 2005, 9). During this period, the region contained approximately 100 coalmines of varying scales and complexity (*ibid*). However, during the

course of the twentieth century, the industry gradually declined. Initially, this involved the cessation of mining in the upland western borders of the West Yorkshire coalfield, which then culminated with the forced closure of the remaining collieries in the 1980s (Goodchild 2003, 10).

## 2.3 HISTORICAL BACKGROUND II: COALMINING AT SHARLSTON

- 2.3.1 ***Pre-eighteenth-century activity:*** prior to the eighteenth century, it appears that the Sharlston area was a convenient source of easily extractable coal, the earliest, documentary, evidence for coal extraction dating to the fourteenth century. This comprises Coroners' Rolls, dating to c 1342, which record the drowning of Margaret, wife of William de Foulby, within a coal pit at Sharlston (Goodchild 1988, 1). In addition, it is also documented that, during the late fourteenth century, a drain was dug in order to convey water from coalmines at Sharlston, by Richard de Wombwell, Prior of Nostell (*ibid*).
- 2.3.2 The coal extracted prior to the eighteenth century was undoubtedly derived from shallow workings, and direct evidence for these is found on Sharlston Common, to the south-east of the later Sharlston collieries, where bell pits, spoil heaps, hillocks, and retaining banks have been recorded, which are thought to date from the medieval period to the seventeenth century (WYSMR PRN 3831). Furthermore, place-name evidence for early coal working is also present within the Sharlston area. This relates to a fossilised medieval open-field system found immediately north-west of Sharlston Common, which is denoted as 'Coal Pitt Field' on a document dating to 1726, and also on the 1849 First Edition Ordnance Survey (OS) 6 inch to 1 mile map (Goodchild 1988, 1).
- 2.3.3 Documentary sources also enable the ownership of the medieval and post-medieval coal workings to be discerned. Initially, during the medieval period, the Sharlston coalpits were in the possession of Nostell Priory (*ibid*). However, following the Dissolution of the Monasteries, the land in Sharlston formerly owned by Nostell Priory was granted by the Crown, in 1558, to the Savoy Hospital, which, during the post-medieval period, leased it, and also the Sharlston coalpits, to the Stringer family (*op cit*, 2).
- 2.3.4 ***Eighteenth-century activity:*** in the early years of the eighteenth century the Savoy estates, including Sharlston and its coalpits, were forfeited to the Crown, but they were still, initially, leased to the Stringer family (*ibid*). However, in 1707, the lease passed into the hands of the Earl of Westmoreland, following the marriage of Katherine Stringer to Thomas, sixth Earl of Westmoreland (*op cit*, 4). Subsequently, the Earls of Westmoreland continued to work the Sharlston coals throughout the course of the eighteenth century (*ibid*).
- 2.3.5 It is known from documentary accounts that, by 1775, four pit-shafts were found at Sharlston, and it has been suggested that three of the pit-shafts probably worked the Sharlston Low and Sharlston Top seams (Table 1), whilst the fourth exploited the seam closer to the surface (Shafton seam) (*ibid*). It is also known that this colliery employed a steam-powered pumping engine, which was overhauled in 1798, utilised the pillar-and-stall method of working,

- and used horse-driven gins as a means of hauling coal to the surface (*op cit*, 4-5).
- 2.3.6 Documentary evidence indicates that, in 1775-6, three new pit-shafts were opened, two of which probably lay within the area denoted as ‘Coal Pit Field’ on an 1837 township plan of Sharlston (WYAS C559/52) and the 1849 First Edition OS 6 inch to 1 mile map (Goodchild 1988, 5). However, these pits were located some distance south of the area examined by the archaeological investigation. It is also clear from documentary accounts that the extent of coal working in the Sharlston area, during the latter part of the eighteenth century, was continually changing, particularly as, between 1797 and 1799, five, as opposed to seven, working pits are documented (*ibid*). Significantly, the large late eighteenth-century colliery does not appear to have taken advantage of the Aire and Calder Navigation, but instead confined its market to the local area, utilising two nearby turnpike roads for distribution purposes (*ibid*).
- 2.3.7 **Early-mid-nineteenth-century activity:** during the early nineteenth century, coal working in Sharlston was continued by the Earls of Westmoreland, who in 1819 had purchased the land from the Crown, although in 1841-6 the Sharlston collieries were briefly leased to the firm of Sharp, Barrowclough & Co (*op cit*, 2, 6).
- 2.3.8 Fortunately, the form and development of the workings during this period can be discerned, to some degree, from the early nineteenth-century cartographic sources. One of the earliest of the nineteenth-century maps is that showing the extent of the Badsworth Hunt, surveyed in 1823/4 (DAS DD/WN/A12/1), and this depicts ‘Sharlestone Colliery’, comprising four pit-shafts, which lay some distance south-west of the pit-head site examined by the archaeological excavation (Plate 1). To the north-east of ‘Sharlestone Colliery’, immediately to the north of a road which was later named High Street, the 1823/4 survey also plots the position of two pit-head buildings, one of which is denoted as ‘Engine’ (Plate 1). Moreover, it is possible, though by no means certain, that this was the engine documented in the latter part of the eighteenth century (*Section 2.3.5*). Significantly, this map does not depict the pit-shaft, or the associated buildings/structures, examined by the open-area excavation, which suggests that these features post-date 1823/4.
- 2.3.9 In 1837, a plan of the township of Sharlston (WYAS C559/52) was produced, which indicates that, by this date, the form of workings and associated structures had been substantially modified (Plate 2). These modifications included the abandonment of the ‘Sharlestone Colliery’ pit-shafts, which are not depicted on this map, and the creation of new surface features in the immediate vicinity of the engine, plotted on the earlier 1823/4 survey. Significantly, this engine is denoted as ‘Old Engine’ on the 1837 plan, whilst a ‘New Engine’ and two associated pit-shafts are shown to the north-east, which importantly fall within the area examined by the open-area excavation. Whilst it is clear from the cartographic sources that these latter workings, and the ‘New Engine’, were established between 1823/4 and 1837, it is possible that they were in fact established between 1823/4 and 1830, since an 1830 account (Goodchild 1988, 6) records an ‘old steam engine’, which was presumably the

‘Old Engine’ denoted on the township plan, and a second, more modern, engine in the adjoining field, which was probably the ‘New Engine’ depicted on the same 1837 plan. The 1830 account also indicates that coal was hauled to the surface by one of the engines (*ibid*).



Plate 1: Extract from the 1823/4 Badsworth Hunt map (DAS DD/WN/A12/1), showing the Sharlston Colliery, the open-area excavation site being highlighted in red

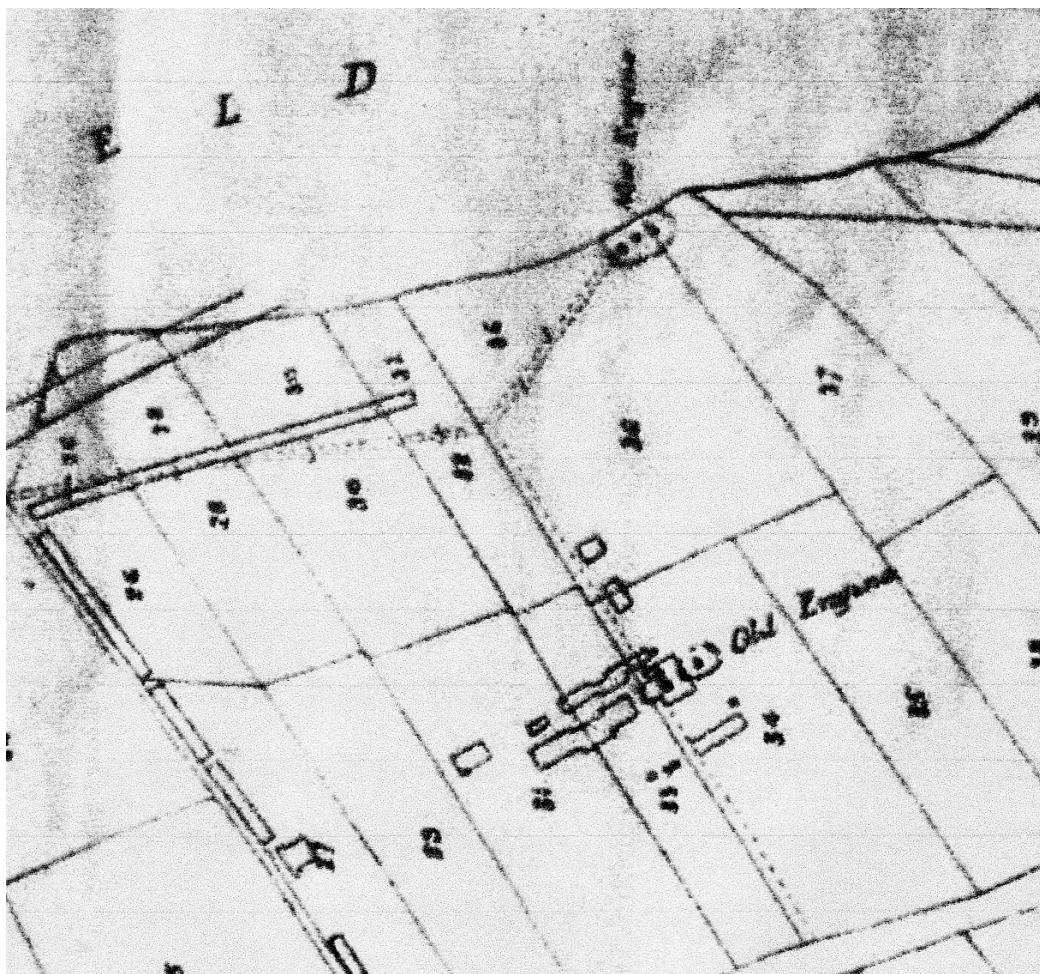


Plate 2: Extract from the 1837 township plan (WYAS C559/52), the open-area excavation site being denoted as 'New Engine'

2.3.10 Additional details of the early-mid-nineteenth-century workings at Sharlston can be discerned through reference to the OS First Edition 1849 6 inch to 1 mile map (Plate 3). This plots the position of 'Sharlston Colliery', which corresponds to the position of the 'Old Engine' plotted on the 1837 township plan. The 1849 map also denotes the site examined by the open-area excavation to the north-east. In contrast to the earlier, 1837, township plan, this site is denoted as 'Old Coal Pit' on the 1849 OS map, which also shows an L-shaped arrangement of buildings at this site, with a smaller building to the west, and a further building to the north-east.



Plate 3: Extract from the 1849 OS 6 inch to 1 mile map, the open-area excavation site being denoted as 'Old Coal Pit'

2.3.11 **Mid-late nineteenth-century activity:** in the early 1850s, Sharlston Colliery appears to have ceased production, for a number of years, after which it was then leased by the Earls of Westmoreland, in 1858, to Richard Pope (*op cit*, 6). Pope was already a successful West Riding colmaster who, although he seemingly took on the Sharlston lease to exploit the previously worked Sharlston Top and and Sharlston Low seams (*Section 2.3.17*), was more interested in exploiting the deeper seams found in this area (*op cit*, 9). In 1860, Pope took Edward Baines junior into partnership, and at a similar time new pit-shafts were sunk in order to reach the Sharlston Yard seam (*op cit*, 6, 9, 10). Further changes to the Sharlston Colliery firm occurred in 1865, when John Crossley & Sons Ltd bought a considerable share of the company, which was subsequently part owned by this limited company, Richard Pope, Edward Baines, and John Henderson, a successful carpet manufacturer, and coalmining and ironworking entrepreneur (*op cit*, 11-12).

2.3.12 John Crossley & Sons Ltd, who also took over the chief lease for the site, then financed a series of new sinkings, in order to exploit the deeper coal seams (*op*



*cit*, 10, 12). These sinkings, which eventually led to the complete abandonment of the older workings by 1868 (*Section 2.3.17*), including the pit-head examined by the open-area excavation, began in 1865, and aimed to reach the Scale and Stanley Main seams (*op cit*, 12). The pit-head of the late 1860s lay to the south-west of the ‘Old Engine Pit’ (*Section 2.3.19*) and was termed ‘New Sharlston Colliery’. During the late 1860s, it is also known that the pit-head was associated with a winding engine, boiler house, donkey-engine house, weighing house, and gasworks (*op cit*, 13).

2.3.13 Fortunately, an indication of the extent of the surface arrangement and below-ground workings of two of the more accessible Sharlston seams, during the 1860s, can be discerned from a set of plans which are now held in the John Goodchild Collection. These were originally produced by the mining engineer, J O Greaves, in 1861, though they contain details of the areas of coal won between 1859 and 1868. In terms of the surface arrangement of the colliery, these plans depict the area subjected to open-area excavation as containing two pits shafts, the more easterly of which is denoted as ‘Old Engine Pit’ (Plate 4). The shafts are contained within a rectangular structure that may represent a heapstead (pit-bank). Furthermore, this plan also plots the position of a rectangular structure immediately north of the pits, which probably formed an engine house, and, just beyond this, a boiler house, containing two boilers. Projecting from the eastern side of the boiler house, the plans also depict an additional compartment, whilst a separate small square building is plotted to the west.

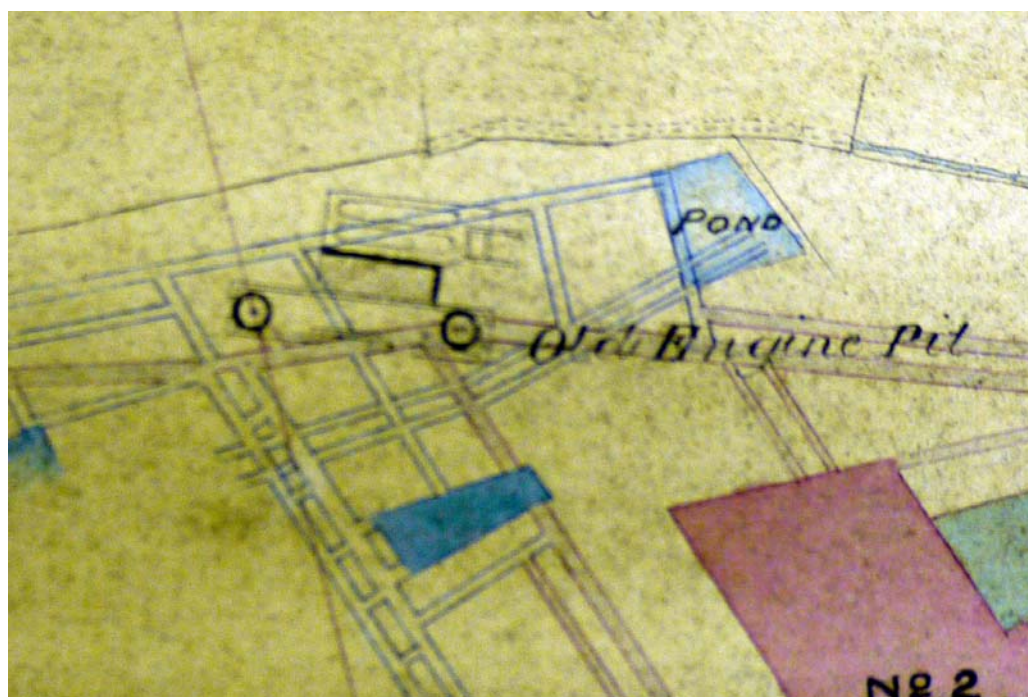


Plate 4: Extract from Greaves's 1861 plan, showing the above- and below-ground form of the open-area excavation site

2.3.14 To the south and south-east of the ‘Old Engine Pit’, the plans also plot several additional features. To the south, these include three shafts and a pit-head building in the area denoted as ‘Sharlston Colliery’ on the 1849 OS map. To the

south-east, the plans plot the position of ‘New Pit’, which, at surface level, consisted of two pits, and an adjacent building comprising two probable engine houses, adjoining a boiler house, containing a single boiler. It is also clear that this ‘pit’ was served by a mineral railway, which joined with the Pontefract and Goole Railway. The Upper Bed plans also plot the position of an ‘Air Pit’ to the west of the ‘Old Engine Pit’ (Plate 5).



Plate 5: Extract from the 1849 OS 6 inch to 1 mile map, with the locations of the pit-shafts, mineral railway, and ‘old workings’ highlighted, as derived from Greaves’ 1861 plans of the Lower Bed (Sharlston Low Seam)

2.3.15 With regard to the below-ground workings, Greaves’ plans depict those associated with the Sharlston Upper Bed, which probably represents the Sharlston Top seam, and the Sharlston Lower Bed, which may well equate with the Sharlston Low Seam, both of which are known to have been worked during the eighteenth and early part of the nineteenth centuries. The plans indicate that both of these seams could be reached by the ‘Old Engine Pit’, which was probably used for either pumping or winding, whilst the adjacent shaft was more likely used for ventilation. In contrast, it appears that ‘New Pit’ merely exploited a small portion of the deeper Sharlston Low seam, whilst the pit-shafts, within the area denoted as ‘Sharlston Colliery’ on the 1849 OS map (and as ‘Old Engine’ on the 1837 township map), appear to have allowed access to the Sharlston Top seam.

2.3.16 Significantly, Greaves’ 1861 plans plot the edges of several areas denoted as ‘old workings’, associated with both the Lower (Sharlston Low) and Upper (Sharlston Top) beds, and therefore provide some indication to the possible working areas exploited during the eighteenth and early nineteenth centuries. Those ‘old works’ associated with Sharlston Low seam were located in an area positioned immediately to the south-west of the ‘Old Engine Pit’ (Plate 5). Similarly, those associated with the Sharlston Top seam fell within a similar area, though they also include a large east/west-aligned swathe running across

the complete width of the area covered by the plans, which was accessed via the pit-shafts located within the area denoted as ‘Sharlston Colliery’ on the 1849 OS map (Plate 6).



Plate 6: Extract from the 1849 OS 6 inch to 1 mile map, with the locations of the pit-shafts, mineral railway, and ‘old workings’ highlighted, as derived from Greaves’ 1861 plans of the Upper Bed (Sharlston Top Seam)

2.3.17 Sandwiched between these areas of ‘old workings’, the plans also depict in some detail the workings which date between 1859 and 1868, which are presumably those undertaken by Pope, Baines, Henderson, and John Crossley & Sons Ltd. In terms of the method used to extract the coal, the 1859-68 workings within both seams are comparable, as both were laid out to the rise of the coal seam, and were structured by a series of double roadways dug through each seam (Plate 7). From these routes, both seams were then divided by single roadways into smaller compartments, or panels, measuring between *c* 20m and *c* 30m wide, from which the coal was progressively extracted. This type of working has many parallels with the system which prevailed in Lancashire during the mid-nineteenth century, applied to the extraction of thin coal seams, and was also relatively common in the Wakefield area during this period (Dunn 1852, 95-6; Cockin 1904, 164). A similar working arrangement, though on a smaller scale, also appears to have been practised at the ‘New Pit’.

2.3.18 In 1869, for financial reasons, it was proposed that the deeper Haigh Moor seam should be exploited, and sinkings to this seam were completed in 1871 (Goodchild 1988, 14, 17). By exploiting this seam, Sharlston became the deepest colliery in West Yorkshire, and it also employed an underground engine, which hauled coal from the Haigh Moor seam to the Stanley Main seam, after which it could then be hauled to the surface (*op cit*, 17).

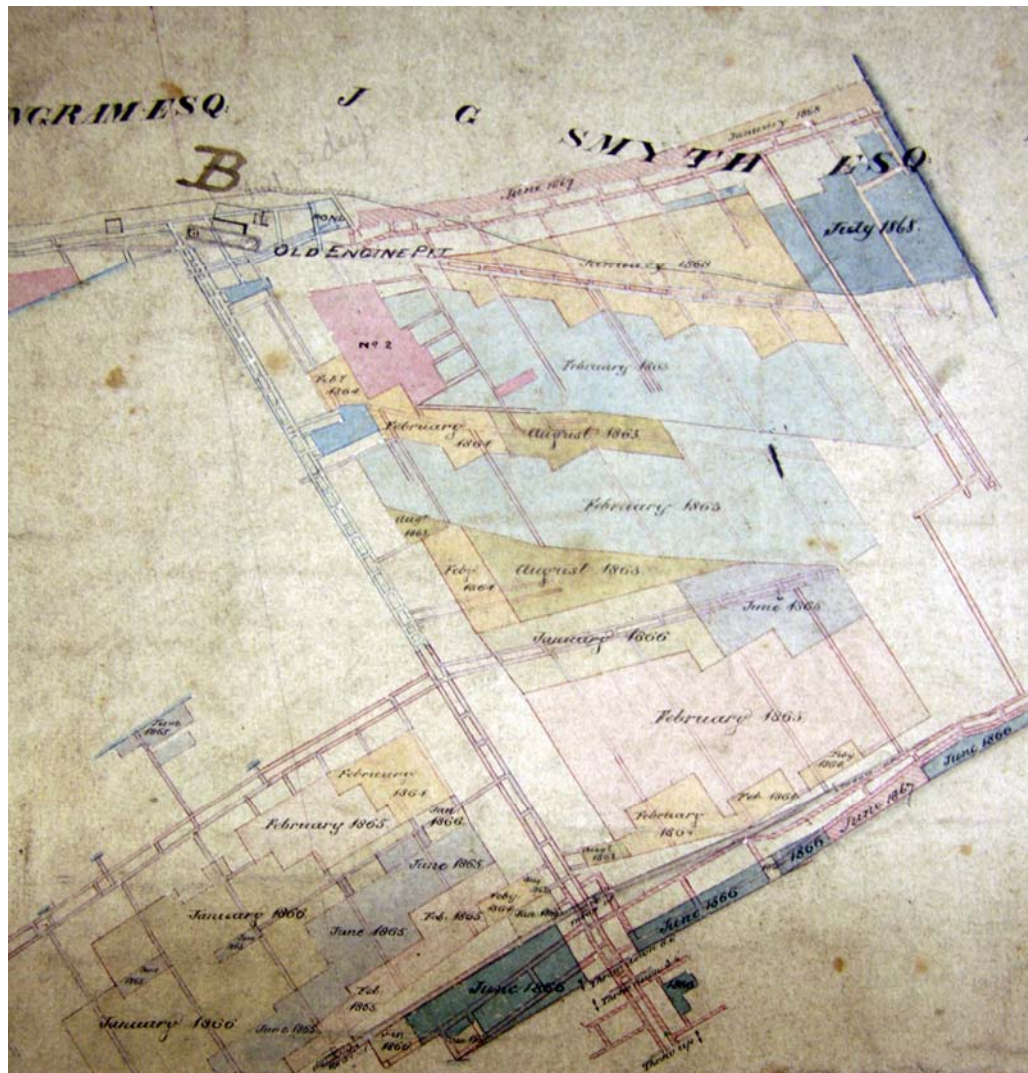


Plate 7: Extract from Greaves' 1861 plans of the Lower Bed, showing the arrangement of the below-ground workings in the vicinity of the 'Old Engine Pit'

2.3.19 In 1873, the Sharlston Colliery firm was sold to Frederick Perkins, George Harvey Jay, and James Frederick Walsh, who established the New Sharlston Collieries Co Ltd, which managed the Sharlston Colliery into the early part of the twentieth century (*op cit*, 30). The workings associated with the late nineteenth- and early twentieth-century colliery are denoted as 'New Sharlston Colliery' on OS mapping dating to this period (*eg* 1906 OS map; Plate 8), and these were confined to the area to the south-west of the open-area excavation, formerly occupied by the Sharlston Colliery, and to the west of 'New Pit', which, by the time of the OS 1892 1:2500 survey, had been abandoned. At surface level, the relevant OS mapping indicates that the late nineteenth-/early twentieth-century colliery consisted of two main pit-shafts, pit-head buildings, and was also served by a railway which represented an extension of that present in the 1860s that initially served 'New Pit' (*Section 2.3.14*). This colliery was in operation until 1991 (Northern Mines Research Society nd).

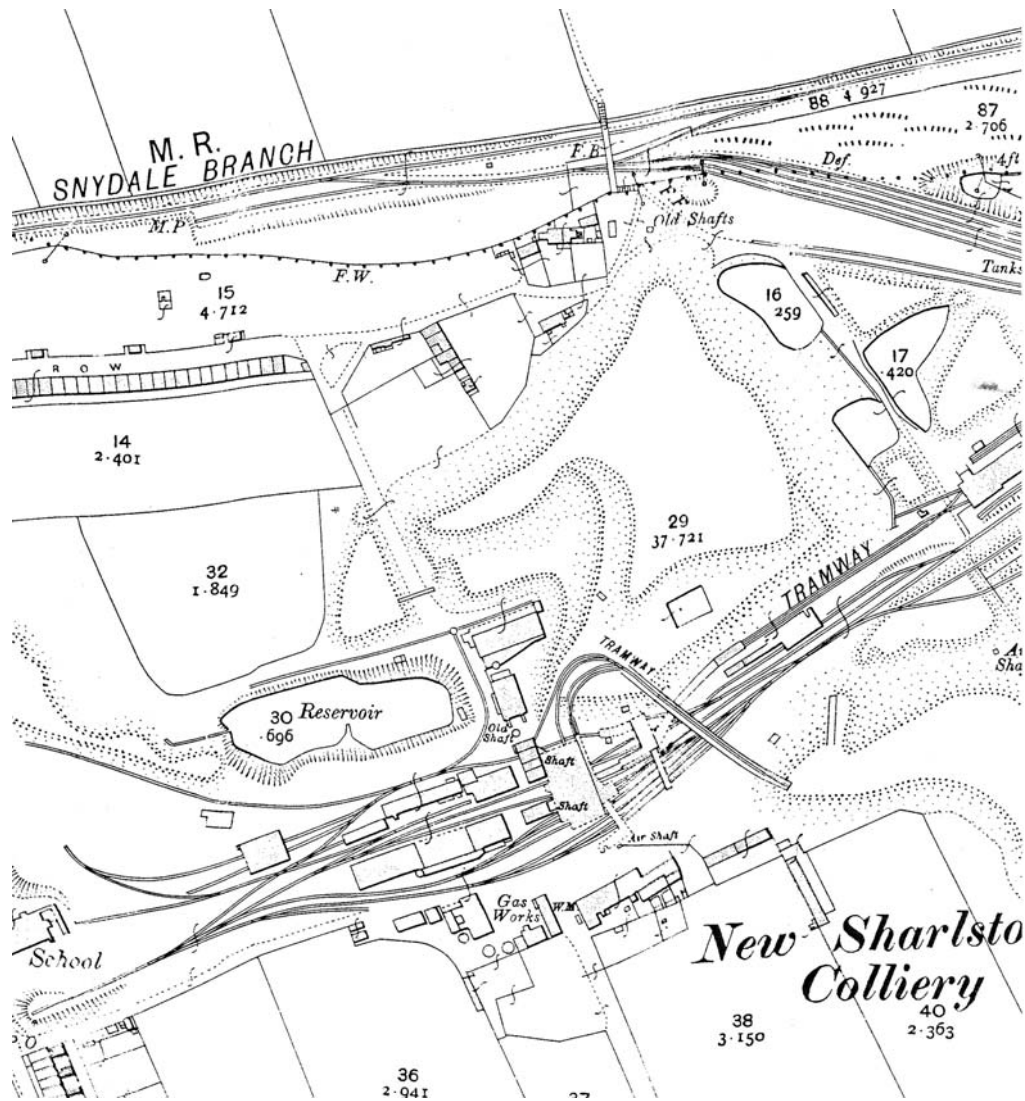


Plate 8: Extract from the 1906 1:2500 OS map, showing New Sharlston Quarry, the area examined by the open-area excavation being to the north, denoted as 'Old Shafts'

### 3. ARCHAEOLOGICAL INVESTIGATION

---

#### 3.1 PRINCIPAL AIMS AND OBJECTIVES

3.1.1 The archaeological investigation entailed an open-area excavation at the site of an early nineteenth-century pit-head, and an archaeological watching brief designed to record historical areas of coal working. The principal aims and objectives of the archaeological investigation followed those outlined in the WYAAS brief (*Appendix 1*). Therefore, in line with the brief, the principal objectives of both the open-excavation and watching brief were, firstly, to record and assess any archaeological remains identified within the areas of interest (Areas A-C; Fig 1). Following this, the principal aim was to place the results of the work within the public domain, by producing a full report for incorporation within the West Yorkshire Historic Environment Record (WYHER).

#### 3.2 OPEN-AREA EXCAVATION

3.2.1 The open-area excavation focused on that portion of Sharlston Colliery denoted as a 'New Engine' on the 1837 township map (*Section 2.3.9*), as 'Old Coal Pit' on the 1849 OS map (*Section 2.3.10*), and as 'Old Engine Pit' on Greaves' 1861 plans (*Section 2.3.13*). The excavation area measured 46.5m east/west, with a maximum north/south extent of *c* 30m, though the majority of the archaeological remains were confined to the southern portion of the open-area trench, which measured *c* 19.5m across (Fig 2).

3.2.2 The specific aims of the open-area excavation followed those outlined in the WYAAS brief. The excavation, therefore, aimed to obtain evidence relevant to certain historical methods of coal mining. In particular, the open-area excavation aimed to explore those historical methods utilised to:

- locate and excavate the coal seams;
- drain and ventilate the excavations;
- raise the excavated coal to the surface;
- prepare the coal for transport and removal from the site.

3.2.3 **Methodology:** initially a mechanical excavator, fitted with a toothless ditching bucket, removed the modern overburden/demolition debris from the area targeted for excavation. During the excavation phase, and in agreement with WYAAS, the same machine was also used to define carefully the extent of any surviving structural remains. Thereafter, all the archaeological remains were manually cleaned in order to define their extent, nature, form, and function.

3.2.4 The remains exposed during the excavation were recorded stratigraphically on *pro-forma* context sheets, and also on plans and, where relevant, on section drawings. These records were subject to regular inspection and approval by

WYAAS. A full and detailed photographic record of individual contexts was also produced, and, similarly, photographs of the overall site at all stages of the excavation were taken. Site photography employed 35mm cameras, loaded with black-and-white print film as well as colour transparency, and all frames included a visible, graduated, metric scale. Extensive use of digital photography was also undertaken throughout the course of the fieldwork, and several of these images have been used in this report.

- 3.2.5 The precise location of the excavation trench and the positions of all the archaeological structures were surveyed by EDM tachometry using a Total Station, linked to a pen computer data-logger. This process generated scaled plans within a CAD package, which were then subject to manual survey enhancement. The drawings were generated at an accuracy appropriate for a 1:20 scale. All survey data were also tied into the Ordnance Datum.
- 3.2.6 **Site Taphonomy and Phasing:** the open-area excavation examined two concrete-capped pit-shafts, probably dating to the early part of the nineteenth century, and it also exposed brick and stone early-mid-nineteenth-century structural remains, as well as evidence for a timber structure (Fig 2). These formed the remains of ancillary structures and buildings at the pit-head, the functions of some of which could be discerned through their character and morphology, and also through reference to the known cartographic and documentary evidence for the site. Some archaeological deposits were also identified, although these largely formed redeposited natural clay, upcast shales and other colliery waste, and demolition material. In addition to the archaeological deposits, the excavation also exposed several natural, geological, horizons. On the whole, these were yellowish-brown boulder clay, orange sandstone, grey clay, and separate deposits of grey and blue shale.
- 3.2.7 During the assessment phase, these remains and deposits were assigned to five broad phases of activity, encompassing the establishment, subsequent development, and decline of the nineteenth-century pit-head (OA North 2010). However, following a fuller consideration of the excavation remains, this scheme has been revised, and condensed to three broad phases of activity. In addition, the interpretation of several of the structures originally described in the assessment report has been revised, following a more detailed analysis of their form (a detailed list of excavated contexts can be found in *Appendix 2*).
- 3.2.8 **Phase 1 (late 1820s):** the earliest remains relate to the initial establishment of the pit-head, which might, based on the cartographic and documentary sources, date sometime between 1823/4 and 1830 (*Sections 2.3.8 and 2.3.9*). These remains comprised two pit-shafts and the partial evidence for a possible horse-powered winding engine.
- 3.2.9 **The Pit-Shafts:** the pit-shafts (1 and 2; Fig 2) were positioned on an east/west alignment and were spaced *c* 13.5m apart. Although both shafts had been capped by rectangular concrete at a later date, it is clear from the 1861 plan of the site (Plate 4) that originally they were circular in plan, and had similar-sized diameters. Moreover, this was confirmed by an archaeological watching brief undertaken during the removal of the concrete caps, as part of the opencast stripping of the site (*Section 3.3.1*). This stripping indicated that the shafts were

indeed circular with diameters in the region of 2.6m (*c* 8½ft), and were lined with brick (Plate 9). These comparatively small diameters are comparable to many of the pit-shafts dug in the Tyneside area in the early nineteenth century, which normally had diameters ranging between 8ft and 9ft (2.4m and 2.7m) and, as at Sharlston, were also dug in pairs (*cf* Galloway 1898, 389).



Plate 9: Pit-shaft 2, as exposed during the watching brief

3.2.10 *The Whim-Gin*: to the west of shaft 1, several *in situ* timbers and postholes were present, which might have formed the earliest structural remains at the pit-head, contemporary with the initial sinking of the shafts (Fig 2). These remains included an *in situ* upright circular post (251), with a diameter of *c* 0.3m, which was contained within a sub-circular postpit (245), with a diameter of *c* 0.9m and a depth of *c* 0.5m (Plate 10; Fig 3). This postpit also contained a large concentration of angular stones that had been packed around the buried base of the post. The post appeared to be largely unmodified, and was, in effect, an unconverted trunk, stripped of bark. The only modification noted was the removal of a large lateral branch (probably by sawing), and that the base of the trunk was flat (presumably also sawn, but too poorly preserved for this to be confirmed by the survival of toolmarks). Despite the poor condition of the wood, it was provisionally identified as elm (*Section 4.9*). Unfortunately, this timber was not suitable for tree-ring dating, due to its poor condition and also because the elm curve is limited and regionally variable (I Tyers *pers comm*).





Plate 10: Post 251 and timber arrangement 220, looking north

3.2.11 Surrounding the upright post, four *in situ* cut timbers, probably representing reused pit props, were discovered (Plate 10). These timbers were probably oak, though, as with the central post, none was suitable for tree-ring dating. They measured *c* 0.1m wide, had been set in a cross-shaped arrangement (220), and were associated with a timber stake (219; not illustrated), which lay across the northern end of one of the props. This arrangement had the upright post (251) directly at its centre and measured *c* 1.6m north/south by 1.3m east/west. In addition to the cut timbers, a small posthole (238) and two stakeholes (255) lay immediately south of the timber upright. Evidence for two further timber uprights was also present *c* 2m east of the *in situ* timber upright (251), in the form of two postholes (152 and 154) both with diameters of *c* 0.6m. These features were spaced *c* 1.5m apart, were between 0.6-0.8m deep, and had been packed with stone.

3.2.12 Although, as a discrete group, these features are difficult to interpret, it is quite possible that they formed elements of a whim-gin, which was perhaps employed to raise spoil/coal during the initial sinking of shaft 1. This type of horse-driven winder was utilised at many collieries from the seventeenth-century onwards and was set some distance back from the pit-shaft (Griffin 1971, 30; Galloway 1898, 178). These gins invariably consisted of a horizontal winding drum mounted on a vertical timber shaft, which was secured by a timber base and crossbeam, which itself was supported by vertical timber uprights (Plate 11). The vertical shaft and rope drum were driven by one or more horses attached to a timber horse arm, which was normally *c* 10m in length (Griffin 1971, 32). The construction of timber headgear, directly above the pit-shaft, was also essential to the working of the whim-gin, as this secured two pulleys, over which rope from the winding drum passed into the pit-shaft.

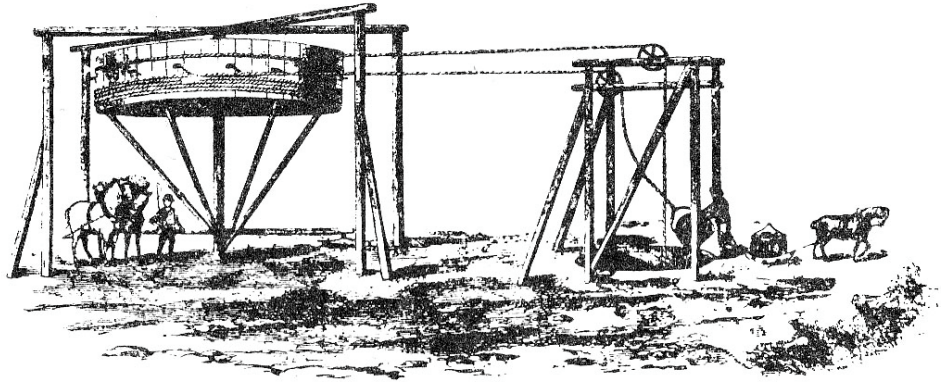


Plate 11: A whim-gin (reproduced from Galloway 1898, fig 6)

- 3.2.13 Given the known arrangement of these gins, one possibility is that the *in situ* timber upright (251) formed the eastern support for the crossbeam of the gin, with the winding drum lying to the west (cf Galloway 1898, fig 6; Plate 11). The upright for the crossbeam was, in turn, secured by the cross-shaped arrangement of timbers, and was perhaps given additional support from an angled timber post, the position of which was marked by posthole 238. If this was the case, the two postholes to the east (152 and 154) may well have formed elements of the timber headgear and perhaps secured two angled timbers, which provided additional support for those timber uprights positioned directly above shaft 1. Furthermore, these suspected timber uprights may well have been supported by two square brick piers (188 and 189) which were present on the western side of shaft 1.
- 3.2.14 **Phase 2 (late 1820s-pre-1861):** during Phase 2, several brick and stone structures were constructed which relate to the effective working of the early nineteenth-century pit-head, following the sinking of the two shafts, and dismantling of the timber whim-gin. These included a steam-powered winding engine and associated boiler house, and several additional buildings and structures.
- 3.2.15 **The Winding Engine:** the remains of an engine house (131; Fig 2) were positioned immediately north of the pit-shafts, and this was probably constructed immediately following the sinking of the shafts. It lay in a position which directly equates with a rectangular building depicted on Greaves' 1861 plans (Plate 4), and measured *c* 11.2 x 4m. It also shared its brick-built external wall (187) with an adjacent boiler house, located to its north. This wall was constructed of handmade bricks, measuring *c* 9 x 4¼ x 3 inches (*c* 0.23 x 0.11 x 0.08m), cemented with lime mortar, which had been laid in an English garden-wall bond, at a ratio of one course of headers to four stretcher-courses.
- 3.2.16 Within the interior of the engine house was the truncated setting for an engine, which drove a winding drum positioned to the south (Plate 12; Fig 2). The setting for the engine measured *c* 8.2 x 1.7m, was aligned east/west and survived as four *c* 0.4m-wide handmade brick plinths, which were two-courses (*c* 0.26m) high, and also two larger brick-and stone-built plinths, which were of comparable height. The larger of these features measured *c* 2.5 x 1.7m, and it

had a square socket on its southern side, whilst the smaller measured *c* 1.7m square, and lay at the centre of the building.



Plate 12: The engine setting within engine house 131, looking east

3.2.17 Given the form of the setting, it is likely that it represents the base of a beam engine. Furthermore, it is possible that the central plinth supported the engine's beam, though, given the relatively confined space within the engine room, this was perhaps supported by a north/south-aligned timber beam, which was tied into the walls of the engine house. Indeed, this arrangement, with the beam of the engine supported by a timber tie-beam, may have been a relatively common feature of early nineteenth-century winding engines, particularly as a comparable example is found adjacent to William pit, Whitehaven (*cf* Anderson 1967, 140-1). The relatively limited space within the engine room also implies that a flywheel was not present, but instead, the rod running down from the beam may well have been attached to a common crank, which directly rotated the adjacent winding drum. Given this arrangement, the engine's cylinder would then have been located at the eastern end of the plinth, and, given the width of the plinths, would have had a maximum diameter of 1.7m (66 inches). However, within the engine room, no evidence for a condenser was apparent, such as a condenser pit, and the only other feature identified was a ceramic drain. This drain ran parallel to the southern wall of the engine room for a

distance of *c* 7.5m, up to the western wall of the engine house. After this point, the course of this drain continued west across the excavated area.

- 3.2.18 At the eastern end of the engine house, bonded into its external wall, was also a small brick-built structure (**112**), measuring *c* 2.2 x 1.6m (Fig 2). The northern, eastern, and southern sides of this structure were all defined by a two course-thick handmade brick wall, constructed of bricks measuring *c* 8½ x 4¼ x 2½ inches (*c* 0.22 x 0.11 x 0.07m) bonded with lime mortar. Within the interior of this structure was a handmade brick floor and also a cast-iron pipe, raised above the floor level, which probably originally ran into the engine house and may either have delivered steam or water to the engine. However, the presence of a similar cast-iron pipe to the east, contained in a handmade brick housing (**109**) extending away from the boiler house, suggests that it probably delivered the latter.
- 3.2.19 The setting for a winding drum (Structure **171**), which was driven by the adjacent engine, was positioned immediately south of the engine house on the heapstead (Plate 13; Fig 2). The surviving remains included two parallel east/west-aligned walls (**200** and **202**), spaced *c* 1.7m apart, which would have supported the winding drum. Both walls measured *c* 7.4 x 1.1m and were constructed of a combination of stone and handmade bricks, measuring *c* 9 x 4¼ x 2½ inches (*c* 0.23 x 0.11 x 0.07m), bonded with lime mortar. In addition, two circular restraining bolt sockets were visible on the more northerly of the walls (**200**), whilst a single socket was evident on the southern wall (**202**). Positioned between the supporting walls for the winding drum was also a *c* 0.9m-wide infilled trench (**225**), which contained a ceramic drain.



Plate 13: Structure **171**, looking west toward Pit-Shaft 1

- 3.2.20 Although the winding drum lay directly adjacent to shaft 1, it is likely that it was used to draw coal from shaft 2, as the headgear would need to have been positioned some distance from the drum, which in this instance was probably positioned directly above the shaft. Tentative evidence for this was provided by a fragment of walling (**118**), built against the western side of the pit-shaft, which may have partially supported the timber headgear. This east/west-aligned wall was constructed of handmade bricks, measuring *c* 9 x 4¼ x 2½ inches (*c* 0.23 x 0.11 x 0.07m), bonded with lime mortar, and measured *c* 2.1 x 0.6m.
- 3.2.21 **The Boiler House:** the boiler house lay immediately north of the engine house and was undoubtedly of contemporaneous date (Plate 14; Fig 2). Its surviving remains included a platform (**127**), which formed the setting for the two adjacent east/west-aligned boilers depicted on the Greaves' 1861 plans (Plate 4). This platform was largely constructed of handmade bricks, which measured *c* 9 x 4¼ x 3 inches (*c* 0.23 x 0.11 x 0.08m), that were bonded with lime mortar, though its far southern side incorporated a *c* 1m-wide stone base. This base was composed of cut sandstone blocks, bonded with lime mortar, set above a silty-clay levelling layer (**177**; not illustrated). The platform measured *c* 12.4 x 6.9m, and two parallel brick-lined chambers (**158** and **159**) within its fabric denoted the positions of the two boilers. These chambers were set *c* 1.7m apart and both were aligned east/west, and measured *c* 1m wide. Both chambers were also subdivided by *c* 0.7m-wide handmade brick walls (**162** and **174**), which were identically positioned *c* 3.4m east of their eastern ends. The more northerly of the chambers (**158**) also contained a cast-iron plate (**166**), whilst, adjacent to the far-eastern end of the southern chamber, was an arcing section of wall (**150**). This wall, which appears to have supported the eastern end of the boiler, measured *c* 0.45m wide, stood to a height of *c* 1m, and was constructed of handmade bricks, measuring *c* 9 x 4¼ x 2½ inches (*c* 0.23 x 0.11 x 0.07m), bonded with lime mortar.



Plate 14: The remains of the boiler house, including platform **127**, surface **128**, and wall **150**, looking north-east

- 3.2.22 Immediately to the west of the platform (**127**) was a worn surface (**128**), heavily blackened with coal dust, which probably formed the stoking area for the boilers (Plate 14; Fig 2). This surface measured *c* 8.9 x 3.2 m, and was composed of handmade bricks measuring *c* 8½ x 4¼ x 2¾ inches (*c* 0.22 x 0.11 x 0.075m). A cast-iron plate, measuring 0.63m square, was also discovered, which had been set into this surface at its northern end, and it is possible that this feature acted as a pad for a timber or cast-iron upright support.
- 3.2.23 **Additional Buildings and Structures:** in addition to the winding engine and boiler house, several contemporary structures/features were present relating to the surface arrangements at the pit-head. One of these was positioned directly within the open-ended room/compartments attached to the eastern side of the boiler house, which is plotted on Greaves' 1861 plans (Plate 4), and represented by a small setting (**239**), measuring *c* 1.75 x 1.75m (Plate 15; Fig 2). This square setting was constructed of *c* 0.25m-thick sandstone slabs that contained a series of sockets, arranged around its edge. Fourteen of these sockets were circular in form, all with diameters of *c* 0.08m, whilst a larger square-cut socket, measuring 0.14m square, was positioned close to the north-eastern corner of the base.

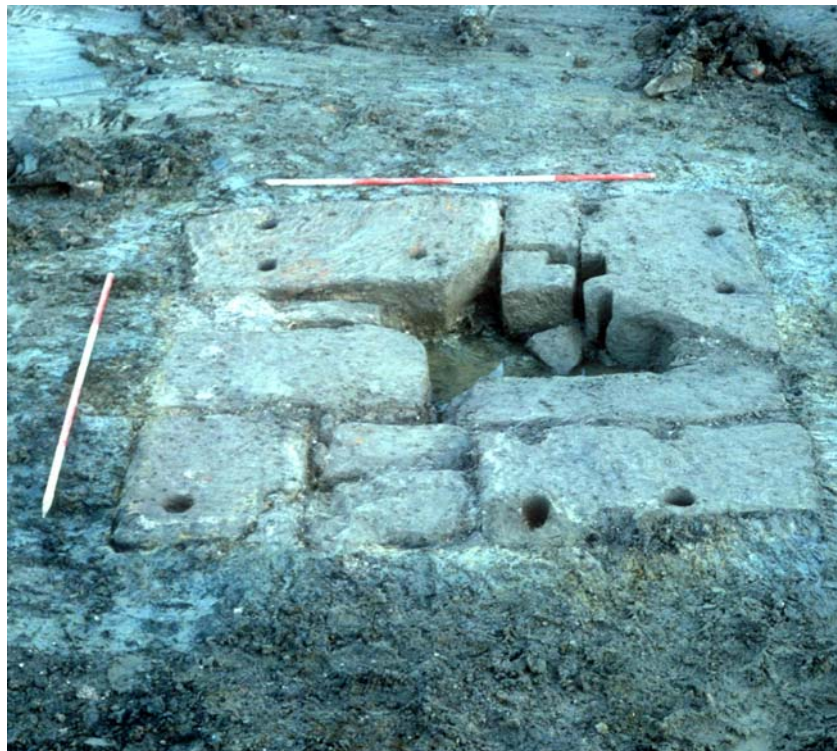


Plate 15: Setting **239**, looking north

- 3.2.24 A second structure (**146**) lay immediately east of shaft 2. This structure, although heavily disturbed, was defined by two east/west-aligned walls (**222** and **132**; Fig 2), spaced *c* 5.3m apart. The larger of these walls (**132**), was located to the south of Shaft 2 and measured *c* 1.9m wide, survived to a height of *c* 0.7m, and was constructed of roughly hewn sandstone blocks, which were bonded with a mid-red sand-based mortar (Plate 16). Similarly, the wall (**222**) to the north of the shaft was also constructed of mortar-bonded, roughly hewn,

sandstone blocks, though it was a narrower feature, measuring *c* 0.7m wide, which survived to a height of *c* 1.2m.



Plate 16: East-facing elevation of wall 132

3.2.25 In between walls 222 and 132, several additional walls were also present, forming further elements of the structure. These included a right-angled length of stone walling (226/223) linked to the southern side of wall 222, which measured *c* 0.7m wide and survived to a height of *c* 0.6m. This wall, in turn, was abutted by a north-south-aligned wall (122), which measured 1.7m wide and was composed of handmade bricks, measuring *c* 9¼ x 4¼ x 2½ inches (*c* 0.24 x 0.11 x 0.07m), bonded with lime mortar. This wall also butted wall 132 (Plate 17), and, immediately to its east, the remains of a possible flagstone floor were uncovered, whilst a 0.45m-wide culvert (221) led from the eastern side of the structure. This culvert was lined with handmade bricks, measuring *c* 9 x 4 x 2½ inches (*c* 0.23 x 0.1 x 0.07m), and had been capped with sandstone slabs. With regard to the function of this structure, it is likely that it at least defined the area of the heapstead where coal, once raised from shaft 2 in corves (baskets), was tipped ready for loading into carts, which could then be transported to the screens for grading. However, the presence of fairly substantial stone walls might indicate that these directly supported the cast-iron grading screens. If this was the case, perhaps, at Sharlston, coal was raised from shaft 2 and then tipped directly over the screens, separated into different sizes, and placed into separate carts. Further support for this suggestion is given by a discrete deposit of coal ash (257), which lay at the southern end of wall 132. This deposit may well represent fine coal or ‘duff’, which was an unsaleable by-product of the coal-screening process (Galloway 1898, 458-9).



Plate 17: Wall 132, butted by wall 122 (right-hand side), looking west

3.2.26 Another pit-head structure exposed by the excavation was a building (140) to the north-west of the shaft 1, which may have acted as either a drying room, store, or small workshop (Plate 18; Fig 2). Its positioning suggest that it was constructed following the dismantling of the timber whim-gin (Section 3.2.10), and it represents the small building depicted on the 1849 OS map and on Greaves' 1861 plans to the west of the pit-shafts, albeit being positioned by Greaves slightly erroneously. The building had a rectangular plan, measuring  $c$  9.3 x 5.2m, and was defined by an external two course-thick brick-built wall. This wall was composed of handmade bricks measuring  $c$   $8\frac{1}{2} \times 4\frac{1}{4} \times 2\frac{1}{2}$  inches ( $c$  0.22 x 0.11 x 0.07m), laid in an English garden-wall bond, at a ratio of one course of headers to four stretcher-courses, and had been set on four course-thick brick footings that were visible on the northern side of the building. The eastern wall was afforded additional support by a small handmade brick buttress (250). Within the interior of this building, close to its centre, a handmade brick pier (247) was discovered, measuring  $c$  0.7 x 0.8m, which had been set on a sandstone slab, and it is possible that this supported an upper storey. Extending north-east from this feature was also a 0.35m-wide brick-lined drain (252). Following the demolition of this building, two rectangular handmade brick-built piers (248 and 249), measuring  $c$  1.3 x 0.9m, were then constructed, one of which (249) lay directly over the demolished wall line of the building. Two similar piers (188 and 189) also lay to the south-east, which were positioned on the western side of shaft 1. However, as a group, the function of these structures is not particularly clear.





Plate 18: Building 140, looking south-east

- 3.2.27 The final pit-head features were located to the west and north of building 140. Positioned *c* 2.3m to the west, these included a degraded brick floor and a *c* 0.8m-square pier (142; Fig 2), which might represent contemporary features. Both were constructed of handmade bricks, measuring *c* 9 x 4 x 2½ inches (*c* 0.23 x 0.10 x 0.07m), and, in the case of the pier, these bricks were bonded with lime mortar. To the north, a 0.65m-wide, brick-lined culvert (208) was present, which had been set within an east/west-aligned channel (116), measuring *c* 0.5m wide and *c* 0.2m deep.
- 3.2.28 **Phase 3 (late nineteenth-early twentieth century):** the documentary evidence suggests that this pit-head was probably abandoned in the late 1860s, with the establishment of the New Sharlston Colliery pit-head to the south-west (Section 2.3.12). This abandonment appears to have entailed demolition of the earlier structures, as evinced by a rubble-rich demolition layer (104 and 213; not illustrated), which overlay the buildings and structures. Following demolition, two east/west aligned linear clay banks (110 and 114; not illustrated) were created in the northern and north-eastern parts of the site, whilst, to the south, two ceramic pipes were laid (225 and 227; not illustrated). During the twentieth century, the shafts were then capped with concrete, and a gas-monitoring inspection chamber (145; not illustrated) was constructed.

### 3.3 WATCHING BRIEF

- 3.3.1 A watching brief was maintained over three areas (Areas A-C; Fig 1), one of which (Area A) contained the pit-head that had been subjected to open-area excavation (Section 3.2). Within these three areas, the Shafton, Sharlston Top,

Sharlston Muck, and Sharlston Low coal seams (Table 1) were exposed and any evidence relating to historical coal mining was recorded, through the assistance of UK Coal Mining Ltd. However, as full regard was given to health and safety during the watching brief, access to the exposed workings was restricted.

3.3.2 **Historical coal working of the Sharlston Top Seam:** the most extensive evidence for historical coal working was present in Area C, being confined to the Sharlston Top seam, which lay at an approximate depth of 53m (Table 1). This evidence, in the main, comprised an extensive area of bord-and-pillar (more commonly known as pillar-and-stall) working (Griffin 1971), indicating this portion of the Sharlston Top seam was ‘worked in the whole’, perhaps during the late eighteenth and early nineteenth centuries (*Section 3.3.9*). Within this area, the edge of the historical workings could be determined, enclosing a working area measuring *c* 240 x 366m, and, within this area, detailed examination was possible at eight separate locations (Fig 4).

3.3.3 The largest and most coherent area of the historical workings was located in the western half of Area C, covering an area of *c* 190 x 175m (Area C1; Plate 19). In this area, the positions of two single roadways (headways) and one double roadway, were visible (Fig 4: a, b, and c), though these did not appear to traverse the complete length of the historical workings. These were aligned north-west/south-east, following the rise of the coal seam (rising in south-easterly direction), and were generally laid out in a straight course. The double roadway formed the most westerly of the headways (Fig 4: a) and it appeared to converge at its mid-point and then proceeded northwards as a single roadway. These headways, along which the extracted coal was transported, were spaced approximately 64m (70 yards) apart and ranged between *c* 3.9m (4 yards) and *c* 1.9m (2 yards) wide.



Plate 19: Bord-and-pillar workings uncovered in Area C1

- 3.3.4 In between, and set at right-angles to, the headways were the bords. The bords, from where the coal was originally extracted, followed the level of the coal seam and their width showed some slight variation, being between *c* 3.8m and 4.6m (4-5 yards) wide. Within the areas between the headways, the bords were defined and separated by pillars of coal, which supported the roof. Gaps between the pillars also allowed communication between the adjacent bords and presumably also aided ventilation (cross-holing), though it is possible that these cuttings represent ‘jenkins’ that were cut by the miners in order to rob the coal from the pillars (Griffin 1971, 47).
- 3.3.5 The pillars, some of which were pick marked, stood to a height of between *c* 0.85m and *c* 1m (*c* 1 yard) and, as with the bords, their width and length showed some variation. The width of the pillars ranged between 0.2m and 5.8m (*c* 0.2-6.3 yards), though the majority were in the region of 1.8m (*c* 2 yards) wide. Generally, the wider pillars were positioned adjacent to the headways, as there, thicker pillars would have been required in order to support the roadway (*cf* Phillips 1850, 6). Regarding the length of the pillars, the longest was *c* 40m, whilst the smaller measured a mere 2m.
- 3.3.6 To the south of the three headways, a further headway, 3.9m wide (4 yards), was also identified (Fig 4: d), though this had a slightly different alignment (north-north-west/south-south-east) to the headways located to the north-west. Consequently, the bords and pillars positioned immediately adjacent to this headway also had a slightly differing alignment from those to the north, though they were of similar dimensions. This appears therefore to represent a separate working area (Area C2), which was separated from that to the north-west by two substantial blocks of unworked coal, and was perhaps accessed from a different pit-shaft. To the west of this possible headway, several larger and more substantial pillars of coal were also present, implying that, in some areas, the roof of the mine required more support.
- 3.3.7 Other discrete areas of bord and pillar lay to the north and east (Fig 4: C3 and C4). However, these covered smaller areas, and, although the bords and pillars were spaced and aligned (north-east/south-west) in a similar manner to those found in the western half of Area C, no headways could be identified. Generally, the pillars in these areas were of similar size to those found in the western half of Area C, but several sizable pillars were also present, suggesting that the roof of the mine was less sound at these locations. In between the areas of bord and pillar, a large, irregular-shaped ‘blank’ area was also present (Fig 4: C5), with an apparent absence of bord-and-pillar working. It is possible that this represents a goaf (abandoned working), where the pillars of coal had either been removed, at some stage, as part of a scheme of ‘working in the broken’, or had naturally disintegrated, due to a process known as ‘thrust’ by nineteenth-century mining engineers (*cf* Dunn 1852, 81-2). This process effected weak and thin pillars, which were crushed and then ground into small pieces of coal following a fracture of the roof of the mine (*op cit*, 82).
- 3.3.8 Evidence for timber pit props was also revealed within all of the areas subjected to detailed scrutiny as part of the watching brief. This evidence comprised partially intact props, several of which were retained (*Section 4.9*), though none

were suitable for tree-ring dating. In addition, circular depressions in the floor of the mine also denoted the positions of the former props (Plate 20). The locations of the props indicated that they were positioned within the bords partially to support the roof of the mine, with the main weight carried on the adjacent pillars. Indeed, it is possible that these props were required as a result of cutting ‘jenkins’ through the pillars (*Section 3.3.4*).



*Plate 20: Line of depressions in Area C1 marking the position of pit props*

3.3.9 oning of the props varied, and presumably these differences accorded with the perceived condition of the mine’s roof. For instance, in one area (Area C1.10; Fig 5), where it was possible to examine the positions of the props in some detail, their close spacing (*c* 0.5m apart) within the bords suggested that there was a high risk of roof collapse in this section of the workings. Significantly, during the examination of this area, several features were discovered, which provide some indication of the transport of extracted coal, and also the possible date of the bord-and-pillar workings. These features included a timber railway sleeper (*Section 4.8.4*) and two parallel lengths of ferrous staining, suggesting that haulage of the coal along the double headway was via wheeled trams travelling on cast-iron railways. Beneath and adjacent to these tramways, several layers of unworked wood were also recorded. In terms of date, this type of below-ground haulage, along light cast-iron railways, was introduced in *c* 1790 by John Curr of Sheffield, and it replaced an earlier form of haulage along

wooden tracks, which was also introduced by John Curr in *c* 1776 (Galloway 1898, 322; Griffin 1971, 55). Given the chronological parameters, it is therefore conceivable that the bord-and-pillar workings were established in the last decade of the eighteenth century, and that the seam was then worked into the early decades of the nineteenth century. Furthermore, this would correspond to the documentary evidence that indicates that the Sharlston Top seam was exploited during these periods (*Sections 2.3.5 and 2.3.15*).

3.3.10 **Other mining features:** in addition to the bord-and-pillar workings, UK Coal Mining Ltd also surveyed the positions of 11 shafts within Area C (Fig 4). In the majority of cases, it was not particularly clear whether these shafts related to the bord-and-pillar workings recorded this area, or represented shafts dug at a later date to lower seams. One unlined shaft was, however, exposed, which appeared to provide ventilation to the Sharlston Low seam (Plate 21). One other feature recorded during the watching brief in Area C was a brick-lined tunnel, perhaps functioning as a sough, which appeared to be associated with the Sharlston Top workings (Fig 4).



*Plate 21: Unlined ventilation shaft uncovered in Area C*

## 4. THE FINDS

### 4.1 INTRODUCTION

4.1.1 Over the course of the fieldwork, a collection of artefacts was recovered from the excavated features, structures and deposits. The majority of the assemblage was made up of post-medieval pottery, whilst the rest comprised a range of other materials in lesser amounts (Table 2; *Appendix 3*).

Material Class	Date/Description	Total
Pottery	Seventeenth-twentieth century	259
Building material	Bricks	96
	Mortar	14
Clay tobacco pipe	Nineteenth century	14
Metalwork	Iron	33
Glass	Nineteenth century	9
Industrial residue	Iron slag	2
Organics	Wood	16
<b>Total</b>		<b>443</b>

*Table 2: Quantitative record of the artefactual remains*

### 4.2 POST-MEDIEVAL POTTERY

4.2.1 In all, some 259 fragments (9.557kg) of pottery were recovered, probably representing over 110 individual vessels. The pottery is in good condition, often in large fragments, although there is some iron-staining, probably a result of waterlogging. A range of fine tablewares and kitchenwares are represented, with one or two fragments of probably locally made slip-decorated redwares, and a range of industrially produced, refined, white earthenwares, many of them of Staffordshire origin, but others probably more locally produced. The distribution of pottery is shown in Table 3.

Context	Phase	No frags	Weight (g)
<b>101</b>	3	34	1918
<b>104</b>	3	48	2182
<b>106</b>	3	2	28
<b>108</b>	2	10	60
<b>111</b>	3	9	96
<b>120</b>	2	3	52
<b>121</b>	2	37	549
<b>137</b>	3	13	140
<b>141</b>	3	1	162
<b>146</b>	2	22	1368
<b>148</b>	2	2	110
<b>221</b>	1	2	8
<b>US</b>		76	2884
<b>Total</b>		<b>259</b>	<b>9557</b>

Table 3: Distribution of pottery between contexts

4.2.2 **Kitchenwares:** these are in the main utilitarian vessels which change little through time, and are therefore of little use in dating. Those from the site comprise mainly black-glazed and self-glazed redwares and stoneware storage vessels, including bottles and jars. Large, heavy bases amongst the redwares suggest the presence of pancheons and perhaps jugs, but otherwise there are no sherds diagnostic of form. There is also, however, a large fragment from a rectangular dish with simple slip-trailed decoration, which is likely to have been locally made, and a small fragment of a press-moulded dish with feathered slip-trailing. It is possible that these could be of eighteenth-century date, but small potteries in Yorkshire and elsewhere continued to produce such vessels throughout the nineteenth century (Barker 1993, 20).

4.2.3 Stoneware vessels include bottles in a range of sizes, and wide-mouthed and straight-sided jars, including one stamped HARTLEY on the base, and likely to have been a container for jam dating to the late nineteenth or early twentieth century. This jar was also stamped with LIVERPOOL, indicating its place of production. Other kitchenwares include a range of late industrial slipwares, mainly bowls, amongst them two examples with mocha-type decoration, which was used through the nineteenth century, continuing in production as late as 1939 (Rickard 2006, 56), and several sponge-decorated vessels. Others, including white earthenware bowls with blue horizontal stripes, are probably of local origin, being made in Castleford until the 1960s (see, for instance, the 1956 advertisement for Clokie and Sons ‘blue-hooped kitchenware’ illustrated at [www.twixtaireandcalder.org.uk](http://www.twixtaireandcalder.org.uk)).

4.2.4 **Tablewares:** these comprise mainly transfer-printed refined white earthenware teawares, and are of nineteenth-century and later date. Again these are mainly

of Staffordshire origin, but with an element of locally produced wares. The designs represented are predominantly ‘Willow pattern’, but ‘Asiatic pheasants’, extremely popular in the mid-nineteenth century (Coysh and Henrywood 1982, 29), is also present. One particular pattern, of small flowers in sprays of peacock feathers, appears on at least three vessels, two teacups and a saucer, and is present in a Phase 2 shale deposit (**108**), and Phase 2 bedding layers (**121** and **148**), suggesting that they were very closely linked. Whilst the majority of the transfer-printed earthenwares are printed in blue, fragments of rural scenes in brown (from Phase 3 rubble layers **101** and **104**), and floral patterns in green (from Phase 2 bedding layer **121**) and mauve (from Phase 2 shale deposit **108**) were also noted. Brown was first recorded in 1808 (Neale 2004, 142) but green was not introduced until the 1820s (*op cit*, 138), and mauve was not perfected until the 1830s (*op cit*, 140). Plain saucers with under-glaze painted red lines around the edge, and a saucer decorated in ‘Sea Leaf’ pattern, are most likely to be mid-later nineteenth-century Staffordshire products (Goodwin and Barker 2009).

- 4.2.5 **Conclusion:** although the group is of interest with regard to late activity on the site, it adds little to the dating or understanding of mining activity.

### 4.3 CERAMIC AND NON-CERAMIC BUILDING MATERIAL

- 4.3.1 In total, 96 bricks were retained for analysis, as well as 14 fragments of mortar derived from demolition rubble, and Phase 2 wall **120** (equivalent to wall **132**).
- 4.3.2 **Bricks:** the bricks include a variety of handmade wire-cut and cast-moulded examples of various sizes, which derived from pit-head buildings and structures dating to Phase 2.
- 4.3.3 **Mortar:** the use of mortar bonding varied greatly across the site. Typical varieties include a soft lime-based matrix, and a hard mid-red sand-based variety, with occasional lime and crushed mineral, which was derived from Phase 2 wall **120** (equivalent to wall **132**). In addition, a hard grey ash-based content was used within brick surface **228**.

### 4.4 CLAY TOBACCO PIPES

- 4.4.1 In total, 18 (four bowl and 11 stems) fragments of clay pipe were recovered from levelling, backfill, demolition material and overburden (*Appendix 3*). Analysis of the pipes was based solely on visual inspection of individual stems, and has been described using the terminology supplied by Oswald (1975).
- 4.4.2 **The assemblage:** of the fragments, 14 stems with various bore sizes are present, which generally date to the nineteenth century. These include short-heeled spurs, both plain and with scroll or rosette straps applied to the spur. These represent a style common in the early nineteenth century (Oswald 1975). The remaining bowl fragments include types with simple leaf-design decoration, and a large complete heeled bowl (from backfill **136/1039**) bearing a West Galway stamp, which dates to the late nineteenth century.



## 4.5 IRON OBJECTS

- 4.5.1 In total, 33 objects were recovered from demolition and overburden deposits. Apart from the fish-bellied rails, all objects were subjected to x-ray photography. For the most part, the material is in relatively poor condition, with many fragments encrusted with dense corrosion products, prohibiting visual identification. For this reason, 14 objects were unidentifiable.
- 4.5.2 **Miscellaneous objects:** the identifiable objects include several miscellaneous items that are pertinent to the lifetime of the colliery. These include washers, two large spanners, spikes, nails, and a bolt (*Appendix 3*).
- 4.5.3 **Cast-iron plates:** in addition to the miscellaneous objects, the assemblage includes five large ferrous plates. Four of these (**SF1-4**) were recovered from demolition deposits (**104** and **137**), whilst one (**SF5; 166**) was recovered from a demolition deposit contained in a brick-lined channel (**158**), associated with the boiler setting (**127; Section 3.2.21**).
- 4.5.4 The plates were originally identified as fish-bellied rails (OA North 2010) and, given this, a programme of analysis was recommended. Roderick Mackenzie, a suitably qualified ancient metallurgical specialist, with a specialist interest in nineteenth-century railways, was approached to undertake this analysis. However, on viewing the plates, he indicated that they had been misidentified and in fact represented cast-iron firebars derived from the boiler of a steam locomotive. Given that the plates were firebars, and not fish-bellied rails as originally suspected, the plates were therefore subjected to a second phase of assessment (*Appendix 4*). This assessment concluded that the firebars hold limited research potential and in consequence no further analysis was undertaken.

## 4.6 GLASS

- 4.6.1 In total, nine fragments of vessel and bottle glass, and a stirring rod, were recovered from demolition rubble (*Appendix 3*).
- 4.6.2 **The assemblage:** the bottles include two fragments from a dark green wine type, a clear milk bottle, green and blue hexagonal walled flasks, and a clear mineral bottle, bearing embossed text naming the manufacturer. The remaining fragments included a small vessel and a large hollow stirring rod. Collectively, the glass dates to the eighteenth/nineteenth century.

## 4.7 INDUSTRIAL RESIDUES

- 4.7.1 In total, two fragments of iron slag (weighing <100g) were recovered from demolition rubble (*Appendix 3*).
- 4.7.2 **The assemblage:** the high ferrous content suggests that the pieces derived from probable smithing activity, although the lack of other waste material suggests that evidence of iron working had been completely removed from the site.

## 4.8 WOOD

- 4.8.1 In total, 17 fragments of timber were recovered during the open-area excavation and watching brief. These included a single large post (**251**), and an arrangement of timbers (**220**) associated with the Phase 1 whim-gin. In addition, during the watching brief, several fragments were also recovered from coal workings (Area C) associated with the Sharlston Top. All fragments were individually recorded using the methodology recommended by Oxford Archaeology (2001).
- 4.8.2 **Wood recovered during the open-area excavation:** the assemblage included two stakes, a possible roof brace, a timber post (**251**) and an arrangement of reused pit props (**220**; Fig 6.1-4). These objects were probably associated with early-mid-nineteenth-century structures, and the post (**251**) and reused pit props (**220**), and one of stakes (**219**), formed part of the Phase 1 whim-gin (Table 4). None of these timbers was suitable for tree-ring dating.
- 4.8.3 The best-preserved large timber (**251**) measured *c* 0.8m in length, with a maximum diameter of *c* 0.3m, and was in poor condition, the outer surfaces being cracked and degraded, and the wood itself softened and powdery. It appeared to be largely unmodified, and was, in effect, an unconverted trunk, stripped of bark. The upper surface was crushed and fibrous, indicating that it had probably rotted *in situ* to ground level. The only modification noted was the removal of a large lateral branch (probably by sawing), and that the base of the trunk was flat (presumably also sawn, but now too poorly preserved for this to be confirmed by the survival of toolmarks). Despite the poor condition of the wood, it was provisionally identified as elm (Table 4).

Context	Description	Dimensions	Wood Type
<b>108</b>	Stake	L: 0.5m; W: 0.15m; T: 0.05m	<i>cf</i> Oak
<b>193</b>	Possible roof brace	L: 0.5m; W: 0.20m; T: 0.05m	Coniferous
<b>219 (SF6)</b>	Stake	L: 0.55m; W: 0.11m; T: 0.05m	Oak
<b>220 (SF7; Fig 6.1)</b>	Reused pit prop with a triangular profile, and a tapered point. Tool marks visible along its body and at its tapered end. Off-shoot stubs visible along its body	L: 1.28m; W: 0.05m; T: 0.04m	<i>cf</i> Oak
<b>220 (SF8; Fig 6.2)</b>	Reused pit prop with a triangular profile, and one squared-off end and an opposing tapered point. Tool marks visible along its body and at its tapered point	L: 1.33m; W: 0.08m; T: 0.06m	<i>cf</i> Oak
<b>220 (SF9; Fig 6.3)</b>	Reused pit prop with a triangular profile, and one squared-off end and an opposing tapered point. Tool marks visible at tapered end	L: 1.27m; W: 0.06m; T: 0.05m	<i>cf</i> Oak

<b>220 (SF10; Fig 6.4)</b>	Reused pit prop with a triangular profile. A section has been cut out of its mid-section (L: 0.17m; W: 0.02m; D: 0.01m). The prop has a tapered point, and tool marks are visible at that end	L: 1.60m; W: 0.10m; T: 0.05m	cf Oak
<b>251 (SF11)</b>	Unmodified trunk stripped of bark, with flat base. One sawn off-shoot stub visible on its body	L: 0.80m; D: 0.29m	Elm

Table 4: Details of timbers recovered during the open-area excavation

4.8.4 **Wood recovered during the watching brief:** this assemblage included seven pit props (Fig 6.5-11), a railway sleeper and unworked wood fragments (Table 5), all of which were derived from the workings associated with the Sharlston Top seam. None of these timbers were suitable for tree-ring dating.

<b>Provenance</b>	<b>Description</b>	<b>Dimensions</b>	<b>Wood Type</b>
Area C3.14: Sharlston Top Seam (Fig 6.5)	Plank-shaped pit prop with square-cut ends	L: 0.85m; W: 0.11m; T: 0.025m	cf Oak
Area C3.14: Sharlston Top Seam (Fig 6.6)	Pit prop derived from a quartered tree trunk. The prop tapers to a squared point and has bark preserved along one side. Axe/knife cut-marks along its mid-section and a rectangular-shaped section has been cut out of the sapwood	L: 1.05m; W: 0.07m; T: 0.05m	cf Oak
Area C4.13: Sharlston Top Seam (Fig 6.7)	Pit prop derived from a quartered tree trunk. The prop has a bevelled and squared ends, with tool marks at its worked end	L: 1m; W: 0.12m; T: 0.02m	cf Oak
Area C4.13: Sharlston Top Seam (Fig 6.8)	Minimally shaped pit prop derived from a halved tree trunk. Stubs of an off-shoot branch visible at its mid-section	L: 0.95m; W: 0.14m; T: 0.08m	cf Oak
Area C1.10: Sharlston Top Seam (Fig 6.9)	Pit prop derived from a quartered tree trunk. Straight cut ends with tool marks visible on two of its three faces	L: 1.05m; W: 0.07m; T: 0.06m	cf Oak
Area C: Unstratified (Fig 6.10)	Minimally shaped pit prop derived from a halved tree trunk. Bark preserved on one side of prop. No tapered points visible at ends	L: 1m; W: 0.06m; T: 0.03m	cf Oak
Area C: Unstratified (Fig 6.11)	Minimally shaped pit prop, with square-cut ends	L: 1.1m; W: 0.06m; T: 0.06m	cf Oak
Area C1.10 (Sharlston Top Seam)	Railway sleeper with square-cut ends	L: 1.85m; W: 0.25m; T: 0.05m	cf Oak
Area C1.10 (Sharlston Top Seam)	Possible track, with bevelled point, in very poor condition	L: 0.64m; W: 0.03m; T: 0.03m	cf Oak

Table 5: Details of timbers recovered during the watching brief

## 5. DISCUSSION

---

- 5.1 The investigations at Sharlston provide a rare and direct archaeological insight into the working practices at a late eighteenth- and early nineteenth-century colliery in West Yorkshire. Prior to the work at Sharlston, archaeological investigations of colliery sites across the region were largely confined to surveys and trial excavations/watching briefs of shallow surface workings (*inter alia*; WYAS 2000a; 2000b; Lindsey Archaeological Services 2003; Roe 2008) or the recording of extant buildings/features associated with certain colliery pit-heads (*inter alia*; Caley 1994; RCHM(E) 1994; Vynner 2004; English Heritage 1995; Roe 2008). In contrast, only very limited archaeological investigation has been undertaken on colliery pit-heads where there is an absence of upstanding remains (*cf* Gomersall 2005, 14), and also on areas of historical workings exposed during modern opencast extraction (*inter alia*; WYAS 2001). Moreover, this pattern of archaeological investigation is mirrored nationally, as there are few archaeological excavations/watching briefs that have explicitly focused on below-ground colliery remains and workings, even though a comparatively large body of historical research exists relating to the eighteenth- and nineteenth-century English coalfields (*cf* Gill and Newman nd, 30-5).
- 5.2 Given this, the remains at Sharlston undoubtedly hold great significance, particularly as the excavated and recorded remains appear to relate to two separate phases of historical coal working. The earliest of this evidence may well comprise the bord-and-pillar workings within the Shalston Top seam. These were exposed during the opencast stripping in Area C and, based on the evidence for a cast-iron railway, they were perhaps established in the last decade of the eighteenth century, and were worked into the early decades of the nineteenth century. If this is the case, they were certainly worked under the auspices of the Earls of Westmoreland, who initially leased and then owned the coal seams at Sharlston during this period (*Section 2.3.4*).
- 5.3 In terms of the layout of the bord and pillar, it is perhaps significant that, overall, it represents a comparatively simple form of coal working, which, prior to the discovery at Sharlston, was more commonly associated with early coal working in the Tyneside area and South Wales (*cf* Phillips 1850, 6; Galloway 1898, 237-8; Poole 1924, 48-52; Griffin 1971, 47). This type of bord-and-pillar working has also been uncovered at Coleorton, Leicestershire, where it is suggested to date to the fifteenth and sixteenth centuries (Hartley 1994). This type of primitive working, as at Sharlston, invariably involved the cutting of single-width headings towards the rise, with bords set out parallel to the level of the seam (Galloway 1898, 237-8). With this style of working, the intervening pillars were left just wide enough to support the roof, as the main aim was to extract as much coal as possible during this phase of working (Poole 1924, 48). At Sharlston, this underlying aim of maximising ‘working in the whole’ presumably also explains the presence of pit props which, along with the pillars of coal, were also used to support the roof of the mine.

5.4 Significantly, in terms of the known early-mid-nineteenth-century coal working practices in Yorkshire (*cf* Phillips 1850, 42-4), this style of working, particularly in one portion of the bord-and-pillar workings (C1; Fig 5), shows some similarity to the ‘narrow-work’ system, and it is possible that, within Yorkshire, ‘narrow work’ was a later derivative of the type of working identified at Sharlston (Plate 22). ‘Narrow work’ is known to have been utilised in the collieries around Wentworth and was described in 1850 as ‘perhaps the oldest underground working in Yorkshire’ (*op cit*, 43). The layout of this system involved the digging of a headway, following the rise of the seam, from which parallel roadways (bord gates) were set at right-angles. These bord gates were supported by solid ribs of coal, and between these lay eight or ten working bords. The bord gates therefore compartmentalised the working areas and, in turn, minimised the risk of the complete collapse of the roof during the subsequent removal of the pillars, or indeed by natural processes of collapse. At Sharlston, in Area C1, whilst there is clear evidence for the headways, it is difficult to identify any bord gates, suggesting that either the roof of the mine was considered to be sound, a more high-risk strategy of extraction was practised, or that, more probably, it was never intended to remove the pillars of coal during a subsequent phase of working (working in the broken). If this was the case, that area (C5) immediately to the east of Area C1, where no evidence for bord-and-pillar working was present, may well represent an area where the roof of the mine had naturally collapsed due to the weight of the overlying strata.

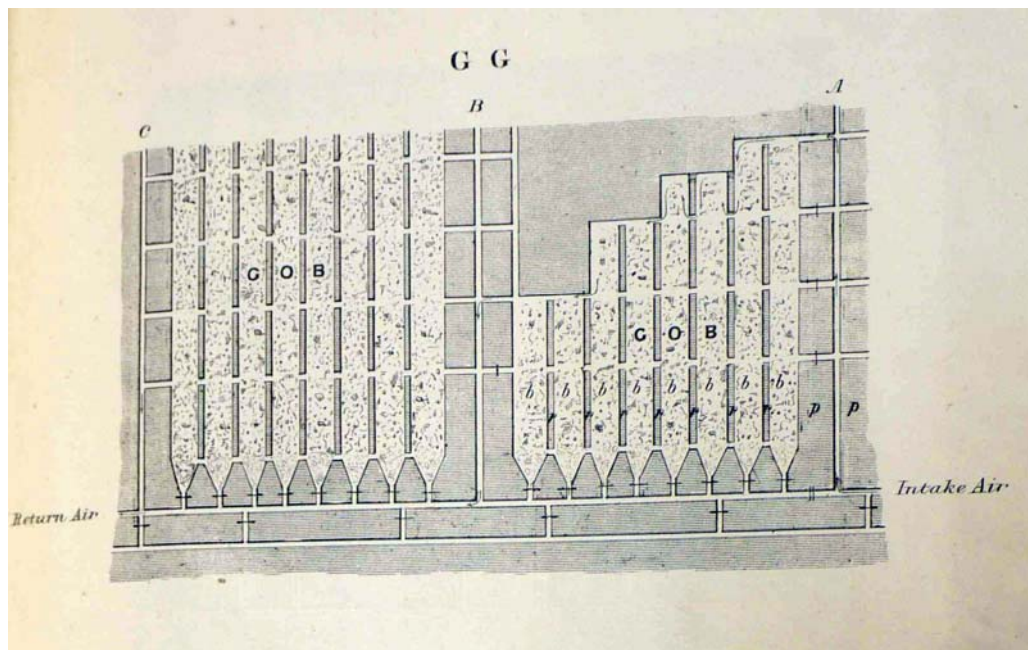


Plate 22: The Yorkshire ‘narrow-work’ system (reproduced from Phillips 1850)

5.5 At Sharlston, the width of the bords (4-5 yards (3.6-4.5m) wide) might suggest that each was worked by two men, though, if a proportion of the works are of eighteenth-century date, the general practice during this period was to have one man per bord (JC 1708, 42). The length of the recovered pit props indicates that working head-height within the bords was *c* 1m. This suggests that the miners knelt within the bords, though, if the seam was extracted by undercutting

(holing under), which may well have been the technique utilised at Sharlston, much of work would need to have been performed lying down.

- 5.6 In the western half of Area C (Area C1), following extraction, the coal was probably dragged in corves (baskets) to the identified headways (a-c), where it then appears to have been placed in wheeled trams, which were perhaps drawn by ponies or asses (Griffin 1971, 56). This was probably also the case in the area of working located to the south (Area C2), where a further headway was identified, and presumably a similar method was employed within the other areas of bord-and-pillar (Areas C3 and C4). However, it is not particularly clear where the routes in Area C1 ultimately led and where, in turn, the coal was raised to the surface. One suggestion is that these headways joined with a collapsed, and now invisible, roadway, located to the north, that originally ran parallel with the bords, and then headed towards, and perhaps joined with, the pit-shafts to the south-west, which are denoted on the 1823/4 map (Plate 1). Significantly, this pit-head also contained an engine, which may date to the late eighteenth century. Furthermore, Greaves' 1861 plans (Plate 6) indicate that an extensive swathe of 'old workings', probably associated with the Sharlston Top seam, existed across this area, and these appear to have extended into the recorded area of bord-and-pillar. If this was the case, it may suggest that all of the exposed workings in Area C were linked to these pit-shafts, or that, at the very least, those contained within Area C1 joined with the extensive area of workings emanating from the pit-shafts depicted on the 1823/4 map (Plate 1). Alternatively, coal may have been raised from the respective workings (C1-4) by separate shafts, and some of these might be those that were identified during opencast stripping. Moreover, at least two of the shafts appear to have lain directly on the line of two of the identified headways within one of the working areas (C1). Indeed, this suggestion of separate shafts, serving different areas of workings, may be more applicable, particularly as, during the latter part of the eighteenth century, coal working at Sharlston is known to have been a dynamic affair, which entailed the sinking of multiple pit-shafts. In addition, separate shafts associated with separate working areas would also have assisted in their respective ventilation.
- 5.7 Unfortunately, the system of ventilation employed within the Sharlston workings is difficult to ascertain, though, given their suspected initiation in the later eighteenth century, this may have initially involved 'coursing the air', a technique which was developed by James Spedding in *c* 1760 (Griffin 1971, 67). With this style of mine ventilation, the intake and return air was probably channelled along the headways and then into the bords, with its course being controlled by stoppings and doors. It is also possible, given the suspected late eighteenth-century date of some of the workings, that air was drawn through the workings by the use of a fire basket positioned at an upcast shaft, as opposed to a ventilation furnace (*op cit*, 63).
- 5.8 The later phase of coal working uncovered during the archaeological investigation probably dates from the late 1820s and comprises certain pit-head structures exposed by the open-area excavation, which were probably abandoned in 1868, following the relocation of the Sharlston pit-head to the south (*Section 2.3.12*). Again, as with the possible late eighteenth-century bord-

and-pillar workings, these structures relate to coal working undertaken under the auspices of the Earls of Westmoreland. The structures include two adjacent pit-shafts, surrounded by a heapstead, which Greaves' 1861 plans indicate allowed access to workings that probably exploited the Sharlston Top and Sharlston Low seams (Plate 4).

- 5.9 Potentially, the earliest structural remains located at this pit-head are the partial components of a horse-driven whim-gin, adjacent to the more westerly of the shafts (shaft 1). Although horse-driven gins are known to have been used to raise coal at Sharlston in the eighteenth century, this gin most likely dates to the late 1820s and was perhaps associated with the sinking of the westerly shaft. If this was the case, this gin would have acted as a temporary winding engine and probably raised a large bucket known as a 'hoppet' or 'kibble', which contained spoil generated during sinking (Griffin 1971, 28). Presumably, a second temporary whim-gin was also associated with the eastern shaft, to facilitate its sinking, though no evidence for this was observed during the open-area excavation.
- 5.10 The sinking of two adjacent pit-shafts is not unusual in terms of early-mid-nineteenth-century mining techniques employed in Yorkshire. Phillips (1850, 44), for example, describes a comparable arrangement at Low Moor Colliery, West Yorkshire, where shafts were dug in pairs, with one being used as an upcast shaft for air only, whilst the other was a downcast shaft used for winding, and this certainly appears the case with the exposed pit-shafts at Sharlston. Greaves' 1861 plans (Plate 4) suggest that the more westerly of shafts (shaft 1) was probably utilised for ventilation, whilst the adjacent shaft (shaft 2), which is denoted on his plans as 'Old Engine Pit', was clearly used for winding, as it was associated with the remains of a winding engine. This winding engine has many late eighteenth- and early nineteenth-century parallels (*cf* Forster Brown 1924, 172; Griffin 1971, 35-41) and consisted of a winding drum, secured by two parallel walls, which was driven by a beam engine enclosed within an engine house. It is also probable that this engine had grab-hand reversing gear and was anywhere between seven and 15 horsepower (Forster Brown 1924, 172-3; Griffin 1971, 35). Although the precise type of beam engine employed cannot be ascertained with any degree of certainty, the absence of a housing for a condenser may imply that it was a small Newcomen-type engine, as opposed to a Watt-type engine, which was perhaps fitted with a 'pickle-pot' condenser attached to the engine's cylinder (Griffin 1971, 36). Indeed, outside of the large collieries situated in the Tyneside district, the use of small Newcomen-type engines for winding persisted in many collieries well into the nineteenth century, particularly as these engines were more reliable and easier to maintain than the Watt-type engines (*op cit*, 36-8).
- 5.11 Whatever the specific type of engine utilised at Sharlston, it was clearly powered by the two boilers situated within an adjacent boiler room, which are depicted on the Greaves plans of 1861 (Plate 4). The presence of two boilers, serving one engine, is not in itself unusual, as often within collieries, only one boiler was in operation at any one time, with one being reserved as a spare (Hills 1989, 124). Concerning the type of boiler employed, it is possible that the two brick-lined chambers within the setting represent two separate flues,

extending beneath each of the boilers. If this was the case, the discovery of an arcing section of wall at the eastern end of one of the boilers may suggest that they were of the egg-ended type, a suggestion which is confirmed, in some measure, by the morphology of the boilers denoted on Greaves' 1861 plans (Plate 4). Furthermore, the arcing section of walling and length of the setting suggest that these boilers had diameters of *c* 1.5m (5 feet) and lengths in the region of 12m (39 feet).

5.12 Egg-ended boilers were a derivative of the wagon boiler, and were constructed of wrought- or cast-iron plates, with a cylindrical form with domed ends (*op cit*, 133). This type of low-pressure boiler was developed in *c* 1814 and was heated in a similar way to the wagon boiler, with a flue running beneath, and then passing around the boiler at a higher level to a chimney (*ibid*). At Sharlston, although there is no surviving evidence for the higher flue, there is tentative evidence for the position of the chimney. This comprises the small 'compartment' abutting the eastern wall of the boiler house, which is depicted on Greaves' 1861 plans (Plate 4). This feature is in a logical enough position for such a feature and the excavation did uncover a square sandstone base in this area. This base, with its cut sockets, although difficult to interpret, might conceivably represent that for the suspected chimney, the walling of which was perhaps strengthened by iron ties secured within the sockets.

5.13 Other early nineteenth-century features associated with the pit-head include the small building to the north-west of shaft 1, which may have functioned as a store, drying room, or workshop, and a structure directly associated with shaft 2. It has been postulated that this latter structure might have supported the cast-iron screens, which allowed the coal raised from the winding shaft to be directly graded into different sizes. The direct grading of coal, by screens positioned immediately adjacent to the winding shaft, was relatively common at some early nineteenth-century collieries in Northumberland and Durham (Griffin 1971, 107) and was presumably also a feature of the Yorkshire coalfields. More generally, the early nineteenth-century screening of coal, particularly in the northern coalfield, was spurred on by the innovations of Benjamin Thompson, and the reductions in duty on small coal, culminating in the Small Coal Act of 1825 (Galloway 1898, 442, 458). Indeed, it is possible that the economic benefits gained from coal screening might partly explain the presence of the putative screens at the Sharlston pit-head, and these might have been designed to separate the coal into those grades that were suitable for the early nineteenth-century market. Indeed, if this was the case, it is possible that the Sharlston setting supported a primary screen with bars set  $\frac{1}{2}$ - $\frac{3}{4}$  inches (1.2-1.9cm) apart, which split out the larger coal for the London and coasting trade, and a second screen with bars placed  $\frac{3}{8}$  inch (9mm) apart. This screen would have captured that coal known as 'nuts and walnuts', though this was often wasted, destroyed, or was used in road repair, as its size meant that it was subject to the full coal duty. A third screen may then have been present, with bars set at dimensions below  $\frac{3}{8}$  inch (9mm). This would have separated out the 'peas and beans', which could be sold within the home and export markets at a reduced duty, from the fine coal, or 'duff', which was unsalable (Galloway 1898, 458-9; Griffin 1971, 107-8).



## 6. THE ARCHIVE

---

- 6.1 The Wakefield Museum has been nominated as the ultimate repository for the paper and material archive:
- Wakefield Museum  
Wood Street  
Wakefield  
WF1 2EW  
Tel: 01924 305351
- 6.2 Arrangements have been made with the Museum for the deposition of the complete site archive from the 2007-9 archaeological investigations.
- 6.3 The complete project archive, which includes written records, plans, black-and-white and colour photographs, and artefacts, has been prepared for long-term storage following the guidelines set out in *Environmental standards for the permanent storage of excavated material from archaeological sites* (UKIC 1984, Conservation Guidelines 3), and *Guidelines for the preparation of excavation archives for long-term storage* (Walker 1990).
- 6.4 All finds have been packaged according to the Museum's specifications, either in acid-free cardboard boxes or, in the case of less stable materials, in airtight plastic boxes. The metalwork assemblage and the timber constitute the only material categories that are potentially unstable; although these materials have been packaged in airtight plastic boxes, and in the case of the timbers double-wrapped in heavy-duty black polythene, they will also need to be stored in controlled conditions.
- 6.5 Box lists have been prepared and the entire paper and material archive has been indexed, ordered and checked, ready for submission to Wakefield Museum and the West Yorkshire Archive Service.

## 7. REFERENCES

---

### 7.1 CARTOGRAPHIC SOURCES

British Geological Survey, 1998 1:50,000 Series (England and Wales), Sheet 78: Wakefield

Doncaster Archive Service (DAS) DD/WN/A12/1 Map of the Badsworth Hunt, from an actual survey made in the years 1823 and 1824 by J Walker and H Clarkson of Wakefield, published 1826

John Goodchild Collection, Plan of the Lower Bed coal workings in the Estate of the Earl of Westmoreland (*sic*) at Sharlston Colliery 1861, surveyed by JO Greaves (three plans)

John Goodchild Collection, Plan of the Upper Bed coal workings in the Estate of the Earl of Westmoreland (*sic*) at Sharlston Colliery 1861, surveyed by JO Greaves (three plans)

Ordnance Survey 1849, 6 inch to 1 mile, Yorkshire Sheet 249

Ordnance Survey 1892, 1:2500, Yorkshire Sheet CCXLIX.1

Ordnance Survey 1906, 1:2500, Yorkshire Sheet CCXLIX.1

West Yorkshire Archive Service (WYAS) C559/52 Plan of the township of Sharlston in the parish of Warmfield, published 1837

### 7.2 SECONDARY SOURCES

Anderson, D, 1967 Blundell's collieries: technical developments, 1776-1966, *Trans Hist Soc Lancashire Cheshire*, **119**, 113-79

Barker, D, 1993 *Slipware*, Princes Risborough

Boulton, WS, 1910 *Practical Coal Mining*, **1**, Kent

Caley, A, 1994 *Hope Pit, Grange Moor, buildings survey*, unpubl rep

Cockin, TH, 1904 *An Elementary Class-Book of Practical Coal-Mining*, London

Countryside Commission, 1998 *Countryside Character, Volume 3: Yorkshire and the Humber*, Cheltenham

Coysh, AW, and Henrywood, RK, 1982 *The Dictionary of Blue and White Printed Pottery, 1780-1880*, **1**, London

Dunn, M, 1852 *A Treatise on the Winning and Working of Collieries*, London

English Heritage, 1991 *Management of Archaeological Projects*, 2nd edn, London

English Heritage, 1995 *Colliery Landscapes: an aerial survey of the deep-mined coal industry in England*, London

Forster Brown, E O, 1924 The History of Winding, in Mining Association of Great Britain, *Historical Review of Coal Mining*, London, 170-82

Galloway, R, 1898 (reprinted 1971) *Annals of Coal Mining and the Coal Trade, 1: First Series, up to 1835*, Newton Abbot

Giles, C, and Goodall, IH, 1992 *Yorkshire Textile Mills*, London

Gill, M, and Newman, P, nd *An Archaeological Assessment of Coal Mining in England (Draft)*, <http://46.32.234.2/namho/research/COAL.FINAL.pdf> (accessed 15<sup>th</sup> August 2012)

Goodwin, J, and Barker, D, 2009 *Small Pieces of History: Archaeological Ceramics from Tunstall, Stoke on Trent*, Stoke-on-Trent Archaeol Ser Monog, **2**, Stoke-on-Trent

Gomersall, H, 2005 (revised 2009) *West Yorkshire Archaeology Advisory Service Research Agenda: Industrial Archaeology*, Wakefield

Goodchild, J, 1988 *Coals from Sharlston: the Origins of a West Riding Coalfield*, Wakefield

Goodchild, J, 2003 *Images of England, West Yorkshire Coalfield*, Gloucester

Griffin, AR, 1971 *Coalmining*, Chatham

Hall, VF, 1977 *Industrial Steam Locomotives*, London

Hartley, RF, 1994 Tudor Miners of Coleorton, Leicestershire, in T D Ford and L Willies (eds), *Mining Before Powder, Bull Peak Dist Mines Hist Soc*, **12.3**, 91-101

Hills, RL, 1989 *Power from Steam: a History of the Stationary Steam Engine*, Cambridge

JC, 1708 (reprinted 1968) *The Compleat (sic) Collier: or the Whole Art of Sinking, Getting, and Working, Coal-mines, &c. as is now used in the Northern Parts, Especially about Sunderland and New-Castle*, Newcastle upon Tyne

Lake, RD, 1999 *The Wakefield District – a Concise Account of the Geology, Memoir of the British Geological Survey, Sheet 78*, London

Lindsey Archaeological Services, 2003 *Cloth Hall Street Leeds, archaeological watching brief*, unpubl rep

May, R, 2004 *Archaeological Desk-based Assessment of Land at Sharlston Colliery, Wakefield, West Yorkshire*, unpubl rep

Neale, G, 2004 *Collecting Blue and White Pottery*, London

Northern Mines Research Society, nd *Records*, <http://www.nmrs.org.uk/records/index.html> (accessed 15<sup>th</sup> August 2012)

Oswald, A, 1975 *Clay Pipes for the Archaeologist*, BAR Brit Ser, **14**, Oxford

Oxford Archaeology, 2001 *Wood Policy in the Field*, Oxford

OA North (Oxford Archaeology North), 2010 *Sharlston Colliery Reclamation Site, New Sharlston, West Yorkshire: post-excavation assessment*, unpubl rep

Phillips, J, 1850 *Report on the Ventilation of Mines and Collieries*, London

Poole, G, 1924 Historical Survey of Methods of Working, in Mining Association of Great Britain, *Historical Review of Coal Mining*, London, 42-63

Rickard, J, 2006 *Mocha and Related Dipped Wares, 1770-1939*, Hanover and London

Roe, M, 2008 *Middleton Park Community Archaeological Survey*, unpubl rep

RCHM(E) (Royal Commission on the Historical Monuments (England), 1994 *Historic Buildings Report, Prince of Wales Colliery, Pontefract, West York*, unpubl rep

Smith, TL, 1909 *The Itinerary of John Leland in or about the years 1535-1543: Parts VII and VIII*, London

Thornes, RCN, 1987 *West Yorkshire: A Noble Scene of Industry, the Development of a County 1500 to 1830*, Wakefield

Thorpe, J, 2009 *Coal Mining in Morley, Nelson*, British Coal Mining, **87**, London

Topping, B, 1998 *The Engine Driver's Manual*, Shepperton

UKIC, 1984 *Environmental Standards for the Permanent Storage of Excavated Material from Archaeological Sites*, Conservation Guidelines, **3**, London

Vyner, B, 2004 *Mellor, Penny Spring, and Benholmley Woods, Archaeological Survey*, unpubl rep

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

WYAS (West Yorkshire Archaeology Service), 2000a *Cross Lane, Drighlington, West Yorkshire, Foul Sewer Requisition: Geophysical Survey*, unpubl rep

WYAS (West Yorkshire Archaeology Service), 2000b *Cross Lane, Drighlington, West Yorkshire, Foul Sewer Requisition: Archaeological Evaluation*, unpubl rep

WYAS (West Yorkshire Archaeology Service), 2001 *Methley South Opencast, Methley, West Yorkshire: Archaeological Watching Brief*, unpubl rep

## APPENDIX 1: PROJECT BRIEF

---

**WEST YORKSHIRE ARCHAEOLOGY ADVISORY SERVICE:  
SPECIFICATION FOR AN ARCHAEOLOGICAL EXCAVATION  
AND WATCHING BRIEF DURING OPENCAST  
AT SHARLSTON COLLIERY RECLAMATION SITE, A655, NEW SHARLSTON**

**Specification prepared on behalf of Wakefield Metropolitan District Council at the request of Craig Ball of UK Coal Mining Ltd. (Planning Permission No. 5/99/33099/L)**

**1. Summary**

1.1 Archaeological work consisting of a small open-area excavation and a watching brief during coal extraction by opencast is proposed to mitigate the impact of development at the above site.

1.2 This specification deals with the excavation and watching brief and the preparation of an interim assessment of potential on the results of the fieldwork. The interim assessment will establish whether further analysis and the preparation of a publication report is required. Any work arising from the results of the archaeological fieldwork and the interim assessment will be additional to this specification.

1.3 This specification has been prepared by the curatorial branch of the West Yorkshire Archaeology Advisory Service (WYAAS), the holders of the West Yorkshire Historic Environment Record.

**NOTE:** The requirements detailed in paragraphs 6.1, 6.2, 6.3, 6.4, 6.5, 7.5 and 10.1 are to be met by the archaeological contractor **prior** to the commencement of fieldwork.

**2. Site Location & Description (Fig.1)**

**Grid Reference: SE 3834 2024 (centred)**

2.1 The development site lies on the site of the former Sharlston Colliery, to the northeast of the junction with Crossley Street and High Street, New Sharlston.

2.2 The site is approximately 60 ha. in total area; it has been cleared of buildings, and the majority is currently occupied by substantial mounds of colliery spoil (coal slack and Red Shale), to an estimated average depth of c. 15m. The area which requires archaeological excavation is adjacent to but not covered by Tip A (see attached UK Coal site plan). The area of archaeological excavation is believed to be currently occupied by trees and small shrubs (the WY Archaeology Advisory Service have been unable to arrange site access in the time available for the preparation of this specification).

2.3 The underlying drift geology of the area is Middle Coal Measures. Eight workable coal seams (with additional fireclay deposits) are accessible from or outcrop upon the site, including the Shafton (0.62m), Sharlston Top (0.99m), Sharlston Muck (0.80m) and Sharlston Low (1.35) seams, all of which appear to be accessible within 10 -20 metres of the current ground surface.

### 3. Planning Background

3.1 UK Coal Mining Ltd. (Harworth Park, Blyth Road, Harworth, Doncaster DN11 8DB contact Craig Ball ☎ 01302 751751) have obtained planning consent (Planning Application No. 05/99/33099/L) for reclamation with opencast extraction. The WY Archaeology Advisory Service (as Wakefield District's archaeological advisor) has prepared this specification in order to allow the developers to meet the terms of an archaeological condition which has been placed on the consent. A desk-based assessment produced as part of the Environmental Impact Statement for the site confirmed that significant archaeological remains are present in several parts of the site. These remains will be disturbed or destroyed by the development of the site and archaeological excavation and recording works are required to mitigate this impact.

3.3 This specification has been prepared by WYAAS, at the request of Craig Ball of UK Coal, to detail what is required and to allow an archaeological contractor to provide a quotation.

3.4 UK Coal will initially be removing the spoil tips on the site and washing them for recovery of saleable coal. This will be followed by opencast extraction within three areas (A-C) to the north, east and southeast of the site, over a total area of approximately 13 ha. It is estimated that the opencast will yield approximately 230,000 tonnes of coal.

### 4. Archaeological Interest

4.1.1 Documentary evidence confirms that the Middle Coal Measures within the area of the villages of Sharlston, Crofton and Warmfield have been exploited for coal since the 14<sup>th</sup> century, with the trade being well established on a commercial basis by the end of the 16<sup>th</sup> century. 'Ancient pits and workings' are said in the Desk-based Assessment to have been noted within the current development area on a map of the late 19<sup>th</sup> century (not reproduced in the report).

4.1.2 Substantial documentation appears to survive for the workings of Sharlston Colliery through the course of the 18<sup>th</sup> century. In common with most large extraction operations of this date, the 'colliery' was probably not a single entity, but may have comprised several shafts some considerable distance apart, and there is no absolute indication that any of these shafts were located within the area of the current development. However, by the early 19<sup>th</sup> century, the name 'Sharlston Colliery' had been identified with a two-shaft pit head centred at SE 38430 20464; as these shafts were served by "an Old Steam Engine" (and a Newcomen engine is known to have been in use by the company by the late 18<sup>th</sup> century), there is a good chance that this area formed at least part of the workings of the early- to mid-18<sup>th</sup> century colliery. In the 1840s, the operational pit head was removed to a site 350m to the south (SE 3832 2010). The earlier site (marked as 'Old Coal Pit' on the 1849 Ordnance Survey 6" map, despite the continued presence of buildings) appears to have gone out of use. Sharlston Colliery continued in operation in the new location (with expansion and, apparently, alteration) until 1993, when the colliery closed. The site had been cleared of buildings by 1995.

4.1.3 Because of the nature of 19<sup>th</sup> century development in the coal industry, where pits tended to become larger and more complex on their original site rather than

relocating, few 18<sup>th</sup>/early 19<sup>th</sup> century collieries are available in West Yorkshire for investigation. At Sharlston Colliery, however, the location of the earlier pit head appears to survive as an undisturbed site, presenting substantial potential for archaeological survival belowground. Elsewhere on the site, the known presence of shafts apparently unrelated to the 19<sup>th</sup>-century mining suggests that there will be good surviving evidence of mining of the 18<sup>th</sup> century and earlier within the most robust seams (see 2.3 above) within the area of opencast.

#### **4.2 Impact of proposed development**

Opencast and restoration work on the site will destroy all evidence for historic mine workings in the affected area, and will completely destroy all evidence related to what is believed to be the known site of an 18<sup>th</sup>/early 19<sup>th</sup> century pit head, which may also preserve remains related to an earlier pit head.

#### **4.3 Research Priorities**

The general background and priorities for investigation of the archaeology of the West Yorkshire coal industry are outlined in the WYAAS Research Agenda for Industrial Archaeology (2003) at <http://www.archaeology.wyjs.org.uk/>. The industry has been the subject of a few technical histories, which have largely concentrated on developments in the coalfields of Shropshire, of South Wales and of the Northumberland/Durham region and then extrapolated national conclusions from this data. Because the nature of coal seams varies widely from area to area, the methods of drainage/haulage/ventilation etc. adopted to deal with them at different periods also varied widely. Little physical evidence has as yet been retrieved for the application and uptake of technology within the Yorkshire coalfield, and a study of such evidence has the potential to add considerably to a national overview of the development of the industry. The current priority in West Yorkshire is therefore the gathering of data on a range of typical colliery structures and practices over the whole of the working life of the coal field. At surface level, priority is being given to investigation and excavation on those sites which are likely to retain belowground remains of colliery structures which will either illustrate typical colliery layout and practice at a particular era or will provide evidence for layout and practice at crucial periods of technological transition such as the late 18<sup>th</sup>/early 19<sup>th</sup> century – the site of the earlier Sharlston Colliery meets both of these requirements. At the level of the coal seams, every available opportunity is being taken for the archaeological investigation and recording of surviving underground workings where these have the potential to illustrate typical or transitional practices – potential early workings within the principal seams at Sharlston fall into this category.

#### **5. Aims of the Excavations**

5.1 The objective of the project is to fully record, analyse and report all archaeological remains within the areas of interest ('preservation by record') prior to their destruction during the development of the site, and to place the results of this work in the public domain by depositing it with the WY Historic Environment Record (Registry of Deeds, Newstead Road, Wakefield WF1 2DE).

5.2 The specific aims of the project are to obtain evidence on the historic methods employed on the site to:

- find and excavate the seam
- drain and ventilate the excavations



- raise the excavated coal to the surface
- prepare the coal for transport and remove it from the site

## **6. General Instructions**

### **6.1 Health and Safety**

6.1.1 The archaeological contractor should operate on site with due regard for Health and Safety regulations. The deposits within the open area excavation and within the areas of opencast are of regional and potentially national importance and the contractor will be expected to make every reasonable effort (including the employment of specialist equipment and retrieval techniques) to execute the excavation and recording work as specified across the whole site. However, the safety of on-site personnel must take precedence over archaeological considerations. The excavation will take place in an area where shafts associated with deep mining are known to be present; the watching brief will take place during operation of heavy machinery within the working area. The project will therefore require the preparation of a Risk Assessment of the site in accordance with the Health and Safety at Work Regulations. WYAAS and its officers cannot be held responsible for any accidents or injuries that may occur to outside contractors while attempting to conform to this specification. Any Health and Safety issues which may hinder compliance with this specification should be discussed with WYAAS at the earliest possible opportunity (see section 14.2).

### **6.2 Confirmation of Adherence to Specification**

6.2.1 Prior to the commencement of *any work*, the archaeological contractor must confirm adherence to this specification in writing to WYAAS, or state (with reasons) any proposals to vary the specification. Should the contractor wish to vary the specification, then written confirmation of the agreement of WYAAS to any variations is required prior to work commencing. Unauthorised variations are made at the sole risk of the contractor. Modifications presented in the form of a re-written specification/project design will not be considered by WYAAS. Any technical queries arising from the specification detailed below should be addressed to WYAAS without delay.

### **6.3 Confirmation of Timetable and Contractors' Qualifications**

6.3.1 Prior to the commencement of *any work*, the archaeological contractor must provide WYAAS in writing with:

- a projected timetable for the site work;
- details of the staff structure and numbers;
- names and CVs of key project members (the project manager, site supervisor, any proposed specialists, sub-contractors *etc.*).

6.3.2 Either the project manager or the site supervisor must be able to demonstrate an appropriate specialist understanding of the development and technology of coal mining. The project manager or the site supervisor must also be able to demonstrate previous experience of archaeological excavation on a site or sites relating to coal mining. The WY Archaeology Advisory Service may consider waiving this requirement if suitable professional expertise can be subcontracted and procedures approved by WYAAS are put in place to ensure that site attendance by the specialist subcontractor is sufficient to guarantee an appropriate level of overview. The timetable should be adequate to allow the work to be undertaken to the appropriate

professional standard, subject to the ultimate judgement of the West Yorkshire Archaeology Advisory Service.

#### **6.4 Notification**

6.4.1 The excavations will be monitored as necessary and practicable by WYAAS in its role as curator of the county's archaeology. WYAAS should be provided with as much notice as possible in writing (and certainly not less than one week) of the intention to start work. A copy of the archaeological contractor's risk assessment of the site should accompany the notification.

6.4.2 The museums officer named in paragraph 10.1 should be notified in writing of the commencement of fieldwork at the same time as WYAAS.

6.4.3 As a courtesy, English Heritage's Regional Science Adviser, Andy Hammon should also be notified of the intention to commence fieldwork. (Tel.: 01904 601983; email: andy.hammon@english-heritage.org.uk).

#### **6.5 Documentary Research**

6.5.1 Prior to the commencement of fieldwork, the following should be visited by either the project manager or the site supervisor:

- West Yorkshire Historic Environment Record – for general information
- The Mining Records section of the Coal Authority (200 Lichfield Lane, Mansfield, Nottinghamshire NG18 4RG) – for abandonment plans and any other archives relevant to the area
- The John Goodchild Collection, Drury Lane Wakefield WF1 2DT – for any other archives relevant to the area

in order to gain an overview of the archaeological/historical background of the site and environs and to familiarise themselves with the results of the evaluation of the site. In particular, the abandonment plans should be examined for evidence of early workings in order to allow the archaeological contractor to further focus the Watching Brief element of the specification (see Section 8 below). In addition to providing a knowledge base for the work in hand, the results of this assessment may be incorporated into the contractor's report where they are considered to contribute to that report, but any extraneous material should be omitted. A formal desk-based report is not required and the results of this exercise should be used to inform the whole project. Please note that both the HER and the Coal Authority make a charge for consultations of a commercial nature.

6.5.2 The following sources (some of which will be made available in the WY HER by prior arrangement) should also be consulted for a brief technological introduction and for an introduction to the site:

Galloway, RL 1882 *History of Coalmining in Great Britain* (David and Charles reprinted 1969)

Goodchild, J 1988 *Coals from Sharlston – the origins of a West Riding Colliery* (Wakefield Historical Publications)

Gould, S and Cranstone, D 1992 *Monuments Protection Programme: the Coal Industry - Step 1 Report* English Heritage

Griffin, AR 1971 *Coalmining* Longman, Ltd

Mining Association of Britain (no date - c. 1924) *Historical Review of Coal Mining* (an extensive collection of short essays dealing with most aspects of the Coal Industry)

## 6.6 Location of Services, etc.

6.6.1 The archaeological contractor will be responsible for locating any drainage pipes, service pipes, cables etc which may cross any part of the excavation area, and for taking the necessary measures to avoid disturbing such services.

## 7. Fieldwork Methodology - Open-area excavation

### 7.1 Trench Size and Location (Fig. 2)

7.1.1 The work will involve the excavation of a 30m x 50m trench totalling 1500m<sup>2</sup> in area. The contractor should also make provision for an additional contingency area of up to 300m<sup>2</sup> excavation. The use of the contingency will depend upon the results obtained during the initial excavations and will be implemented at the discretion of WYAAS. The decision to invoke all or part of the contingency area will be issued in writing, in retrospect after site discussions if necessary.

7.1.2 The open-area excavation trenches should be located as shown on Figure 2.

	Area (m <sup>2</sup> )	Rationale
Area A	1500	To locate and fully investigate archaeological remains associated with the 18 <sup>th</sup> /early 19 <sup>th</sup> century colliery on this site, along with any earlier colliery features that may be present.
Contingency	300	To enable the archaeologist to fully expose and investigate any archaeologically-significant features which may be only partially uncovered by the excavation of Area A

Total excavation area: **1500m<sup>2</sup>**

Contingency allowance: **up to 300m<sup>2</sup>**

### 7.2 Method of Excavation

7.2.1 After the removal of the standing vegetation, the excavation area may be opened using an appropriate machine fitted with a wide toothless ditching bucket. The topsoil and recent overburden should be removed down to the first significant archaeological horizon in successive level spits of maximum 0.2m thickness. **Under no circumstances should the machine be used to cut arbitrary trenches down to natural deposits.** All machine work must be carried out under direct archaeological supervision and the machine halted if significant archaeological deposits are encountered. The top of the first significant archaeological horizon may be exposed by the machine, but must then be cleaned by hand and inspected for features. Excavation should then continue manually. As part of this initial stripping exercise, the contracting archaeologist should identify the location of the two deep shafts believed to survive in a capped state at the southern side of the excavation area. These should be hazard-taped off from the remainder of the excavation area.

7.2.2 All archaeological remains will be hand excavated in an archaeologically controlled and stratigraphic manner sufficient to meet the aims and objectives of the project. The excavation will record the **complete** stratigraphic sequence, down to naturally occurring deposits and will investigate and record **all** inter-relationships between features. The following excavation strategy will be employed:

- Deposits will be planned both at their first visible and their fullest extent. All stratigraphic relationships will be fully explored and documented, if necessary by means of half-sections or quadrants.
- Linear and discrete features: all stake-holes, post-holes, pits, engine bases, and other structural/industrial features will be 50% excavated in the first instance, recorded in section, and then fully excavated. All intersections will be fully investigated to determine the relationship(s) between the component features.
- Built structures: walls, floors, machine- and crane bases etc will be excavated sufficient to establish their form, phasing, and construction techniques. The feature(s) will then be fully excavated. All intersections will be investigated to determine the relationship(s) between the component features. With regard to the necessary level of investigation and recording, a distinction may be drawn between substantive component features or modifications, and historic repairs which are clearly minor in nature; if any doubt exists about the nature of an intervention, it should be investigated and recorded in detail (subject to the judgement of the specialist subcontractor specialising in the coal-mining industry).

If features are encountered which the archaeological contractor considers to be too massive to be excavated by hand using the appropriate tools (mattock, crowbar, etc.), this should be drawn to the attention of the WY Archaeology Advisory Service immediately. The controlled use of a mechanical excavator may in principle be used to excavate/partially remove/test the following types of deposit once appropriate records have been made, but machining must be done in 0.20m spits under direct archaeological supervision, and the written agreement of the WYAAS (which may be issued in retrospect after discussions on site) must be sought in each instance in advance of work commencing:

- extensive deposits of made ground or levelling layers
- extensive deposits of less sensitive material, such as fuel ash waste
- compacted deposits which can not be removed by hand or with suitable hand tools
- any deposits identified as contaminated
- Areas of homogenous deposits which do not appear to have particular archaeological sensitivity (e.g. brick rubble, made ground)
- concrete or other substantial intrusions (e.g. machine bases etc)

Large objects (e.g. worked stone) that can not be lifted by one person and homogeneous stretches of brick wall may be removed by machine without specific agreement of the WY Archaeology Advisory Service. However, this method must not be used on brick walls where careful dismantling is likely to reveal further features or archaeological information (e.g. concealed flues; rebuilding).

7.2.4 All artefacts are to be retained for processing and analysis except for unstratified late 19<sup>th</sup> & 20<sup>th</sup>-century material, which may be noted and discarded.

7.2.5 Samples for scientific dating should be taken if suitable material is encountered during the excavation. Provision should also be made for specialist sampling if appropriate (soil profiles, archaeomagnetic dating, dendrochronology etc.) (Also see paragraph 7.5.)

### **7.3 Method of Recording**

7.3.1 The excavation area is to be recorded according to the normal principles of stratigraphic excavation. The stratigraphy of the whole area is to be recorded, even when no archaeological deposits have been identified.

7.3.2 Section drawings (at a minimum scale of 1:20) must include heights A.O.D. Plans (at a minimum scale of 1:50) must include O.D. spot heights for all principal strata and any features. At least one section of each edge, showing a representative and complete sequence of deposits from the modern ground surface to the natural geology, will be drawn.

7.3.3 The actual areas of excavation and all archaeological (and possibly archaeological) features should be accurately located on a site plan and recorded by photographs, scale drawings and written descriptions sufficient to permit the preparation of a detailed archive and report on the material. The trench locations, as excavated, will be accurately surveyed, tied into the O.S. National Grid and located on an up-to-date 1:1250 O.S. map base.

### **7.4 Use of Metal Detectors**

7.4.1 Spoil heaps are to be scanned for non-ferrous metal artefacts using a metal detector capable of making this discrimination, operated by an experienced metal detector user (if necessary, operating under the supervision of the contracting archaeologist). Modern artefacts are to be noted but not retained (19<sup>th</sup>-century material and earlier should be retained.)

7.4.2 If a non-professional archaeologist is to be used to carry out the metal-detecting, a formal agreement of their position as a sub-contractor working under direction must be agreed in advance of their use on site. This formal agreement will apply whether they are paid or not. To avoid financial claims under the Treasure Act a suggested wording for this formal agreement with the metal detectorist is: "In the process of working on the archaeological investigation at [*location of site*] between the dates of [*insert dates*], [*name of person contributing to project*] is working under direction or permission of [*name of archaeological organisation*] and hereby waives all rights to rewards for objects discovered that could otherwise be payable under the Treasure Act 1996."

### **7.5 Conservation Strategy**

7.5.1 A conservation strategy must be developed in collaboration with a recognised laboratory. All finds must be assessed in order to recover information that will contribute to an understanding of their deterioration and hence preservation potential, as well as identifying potential for further investigation. Furthermore, all finds must be stabilised and packaged in accordance with the requirements of the

receiving museum. As a guiding principle, only artefacts of a “displayable” quality would warrant full conservation, but metalwork and coinage from stratified contexts would be expected to be x-rayed if necessary, and conservation costs should also be included as a contingency.

## **7.6 Human Remains**

7.5.1 Any human remains that are discovered must initially be left *in-situ*, covered and protected. WYAAS will be notified at the earliest opportunity. If removal is necessary the remains must be excavated archaeologically in accordance with the *Guidance for Best Practice for Treatment of Human Remains Excavated from Christian Burial Grounds in England* published by English Heritage (2005), a valid Ministry of Justice licence (if appropriate) and any local environmental health regulations.

## **7.7 Treasure Act**

7.7.1 The terms of the Treasure Act 1996 must be followed with regard to any finds that might fall within its purview. Any finds must be removed to a safe place and reported to the local coroner as required by the procedures as laid down in the “Code of Practice”. Where removal cannot be effected on the same working day as the discovery, suitable security measures must be taken to protect the finds from theft.

## **7.8 Unexpectedly Significant or Complex Discoveries**

7.8.1 Should there be unexpectedly significant or complex discoveries made that warrant, in the professional judgement of the archaeologist on site, more detailed recording than is appropriate within the terms of this specification, then the archaeological contractor should urgently contact WYAAS with the relevant information to enable them to resolve the matter with the developer.

## **8. Fieldwork Methodology – Watching Brief in area of opencast**

8.1 UK Coal will be extracting by opencast in three main areas to the north, east and southeast of the site. Area A will be won in six discrete cells, working east to west. Area B will be won in three cells working north to south. Area C will be won in four cells, working west to east. The principal coal seams which it is the intention to expose and remove are those commonly referred to as the Shafton (0.62m), Sharlston Top (0.99m), Sharlston Muck (0.79m) and Sharlston Low (1.39m) seams. There are a small number of named and unnamed seams (generally less than 0.40m thick) which will also be removed and processed. Final excavation levels will vary from approximately 24m in Area A at the northern end of the site, to a depth of approximately 52 m. in Area C along the southern end of the site.

8.2 The coaling areas will be worked in sequence over a period of approximately 11 months. Each cell will first be emptied of the overburden and extant coal, and then the underlying stone will be quarried. Initially the overburden will be removed by machine. The surface of each coal seam will be exposed, and cleaned mechanically and by hand. Normal practice is to expose each coal seam in turn over the whole of each cell as a single operation. The Sharlston Top outcrops immediately to the south of Area C; both it and the Sharlston Low are known to contain earlier workings. The Shafton outcrops near the centre of Area A, and may have been exploited by the 18<sup>th</sup> century mining in that area. It is the intention of this specification that an

archaeological watching brief shall be carried out in cells 5 and 6 in the Shafton seam, and in cells 11-13 in the Sharlston Top and the Sharlston Low seams, on the basis that these are the areas most likely to yield interpretable evidence of 18<sup>th</sup> century and earlier working.

8.3 The archaeologist's attendance on site should coincide with periods of coal clearance and cleaning in the areas/seams specified. It is imperative that the contracting archaeologist should liaise closely with the main contractor in order that they may be aware when earlier workings have been exposed, and to ensure optimum timing and length of site visits. The frequency of the archaeologist's visits should depend on the concentration of archaeologically significant features and the contracting archaeologist's judgement. Where there are no early workings being exposed, archaeological site visits will not be necessary. In the event of exposure of features of particular complexity or interest, visits may be need to be frequent. The total period of visits by the archaeological contractor should not exceed 16 full days in total. In addition, provision should be made for a contingency period of up to a further 10 full days of work in the event of the discovery of an exceptionally complex or important concentration of features. This contingency period need not necessarily be used in its entirety, and in any event may only be drawn upon as the result of specific written agreement between the contracting archaeologist, the WY Archaeology Advisory Service , and UK Coal

8.4 It is the intention of this specification that the archaeological watching brief shall be carried out after cleaning and during execution of the Completion Plan. It is imperative that the contracting archaeologist should liaise closely with the site surveyor in order to determine which areas will be recorded in detail (industry practice elsewhere suggests that this may be as little as 20% of the site), and to determine the optimum timing of site visits. The archaeologist will be given the opportunity to view the exposed surface of the coal seam. The archaeologist will then be allowed time to rapidly clean, assess, and record any features and finds. Judgement should be used in determining what features actually require detailed recording by the archaeologist. The contracting archaeologist should bear in mind at all times that, because of the constraints imposed by the principal contractor's method of working, the exercise being carried out is intended as a *summary* recording brief rather than a detailed archaeological excavation. It is the intention of this specification that the archaeological work should not materially affect the normal course of the main contractor's work. However, should discoveries be made which are unexpectedly significant and complex, then the archaeological contractor should follow the procedure outlined in Para. 7.8.1 above.

8.5 Material excavated from within exposed underground workings should be searched as practicable for finds. Significant numbers of artefacts are not expected to occur on this site, but wooden or wicker artefacts such as ladders, baskets and pit props are known to survive well in the environment of abandoned pillar and stall workings.

8.6 Items of archaeological interest on this type of site would typically include (but are not confined to):

- the morphology of the extraction galleries themselves
- evidence for assisted ventilation (gallery stops, furnaces or fire baskets, etc.)

- evidence for drainage (pumps or drainage drifts)
- evidence for haulage (tracks, roadways or ramps)
- any associated artefacts

8.7 It is the intention of the specification that the Completion Plan should provide a framework for the drawn archaeological record. A representative sample of the extraction galleries should be mapped, with the size of the sample to be determined by the time available on-site. The absolute position of these mapped samples and of features of archaeological interest identified within the areas examined should be located as accurately as possible either with reference to the Completion Plan (where this is sufficiently detailed) or by the use of a GPS. The features and their position relative to the surrounding galleries should be recorded by photographs, scale drawings and written descriptions in a manner sufficient to permit interpretation and the preparation of a report on the site (see Para. 12ff). In the interest of recording speed, it is expected that the archaeological contractor will make the maximum possible use of a TST and an appropriate graphics software package.

8.8 Photographs may be taken with either a Medium Format or a 35mm camera, as judged appropriate by the archaeologist on site. All photographs to be black and white, using conventional silver-based film only, such as Ilford FP4 or HP5, or Delta 400 Pro (a recent replacement for HP5 in certain film sizes such as 220). Dye-based (chromogenic) films such as Ilford XP2 and Kodak T40CN are unacceptable due to poor archiving qualities. Digital photography is unacceptable due to unproven archiving qualities. This basic photographic record should be supplemented by colour slide photography as necessary. All detail photographs must contain a graduated photographic scale unless this is not possible for reasons of Health and Safety. The photographic record must be accompanied by a photographic register detailing (as a minimum) location and direction of shot.

## **9. Monitoring**

9.1 The project will be monitored as necessary and practicable by WYAAS, in its role as curator of the county's archaeology and advisor to the local Planning Authority. WYAAS's representative will be afforded access to the site at any reasonable time. It is usual practice that the visit is arranged in advance, but this is not always feasible.

9.2 WYAAS's representative will be provided with a site tour and an overview of the site by the senior archaeologist present and should be afforded the opportunity to view all trenches, any finds made that are still on site, and any records not in immediate use. It is anticipated that the records of an exemplar context that has previously been fully recorded will be examined. Any observed deficiencies during the site visit are to be made good to the satisfaction of WYAAS's representative, by the next agreed site meeting. Access is also to be afforded at any reasonable time to English Heritage's Regional Archaeological Scientific Advisor.

## **10 Archive Deposition**

10.1 Before commencing the fieldwork, the archaeological contractor must determine the requirements for the deposition of the excavation archive with Wakefield Museum, Wood Street, Wakefield, WF1 2EW – 01924 305351; Keeper of Archaeology: Pam Judkins.



10.2 It is the policy of Wakefield MDC Museums and Arts to accept complete excavation archives, including primary site records and research archives and finds, from all excavations carried out in the District which it serves.

10.3 It is the responsibility of the archaeological contractor to endeavour to obtain consent of the landowner, in writing, to the deposition of finds with Wakefield MDC Museums.

10.4 The archaeological contractor must meet Wakefield MDC Museums' requirements with regard to the preparation of fieldwork archives for deposition.

## **11. Post-excavation Assessment and Analysis**

### **11.1 Initial Treatment of Artefacts and Samples**

Upon completion of fieldwork all finds will be cleaned, identified, marked (if appropriate) and properly packed and stored in accordance with the requirements of national guidelines. Metalwork will be x-rayed (as per paragraph 7.5) and assessed by a conservator. Any samples taken shall be processed appropriately.

### **11.2 Archive Consolidation**

11.2.1 The site archive will be checked, cross-referenced and made internally consistent. A fully indexed archive shall be compiled consisting of all primary written documents, plans, sections, photographic negatives and a complete set of labelled photographic prints/slides.

11.2.2 The complete archive (including finds) will be prepared in accordance with the requirements of the recipient museum (see section 10 above).

11.2.3 The original archive is to accompany the deposition of any finds, providing the landowner agrees to the deposition of finds in a publicly accessible archive (see paragraph 10.3 above). In the absence of this agreement the field archive (less finds) is to be deposited with the West Yorkshire Archaeology Advisory Service.

### **11.3 Assessment - Artefacts**

All artefacts must be assessed by a qualified and experienced specialist. Assessment should be generally based on MAP2 but should include:

- preparation of a descriptive catalogue;
- dating (where possible);
- an assessment of the significance of the assemblage;
- an assessment of the potential for further analysis to contribute to the interpretation of the archaeology of this site;
- an assessment of the potential for further analysis to contribute to artefact studies;
- recommendations for additional artefact illustration/photography;
- an assessment of the condition of the assemblage and recommendations for conservation, retention/discard and archiving.

### **11.4 Assessment - Samples**

11.4.1 All material must be assessed by a qualified and experienced specialist. Assessment should be generally based on MAP2 but should include:

- preparation of a descriptive table/catalogue;

- identification of material suitable for scientific dating;
- an assessment of the significance of the assemblage;
- an assessment of the potential for further analysis to contribute to the interpretation of the archaeology of this site;
- an assessment of the condition of the assemblage and recommendations for retention/discard and archiving.

### **11.5 Dating**

Scientific dating should be undertaken at this stage if it is required to fulfil the aims of the project.

### **12 Reporting (Stage 1) – Interim Assessment of Potential**

12.1 Following the return of the specialist reports to the archaeological contractor, but prior to the commencement of preparation of the detailed site report, the contractor should arrange a meeting with the WY Archaeology Advisory Service and (at his discretion) English Heritage's Regional Science Adviser (Andy Hammon, English Heritage, 37 Tanner Row, York YO1 6WP). The purpose of this meeting is to discuss the results of the initial stratigraphic synthesis and initial scientific analyses, and to determine

- the ability of the available data to fulfil the stated aims and objectives of the project
- any requirement for further scientific analyses prior to the formulation of the full report on the site.

The meeting may take the form of a telephone discussion, at the discretion of the WY Archaeology Advisory Service.

12.2 Prior to the meeting, documentation sufficient to enable the Advisory Service and English Heritage's Regional Science Adviser to evaluate any proposals for further analysis should be made available to WYAAS and EH. This documentation should consist of the following as a minimum, but should not include a detailed site narrative or constitute a draft of the final report:

#### 12.2.1 Text

- A brief narrative outline of the results of the excavation (**N.B.** this is not intended to be a detailed description of the stratigraphic sequence, but should provide sufficient detail to permit the form and development of the site to be understood by a third party who has not visited the excavation);
- Detailed description of any features/feature groups, the interpretation of which may be affected by the results of further scientific analysis;
- A re-evaluation of the aims and objectives of the project in the light of the initial specialist analysis;
- A descriptive context catalogue;
- Unedited copies of specialist reports;
- Detailed and specific recommendations for further artefact and environmental analysis;
- Detailed and specific recommendations for any additional scientific dating;
- Detailed and specific recommendations for further documentary research;

- Costings for any recommended further research, scientific analysis or dating;
- Recommendations for general publication in monograph form or in an appropriate journal, if warranted by the results of the excavation.

### 12.2.2 Illustrations

Illustrations should be sufficient to permit the summary discussion to be understood by a third party, and should include:

- Location plan;
- Trench locations (as excavated), overlaid on an up-to-date 1:1250 O.S. map base;
- Draft phase plans (these should be at a scale sufficient to illustrate major context and feature groups important to an understanding of the site narrative)
- Plans, sections and photographs sufficient to permit the narrative outline to be understood, and to support recommendations for further specialist analysis. Draft drawings and marked-up digital photographs are acceptable as long as these are legible.

## **13. Reporting (Stage 2) – Full Report**

13.1 If further specialist analysis is judged by the WY Archaeology Advisory Service to be necessary and appropriate, this work should be commissioned and the results incorporated into a full report. If no further specialist analysis is required, then a full report will be produced.

13.2 Details of the style and format of the full report are to be determined by the archaeological contractor. However, it should be produced with sufficient care and attention to detail to be of academic use to future researchers. The report should be fully illustrated and include:

- background information;
- a description of the methodology;
- a full description of the results;
- an interpretation of the results in a local/regional/national context as appropriate;
- a full bibliography.

Appendices to the report should include:

- Unedited copies of final specialist reports;
- a quantified index to the site archive
- written confirmation from the relevant museum or other repository that the archive has been accepted for long-term storage, with full location details of the archive
- a copy of this specification.

13.3 Location plans should be produced at a scale which enables easy site identification and which depict the full extent of the site. A scale of 1:50,000 is not regarded as appropriate unless accompanied by more detailed plan(s). The location

of the trenches (as excavated) should be overlaid on an up-to-date 1:1250 O.S. map base.

13.4 All illustrations should be executed to publication standard. Site plans should be at an appropriate, measurable scale showing the trenches as excavated and all identified (and, if possible, predicted) archaeological features/deposits. Trench and feature plans must include O.D. spot heights for all principal strata and any features. Section drawings must include O.D heights and be cross-referenced to an appropriate plan.

13.5 Finds that are critical for dating and interpretation should be illustrated.

13.6 Discrete features crucial to the interpretation of the site should be illustrated photographically.

13.7 In addition to the full report to be deposited with the WY Historic Environment Record, the results of this excavation may merit publication in monograph form or in a suitable archaeological journal (subject to the judgement of the WY Archaeology Advisory Service). If further publication is considered to be necessary, the archaeological contractor will be expected to approach the editor of the appropriate publication (after discussions with WYAAS) to confirm the journal's requirements and views with regard to the suitability of the proffered material.

13.8 The full report will be submitted directly to the WY Archaeology Advisory Service within a timescale agreed by both parties. The report will then be assessed by WYAAS to establish whether or not it is suitable for accession into the WY Historic Environment Record. Any comments made by WYAAS in response to the submission of an unsatisfactory report will be taken into account and will result in the reissue of a suitably edited report to all parties, within a timescale which has been agreed with WYAAS. Completion of this project and a recommendation from WYAAS for the full discharge of the archaeological condition is dependant upon receipt by WYAAS of i) a satisfactory full report and, should publication be warranted, ii) a copy of a letter from an appropriate journal editor or publisher confirming acceptance of the article.

13.9 The full report, once accepted by WYAAS, will be supplied on the understanding that it will be added to the West Yorkshire Historic Environment Record and will become a public document after an appropriate period of time (generally not exceeding six months).

13.10 The attached summary sheet should be completed and submitted to the West Yorkshire Archaeology Advisory Service for inclusion on WYAAS's website.

## **14. General Considerations**

### **14.1 Authorised Alterations to Specification by Contractor**

14.1.1 It should be noted that this specification is based upon records available in the West Yorkshire Historic Environment Record. It is recommended that archaeological contractors should carry out a site inspection prior to submitting a tender. If, upon visiting the site or at any time during the course of the recording exercise, it appears in the archaeologist's professional judgement that:

- i) a part or the whole of the site is not amenable to recording as detailed above, and/or
- ii) an alternative approach may be more appropriate or likely to produce more informative results,

then it is expected that the archaeologist will contact WYAAS as a matter of urgency. If contractors have not yet been appointed, any variations which WYAAS considers to be justifiable on archaeological grounds will be incorporated into a revised specification, which will then be re-issued to the developer for redistribution to the tendering contractors. If an appointment has already been made and site work is ongoing, WYAAS will resolve the matter in liaison with the developer and the Local Planning Authority.

#### **14.2 Unauthorised Alterations to Specification by Contractor**

14.2.1 It is the archaeological contractor's responsibility to ensure that they have obtained WYAAS's consent in writing to any variation of the specification prior to the commencement of on-site work or (where applicable) prior to the finalisation of the tender. Unauthorised variations may result in WYAAS being unable to recommend determination of the planning application to the Local Planning Authority based on the archaeological information available and are therefore made solely at the risk of the contractor.

#### **14.3 Technical Queries**

14.3.1 Any technical queries arising from the specification detailed above, should be addressed to WYAAS without delay.

#### **14.4 Publicity**

14.4.1 If the project is to be publicised in any way (including media releases, publications etc.), then it is expected that WYAAS will be given the opportunity to consider whether its collaborative role should be acknowledged, and if so, the form of words used will be at WYAAS's discretion.

#### **14.5 Valid Period of Specification**

14.5.1 This specification is valid for a period of one year from date of issue. After that time it may need to be revised to take into account new discoveries, changes in policy or the introduction of new working practices or techniques.

**West Yorkshire Archaeology Advisory Service**  
**Helen M. Gomersall**

**July 2007**

West Yorkshire Archaeology Advisory Service  
Registry of Deeds  
Newstead Road  
Wakefield  
WF1 2DE

Telephone: 01924 306798  
Fax: 01924 306810  
E-mail: hgomersall@wyjs.org.uk

## APPENDIX 2: SUMMARY CONTEXT LIST

Context	Description	Phase
<b>101</b>	Rubble layer	3
<b>102</b>	Topsoil. Containing modern fly tip	3
<b>103</b>	Natural clay geology	-
<b>104</b>	Demolition rubble	3
<b>105</b>	Mid-yellow-grey compacted clay deposit adhering to structure <b>150</b>	2
<b>106</b>	Loose clinker and slag deposit, possibly associated with railway sidings at the northern end of the site	3
<b>107</b>	Group number for brick and stone structures south-east of pit-shaft 2. Equivalent to structure <b>146</b>	2
<b>108</b>	Hand-tipped blue-grey and orange-red shale deposit	2
<b>109</b>	East/west-aligned brick wall	2
<b>110</b>	Redeposited clay forming a bank at the northern end of the site	3
<b>111</b>	Sandy clay layer beneath bank <b>110</b>	3
<b>112</b>	Group context for structure north of pit-shaft 2, comprising walls <b>183-7</b>	2
<b>113</b>	Demolition rubble spread over the top of ditch <b>116</b>	2
<b>114</b>	East/west-aligned clay bank in the north-eastern corner of the site	3
<b>115</b>	Coal deposit, possibly used as railway ballast	3
<b>116</b>	Drainage ditch	2
<b>117</b>	North/south-aligned brick wall immediately east of pit-shaft 2	2
<b>118</b>	East/west-aligned stone structure immediately west of pit-shaft 2	2
<b>119</b>	Ash deposit from boiler	2
<b>120</b>	Equivalent to wall <b>132</b>	2
<b>121</b>	Dark brown ash bedding layer beneath stone floor <b>246</b> within structure <b>122</b>	2
<b>122</b>	Brick structure	2
<b>123</b>	Demolition/upcast deposit immediately north-east of pit-shaft 1	3
<b>124</b>	Bucket within layer <b>123</b>	3
<b>125</b>	Cut containing bucket <b>124</b>	3
<b>126</b>	Fill of cut <b>125</b>	3
<b>127</b>	Group number for brick platform, foundation of boiler house	2
<b>128</b>	Coal-dusted brick floor along the western side of foundation <b>127</b>	2
<b>129</b>	Brick floor overlying drains along the north-west side of foundation <b>127</b>	2
<b>130</b>	Brick structure	2
<b>131</b>	Rectangular-shaped foundation north of pit-shafts 1 and 2	2
<b>132</b>	East/west-aligned stone wall	2
<b>133</b>	Mid-brown-grey clay deposit within structure <b>122</b>	2
<b>134</b>	Mid-dark orange-brown clay deposit within structure <b>122</b>	2
<b>135</b>	Sandy clay deposit with frequent flecks of mortar above <b>133</b>	3
<b>136</b>	Coal spillage above platform <b>127</b>	3
<b>137</b>	Demolition backfill overlying stone structure <b>146</b>	3
<b>138</b>	Brick floor butting foundation <b>127</b>	2
<b>139</b>	Dark-brown gritty silt deposit beneath surface <b>138</b> and above floor <b>129</b>	2
<b>140</b>	Brick-built structure north-west of pit-shaft 1	2
<b>141</b>	Clay/coal layer observed in the north-facing section at the south-eastern corner of the site	3
<b>142</b>	Brick-built pier component of structure <b>140</b>	2
<b>143</b>	Brick blocking wall above floor <b>128</b> , butting wall <b>144</b>	2
<b>144</b>	East/west-aligned brick wall forming the southern boundary of surface <b>128</b>	2
<b>145</b>	Service trench/inspection pit	3
<b>146</b>	Stone construction east of pit-shaft 2	2
<b>147</b>	Shale/upcast surrounding pit-shaft 1	2
<b>148</b>	Coal dust used as a bedding layer for surface <b>128</b>	2

149	Clinker deposit on the south-eastern side of the site	3
150	Curved red brick/stone structure east of foundation 127	2
151	Fill of posthole 152	1
152	Cut for posthole	1
153	Fill of posthole 154	1
154	Cut for posthole	1
155	Light grey shale deposit tipping below 108	2
156	Dark grey shale deposit tipping below 155	2
157	Dark grey clay deposit butting 107	2
158	East/west-aligned channel extending from foundation 127 into surface 128	2
159	Stone wall	2
160	East/west-aligned brick wall within foundation 127 and overlying wall 159	2
161	East/west-aligned channel contained within foundation 127	2
162	Brick pier or partition wall, separating channels 161 and chamber 164 within foundation 127	2
163	Brick surface across the top of chamber 164	2
164	Brick-lined chamber within foundation 127	2
165	Brick floor of chamber 164	2
166	Fish-bellied rail within the southern edge of channel 158	2
167	Rubble, ash and mixed clay fill of chamber 164	2
168	East/west-aligned brick surface within foundation 127	2
169	East/west-aligned brick surface within foundation 127	2
170	North/south-aligned internal brick wall within foundation 127	2
171	Rectangular-shaped structure between the pit-shafts	2
172	Wall within foundation 127	2
173	Northern external wall of foundation 127	2
174	Short brick partition wall dividing channel 158	2
175	Floor of channel 158	2
176	Black-shale deposit beneath wall 178	2
177	Mixed-clay deposit beneath wall 159	2
178	Wall of boiler house	2
179	Brick structure attached to the western side of wall 178, bonded to 173	2
180	Purple/brown powder above floor 175 within foundation 127	2
181	Ash/mortar layer beneath channels 161 and 162 within foundation 127	2
182	North/south-aligned brick pile overlying wall 160 within foundation 127	2
183	Northern external brick wall of structure 112	2
184	Eastern external wall of structure 112	2
185	Southern external wall of structure 112	2
186	Brick floor of structure 112	2
187	Eastern external wall of structure 131	2
188	Brick structure extending west below the capping along the northern side of pit-shaft 1	1
189	Brick structure extending below the capping along the southern side of pit-shaft 1	1
190	Stone foundation below structure 112	2
191	Shale/rubble demolition layer of building represented by wall 178	2
192	Shale deposit beneath 191 (same as 108)	2
193	Mixed-yellow clay and rubble beneath wall 169	2
194	Natural grey clay	-
195	Dark grey-brown silt fill of cut 212 for wall	2
196	Construction cut for wall 172	2
197	Backfill of cut 196	2
198	Construction cut for surfaces 168 and 169	2
199	Fill of cut 198	2
200	Northern external wall of building 171	2

201	Red-brick foundation butting the southern side of wall 202	2
202	Southern external wall of building 171	2
203	Brick pier within wall 200	2
204	Brick pier within wall 202	2
205	Brick-lined air channel west of foundation 131	2
206	Partition wall of structure along the southern end of surface 128, possibly associated with building attached to pit-shaft 1	2
207	Wall adjacent to brick pier 203	2
208	Drain aligned north-east/south-west, crossing the northern part of the site	2
209	Redeposited clay beneath 139	2
210	Stone drain below channel 158	2
211	Stone infill of drain 210	2
212	Foundation cut for wall 173	2
213	Demolition deposit above wall 173	2
214	Fuel ash beneath layer 181	2
215	Concrete across surface 228	3
216	Drain below surface 129	2
217	Levelling layer beneath foundation 127	2
218	Redeposited clay layer below shale upcast 147	2
219	Wooden stake lying north/south. Component of feature 220	1
220	Wooden feature at the south-western corner of the site, possibly part of a horse-driven gin	1
221	Early culvert beneath the entrance of pit-shaft 2	1
222	East/west-aligned stone wall forming the northern external boundary of structure 146	2
223	East/west-aligned stone wall extending east from pit-shaft 2, with dog-leg to north	2
224	North/south-aligned stone wall forming part of structure 146, butting wall 222	2
225	Ceramic pipe extending east/west between pit-shafts 1 and 2	3
226	North/south-aligned stone wall beneath wall 117, possibly part of structure 146	2
227	Pipe along the northern side of wall 226, cutting demolition layer 137	3
228	Brick surface at the south-western corner of the site	3
229	Fill of posthole 230	1
230	Cut for posthole	1
231	Fill of posthole 232	1
232	Cut for posthole	1
233	Fill of posthole 234	1
234	Cut for posthole	1
235	Fill of posthole 236	1
236	Cut for posthole	1
237	Fill of posthole 238	1
238	Cut for posthole	1
239	Stone engine base	1
240	Fill of posthole 241	1
241	Cut for posthole	1
242	Fill of posthole 243	1
243	Cut for posthole	1
244	Fill around central post 251	1
245	Construction cut for central posthole	1
246	Stone floor beneath structure 122	2
247	Brick pier in the centre of structure 140	2
248	Brick pier butting against structure 140	2
249	Brick pier cutting the southern wall of structure 140	2
250	Brick buttress along the eastern side of structure 140	2
251	Central upright post within feature 220	1



252	Drain aligned north-east/south-west, projecting toward drain <b>208</b>	2
253	Possible blocked entrance within wall <b>222</b>	2
254	East/west-aligned wall along the northern side of pit-shaft 2, beneath wall <b>253</b>	2
255	Posthole group at the southern end of postholes <b>220</b>	1
256	Fill of posthole group <b>255</b>	1
257	Coal-ash dump south of stone foundation <b>120</b>	2
258	Grey-brown clay above <b>257</b> (same as <b>141</b> )	3
259	Ash layer above clay layer <b>258</b>	3
260	Square-shaped pit north-west of <b>220</b>	1
261	Shale fill of pit <b>260</b>	1
262	Not used	
263	Not used	
264	Stony upper fill of pit cap/shaft	3
265	Yellow clay sealing pit-shaft 2	3
266	Yellow clay sealing pit-shaft 1	3
267	Yellow clay west of pit-shaft 2	3
268	Mixed dark brown silt-clay and brick rubble fill of pit-shaft 2	3
269	Brick lining of pit-shaft 2	1
270	Mid brown silt-sand deposit used during construction of brick lining in pit-shaft 2	1
271	Construction cut for pit-shaft 2	1
272	Dark blue-grey shale (natural geology)	-
273	Possible brick structure/lining of pit-shaft 1 (same as <b>278</b> ?)	1
274	Dark grey shale (same as <b>263</b> )	
275	Spread of compact yellow clay (same as <b>266</b> )	3
276	Redeposited shale <b>263</b> /backfill of pit-shaft 1	3
277	Dark brown silt-sand deposit	1
278	Brick lining of pit-shaft 1, possible lower level/variation of <b>273</b>	1
279	Construction cut for pit-shaft 1/ <b>278</b>	1
280	Brick structure west of pit-shaft 1	1
281	Construction cut for <b>280</b>	1
282	Not used	
283	North/south-aligned ceramic pipe extending over the western side of structure <b>171</b>	3

### APPENDIX 3: FINDS CATALOGUE

<i>Context</i>	<b>Object No</b>	<b>Quantity</b>	<b>Material</b>	<b>Description</b>	<b>Comment</b>	<b>Period</b>
<i>U/S</i>	-	96	Ceramic Building Material	Bricks	Two samples taken from each wall	Eighteenth/nineteenth century
<i>101</i>	1000	34	Ceramic	Grooved light brown, grey, and white stoneware jar, bowl, and large bottles (five), black-glazed red earthenware (coarse, two), yellow-glazed red earthenware (four), porcelain bowl, glazed white earthenware (eight), light and dark blue and black transfer-printed wares (12), annular wares (two)		Eighteenth/nineteenth century
<i>101</i>	1036	3	Glass	Green/clear hexagonal flask fragment, milk bottle fragment, large frosted dish lid		Post-medieval
<i>104</i>	1001	48	Ceramic	Press-moulded china bowl (two), black and blue transfer-printed cups, including friar fishing scene (16), blue-edged china platter, dark glazed red earthenware (coarse, three) bowl, dark glazed red earthenware (fine purple fabric, two), industrial slipware cup, yellow ware, light brown stoneware bottles/jars		Seventeenth-nineteenth centuries

<b>104</b>	1011	2	Industrial Residue	Ironworking slag		Not closely datable
<b>104</b>	1016	2	Clay Tobacco Pipe	Highly decorative stem with foliage along the heeled spur and large leaf-decorated bowl fragment		Nineteenth century
<b>104</b>	1027	1	Building Material	Mortar – lime		Post-medieval?
<b>104</b>	1029	6	Iron	Washer, nail, spike, ring, wire and small cast-iron box		Post-medieval
<b>104</b>	1031	5	Animal Bone	Fowl and bovine fragments		Not closely datable
<b>104</b>	1035	6	Glass	Blue hexagonal flask (two), stirring rod, clear bottle embossed with address 57 NORTHGATE HALIFAX, double-lipped beer bottle		Post-medieval
<b>104</b>	1041	8	Clay Tobacco Pipe	Stems; medium bore, includes tapered lipped mouthpiece, heeled spur with unusual applied rosette motif		Nineteenth century
<b>104</b>	Small find 1	1	Iron	Fish-bellied plate		Post-medieval
<b>106</b>	1008	2	Ceramic	Glazed white earthenware		Nineteenth century

<b>106</b>	1040	6	Clay Tobacco Pipe	Stems (two), spurred bowl with internal decoration, decorated bowl fragment depicting a running man, and heeled spur with rosette applied to the base of the bowl scar		Nineteenth century
<b>108</b>	1002	10	Ceramic	Dark glazed red earthenware (fine), blue transfer-printed cups		Eighteenth/nineteenth century
<b>108</b>	1038	1	Wood	Stake		Not closely datable
<b>111</b>	1042	9	Ceramic	Brown-glazed red earthenware (coarse), Nottingham-type stoneware, Staffordshire-type trailed slipware, yellow-glazed red earthenware (coarse), glazed white earthenware		Eighteenth-nineteenth centuries
<b>111</b>	1043	1	Glass	Clear vessel body fragment		Post-medieval
<b>111</b>	1044	1	Clay Tobacco Pipe	Narrow-bored stem		Eighteenth century
<b>120</b>	1004	3	Ceramic	Blackware (two), yellow-glazed earthenware		Eighteenth/nineteenth century
<b>120</b>	1028	13	Building Material	Mortar – lime		Post-medieval?

<b>121</b>	1005	38	Ceramic	Nottingham-type stoneware bowl, porcelain cup, dark glazed red earthenware (fine, 11), brown-glazed red earthenware, industrial slipware (four), press-moulded china plate (three), blue shell-edged pearlware plate, transfer-printed gravy bowl, plates and cups		Eighteenth-nineteenth centuries
<b>121</b>	-	1	Animal Bone	Sheep fragment		Not closely datable
<b>123</b>	1033	1	Plastic	Button		Twentieth century
<b>125</b>	1024	1	Iron	L-shaped perforated bar	Brace?	Not closely datable
<b>136</b>	1039	1	Clay Tobacco Pipe	Large bowl stamped with manufacturer's mark COGORM WEST GALWAY 43		Nineteenth century
<b>137</b>	Small find 2	1	Iron	Fish-bellied plate		Post-medieval
<b>137</b>	Small find 3	1	Iron	Fish-bellied plate		Post-medieval
<b>137</b>	1006	7	Ceramic	Dark glazed red earthenware (coarse), blackware cup, transfer-printed wares, agate ware		Seventeenth-early nineteenth centuries
<b>137</b>	1014	4	Ceramic	Annular and agate wares		Eighteenth/nineteenth century
<b>137</b>	1032	1	Copper alloy	Button	Looped	Post-medieval
<b>137</b>	1034	1	Iron	Large spanner		Post-medieval
<b>137</b>	Small find 4	1	Iron	Fish-bellied plate		Post-medieval
<b>141</b>	1007	1	Ceramic	Dark glazed red earthenware (fine) bowl		Nineteenth century

<b>146</b>	1013	20	Ceramic	Pearlware bowl (two), blue shell-edged dish lid (two), stoneware vessel, blackware jug (two), brown-glazed trail slipware roasting dish, annular bowl (three), blue transfer-printed cups, mocha-ware bowl (four)		Eighteenth-nineteenth centuries
<b>147</b>	1023	1	Iron	Large square-sectioned L-shaped bar with a spiked terminal		Post-medieval
<b>148</b>	1015	3	Ceramic	Light brown stoneware bottle, Asiatic Pheasant pattern transfer-printed bowl (two)		Nineteenth century
<b>148</b>	1017	1	Iron	Unidentified Object		Post-medieval
<b>148</b>	1026	1	Industrial debris	Ironworking slag/smithy waste		Post-medieval
<b>180</b>	Small find 5	1	Iron	Fish-bellied plate		Post-medieval
<b>193</b>	1025	1	Wood	Flattened stake	?Roof brace	Not closely datable
<b>219</b>	Small find 6	1	Wood	Stake		Post-medieval?
<b>220</b>	Small find 7	1	Wood	Pit prop	Possibly part of a stockpile of props	Post-medieval
<b>220</b>	Small find 8	1	Wood	Pit prop	Possibly part of a stockpile of props	Post-medieval
<b>220</b>	Small find 9	1	Wood	Pit prop	Possibly part of a stockpile of props	Post-medieval
<b>220</b>	Small find 10	1	Wood	Pit prop (reused?)	Possibly part of a stockpile of props	Post-medieval

<b>221</b>	1045	2	Ceramic	Cobalt blue sponge and light blue transfer-printed wares		Nineteenth century
<b>251</b>	Small Find 11	1	Wood	Unmodified trunk		Post-medieval
<b>282-WB</b>	Small find 12	1	Wood	Railway sleeper	Area 10; (Sharlston Low/Top?)	Post-medieval
<b>282-WB</b>	Small find 13	1	Wood	Pit prop	Area 10; (Sharlston Top)	Post-medieval
<b>U/S</b>	1009	64	Ceramic	Brown-glazed red earthenware (coarse, nine), black-glazed red earthenware (coarse, 14), jasperware bowl, Nottingham-type stoneware, Hartley's marmalade stoneware jar, sponge-printed fruit bowl, stonewares (12), tin-glazed plates (three), black and blue transfer-printed wares		Eighteenth-nineteenth century
<b>U/S</b>	1010	2	Ceramic	Glazed white earthenware condiment lid		Nineteenth century
<b>U/S</b>	1012	1	Copper alloy	Unidentified Object		Post-medieval
<b>U/S</b>	1018	2	Iron	Unidentified Object		Post-medieval
<b>U/S</b>	1019	1	Iron	Unidentified Object		Post-medieval
<b>U/S</b>	1020	1	Iron	Unidentified Object		Post-medieval
<b>U/S</b>	1021	2	Iron	Spike and unidentified object		Post-medieval
<b>U/S</b>	1022	7	Iron	Nail, staple, spike, unidentified objects (four)	Metal detected	Post-medieval
<b>U/S</b>	1030	5	Iron	Bolt, unidentified objects (four)		Post-medieval

<b><i>U/S</i></b>	1037	1	Animal Bone	Sheep fragment		Not closely datable
<b><i>U/S</i></b>	-	1	Wood	Post/prop		Post-medieval
<b><i>U/S- WB</i></b>	-	1	Wood	Pit prop	Area 10 (Sharlston Low?) Area C	Post-medieval
<b><i>U/S- WB</i></b>	-	2	Wood	Pit props	Area 14 (Sharlston Top)	Post-medieval
<b><i>U/S- WB</i></b>	-	1	Wood	Pit prop	Upper seam (Sharlston Top)	Post-medieval
<b><i>U/S-WB</i></b>	-	2	Wood	Pit props	Sharlston Top seam (Area 13) and unidentified area (Area 12? Sharlston Low?)	Post-medieval



---

## APPENDIX 4: REASSESSMENT OF THE CAST-IRON PLATES

---

*Roderick Mackenzie BSc PhD*

### **A4.1 INTRODUCTION**

A4.1.1 The following report is an archaeometallurgical assessment of five ferrous metal objects that were found during archaeological fieldwork at the site of the former colliery at Sharlston, West Yorkshire. The items were recovered from the archaeological deposits that are thought to relate to the demolition of the colliery. The main aim of this assessment has been to identify the objects and determine whether they are of potential archaeometallurgical or historical significance.

### **A4.2 METHODOLOGY**

A4.2.1 For the initial evaluation of the metal objects, detailed photographs, including one showing a fracture surface, and measurements were reviewed. As the objects have been positively identified from their photographs and dimensions, there was no need for them to be inspected in person by the author.

### **A4.3 RESULTS**

A4.3.1 The five metal objects are all very similar in shape and dimension; they are bars with a straight top edge (*c* 1.30m) and pronounced 'fish-bellied' lower edge. At their deepest, the bars measure approximately 190mm, tapering down to approximately 60mm deep at each end. The bars are approximately 18mm thick along most of their length, although the thickness increases to approximately 40mm at each end. The bars all appear to be made from the same type of ferrous metal and a fresh fracture surface on one of the bars strongly suggests that it is made from cast iron.

### **A4.4 INTERPRETATION AND DISCUSSION OF RESULTS**

A4.4.1 The dimensions, shape and the type of metal that the bars are made from are entirely characteristic of firebars from the firegrates of steam boilers, specifically steam railway locomotive boilers. The presence of steam locomotive firebars at the site of a former colliery is perhaps not that unusual, given the abundance and widespread distribution of steam locomotives employed by the National Coal Board prior to dieselisation of their locomotive fleet (Hall 1977).

A4.4.2 The fireboxes of steam locomotive boilers require regular cleaning, inspection and maintenance, and this often involves the removal of firebars from the grate. It is common for some of the firebars to be removed from the grate during routine cleaning, so that ashes and clinker can be pushed or shovelled through into the ashpan below (Topping 1998).

A4.4.3 It would have been, and at heritage railways it still is, quite common to see firebars lying around in the area or loco shed where steam locomotives are cleaned, serviced and maintained. One possible scenario for the presence of

the firebars at Sharlston is that they relate to the final days of steam traction at the colliery, when the fire was dropped out of a locomotive for the final time, prior to it being taken away for scrap. The firebars may have put to one side in a loco shed and simply been forgotten about.

#### **A4.5 CONCLUSION AND RECOMMENDATIONS**

A4.5.1 The firebars offer limited further research potential and, following basic recording and measuring, they can be disposed of in the normal manner.

## ILLUSTRATIONS

---

### LIST OF FIGURES

Figure 1: Site location

Figure 2: Plan of the open-area excavation

Figure 3: The remains of the whim-gin

Figure 4: Bord-and-pillar workings within Area C

Figure 5: Bord-and-pillar workings in Area C1.10

Figure 6: The wooden pit props recovered during the open-area excavations and watching brief

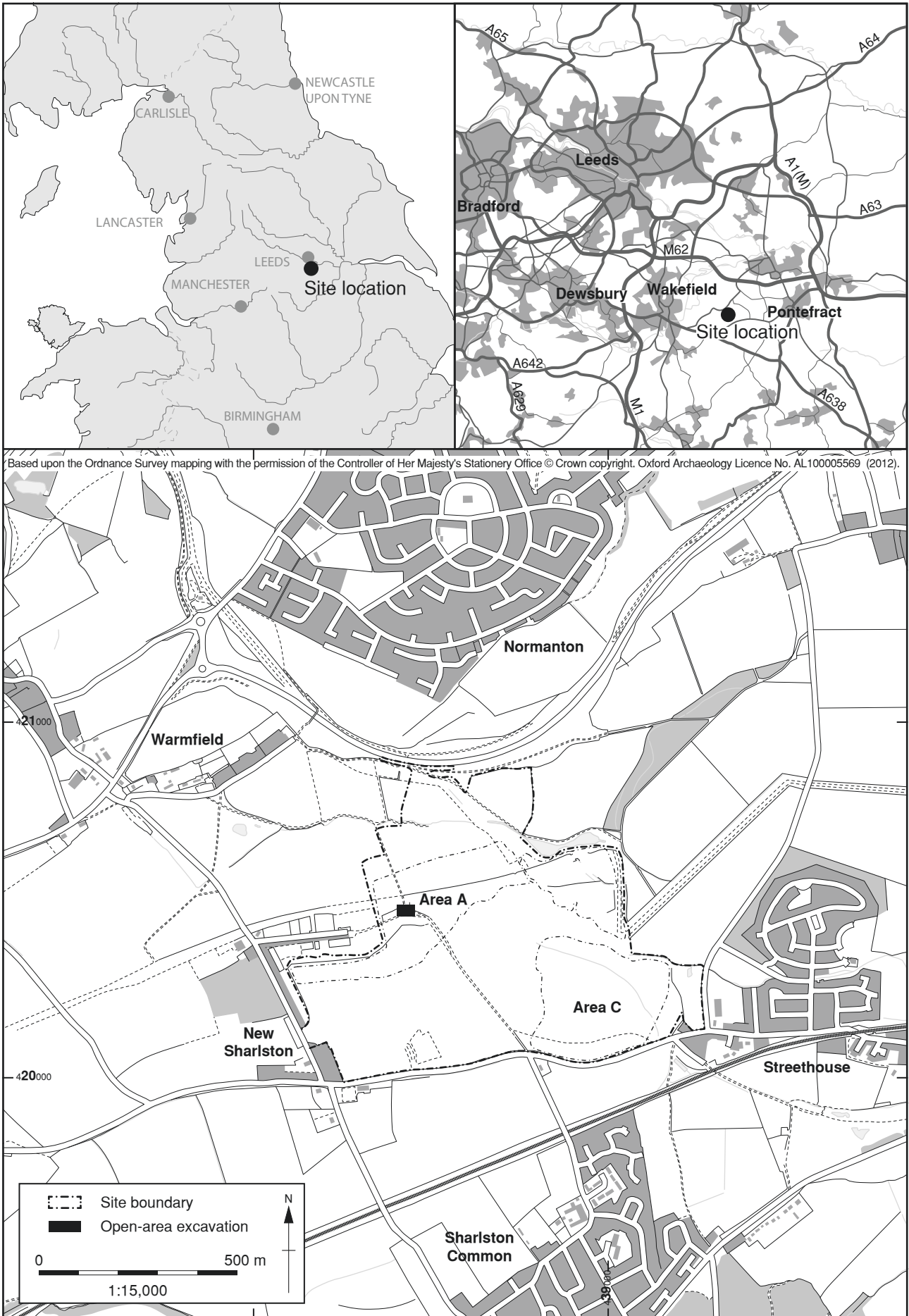


Figure 1: Site location

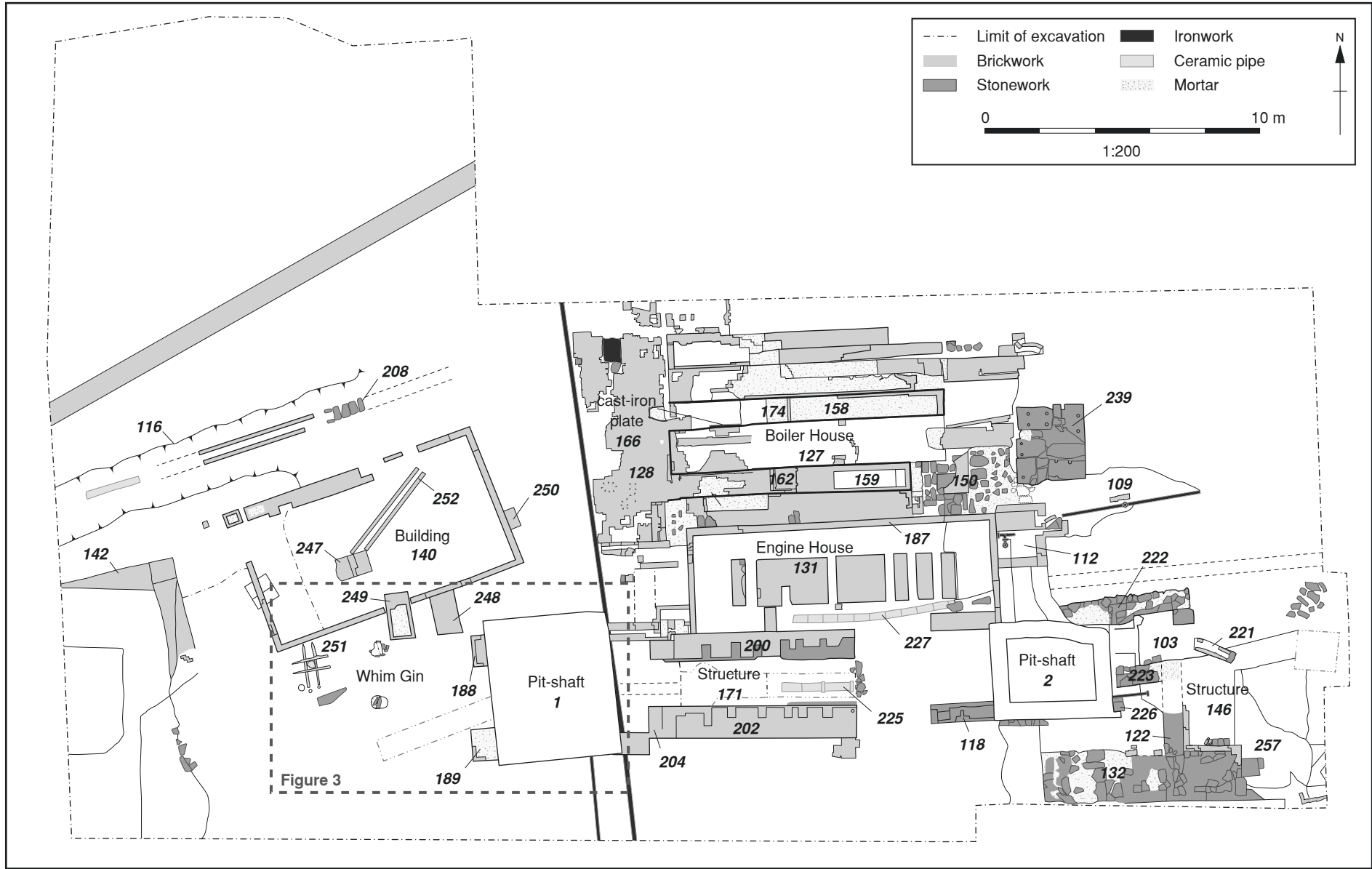


Figure 2: Plan of the open-area excavation

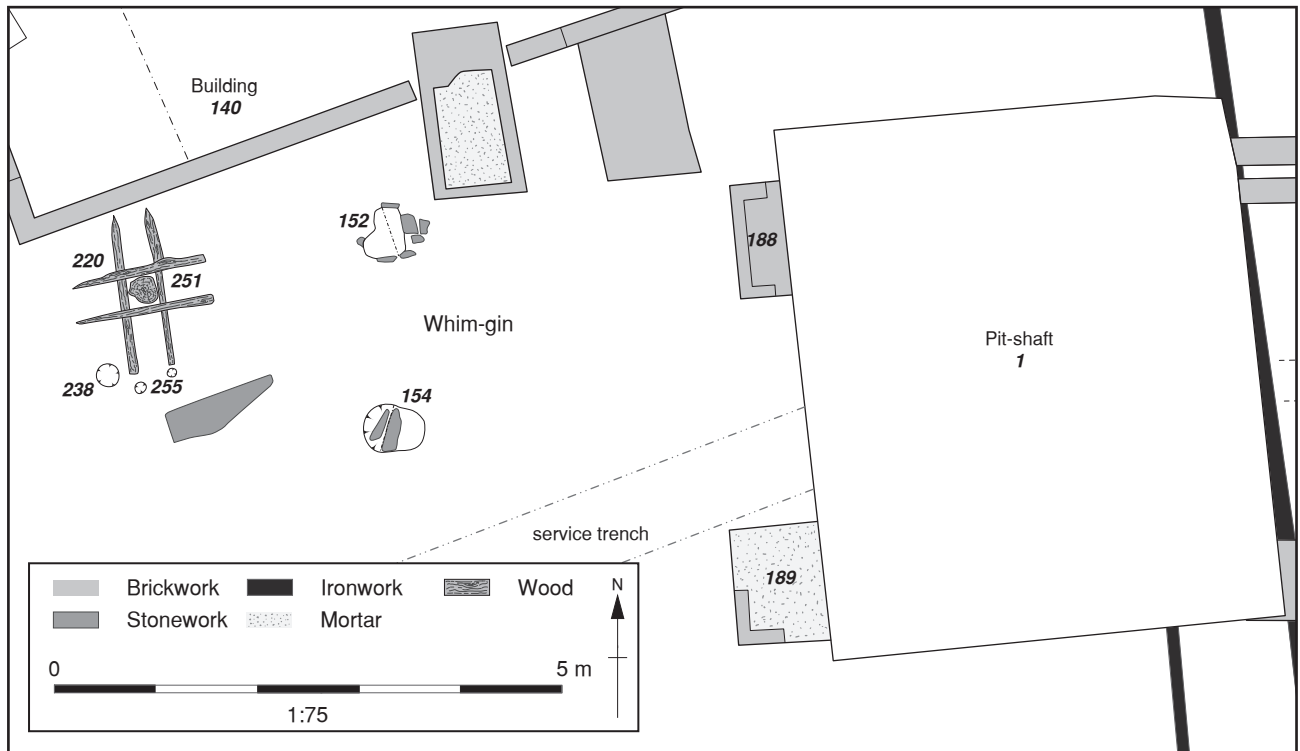


Figure 3: The remains of the whim-gin



Figure 4: Bord-and-pillar workings within Area C



Figure 5: Bord-and-pillar workings in Area C1.10





Figure 6: The wooden pit props recovered during the open-area excavations and watching brief