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## SUMMARY

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Balfour Beatty is carrying out a scheme of redevelopment on the site of a former golf-driving range on land adjacent to Haslingden Road, Blackburn, Lancashire (NGR centred SD 691 270). The land is outlined for redevelopment as part of the Building Schools for the Future (BSF) scheme. The site is of considerable archaeological interest, as the former Grimshaw Pottery, which dates to the early nineteenth century, lies within the area of the proposed development. In addition, the projected line of the Manchester to Ribchester Roman road lies in close proximity to the western extent of the site.

Grimshaw Pottery was built c 1806 by John Riley, who manufactured a range of domestic wares for sale in Blackburn and the surrounding towns. However, the kiln was short-lived, as it was destroyed by a fire in 1814. It is clear that the kiln was rebuilt following the fire and had been completed by 1822, as it is annotated on Gillies map of Blackburn of that date, and documentary evidence exists for the pottery up to the early 1830s. It remains uncertain when pottery ceased to be produced at Grimshaw, and whilst it was the subject of a sketch by Charles Haworth in 1846, it may have been abandoned by that time. The pot house is marked as 'Old Pottery' on the Ordnance Survey of 1849, hinting that it was no longer in use at that date.

In order to secure archaeological interests, the Planning Archaeologist at Lancashire County Archaeological Service, who provides archaeological advice to the Local Planning Authority, recommended that a programme of archaeological investigation be carried out to support the planning application. OA North was duly commissioned by Ramboll Engineering (UK) Ltd, acting on behalf of Balfour Beatty, to undertake the recommended programme of investigative work in July 2010. The first stage of this work comprised a geophysical survey (Strata Scan 2010), which served to identify two potential areas for the location of the pottery kiln. A series of evaluation trenches was excavated subsequently, placed within the two areas highlighted by the geophysical survey: Area 1 in the north-western part of the site; and Area 2 in the south-eastern part of the site. Following the excavation of six trenches, the remains of a pottery kiln were observed within Area 1; conversely, no archaeological remains were encountered within the five trenches excavated within Area 2. Subsequent discussions with the Planning Archaeologist resulted in a programme of targeted open-area excavation being carried out within Area 1, with the specific aim of determining the level of survival of the remains of the potworks, and to make a full record of those remains, along with an assessment of any pottery retrieved.

The excavation revealed the well-preserved foundations of the kiln, which was circular in plan, with seven flues, and evidence for a probable bottle-shaped hovel. The kiln was housed within a stone-built workshop, with a further two workshops being located to the north. The easterly of these two workshops contained the remains of a horizontal drying flue, and was almost certainly a greenhouse, with the other possible being the clayhouse. A pot waster dump was also subject to sample excavation.



Analysis of the fragments of pottery recovered from the excavation concluded that a very limited range of utilitarian domestic pots were produced at the potworks. The majority of vessel types produced included pancheons and large bowls, sometimes referred to as wash pans, which were manufactured in two fabrics and in three main glaze types. Other large vessels produced included large storage jars with either vertical or bowed sides, referred to as bread pots. Smaller, shallow bowls and/or dishes were also evident, notably with slip decoration, and finely-potted black-glazed globular jars with everted or rolled rims were seen in small numbers. Finally, plant pots also appear to have been produced, identifiable from their unglazed appearance. In addition, an estimated 274 fragments of kiln furniture were recovered from the site. The bulk of the material was, as might be expected, from the kiln.

The site has considerable potential to provide a chronological framework for late Blackwares. Following a post-excavation assessment of the dataset generated from the site, the pottery assemblage has been catalogued, a full fabric series produced, and rim types and forms illustrated. Moreover, the assemblage has been studied in conjunction with existing assemblages from other sites in the area to ascertain typological links, and a paper has been prepared for publication in an appropriate academic journal.

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## ACKNOWLEDGEMENTS

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Oxford Archaeology North (OA North) would like to thank Balfour Beatty and Ramboll Engineering (UK) Ltd for commissioning and supporting the project. Particular thanks are due to George Kelly of Engineering (UK) Ltd. Thanks are also expressed to Doug Moir, the Lancashire Planning Archaeologist with Lancashire County Archaeology Service, for his advice and support.

The historical research was carried out by Ian Miller. The programme of initial evaluation trenching was directed by Sean McPhilips. The subsequent excavation was directed by Lewis Stitt, who was assisted by Ric Buckle, Phil Cooke, Vicky Jamieson, Lindsey Kemp and Charlotte Vallance. The pottery was analysed by Jeremy Bradley, with advice from Christine Howard-Davis, and the illustrations were compiled by Adam Parsons and Mark Tidmarsh. The report was written by Jeremy Bradley and Ian Miller, and was edited by Alison Plummer, who was also responsible for project management.

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## 1. INTRODUCTION

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### 1.1 CIRCUMSTANCES OF PROJECT

- 1.1.1 Balfour Beatty propose to redevelop the site a former golf-driving range on land adjacent to Haslingden Road, Blackburn, Lancashire (NGR centred SD 691270: Fig 1). The redevelopment is part of the Building Schools for the Future (BSF) scheme. In order to secure archaeological interests, the Planning Archaeologist at Lancashire County Archaeological Service, who provides archaeological advice to the Local Planning Authority, recommended that a programme of archaeological investigation be carried out to support the planning application. OA North was duly commissioned by Ramboll Engineering (UK) Ltd, acting on behalf of Balfour Beatty, to undertake the programme of investigative work.
- 1.1.2 The first stage of work comprised a geophysical survey (Strata Scan 2010), which served to identify two potential areas for the location of the pottery kiln. Following on from this, a programme of evaluation trial trenching was undertaken within the two areas highlighted by the geophysical survey: Area 1 in the north-western part of the site; and Area 2 in the south-eastern part of the site. Following the excavation of six trenches within Area 1, the remains of a kiln were observed; however, no archaeological remains were encountered within the five trenches excavated in Area 2.
- 1.1.3 Subsequent discussions with the Planning Archaeologist resulted in a programme of targeted excavation being carried out within Area 1, with the specific aim of determining the level of survival of the remains of the pottery, and to make a full record of those remains, along with an assessment of any pottery wasters retrieved. Following the post-excavation assessment (OA North 2011), a programme of further analysis of the pottery assemblage was proposed. What follows are the results of this analysis, coupled with a summary of the historical research, and the results obtained from the evaluation trenching and the subsequent excavation.

### 1.2 LOCATION, TOPOGRAPHY AND GEOLOGY

- 1.2.1 The study area (centred on SD 691270) lies in the most westerly portion of Grimshaw Park, bounded from the west by Haslingden Road (Fig 1). The proposed development area is an irregular-shaped plot, bounded to the north by a housing estate, to the east by Queens Park Close, to the south by Blackburn Royal Infirmary and to the west by Haslingden Road (the A6177; Plate 1).
- 1.2.2 Topographically, the area of Blackburn lies within the East Lancashire Hills, with some areas of the town characterised by steep slopes. During the Pleistocene ice age, Blackburn was subjected to glaciation which resulted in the sandstone and shale bedrock being overlaid in many areas by glacial deposits known as ‘till’, commonly known as boulder clay. The boulder clay survives up to several feet in some areas.



*Plate 1: Aerial view of the site prior to the present project*

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## 2. METHODOLOGY

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### 2.1 WRITTEN SCHEME OF INVESTIGATION

All work was carried out in accordance with approved Written Schemes of Investigation, and was consistent with the relevant standards and procedures of the Institute for Archaeologists (IfA 2008), and generally accepted best practice.

### 2.2 EVALUATION TRIAL TRENCHING

2.2.1 In total, 11 trial trenches were excavated across the study area. Trenches 1 (including 1a and 1b) to 4 were excavated within Area 1 and Trenches 5 to 9 within Area 2 (Fig 2). Area 1 was positioned on the site of the 'Old Pottery' as depicted on the Ordnance Survey first edition 6": 1 mile map (published in 1849), and close to the projected line of the Roman road. Trench 2 in particular was positioned in order to determine the presence or otherwise of the road. Trench 4 targeted a heat-affected area as identified by the geophysical survey. The trenches within Area 2 were centred on several anomalies identified by the recent magnetometry survey.

2.2.2 The topsoil and modern overburden were removed by a wheeled mechanical excavator (fitted with a toothless ditching bucket). The machine was operated under close archaeological supervision, down to the first archaeological deposits, whereupon all further excavation was manual. All features of archaeological interest were investigated and recorded. All spoil was scanned for artefacts. Recording comprised a full description and preliminary classification of the deposits and materials revealed on OA North *pro-forma* sheets. The trenches were located using a GPS, which is accurate to +/- 0.25m. Hand-drawn plans were produced showing the contents of the trenches, with representative sections being drawn at a scale of 1:10 or 1:20 as appropriate. An indexed photographic record utilising monochrome and digital formats was maintained.

### 2.3 OPEN-AREA EXCAVATION

2.3.1 The extent of the study area was intended originally to measure approximately 54.3 x 53m. However, the presence of live water mains in the north-east corner of the study area, and a high-standing stone wall along the southern boundary of the site, resulted in the working area being shortened by at least 8m, with the final dimensions being 54.3 x 45m. The open-area was stripped with a 13 tonne 360 tracked excavator using a toothless ditching bucket. In compliance with environmental sampling strategies imposed by Balfour Beatty and Ramboll Engineering (UK) Ltd, all soil deposits including the topsoil and subsoil were stockpiled separately. The 13 tonne machine was then used to carefully define the extent of any surviving walls, foundations and other archaeological remains, after which all excavations were undertaken manually.



- 2.3.2 **Mapping (Pre-excavation plan):** the principal aim at this initial stage was to produce a plan of any archaeological remains seen to be present. Archaeological features exposed within the stripped area were planned using a total station theodolite, and the resulting plan tied into the national grid.
- 2.3.3 **Excavation:** following the stripping of the area and planning, all subsequent excavations were carried out manually, using trowels, shovels and mattocks. A Global Positioning Satellite (GPS) was used to plan the outline of all archaeological features exposed during the excavation. The resulting plan was tied in to the national grid.
- 2.3.4 All information was recorded stratigraphically with accompanying documentation. Complex features and excavated interventions were recorded by individual hand-drawn plans made at a scale of 1:50. These detailed plans were manipulated in CAD software and combined to produce a post-excavation plan of the site (Figs 3, 4 and 5). A full digital photographic record of both individual contexts and overall site shots was maintained. The photographic record was listed on special photographic *pro-forma* sheets.

## 2.4 POTTERY ANALYSIS

- 2.4.1 The assemblage has been recorded and assessed in accordance with the guidelines produced by the Medieval Pottery Research Group (2001) and the terminology used was that recommended by the MPRG (1998). All stratified material has been examined and recorded by sherd number, weight, and minimum numbers of rims, handles and bases, in order to determine the relative proportions of vessel form and type, and the information has been input to an Access database for ease of manipulation. Comments on the condition of the pottery have also been incorporated into the database. Unstratified pottery scanned for any vessels of intrinsic interest, but only a bulk record created. As the vessels would probably have been thrown to conform to standard multiples of Imperial measurement, diameters have also been expressed in inches.
- 2.4.2 The fabrics were identified with the aid of x10 hand lens and a x20 microscope, and the descriptions recorded using the guidelines set out in Peacock 1977 (Peacock 1977, 28-32). An estimation of vessel equivalents (EVE) was only undertaken for those contexts directly connected with the kiln, comprising the kiln itself (**1003**), and the evaluation thereof (Trench 4), plus pottery dump **1009**.

## 2.5 ARCHIVE

- 2.5.1 A full professional archive has been compiled in accordance with current IfA and English Heritage guidelines (English Heritage 1991). The paper and digital archive will be deposited with the County Records Office (Preston), and a sample reference collection of the pottery fragments will be deposited with the Blackburn Museum and Art Gallery, along with a copy of this report. A collection of the pottery has also been retained for use by the new school that will ultimately occupy the site.

### 3. BACKGROUND

#### 3.1 HISTORICAL AND ARCHAEOLOGICAL BACKGROUND

- 3.1.1 **Introduction:** the following section presents a summary historical background of the general area, and is presented by historical period.

| Period            | Date Range        |
|-------------------|-------------------|
| Iron Age          | 700 BC – AD 43    |
| Romano-British    | AD 43 – AD 410    |
| Early Medieval    | AD 410 – AD 1066  |
| Late Medieval     | AD 1066 – AD 1540 |
| Post-medieval     | AD 1540 – c1750   |
| Industrial Period | cAD1750 – 1901    |
| Modern            | Post-1901         |

Table 1: Summary of British archaeological periods and date ranges

- 3.1.2 *The Lancashire Historic Town Survey Programme: Blackburn* (LCC 2005) contains a comprehensive history of the town and its development, and this section is intended only as a brief introduction to the area in order to contextualise the results of the excavation.
- 3.1.3 **Prehistoric to Romano-British:** it is not clear whether the area was densely or permanently occupied during this period, although a number of burials dating to the Bronze Age have been identified in the area around Blackburn, implying the presence of, as yet unknown, settlement activity from at least this date (*op cit*, 16). The site of Hallows Spring, a short distance to the east of the Cathedral, is considered likely to have been a focus for settlement and religious interest from at least the Iron Age (*ibid*; OA North 2005).
- 3.1.4 Blackburn is situated on the line of the north/south-orientated Roman road between Manchester and Ribchester. The remains of this road, which probably passed to the east of the Cathedral (OA North 2005), have been identified in a number of locations, and there is a suggestion that the projected course lies to the immediate west of the excavation site (Fig 2). At Hallows Spring an inscribed stone with a dedication naming Legion VI *Victrix* was reputedly discovered in the seventeenth century, although this is difficult to place in any meaningful context as legion VI *Victrix* was based in York, and there is no known Roman base located at Blackburn (*ibid*).
- 3.1.5 **Medieval:** the earliest written reference to Blackburn is in the Domesday Book of 1086, the name referring to the stream running through the settlement, which is still known as Blakewater or Blackwater (LCC 2005, 17). The town appears to have been of some importance in the early medieval period and is named in the fourteenth century as the site of one of three early churches in east Lancashire, traditionally thought to have been founded in AD 598 (*ibid*)

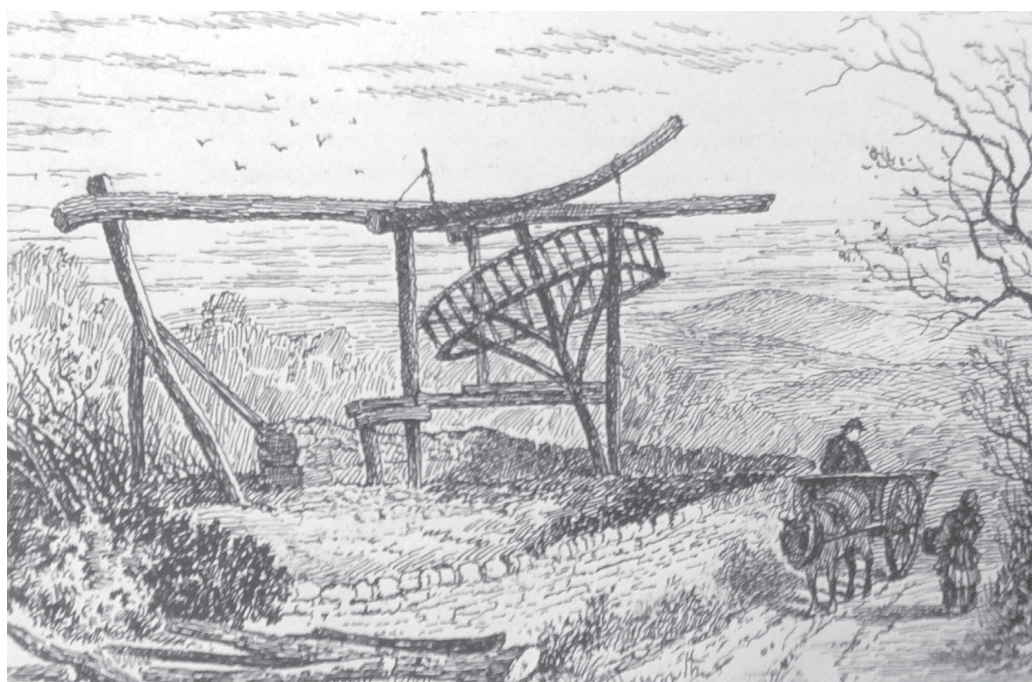
and, conceivably, near the focus of Hallows Spring. Whether this is true is a matter of some debate but, nevertheless, evidence for an earlier structure, exposed during rebuilding of the cathedral in 1820, suggested a Norman church on that site (*ibid*; OA North 2005). Moreover, Blackburn formed the centre of a major early territorial division, which later became the Hundred of Blackburn (LCC 2005), and was also the centre of the Bishopric of Blackburn.

- 3.1.6 Blackburn probably also formed an important market centre for a large surrounding area from an early date, although the earliest reference to this taking place dates to 1498 (*op cit*, 18). There may have been a corn market before this date as a manorial corn mill was certainly in existence by 1271 (*ibid*), potentially located at the point where Millgate crosses the River Blackwater immediately to the south of the Darwen Street Conservation Area. The size of Blackburn at this time is unclear, but it is probable that it did not grow considerably until the sixteenth century, the initial settlement probably focussing around Church Street, Darwen Street and the market place (*ibid*).
- 3.1.7 **Post-medieval:** from the sixteenth century onwards Blackburn grew gradually in size and local importance. It gained a grammar school, probably before 1564 when it is first mentioned, which was replaced after 1567 and renovated in 1653 and 1660 (LCC 2005, 23). A prison was also constructed prior to 1611, reflecting the evident growth of the town (*ibid*). During the eighteenth century the improvement of common land around Blackburn also increased the town's prosperity but by the middle of that century the town had still not grown far beyond the confines of its medieval streets (*op cit*, 24).
- 3.1.8 **Industrial and Modern:** by the end of the eighteenth century, Blackburn had increased dramatically in size, and new streets and alleys developed, particularly to the west of the cathedral (*op cit*, 25). This growth was based largely on the wealth of the textile industry, and led to a number of fashionable middle-class developments but also to the provision of workers' housing, particularly for hand-loom weavers (*op cit*, 26). During the eighteenth and nineteenth centuries Blackburn became renowned as a centre for cotton cloth production, although woollen weaving had been prevalent for centuries (*op cit*, 28-9). Despite this, the influence of large cotton mills was not felt until the beginning of the nineteenth century, although these soon came to dominate and massively increase production (*op cit*, 29).
- 3.1.9 Although on the north-western fringe of the Lancashire coalfield, coal mining records for Blackburn exist from as early as 1550 (Hatcher 1993, 119). These early pits would have been quite small and short-lived concerns with very shallow workings. The location of six 'old coal pits' are shown on Coalpit Moor to the south-east of the town (Ordnance Survey 1849). By the mid-nineteenth-century, however, Dickinson (1854) lists some 21 working collieries in the general area around Blackburn.
- 3.1.10 The town's increased size was recognised in 1851 when it received a charter of incorporation (LCC 2005, 30). Its population continued to grow throughout the nineteenth century and into the beginning of the twentieth (*ibid*; OA North 2005).



## 3.2 THE DEVELOPMENT OF BLACKBURN AND GRIMSHAW PARK

- 3.2.1 The high ground to the south-east of Blackburn city centre incorporates the area known locally as Coalpit Moor. From the sixteenth century onwards, the moor was worked extensively by local miners (Plate 2), creating a landscape pock-marked with shallow workings. The availability of this rich natural resource was almost certainly one of the factors that led to the establishment of the pottery kiln at Grimshaw Park, as a readily available source of fuel would have been a key consideration.
- 3.2.2 Around Blackburn coal was extracted from the Lower Mountain Mine (seam) known as Gannister coal. Edward Hull in his study of the Burnley Coalfield (1875) suggests this was a good quality coal producing coke. He also makes mention of the fireclay from beneath the coal seams being worked at Gaulkthorn Pottery in nearby Oswaldwistle.
- 3.2.3 The nearest coal pit to the site of the pot house, Top'o'th'Coal Pits, was that illustrated by Haworth, which was clearly redundant by 1846. Although the working life of the colliery is not known, it was certainly working in the late eighteenth century when it was the property of a Mr Bailey, who put it up for sale in 1796 (Nadin 1999), and it is annotated on Gillies' map of Blackburn of 1822 (Plate 5). The proximity of the coal pit to Grimshaw Pottery would certainly have provided an easily accessible source of fuel, representing a significant advantage to the potters.



*Plate 2: A sketch dated 1846 by Charles Haworth of Top'o'th'Coal Pits on Coalpit Moor*

- 3.2.4 Grimshaw Park is an area on the north-western fringe of Coalpit Moor. It was named after the Grimshaws of Eccleshill. The association of the Grimshaw family with the area can be traced as far back as 1317, with Adam de Grimshagh of Eccleshill.

3.2.5 In the early nineteenth century, Grimshaw Park was a small village on the fringe of Blackburn, and consisted largely of clusters of weavers' cottages, a few shops and two inns. However, in the 1820, Grimshaw Park developed as one of the three main areas of industrial housing, together with those at Brookhouse, and Nova Scotia; these areas were the earliest major areas in Blackburn specifically given over to industrial housing (Beattie 2007, 102). It was also during the nineteenth century that Grimshaw Park developed an infamous reputation locally as a haunt for 'some of Blackburn's roughest characters. One favourite haunt of these undesirables was the old pot house, which once stood, not unlike a huge inverted pudding bowl, on Pottery Hill' (*Northern Daily Telegraph* 14 October 1949).

### 3.3 DEVELOPMENT OF POTWORKS AND KILN DESIGN

3.3.1 Prior to the 'industrialisation' of pottery manufacture in the eighteenth century, it was very much a domestic industry, which usually involved the whole of the potter's family. It was frequently carried out in buildings alongside the family dwelling, and often ancillary to farming or other craft occupations. Potters of yeoman status were able to establish a potworks as a part of their farmsteads, either using existing agricultural buildings or erecting purpose-built structures (Baker 1991, 8).

3.3.2 Surviving illustrations of seventeenth-century potworks often depict a range of single- or two-storey buildings, which included the potter's dwelling, a workshop and a kiln (Plate 3). By that date, the kilns were typically semi-permanent structures of stone or brick construction. A useful account of a seventeenth-century pot kiln is provided by Robert Plot, who described them as being 'ordinarily about eight feet high, and six feet wide, of a round copped form, where [the pots] are placed one upon another from the bottom to the top...In 24 hours an oven of pots will be burnt, then they let the fire go out by degrees which in ten hours will be perfectly done, and then they draw them for sale' (Plot 1686, 123).

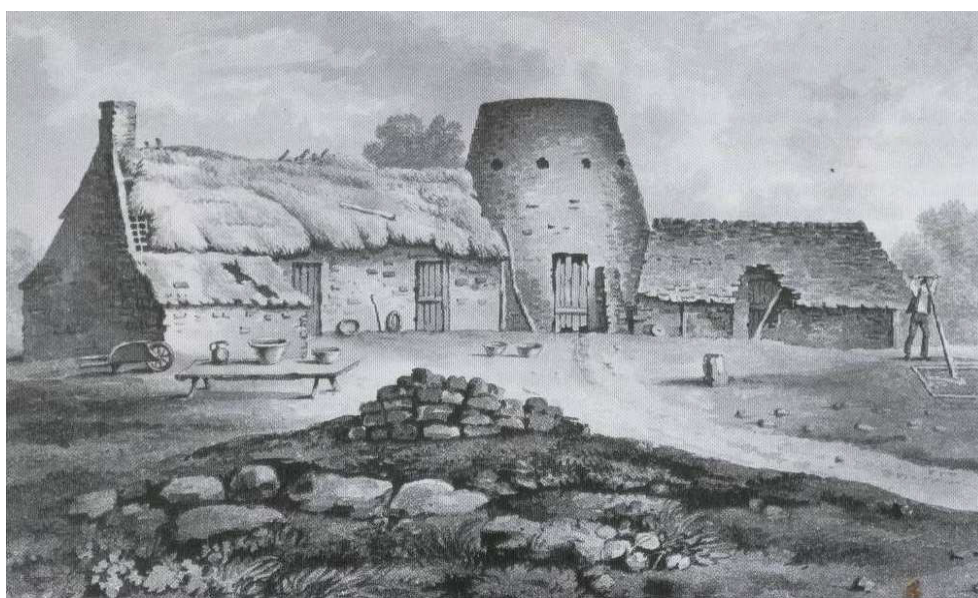


Plate 3: A typical seventeenth-century potworks illustrated by Robert Plot (1686)

- 3.3.3 The design of individual kilns during this period was dependent on the type of fuel to be used. Essentially, two different categories of fuel were available: mineral, in the form of coal or peat; and vegetable, primarily wood, but also furze or brushwood. When ignited on the fire grate, mineral fuels burn with a short flame and form a dense mass through which the incoming air required for combustion passes slowly. Consequently, the air becomes heated evenly before entering the kiln, providing a uniform temperature that is required for the successful firing of pots. Conversely, vegetable fuel burns with a long flame as it can only be stacked relatively loosely, allowing air to be drawn through quickly. In order to avoid an uneven mixture of long hot flames and cool draughts entering the kiln, thereby shattering the pots through strong thermal shock, vegetable-fuelled kilns require a separate combustion area to enable the incoming air to reach a uniform temperature before entering the firing chamber (Brears 1971, 138).
- 3.3.4 Circular kilns fitted with numerous, evenly-spaced fire-mouths around the firing chamber, designed to burn mineral fuels, are known to have been in use since the early thirteenth century (Benrose 1957, 86). This design allowed the heat generated from burning fuel to be distributed evenly around the firing chamber, and any extra heat required in a particular section of the kiln could be achieved by stoking the appropriate fire-mouth.
- 3.3.5 The circular multi-flued kilns were the predominant type used for firing pottery with mineral fuel in the late seventeenth century. The buried remains of a few of this type of kiln have been excavated, including a good example at Hanley in Stoke-on-Trent, which was a well-built stone structure with seven fire-mouths, a 7ft (2.13m) diameter firing chamber, and a single porthole, or 'wicket' through which the potter accessed the firing chamber (Kelley 1967, 116).
- 3.3.6 The main development of the pottery kiln during the eighteenth century came in the form of the hovel, a structure that encased the kiln, or oven (Plate 4). The addition of the hovel offered many benefits: it helped to conserve heat loss from the oven; it prevented damaging draughts through the oven, whilst simultaneously assisting an upward draught through the chimney; and it provided protection for pots when they were brought to the oven for firing. Improvements to the hovel included the adoption of a bottle shape, which became the characteristic symbol of a pottery manufactory (Barker 1991).



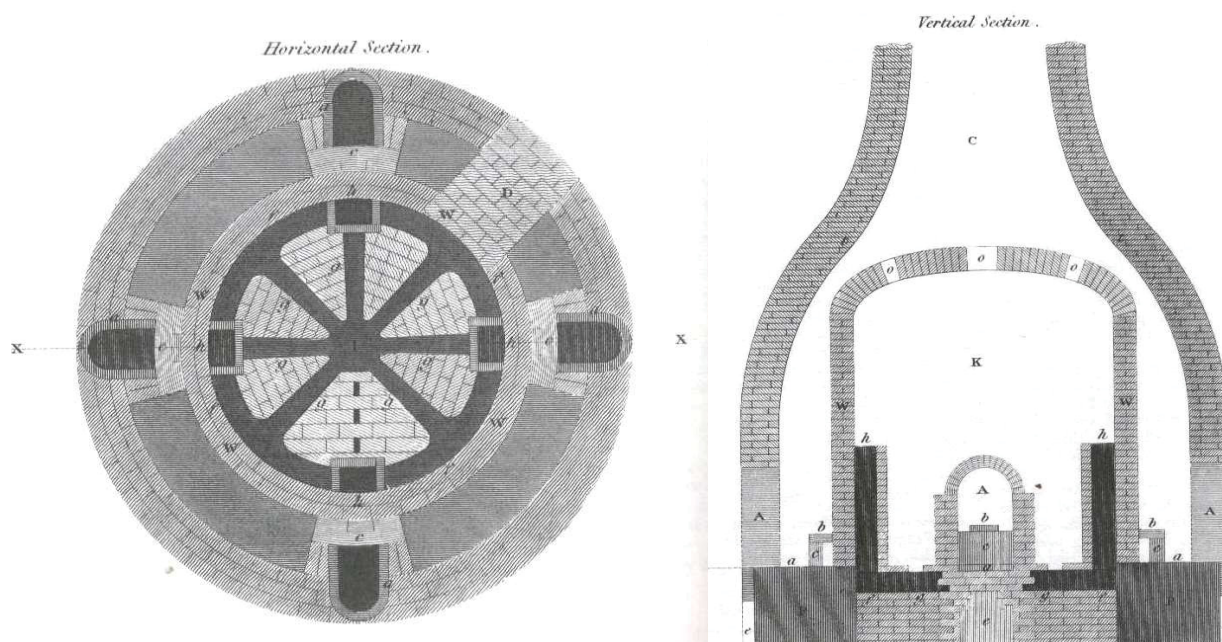


Plate 4: A section and plan of an early nineteenth-century kiln (after Rees 1814)

### 3.4 GRIMSHAW POT HOUSE

3.4.1 The origins of the Grimshaw Pot House can be traced to an earlier pottery kiln at Honey Hole, near Kemp Street, which lies a short distance to the west of the present study area. This kiln was certainly in production by the late eighteenth century, as it was advertised for sale by auction in July 1794. The sale notice offered ‘a freehold messuage or tenement, situate at Honey Hole in Blackburn, called by the name of the New Barn, consisting of a good farmhouse and barn, together with a pottery, now in the possession of John Haworth, John Riley and others’ (*Blackburn Mail* 23 July 1794). It seems that the manufacture of coarse earthenware continued on this site during the early years of the nineteenth century by Messrs Riley, Kemp and Brown but, in November 1806, the partnership was dissolved. There is some evidence to suggest that the failure of the partnership was due to a devastating fire at the potworks (*Blackburn Times* 26 May 1956).

3.3.7 Following the dissolution of the original partnership, John Riley and Richard Brown erected a new kiln at land on the north side of Haslingden Road. The goods manufactured at this kiln were ‘of the coarsest description’, and included bread mugs, washing bowls, flower pots. However, the kiln was short-lived, as it was destroyed by fire in 1814. According to a contemporary newspaper report of the incident, at ‘about one o’clock on Sunday morning last a fire broke out in the pottery in Grimshaw Park, occasioned by the great heat of the oven used in the baking of pots, which communicated sparks through a fissure to the thatched roof. It was speedily in a blaze and threatened destruction to the adjoining building, where the clay is moulded, and the finished pots kept, but by the timely arrival of fire engines from the town, the mischief was confined to the premises where the flames first appeared. A considerable number of pots and other property was destroyed, which we are

concerned to state were uninsured' (*Blackburn Mail* 22 June 1814). Thatching had been used as a material for roofing the buildings at potworks until the 1740s (Plate 2), when a slow transition to the use of fire-resistant brick and tile began (Shaw 1829, 161). Nevertheless, partially thatched potworks in Shropshire are recorded in insurance policies as late as 1816 (Baker 1991, 46).

3.3.8 The precise location of this kiln remains uncertain, although given that the adjoining workshop and warehouse survived the fire of 1814, it seems likely that these buildings will have remained in use and correspond to the structures depicted on Gillies' map of 1822 (Plate 5). As such, the original kiln will have been within the present study area, and whilst it is tempting to suggest that it might have been the small structure labelled as a 'ruin' on the Ordnance Survey map of 1849, firm evidence is lacking.

3.3.9 It is clear that the kiln was rebuilt following the fire of 1814, and had been completed by 1822, when Gillies published his map of Blackburn (Plate 5). This shows a circular structure marked 'oven', representing the pottery kiln, adjoined by a T-shaped range of buildings that probably formed the workshop and warehouse. Gillies map also shows a stone quarry, annotated as Shorrock Delph, situated a short distance to the north of the pot house.

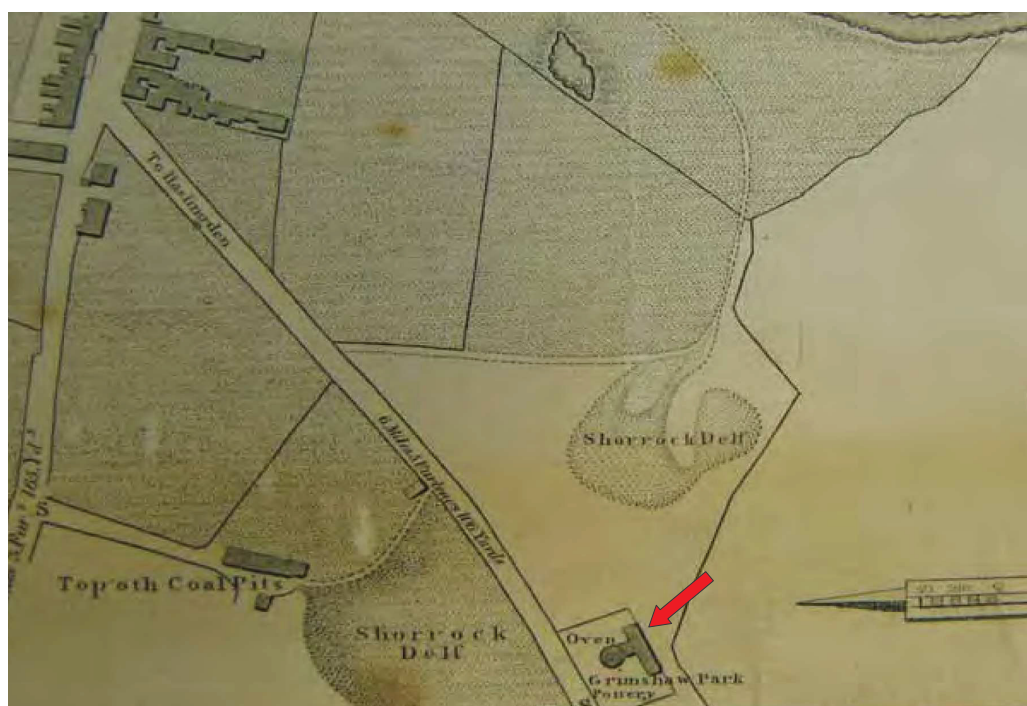


Plate 5: Extract from Gillies' map of 1822, marking 'Grimshaw Park Pottery'

3.3.10 In 1818, Blackburn boasted one perfumer and toyman, one architect, one land surveyor, one organ builder, and one earthenware manufacturer, John Ryley, of Grimshaw Park Pottery' (*Blackburn Standard* 1 August 1891). However, whilst a trade directory for the same year lists Susan Crossley on Old Church Yard as an earthenware dealer, there are no entries for a potter. A John Riley is listed, although his trade is given as a victualler at the Turk's Head in Grimshaw Park (Rogerson 1818, 36). This hints that John Riley may have been engaged in the production of earthenware as a part-time occupation.

- 3.3.11 Pigot & Co's *Commercial National Directory for 1828-9* lists several brick makers (Lark Hill, Redlam Brow, Copy Nook, Nab Lane and King Street) in Blackburn, together with six china, glass and earthenware dealers (of which three are identified specifically as earthenware dealers). However, no pottery manufacturers are listed, other than Wm Williams, who is listed as a 'turner of hollow ware' on Mill Lane. The Turk's Head at this date was occupied by Thomas Kemp, who may have been one of John Riley's original partners in earthenware manufacture during the early nineteenth century (Pigot & Co 1828, 57). A slightly later trade directory, published in 1834, lists two earthenware manufacturers in Blackburn: George Atcroft at Grimshaw Park; and John Beswick at Eccleshill (Pigot & Co 1834, 223).
- 3.3.12 Despite the paucity of direct references to Grimshaw Pot House in contemporary trade directories, firm evidence for its existence, at least in the early 1830s, is provided by the land tax assessment returns. Land tax was levied on land with an annual value of more than 20 shillings, and was collected from 1693 until 1963. The land tax assessments for Blackburn for 1831 and 1832 name John Riley as both the proprietor and occupier of the pothouse at Shorrock Delph, and note that he was granted exemption from paying land tax on the property (LRO QDL/B/10).
- 3.3.13 The pot house was almost certainly a prominent feature in the nineteenth-century landscape of the area. It was probably for this reason that the pot house was the subject of a sketch in 1846 by Charles Haworth (Plate 5), who compiled a drawn record of several prominent sites in Blackburn during the nineteenth century. Towards the end of his career, Haworth collaborated with JG Shaw, the editor of the *Blackburn Times*, and supplied illustrations to a series of historical articles. The first series of these illustrations, comprising six drawings, was released in December 1888, and two further volumes were published in 1889 (Shaw 1889).
- 3.3.14 In the published text compiled to accompany Haworth's illustration of the pot house, Shaw noted that 'it was a landmark on the edge of Blackburn for a considerable portion of the present century, and a monument of an industry which one flourished here but did not assume any important dimensions.' Shaw reiterated earlier comments on the range of pots that were manufactured at Grimshaw, noting that they were 'of the coarsest kind, and consisted chiefly of washing mugs, bread mugs, flower mugs, big dishes, and other brown ware. We believe there is nothing of this kind now made in the neighbourhood' (Shaw 1889, np).
- 3.3.15 Haworth's sketch shows the pot house to have comprised a single, large bottle kiln, typical of nineteenth-century earthenware manufactories (Baker 1991); the workshop and warehouse building to the rear is not depicted, suggesting that this may have been a single-storey structure. The sketch also depicts Haslingden Road as a rough track, and shows carts loading stone that had presumably been quarried from Shorrock Delph.





*Plate 6: A sketch of the Grimshaw Pot House by Charles Haworth*

3.3.16 It remains uncertain when pottery ceased to be produced at Grimshaw. The pot house is marked as 'Old Pottery' on the Ordnance Survey map of 1849, which was surveyed in 1845-7 (Plate 7), hinting that it was no longer in use at that date. Similarly, a trade directory for 1848 (Slater 1848, 291) lists eight earthenware dealers in Blackburn, although does not contain an entry of a pottery at Grimshaw Park. Shaw is also vague on this point, noting in 1889 that 'it fell into disuse at least 35 or forty years ago, and some old townsmen say 50' (Shaw 1889, np). However, according to Rothwell (1986, 33), the kiln was last used in 1858 by the firm of Beswick & Grimshaw, although references are not provided.



Plate 7: Extract from the Ordnance Survey map of 1849 (surveyed 1845-7)

3.3.17 The kiln clearly survived extant for many years after it had been abandoned. In a newspaper article published in 1921, Luke Walmsley recalled his boyhood memories of the 'old pot house', which was presumably in a derelict condition. He described the interior as 'a bare, lofty expanse of space, tapering inwards until meeting at the top...this was the oven part; there were considerable adjoining buildings of ordinary height, I suppose for workshop and storage purposes'. Walmsley also noted that it was the local manufactory of the common brown pot washing and baking mugs, and remembered vaguely 'seeing loaded carts with these useful commodities coming from the Pot House' on their way to markets in Blackburn, Darwen and Accrington (*Weekly Telegraph* 21 May 1921). However, the structure is not shown on the Ordnance Survey map of 1894, which was surveyed in 1891-2, suggesting that it had been demolished by that date.



## 4. EVALUATION TRENCHING

### 4.1 INTRODUCTION

4.1.1 Of the 11 trenches located across the study area (Fig 2), six were opened within Area 1 (Trenches 1, 1a and 1b to 4), and the remaining five within Area 2. Whilst physical evidence for the pottery kiln and associated structures was recovered from Area 1, and in particular Trench 4, no significant archaeological remains were observed within Area 2. What follows is an outline account of the evaluation results, with more detailed interpretation being presented in the subsequent excavation results (*Section 5*).

### 4.2 AREA 1

4.2.1 **Trench 1:** aligned approximately east/west, this trench measured 30 x 2m. The topsoil, **100**, comprised a dark brown loam (0.3m in depth), and overlay a light brown clay subsoil, **102**. The natural geology beneath this was an orange clayey-sand natural, **103**.

4.2.2 At the extreme west end of the trench a rough-hewn stone wall, **104**, measuring approximately 0.94m in width was present to the height of two courses. It was aligned north-east/south-west. To the east of the wall (**104**), the remnants of a brick and stone structure, **105**, were recorded on a similar alignment. This comprised a parallel arrangement of hand-made bricks set on edge, and a number of medium-sized stone blocks (Plate 8). Further to the east a second stone wall, **106**, was present, again being on a north-east/south-west alignment, but with a return section lying in a westerly direction.



Plate 8: West end of Trench 1, showing stone walls and flagstone

- 4.2.3 **Trench 2:** aligned approximately east/west, this trench measured 20 x 2m. The subsoil (**202**) was 0.28m deep and had been disturbed and mixed with what appeared to be a dumped deposit (**204**) of clinker, pot fragments and kiln furniture, being 0.7m in depth. Natural clay was also exposed in this trench (Plate 9).



*Plate 9: Natural clay exposed in Trench 2, looking east*

- 4.2.4 **Trench 3:** this trench was aligned north/south and measured 25 x 2m. A spread of pot wasters was present at the north end of the trench, just beneath the topsoil. No further archaeological remains were present within this trench.
- 4.2.5 **Trench 4:** this trench was aligned north-west/south-east and measured 20 x 2m. Following removal of the topsoil, a stone wall, **401**, was observed at the south-eastern end. It was constructed from rough-hewn blocks, bonded with a white lime mortar, and was present to the height of five courses (0.54m). To the west of this, a tapering arrangement of two refractory brick-built walls (Plate 10) was present (**402** and **404**). The remnants of wall **402** stood to seven courses in height (0.60m), and wall **404** four courses (0.40m). The bricks were set in a lime-based mortar, indicative of an early to mid-nineteenth-century construction date. A surface of hand-made bricks, **404**, was observed between the two lengths of wall; this showed signs of having been subjected to heat.
- 4.2.6 Beyond the walls was a deposit of compacted, burnt and possibly crushed brick, **413**, and to the west of this, the arrangement of low brick walls and brick surface (**402**, **403**, and **404**) was mirrored (**407**, **408** and **412**). To the immediate west of this second arrangement of walls was a compacted layer of clay, **409**, overlain with a spread of clinker. Pot wasters, and to a lesser extent kiln furniture, were present over all of the contexts mentioned above.





*Plate 10: Trench 4 showing collapsed material within the kiln, and the remains of a flue*

- 4.2.6 **Contingency Trenches 1a and 1b:** both of these trenches were aligned slightly off north/south, and each measured 10 x 2m. A deposit of clinker, pot fragments and kiln furniture was exposed beneath the topsoil, the same as in Trench 1. In addition, several rough-cut stone blocks were observed throughout the deposit, suggestive of building debris (Plate 11).



*Plate 11: Contingency Trench A, showing deposits of clinker and demolition rubble*



### 4.3 AREA 2

- 4.3.1 **Trench 5:** this trench was aligned north/south in the north-east part of Area 2. It measured 30 x 2m (Plate 12). Stripping of the topsoil, **500**, revealed up to 0.15m in depth of a mid-brown silty-subsoil, **501**. Below **501**, at a maximum depth of 0.60m, was blue-yellow clay, **502**, most likely to be the natural boulder clay. The topsoil, subsoil and natural clay were seen to be the same in the remaining trenches in this area. Two ceramic field drains were aligned east/west across the trench. Both of these were cut through the subsoil into the boulder clay. Drain **503** was located in the mid-section of the trench and drain **504** was located in the north of the trench. No archaeologically significant deposits were located in this trench.



Plate 12: General view of Trench 5

- 4.3.2 **Trench 6:** this was aligned north/east-south/west in the north of Area 2. It measured 20 x 2m. Excavation removed the topsoil, **600**, exposing up to 0.30m of subsoil, **601**. Below **601** at a maximum depth of 0.50m the natural boulder clay, **602**, was present. A possible cut (**603**) for a field drain was aligned approximately north/south across the north-east end of the trench, cutting into the natural clay deposit **602**. No archaeologically significant deposits were located in this trench.
- 4.3.3 **Trench 7:** aligned north-east/south-west Trench 7 measured 30 x 2m. The trench was positioned over two anomalies identified by the magnetometry survey. Excavation removed topsoil, **700**, and up to 0.42m of subsoil, **701**. Below **701** at a maximum depth of 1m the natural boulder clay was observed. Two ceramic field drains, **703** and **704**, were aligned north-south across the western end of the trench. A small dump of hand-made brick fragments, **705**,

possibly nineteenth century in origin, was present in the eastern end of the trench. The brick fragments were present in both the topsoil and the subsoil. No further archaeologically significant deposits were located in this trench.

- 4.3.4 **Trench 8:** this trench was also aligned north-east/south-west. It measured 20 x 2m. Excavation removed the topsoil, **800**, and up to 30m of subsoil, **801**. Underlying the subsoil at a depth of 0.42m was a thick layer of orangey brown silty-clay, **802**. This contained frequent fragments of ceramic building material (CBM) and occasional pot sherds, which had the appearance of having been dumped, rather than building collapse. Underlying **802** at a maximum depth of 1m the natural boulder clay, **803**, was present. Cut into the natural, and in the centre of the trench was a north/south aligned, 0.25m wide, ceramic pipe, **804**. The pipe extended into the east and west baulks of the trench, and was clearly associated with a modern manhole located just to the north of the trench.
- 4.3.5 **Trench 9:** this was measured over two circular anomalies identified in the magnetometry survey. It 10 x 2m. Excavations removed topsoil **900**, and up to 0.40m of subsoil, **901**. Below **901** at a maximum depth of 0.50m the natural boulder clay, **902**, was observed. At the western end of the trench were three ceramic field drains, **903**, **904** and **905**, being cut into **902**. Drains **903** and **904** were both north/south aligned. Drain **905** was north-west/south-east aligned.
- 4.3.6 Very little of archaeological interest was exposed in Area 2. The hand-made brick dump in Trench 7 and the dump of ceramic building material in Trench 8 were the only archaeologically significant features present. Whilst it is tempting to associate these with the pot house, they are just as likely to be associated with the former workhouse, currently the hospital, which lies almost immediately to the south-east of the area. The triangular plot of land, being located between Haslingden Road and a footpath, immediately to the south of the development area has at least one Victorian-period rubbish dump on it. The anomalies produced by the magnetometry survey proved to be inconclusive.

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## 5. EXCAVATION RESULTS

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### 5.1 INTRODUCTION

5.1.1 The open-area excavation targeted Area 1 of the evaluation trenching. Following reduction of the working area from that defined in the Written Scheme of Investigation (*Appendix 1*) for reasons of health and safety, the final dimensions of area subject to excavation were 54.3 x 45m. Upon completion of the topsoil stripping of the entire area, it became apparent that remains of archaeological interest were focused in three specific locations: the extreme north-west of the site; the centre of the site; and towards the south-east of the site (Fig 3). These areas corresponded to evaluation Trench 1, the most westerly of the contingency trenches (1a), and Trench 4 respectively. The remains identified were interpreted provisionally as physical elements of workshops with drying flue, a discrete pot waster dump (as opposed to a general spread), and the pottery kiln with associated workshop.

### 5.2 THE KILN WORKSHOP

5.2.1 *The kiln workshop:* the rectangular-shaped foundations of a stone-built workshop (**1006**), aligned broadly east/west, were exposed beneath the topsoil (Plate 13). This comprised an arrangement of four walls, two external and two internal, defining three internal rooms (Fig 4). The longest wall (east/west aligned) measured 0.60m wide and 22.5m long, although the eastern end was not complete. It survived to a height of 0.22m (two courses), and is assumed to be the front of the building, the rear wall being beyond the limit of excavation. At its western end this returned in a southerly direction, with just a short section remaining. The internal cross-walls, again extending beyond the baulk of the site, measured 0.60m wide by a maximum of 8.5m long, and survived to a maximum height of 0.50m or four courses. All of the stonework was bonded with a creamy-coloured lime mortar, and were founded upon the natural boulder clay (**1010**). Aligned along the external face of the wall **1006** was a 0.40m wide stone-capped drain (**1007**), exposed for 5.50m (Plate 14).

5.2.2 The largest of the three rooms (Room 2) was located in the centre of the workshop, measured 12.7m wide, and housed the kiln (Fig 4). It was noted that the shortest distance between the kiln and the inner face of the workshop was 1.5m, certainly enough space to allow ease of access to the wicket (kiln doorway), firemouths and flues. Access into the workshop was to the west end of the long wall, and just offset from the wicket. The doorway measured 1.4m in width (Plate 13). There was no apparent floor surface within this, or the remaining two rooms, other than the compacted clay and clinker lying between the wicket and the doorway (*Section 5.3.11, below*).

5.2.3 Very little remained of the rooms to the east and west, and no evidence for their function. The most westerly of the rooms (Room 3) was the smallest, and measured just 4.5m wide (Fig 4). Access into this room was from a wide doorway (2.60m) in the north wall (Plate 14).





*Plate 13: Western end of the kiln workshop*



*Plate 14: North wall of the kiln workshop showing drain 1007*

### 5.3 THE POTTERY KILN

- 5.3.1 Excavations in the area of the kiln reached a maximum depth of 0.90m. At this depth a mid-orangey brown compacted clay containing large pieces of shale and sandstone was exposed. This was almost certainly the natural geological boulder clay.
- 5.3.2 Evaluation Trench 4 had partially revealed the remains of a stone and brick structure (**1003**). This was exposed at a shallow depth beneath the topsoil at 0.20m below the present ground surface. Unfortunately, due to a 5m protective zone around the southern boundary wall of the site, the full extent of the structure could not be investigated. The excavations revealed **1003** to be the remains of a circular kiln and hovel. The full diameter of the kiln structure was 9m (east/west), and this stood to a maximum height of 0.55m (Plate 15).
- 5.3.3 The remains of the kiln, or oven wall, stood to a maximum height of 0.40m (three courses), and clearly continued into the southern limits of Area 1 to create a circular plan (7m or 23ft in diameter). The wall, 0.95m thick, was constructed from roughly-hewn sandstone blocks, bonded in white lime mortar. It was subdivided into segments by an arrangement of flues and a wicket (walk-in entrance). The wicket, which was located in the north-west segment of the kiln wall (Fig 4), tapered slightly into the central area of the kiln (firing chamber), and extended outwards beyond the width of the wall. At its widest it measured 1.51m. A stone floor was present within the wicket, and this also extended outwards from the width of the wall (Plate 15).
- 5.3.4 Protruding out from the kiln wall at regular intervals of 2m, and into the firing chamber were five openings or flues (**1003a**, **1003b**, **1003c**, **1003d** and **1003e**). Each flue was constructed from two skins of wire-cut yellow refractory brick with an average size of 230 x 120 x 60mm, and standing to a maximum height of 0.5m or six bricks. The flues measured between 1.94m and 3.35m long, with the variations in length being due to the differing degrees of preservation. The most intact of the flues (the most westerly) extended just over 1.2m into the firing chamber, at which point it narrowed to 0.35m in width. The maximum flue width, at the wider external end, was 0.50m (inner face to inner face). In places, the brick lining was double-skinned, presumably for added insulation or repair. The inner face of the brick-lining was blackened from the effects of intense heat. Significant quantities of clinker were recovered from the flues indicating the use of coal as a fuel. In places, the vitrified remnants of the flues were seen to extend well into the firing chamber (Plate 16). The sixth and seventh flues almost certainly remain buried beneath the site baulk (Fig 4).
- 5.3.5 The second flue from the west was partially infilled with stone blocks, **1008**, set with a light pink sand mortar. The blocks appeared to have collapsed into the flue.
- 5.3.6 Adjacent to one side of the external ends of each flue was a low stone pier, comprising sandstone slabs horizontally laid, and set in a white lime mortar. Each pier extended out from the kiln wall by up to 0.90m, and survived to a maximum height of 0.6m (five courses).





*Plate 15: The kiln from above, showing the arrangement of the flues and firing floor*



*Plate 16: A typical flue showing refractory brick lining, and with a stone pier to the left*

- 5.3.7 The floor of the firing chamber (5.43m in diameter) comprised a surface of hand-made half-bricks, with the average brick measuring 150 x 240 x 60mm. The bright orange-red colouring of the bricks indicated the surface had been exposed to intense heat, as did the degraded nature of a number of the bricks, especially those near the centre of the firing floor, and the full length of the flues. The bricks fanned out around a small sub-circular patch of brick burnt black (1.4m x 1m) in the very centre of the firing floor (Plate 15). The foundation course for the oven wall, a partial border of sandstone flags set with a loose sandy-mortar, was exposed at the edges of the floor. The average size of each flag was 0.30m x 0.30m.
- 5.3.8 The firing chamber had been filled with crushed brick, **1005**, up to a depth of 0.70m (Plate 21). This contained large quantities of broken pottery and kiln furniture. This is quite possibly the collapsed remains of the top of the kiln or crown. Directly overlying, **1005**, was a second deposit, **1004**, 0.50m thick, and, as **1005**, confined to the extent of the firing chamber. In addition to crushed brick this contained stone and large quantities of mortar, being further collapsed material.
- 5.3.9 The kiln appeared to have been contained within a hovel, the stone foundations for which were present against the external wall of the oven, and seen between the protruding flues (Fig 4). Outside the kiln, but within the workshop, a compacted clay surface (**1025**) was observed. This was located between the entrance into the workshop and the wicket. (Plate 17). Underlying the clay was an 80mm thick layer of clinker, a waste product from the kiln.



*Plate 17: Clinker and clay spread, with wicket shown to the left*



## 5.4 THE WORKSHOPS

- 5.4.1 Excavations within the north-west of Area 1 reached a maximum depth of 1m. At this depth the same mid-orangey brown compacted clay found in the south-east of Area 1 was present; this was the natural boulder clay. The excavations revealed the remnants of two stone structures, including several walls, floor surfaces, and a flue (Fig 5).
- 5.4.2 **West workshop:** the westernmost of the buildings comprised three external walls (**1016**, **1014** and **1021**) and one internal wall (**1013**). The walls were constructed from roughly-hewn blocks. The full extent of the external north wall, **1016**, and the south wall, **1021**, continued beyond the limit of excavation (Plate 18). Wall **1016** measured at least 0.55m wide and 10m long, and had survived to a height of 0.70m. Wall **1021** was of similar dimensions. The easterly wall, **1014**, measured approximately 6.10m in length and 0.48m in width, however, its southern end was damaged, and partially obscured by bricks dislodged from flue **1011** (Section 5.4.7 below). Cross-wall **1013** was slightly wider being 0.50m in width, and although it was seen to butt against the north wall (**1016**), its relationship with the south wall (**1021**) was unclear.



Plate 18: General view of the west workshop, facing north

- 5.4.3 The cross-wall, **1013**, sub-divided the building into two rooms, with Room 1 being the most westerly. The remains of a flagstone floor, **1019**, measuring 3.5 x 5m was present in the northerly half of this room. This was laid upon a dark brown silty-clay material, **1018**, that extended across the whole of the room, suggesting that the flags originally covered the entire floor.

- 5.4.4 Room 2, located to the east of Room 1, measured 5.50 x 5.20m. The remains of a flagstone floor, **1012**, had survived in the south-east corner, and measured 2.10m x 1.60m with a thickness of 50mm. It is likely that the flagstone floor originally extended across the entire room but, unlike the flagstones in Room 1 (**1019**), it appeared to be laid directly on to the natural boulder clay (**1010**). Slight indents in the east end of both walls **1016** and **1021** are tentatively interpreted as doorways.
- 5.4.5 **East workshop:** adjacent to west workshop were the partial remains of a second building (Plate 19), comprising three rooms (3, 4 and 5). The only external wall remaining, **1017**, appeared to butt against the east wall of the first building, suggesting that the easterly range of rooms were a later addition. Although the remains of a cross-wall were present, **1015**, no further walls were visible. The cross-wall itself was in a very poor state, and had suffered some collapse. Likewise, the east end of wall **1017** was not observed.
- 5.4.6 Room 3 housed a north/south-aligned, horizontal, brick structure, **1011**. This measured at least 7 x 1.70m, and was 0.30m high (three brick courses). The southern end of the structure had been clearly truncated by a modern service pipe. It was founded upon stone, and comprised two parallel aligned brick-lined channels each measuring 0.40m wide, and being flanked by a single refractory brick. Each channel was found to be filled with burnt red clay. The channels were partially blocked with loosely set rubble, and overlaid with a roughly-constructed brick surface (Plate 19). The flue, although set at ground level, was slightly higher than the level of the floors in Room 2 (**1012**) and Room 5 (**1022**). This feature, which is almost certainly a horizontal drying flue for freshly thrown pots, butted against the eastern wall of the west workshop, but extended for several metres to the south of it. No further features were observed within this room or Room 4 to the east.



Plate 19: General view of the east workshop with horizontal drying flue in the foreground



- 5.4.7 The poorly preserved remains of what could possibly be a third room (Room 5) in this workshop were identified to the south of Rooms 1 and 2 (Fig 5). However, there was no evidence for a cross-wall between this room and Room 3 to the north-east. A single course of slightly curving sandstone blocks, positioned adjacent to, and within the structure of, the horizontal flue (**1011**), extended into this area. The remains of a flagged stone surface, **1022**, measuring 1.5 x 2.90m were present in the north-eastern corner, and abutting wall **1021**. This floor was laid at a higher level than that to the immediate north (**1012**) within Room 2. A small brick-built rectangular structure of unknown function was located towards the north-west of putative Room 5. It is possible that this was a yard rather than a room within either workshop.
- 5.4.8 Significant quantities of brick rubble, including possible flue fragments (Plate 20) were identified during the machine stripping of the area to the south of the workshops, and a large amount of pottery was also noted.



*Plate 20: South end of the horizontal drying flue, facing north-west*

## 5.5 POTTERY WASTER DUMP

- 5.5.1 Excavations revealed a large spread of ceramic material, **1009**, to the north-west of the kiln. The spread measured 4 x 3.60m, and a machine-excavated slot revealed the dump to be no more than 0.40m in depth. The ceramic material comprised both pot wasters and kiln furniture, and samples were collected for assessment and analysis (*Section 6*). No further discrete dumps were present on site, although thin scatters of wasters were present throughout the entire excavation area. Thin spreads of fuel waste (clinker) were also observed to the front of the kiln workshop at this point.

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## 6. POTTERY ANALYSIS

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### 6.1 THE POTTERY AND ITS CONTEXT

- 6.1.1 Some 378.552kg of pottery and kiln furniture was recovered from the excavations, mainly from the initial trenches (Trenches 1-4) and subsequent excavation in Area 1, with only six fragments of pottery and ceramic building material from Area 2 (Trenches 5-9; Fig 2). There were 4,696 stratified sherds of pottery and kiln furniture, and a further 109 fragments of pottery and kiln furniture were recovered from unstratified deposits. The assemblage falls into two groups, material from the kiln itself, and material from the waste dumps, which, following consultation with the Planning Archaeologist, were sampled, with one cubic metre of pottery collected and analysed per dump. The material was very fragmentary, as indicated by the fact that an estimation of the vessel equivalent (EVE) for material from the kiln, pottery dump, and Trench 4 together, indicated only 55.5 EVEs, despite the thousands of sherds. Although to an extent this must reflect the large size of many of the vessels, it also reflects the high degree of fragmentation, with few rims surviving above 10%.
- 6.1.2 There were some 4,519 sherds (298.427kg) of pottery, of which 78.55%, by sherd count, had an iron-rich dark brown or black glaze, and all but a small amount (6%), was in a single fine red fabric (F1). It is clear that the pot house was producing only a very limited range of forms for the kitchen and dairy, mainly pancheons, large cylindrical jars, perhaps bread pots (Brears 1971, 65, 243), rounded jars, and bowls. Such specialisation is a feature of this type of earthenware-producing pot house at this date, and can be seen at production sites elsewhere, for instance Ticknall, in Derbyshire (Spavold and Brown 2005, 78, fig 11-14).
- 6.1.3 Most of the pottery was recovered from Area 1, where it formed a widespread layer of discarded pottery and kiln furniture. Pottery also came from the kiln itself (**1003**), and from dump **1009**. The best represented vessel forms were large pancheons, and cylindrical jars. Pancheons had a variety of domestic uses, including for washing laundry and for personal washing, as well as bread-making, and use in the dairy (McGarva 2000, 18-20). Kiln **1003** produced the most diverse range of vessels, including a single example of a plate, and 17 sherds from inturned jars, forms not seen elsewhere on the site. Only 14 sherds of slip-decorated ware were noted amongst the kiln assemblage, perhaps indicating that by the time of its final firing, these decorated wares were not part of the repertoire.
- 6.1.4 The range of kiln furniture (including a large number of spacers and rings) and the number of vessels showing evidence of having been fired in an inverted position, suggests that a variety of firing techniques were employed in tandem, although it is noticeable that there were no saggars in the kiln assemblage. Small-diameter jars, which might have been expected to have been fired in saggars, were still being produced, but they were, perhaps, being fired within other, larger vessels.

## 6.2 KILN FURNITURE

6.2.1 Some 255 fragments and complete items of kiln furniture, weighing 45kg, were recovered from stratified contexts; a further 31 fragments (2.889kg) were unstratified. The bulk of the material was, as might be expected, from kiln **1003** and pottery dump **1009**. The kiln furniture falls into three main types: rings; spacers; and saggars. Other, less common items, included fire-bricks, a possible ring-prop spike, and a fragment from a 'panbrim' or 'pie crust' from Trench 2 (McGarva 2000, 104).

6.2.2 **Rings:** sometimes referred to as sectional ring-saggars (Plates 21 and 22; Cat no 1 and 2), these were made from fire-clay, had an L-shaped cross-section, and curved round to fit against the circumference of the vessels which they were intended to hold apart in the kiln (Brears 1971, 134). At Grimshaw, rings to fit pancheons of diameters 210mm, 230mm, 280-360mm, 410-450mm, 500mm and 600mm were recovered. Where it was possible to see, the rings were produced in both of the identified fire-brick fabrics.

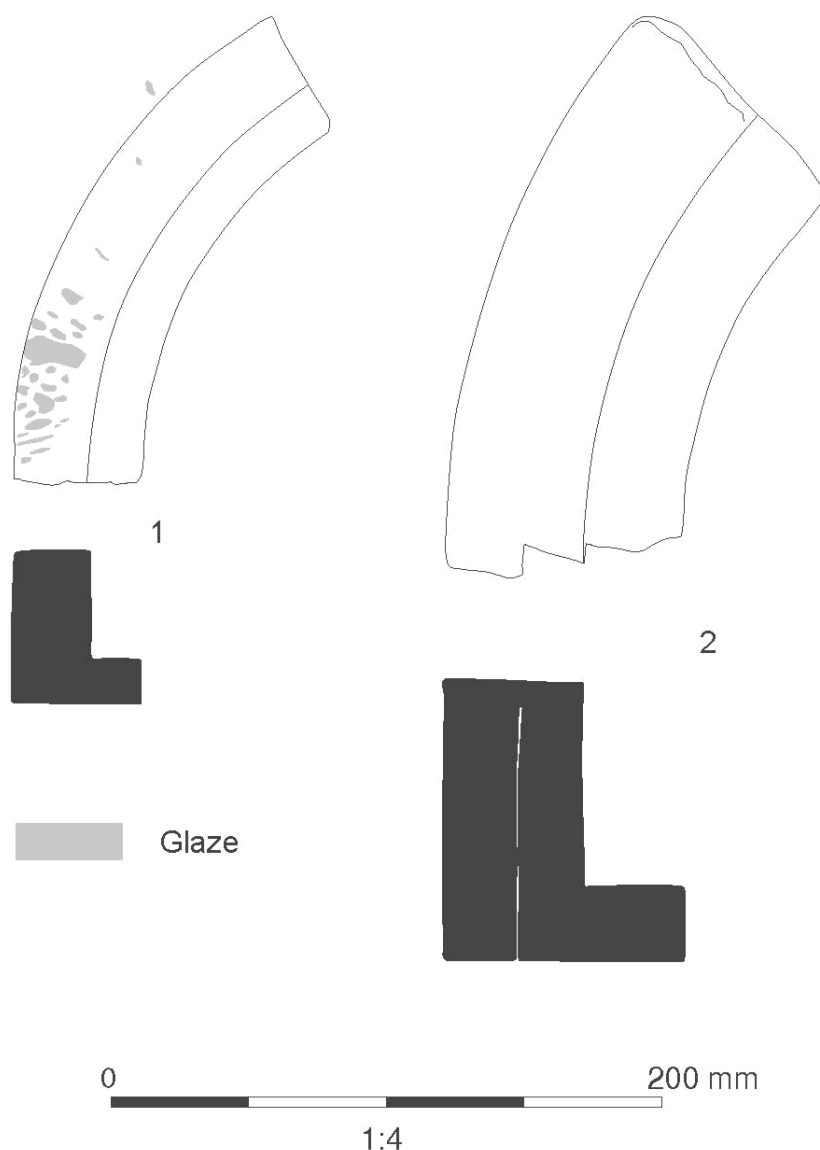


Plate 21: Sectional ring -saggar, Nos 1 and 2



Plate 22: Sectional ring-sagger, No 1

- 6.2.3 Rings were introduced in the later eighteenth century to allow ever larger pancheons to be fired. Prior to this, rings had been completely circular, but these were found to be too fragile (Brears 1971, 134). They were the most numerous items of kiln furniture in the Grimshaw assemblage, with some 91 complete and partially complete examples recorded. This would allow, for instance, a ‘bung’ of 25 pancheons, each of 24-inch diameter, to be stacked to a height of 6ft (1.83m) within the kiln. A photograph of just such a bung was taken at Soil Hill, Halifax in the 1960s (McGarva 2000, 103-104). It is interesting to note that no rings were recovered from the excavated pottery kilns at Prescott (McNeil 1989).
- 6.2.4 In addition, part of what may be a ‘panbrim’ or ‘pie crust’ (Plate 23) was also recovered from Trench 2. This would have been a circular fire-brick object, 51mm thick, with an original diameter of 420mm. At Soil Hill pottery in the 1960s, such ‘pie crusts’ were used to separate large jars (McGarva 2000, 105).
- 6.2.5 **Spacers:** in total, 91 ceramic spacers were recovered (Plate 24). They were sausage-shaped objects formed simply by squeezing a palm-sized chunk of clay in the hand, a process which left finger impressions visible in the object. They were used to separate the rims of vessels when stacked together for firing, and even after the introduction of rings, continued to be used at Grimshaw in firing smaller vessels. The firing process often left impressions of the rim and traces of glaze on the spacer. Vessels were stacked rim downwards for firing (Brears 1971, 133), which often left characteristic glaze runs on the rims.





*Plate 23: Panbrim fragment (Trench 2)*



*Plate 24: Spacers showing glaze runs (left) and rim impressions (right)*

- 6.2.6 It is interesting to note that no single context, including the kiln (**1003**), indicated an exclusive use of either one or the other of these technologies. Such items were also recovered at Prescott, but in smaller numbers (McNeil 1989, 62). A single triangular fired-clay object (Plate 25), probably a form of spacer, was excavated from pot dump **1009**, it was 60 x 70mm, with bevelled edges, and was broken at its wider end. Similar spacers have been recovered in seventeenth- and eighteenth-century deposits on the site of John Dwight's Fulham pottery in London (Green 1999, 181-2, fig 146; 188-9, fig 152), where they were used to separate specific vessel forms, and in the case of the eighteenth-century example, bottles.



*Plate 25: Triangular spacer, possibly used to fire bottles (1009)*

- 6.2.7 Numerous flat pieces of the local micaceous sandstone (70) were recovered from the kiln (**1003**), pottery dump **1009**, and Trenches 3 and 4. Some were clearly heat-affected and in a single instance bore traces of glaze. As a result it is thought that they could have served as spacers, as has been seen elsewhere (Moorhouse and Slowikowski 1992, 105-6). A single fragment of a stilt was recovered unstratified from Trench 2. This was a hand-moulded conically-shaped piece of clay used to separate vessels in the kiln. Again, similar items were found at Prescott, but in much greater numbers (Mc Neil 1989, 62).

6.2.8 **Saggars:** a relatively small number (11) of sagger fragments were recovered from of Area 1 (with the exception of Trench 4; Fig 4). Saggars are roughly-thrown cylindrical pots large enough to hold a single fineware vessel (Brears 1971, 130), or in the case of Grimshaw, the smallest jars produced. They were found in Fabric 2, and both the fire-brick fabrics (FBF1 and 2). Diameters, where it was possible to obtain a measurement, were between 260 and 300mm (10 and 12 ins). Generally, they were well-potted, with simple rounded rims, their walls some 30 mm thick. An oval example was also found, similar to one found at Prescott (McNeil 1989, 71). No examples were found with bung holes. The rarity of these vessels on the site reflects the absence of fineware production at Grimshaw, whilst at Prescott, producing a range of cups and mugs typical of the seventeenth and eighteenth centuries, an estimated 39 sagger vessels were excavated, and drinking vessels formed some 35% of the black-glazed fineware vessels excavated (*op cit*, 61). That they were recovered from the kiln (**1003**) indicates that some fineware was being produced, although it appears to be confined to finely potted jars, rather than drinking vessels.

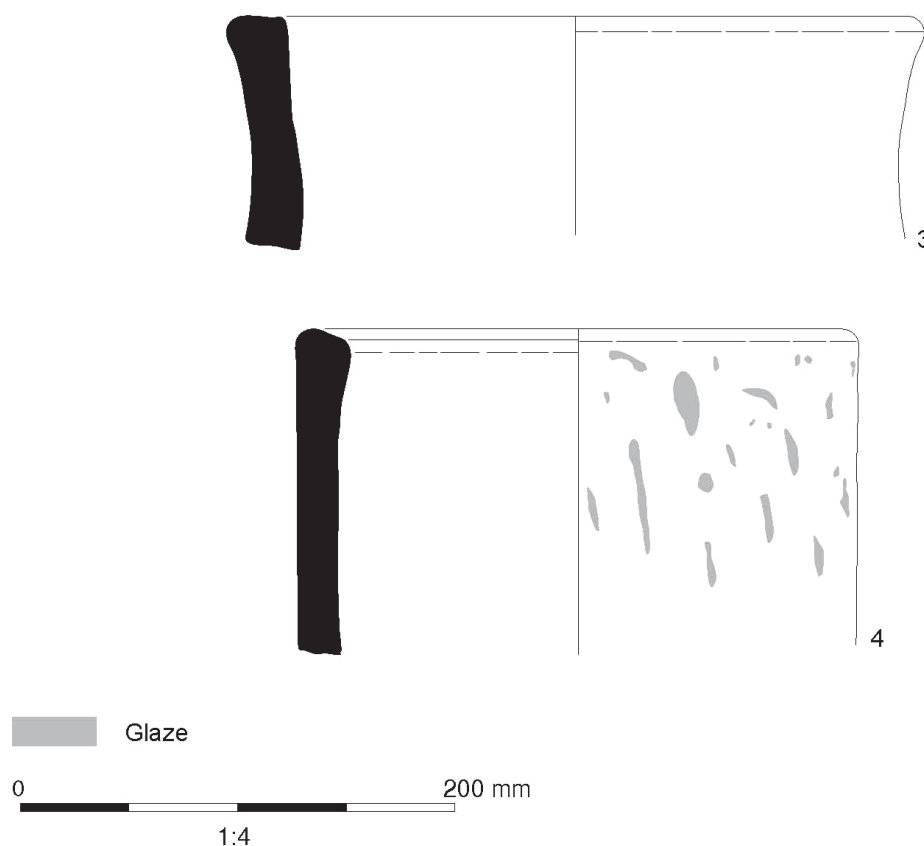


Plate 26: Saggars, Nos 3 and 4

6.2.9 **Fire-bricks:** a total of 11 fire-brick fragments were recovered from Area 1, with eight being in FBF2. Generally these fragments had a vitrified exterior. It is not clear whether the fire-bricks, or for that matter the rings and saggars found at Grimshaw, were manufactured on site, although this seems likely. Certainly, there was access to fire-clay on the site, although it was of poor quality (Hull 1875). Fire-clay is the band of clay found below the coal seam (Brunskill 1990, 42).

### 6.3 THE FABRICS

6.3.1 Two main pottery fabric types (F1-2) and two fire-brick fabrics (FBF1-2) were identified. The overwhelming majority (94%) of the material recovered was in Fabric 1.

6.3.2 **Fabric 1:** a fine hard fired, orange or red and occasionally pink fabric, which contained 2-5% well sorted, fine quartz sand, and occasional medium quartzite sand (Plate 27). Much of the pottery in this fabric was finely potted, the wall thickness ranging between 6-8 mm. Within dump **1009** it was noticeable that many of the body sherds exhibited pronounced ribbing. The fabric was found with all glaze types, and vessel forms, including a small amount slip decorated ware (c 6%).

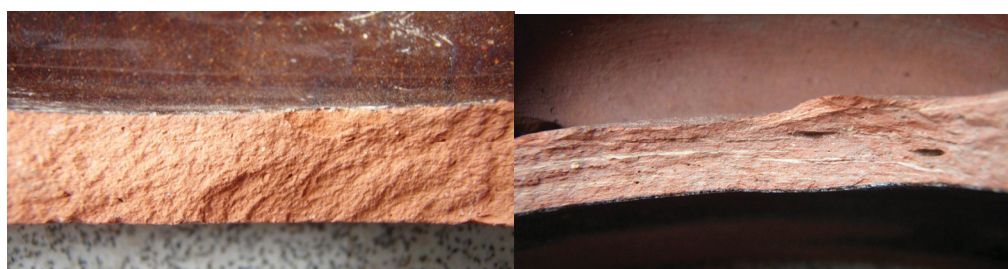


Plate 27: Fabric 1 (left) and Fabric 2 (right)

6.3.3 **Fabric 2:** a hard fired fabric, ranging from pink to orange in colour with white marbling/laminations (Plate 27). The fabric contained 2% quartzite grains up to 0.5mm and 2-5% quartzite sandstone. Occasional elongated voids and red (clay?) pellets were also noted. The marbling within the fabric indicates that the clay was less well-mixed than that of Fabric 1, something that is reflected in the types of vessels being produced, which were restricted to pancheons, large cylindrical jars, and plant pots. The fabric was found with all glaze types, including a very few (six sherds) slip-decorated fragments.

6.3.4 **Other non-local fabrics:** a small proportion of the assemblage (0.5%) comprised what have been termed non-local fabrics, having been brought to the site from elsewhere: refined white earthenware (RWE) was found in small quantities in Trenches 1 and 3, but could not be dated with precision. Most of the ten fragments from Trench 1 were undecorated. The single decorated fragment has an unusual sepia border which, although not identified with complete certainty, could be a Liverpool product. Mottled ware was also recovered from Trench 1, **6001** and **1009**. Probably residual, it is usually dated to the middle of the eighteenth century, or slightly later.

6.3.5 **Fire-brick fabric 1:** a fine light-yellow fabric, with occasional examples having a pinkish hue, occasional clay pellets and quartz grains. Used to make bricks, rings and saggars.

6.3.6 **Fire-brick fabric 2:** light yellow, with red marbling/laminations, which can give it a pinkish hue. The fabric contains coarse yellow quartzite grains measuring up to 0.5mm (5%) and possibly dolomite. Used to make bricks, rings and saggars.



## 6.4 GLAZE AND OTHER SURFACE TREATMENTS

- 6.4.1 Five main surface treatments were identified (Table 2). Most of the glazed vessels (78.5%) were very dark in colour. It is likely that the intended colour was black, with a lustrous finish, but, in practice the glazes varied from dark brown to black with the full range listed in Table 1 below. Sometimes the glaze varied considerably in colour between the base and the walls of the same vessel, a phenomenon which seems largely to reflect its thickness.

|                    | Glaze colour             |          |                |               |            |             |       |
|--------------------|--------------------------|----------|----------------|---------------|------------|-------------|-------|
|                    | Non-local/not identified | Unglazed | Slip decorated | Reddish-brown | Dark Brown | Black/brown | Black |
| <b>Sherd count</b> | 129                      | 305      | 273            | 266           | 1482       | 891         | 1173  |
| <b>%</b>           | 2.9                      | 6.7      | 6              | 5.9           | 32.8       | 19.7        | 26    |

Table 2: Quantification of glaze colours and other surface treatments

- 6.4.2 A small percentage of the assemblage (6%) bore some slipped decoration, usually in the form of concentric lines of white slip applied before glazing (Plate 29 nos 12 and 14), the glaze causing it to appear yellow, generally on a reddish-brown ground, although there appears to have been considerable variation, with some sherds being dark brown. It has been assumed that, in general, sherds with a reddish cast to the glaze were from slip-decorated vessels. It is clear, however, from an unstratified vessel (cat no 26; Plate 28), for instance, that some vessels were originally given a clear glaze.
- 6.4.3 Although, all the glazes were used on all the vessel forms represented at Grimshaw, slip-decoration in the main tended to be restricted to the smaller examples. Thus slip-decorated pancheons fell within a diameter range of 200-360mm (approximately 8-14 ins), with only occasional vessels measuring up to 440mm (approximately 17½ ins), whilst slip-decorated cylindrical jars ranged from 220-420mm (approximately 17½ ins). This type of slip decoration was common throughout the North West, from Buckley in North Wales, to the pot houses of North Lancashire, and Burton-in-Lonsdale, North Yorkshire. (McGarva 2000, 19, 29; White 1989; White 1998, 40).

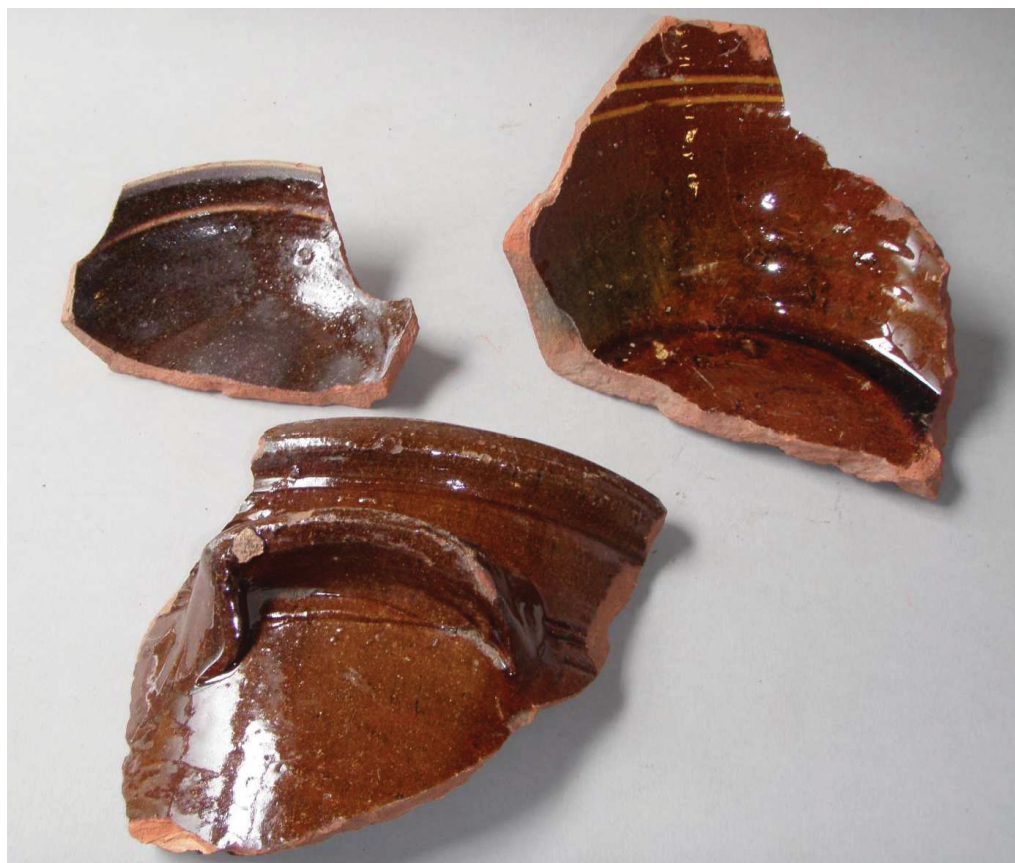


Plate 28: Examples of clear glazing and slip decoration (Cat no 12, 14 and 26)

## 6.5 RIM AND BASE TYPES

- 6.5.1 Six rim types (R1-6) were identified, which were generally, but not always, associated with specific vessel forms (Table 3). A single example of an unglazed hammerhead rim was recovered from kiln fill **1003**, but the form of the vessel from which it came was not discernible.
- 6.5.2 Rim type 1 (R1) was everted, with a groove running around the outside edge. The majority of R1 rims were from pancheons, with only 6 fragments identified as belonging to cylindrical jars. Squared rims (R2) were the most numerous, and were sub-divided into R2a, which was a squared rim with a pronounced horizontal rib below, and R2b which lacked the rib. R2a rims were exclusively used on jars, predominantly the large cylindrical variety. Some 77 sherds with R2b rims were identified as from large cylindrical jars, with a further 54 from pancheons.
- 6.5.3 R3 was a hooked rim, commonly found on cylindrical and rounded jars, and a lesser number of the smaller pancheons/bowls. R4 was everted, usually squared, and found on pancheons/bowls and some jars. Rim type R5 and sub-group R5 collared, were clubbed rims, which, in some cases, could be shown to be a development of the hooked rim (R3) which had been rolled over completely to form the club. Rim R5 was found on jars and pancheons/bowls. The collared version of this rim was usually associated with unglazed vessels. The final form (R6) was a simple rim found on only eleven jars, again, some the rims were collared.

| Rim type       | Vessel form  |          |                 |              |     |                 |           |       |                    |             |
|----------------|--------------|----------|-----------------|--------------|-----|-----------------|-----------|-------|--------------------|-------------|
|                | Undiagnostic | Bottle   | Cylindrical jar | Inturned jar | Jar | Pantheon / bowl | Plant pot | Plate | Puzzle jug/urinal? | Rounded jar |
| R1             | 23           |          | 6               |              |     | 282             |           |       |                    |             |
| R2             | 1            |          |                 |              |     |                 |           |       |                    |             |
| R2a            | 20           |          | 46              | 17           |     |                 |           |       |                    |             |
| R2b            | 4            |          | 77              |              |     | 54              |           |       |                    | 6           |
| R3             | 60           |          | 52              |              |     | 24              |           |       |                    | 35          |
| R3collared     | 2            |          | 3               |              |     |                 |           |       |                    |             |
| R4             | 18           |          | 9               |              | 3   | 104             |           |       |                    | 8           |
| R5             | 28           |          | 53              |              | 1   | 10              |           |       |                    |             |
| R5collared     |              |          | 6               |              |     |                 |           |       |                    |             |
| R6             | 5            |          | 4               |              | 1   |                 |           |       |                    |             |
| R6 everted     | 1            |          |                 |              |     |                 |           |       |                    |             |
| R6collared     |              |          | 1               |              |     |                 |           |       |                    |             |
| Not identified | 22           | <b>2</b> |                 |              |     |                 |           |       | <b>1</b>           |             |

Table 3: Quantification of rim types and vessel forms on which they appear

6.5.4 Three main base types were recognised (Table 4). In the majority the walls were set at an obtuse angle to the base, and could be from either pantheons/bowls or storage jars. Right-angled bases were more easily recognisable as belonging to cylindrical jars, whilst the small diameters of the bases with foot-rings make them likely to represent rounded jars.

| Base form     |              |           |              |
|---------------|--------------|-----------|--------------|
| Obtuse-angled | Right-angled | Foot-ring | Undiagnostic |
| 208           | 69           | 8         | 134          |

Table 4: Quantification of base forms



## 6.6 VESSEL FORMS

- 6.5.1 It seems that Grimshaw was producing a very limited range of utilitarian domestic vessels, all of which were part of the standard repertoire of the post-medieval potters of the North West (Brears 1971, 64-5). The majority of the vessels produced were pancheons/bowls (Table 5), followed by a range of storage jars, from large cylindrical vessels to smaller rounded varieties. A small number of unglazed plant pots (Table 5) were also produced, and there were single examples of a plate, a puzzle jug/urinal, and a bottle.

| Vessel form       | Sherd Count | EVE   |
|-------------------|-------------|-------|
| Puzzle jug/urinal | 1           | -     |
| Bottle            | 1           | -     |
| Pancheon / bowl   | 476         | 27.06 |
| Cylindrical jar   | 257         | 16.27 |
| Jar, inturned     | 17          | -     |
| Jar, rounded      | 55          | 6.97  |
| Jar               | 15          | 5.5   |
| Plant pot         | 28          | 0.77  |
| Plate             | 1           | -     |

Table 5: Number of sherds representing each vessel type and EVEs of vessels from contexts **1003**, **1009**, and Trench 4

- 6.5.2 **Pancheon/bowl:** these are predominantly, but not exclusively, found with rim R1, and in all glaze types, although most were dark brown to black (Plate 29). Their diameter ranges from 200-540mm with vessel sizes showing regular 20mm increments, and occasional larger examples were found with diameters of 600mm, 620mm, and 680mm. In Imperial units this ranged from diameters of approximately 8 ins to 21¼ ins in ¾ inch increments, whilst the largest vessels would have been between 24 and 26¾ ins across. It was noticeable that the smaller diameter pancheons were slip-decorated (Plate 29 Nos 12, 14, 16), whilst the larger ones were, with the exception of five slip-decorated rim sherds from pottery dump deposit **1009**, all darkly glazed.
- 6.5.3 Evidence suggests that the pancheons were stacked for firing in two different ways, and it appears that this could happen even in a single charge, as can be seen in examples from the fill of kiln **1003**. Most commonly, pancheons were stacked upright in the kiln with the aid of sectional ring saggars or rings (McGarva 2000 18). A smaller number, represented by 67 rim fragments (16.6 %), were fired in an inverted position, obvious from the way that the glaze within the vessel ran toward the rim, or collected there in droplets (Plate 29, No 5). This can also be seen on black-glazed wares from excavations at Eccleston Street, Prescott (McNeil 1989, 65, fig 10.8) and on rims from contemporary domestic assemblages, such as that from Rock Triangle, Bury (Bradley 2011). Some of the pancheons had handles (Plate 29, Nos 5 and 11), which might suggest a specific purpose for those examples.



*Plate 29: Pancheons, Nos 5-11, and bowls, Nos 12-17*

- 6.5.4 **Cylindrical jars:** these are the second most common vessel. Again they were produced chiefly with a dark glaze, and near-equal numbers were found with slip decoration or unglazed (46 and 47 respectively). With regard to the latter, it is not clear whether they were deliberately unglazed, or whether as a result of the high degree of fragmentation, these simply reflect parts of an otherwise glazed vessel where the glaze had not reached. All rim types were seen on these vessels, with type R2, both ribbed (R2a) and unribbed (R2b), being the most numerous (Plate 30, Nos 18 and 20). They were thrown in large range of diameters from small jars of between 80-200mm (approximately 3-8 ins) to much larger examples of up to 340mm, 460mm, and 600mm (approximately 13½, 18, and 23½ ins). Evidence from the rims would indicate that they were always fired upright.
- 6.5.5 It seems that tall, cylindrical, pots with lug handles, known as bread pots, were typical of the North West (Brears 1971, 64-5; Plate 30, No 20), and were used, as the name suggests, to store bread. Few examples were found with the handles intact, but given the limited number of vessels represented (EVE 16.275), this would not be unusual. Very similar vessels can be seen within the repertoire at Prescott (McNeil 1989, 76-9, figs 10.7-10).

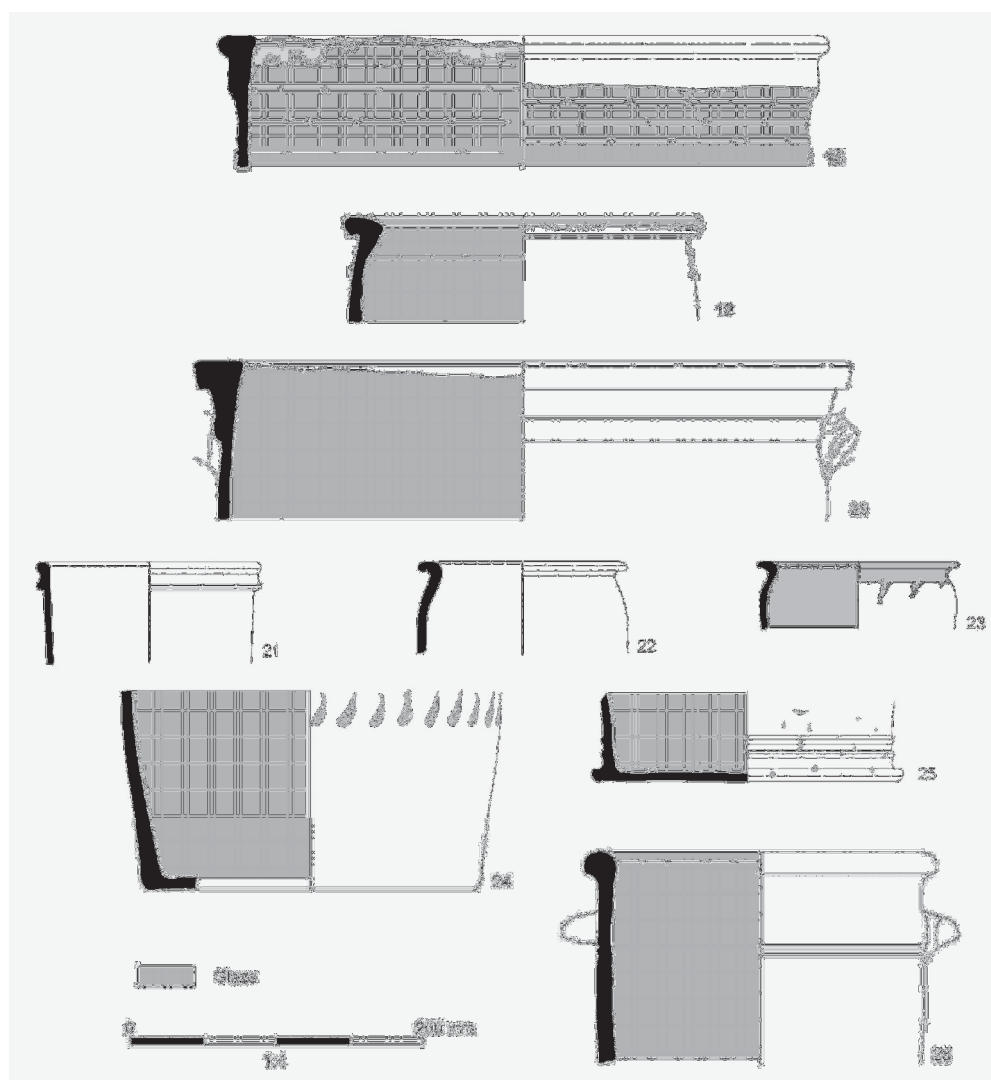


Plate 30: Cylindrical jars, Nos 18-16



6.5.6 **Other storage vessels (Plate 31):** a range of small, finely-potted, black-glazed jars with rim types R2b, and R3-5, was present in small numbers (Table 5). These were between 120mm and 280mm in diameter (approximately 4½-11½ ins), with occasional larger vessels measuring up to 320-380mm (approximately 12½-15 ins). It would appear likely that the smaller of the vessels found in this category (up to approximately 220-240mm; 9 ins) were fired within saggars. It is suggested by Brears (1971, 64-5, 243, 245) that these smaller vessels were barm pots, used for the storage of yeast, whilst the larger examples were possibly for cream.

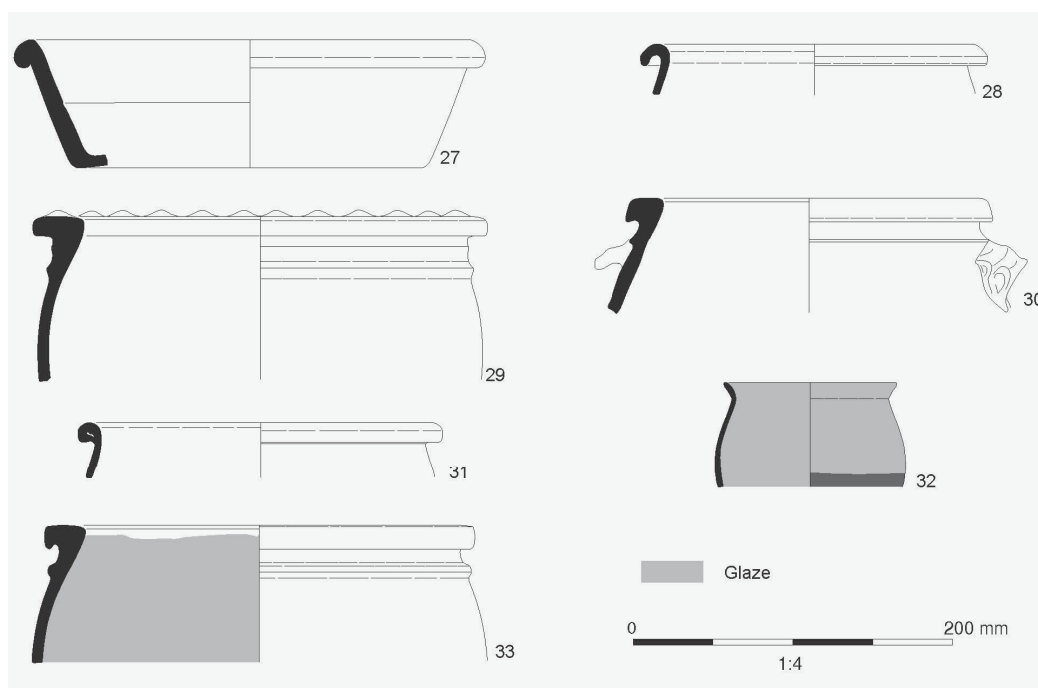


Plate 31: Other storage vessels, Nos 27-33

6.5.7 **Miscellaneous vessels:** some 12 strap handle fragments were recovered, but came only from pot dump **1009** and Trenches 1 and 4 (Plate 32, Nos 34 and 35). These could have been from jugs or possibly mugs, although no obvious jug sherds were recovered, and none of the strap handles were from the kiln itself; a single example was retrieved from Trench 4, which was located over the kiln. It is also possible that some of the smallest diameter (120 mm, c 4¾ ins) simple rims (R6) from Trench 4, could have been large mugs. The manufacture of mugs at this late date would, however, have been unusual, as they were more common in the seventeenth and earlier eighteenth centuries, being in decline by the mid- to late eighteenth (Barker 1986, 59; Philpott 1985, 85). Single instances of a plate (**1003**), bottle (**6001**) and a possible puzzle jug or urinal rim (**1009**) were also recovered (Plate 32, No 37). Puzzle jugs were popular throughout Britain in the nineteenth century, with large numbers of well-dated examples from Burton in Lonsdale, North Yorkshire (McGarva 200, 27; White 1989). Finally, it is clear that plain plant pots were also being produced, identifiable from their unglazed finish and holed bases.

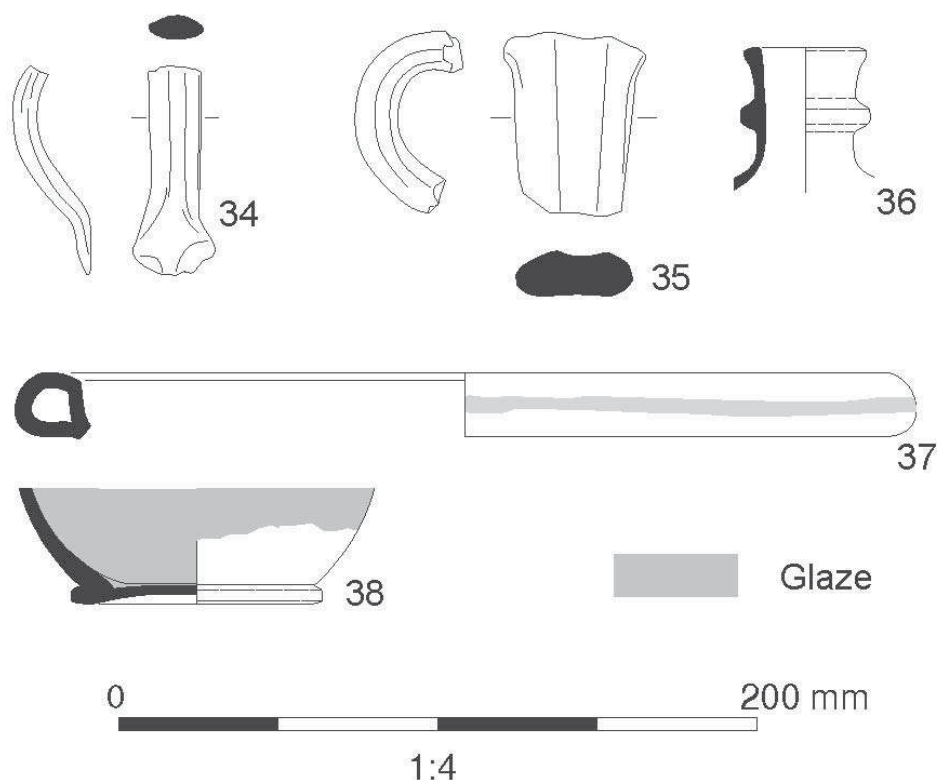


Plate 32: Miscellaneous vessels, Nos 34-38

6.5.8 **Wasters:** a small number of sherds (78) could be identified as true wasters (*sensu* MPRG 1998), rather than faulty vessels which were still good enough to be sold on (seconds; *ibid*). They form a distinct group of sherds where the exact nature of the failure can be seen. Most are badly overfired, and/or have a badly crazed glaze. In some instances glaze could be seen running over a break, indicating that the vessel had cracked or broken in the kiln whilst the glaze was molten; other faults included stacking scars and blistered glaze. More rarely, groups of sherds could be seen fused together. This is normally the result of a stack of vessels in the kiln collapsing as a result of over-firing, and consequently fusing together.

## 6.7 DATING AND DISTRIBUTION

6.7.1 There are significant problems associated with the dating of dark-glazed earthenwares in general, with their utilitarian nature meaning that neither forms, nor glaze and fabric change appreciably through time. This is particularly noticeable in the conservative range of rim forms used by potters within Lancashire (see for instance the rims from the eighteenth century pottery at Prescott, McNeil 1989). Although the Grimshaw assemblage can be dated to the first half of the nineteenth century, its products differ little from vessels being produced at Prescott in the eighteenth (*ibid*). They seem to have used a similar range of rim forms, and the problems of identifying the products of individual pot houses is further complicated by the similarity in fabrics, since most of the potteries south of the River Ribble used the coal measures clays, which are effectively indistinguishable (Ricketts 2010, 12-3). To the north there are some discernible differences in fabric, however, and

microscopic examination of dark-glazed earthenware from sites in Wigan and Lancaster seems to reveal some appreciable differences (Bradley 2011).

- 6.7.2 One notable difference between Grimshaw and Prescott lies in the firing technology used, but even this is slight, and such distinctions as there are would not be detectable unless the kiln sites were being compared directly. Ostensibly, the technologies used at both sites are similar, with the use of ceramic spacers to keep the vessels apart in the kiln, and the inverted firing of large jars (McNeil 1989, 62, figs 10.8, 10.22). Where the two pot houses differ is in the use, at Grimshaw, of ceramic rings to fire bungs of pancheons, whereas at Prescott, the earlier site, these were not used.
- 6.7.3 As so few sites have been excavated around Blackburn or from nearby towns such as Preston, identifying Grimshaw pottery used elsewhere, even retrospectively, has proved to be difficult. Thus far, only one excavated site, BAE Samlesbury (Bradley 2011; OA North 2011), has produced material that can be attributed firmly to Grimshaw. The site comprised three late seventeenth- to early twentieth-century rural sites, which together produced 369 sherds of black-glazed ware, from which it was possible to identify 29 rim fragments as Grimshaw products. Predictably, given the limited range of vessels that the pot house was producing, these are large cylindrical jars and pancheons. Undoubtedly, given the location of the Grimshaw pot house, the market for its wares would have been Blackburn and its hinterlands, Darwen and Accrington being named destinations for the pots from a later recollection (*Weekly Telegraph* 21 May 1921). Given the distance of 8.5km from the Samlesbury sites to the Grimshaw pothouse, it is hardly surprising that Grimshaw products were reaching the area.
- 6.7.4 There are, as yet, no known late pot houses in or near Preston (Newman and McNeil 2007b, 151) and again, there are few published pottery assemblages from the present-day city. A preliminary review has, however, suggested some apparent differences. Probably contemporary black-glazed wares from Preston Friary (LUAU 1991) have similar rim forms on the cylindrical jars, but the treatment of the glaze, most obviously a glaze-free band left on the top of the rim and just below it, is not seen at Grimshaw. The pancheon rims were also different, being collared, rather being grooved.



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## 7. DISCUSSION

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### 7.1 INTRODUCTION

- 7.1.1 The archaeological investigation of the site of the former Grimshaw Pottery has provided a valuable and rare opportunity to examine a nineteenth-century pottery manufacturing site. This has comprised the detailed recording of the foundations of a multi-flue circular pottery kiln, and its associated hovel and workshops. In addition, and perhaps most significantly, a large assemblage of pottery fragments was recovered from the excavation, allowing the range of vessels produced at the pottery to be identified. As this constitutes the largest assemblage of pottery recovered from a nineteenth-century kiln site in Lancashire, it may be considered to be a ‘type site’, and a benchmark for any future excavations of similar sites.
- 7.1.2 The results obtained from the excavation inform several of the initiatives for archaeological research of the industrial and modern periods stated in the current *Archaeological Research Framework for North West England* (Newman and McNeil 2007; McNeil and Newman 2007). In particular, *Initiative 7.37* states: ‘Regional study of late eighteenth to early twentieth century pottery production sites should identify urban factories and rural workshops, to tie products to source with identifiable typologies, organisation and marketing between the large factories and smaller rural potteries’ (Newman and McNeil 2007, 154).
- 7.1.3 The analysis of the pottery assemblage recovered from the excavation has demonstrated clearly that only a very limited utilitarian range of domestic pots were produced at Grimshaw. The range of vessel types was dominated by pancheons, sometimes referred to as wash pans. These vessels were produced in two fabrics, and in three main glaze types; other large vessels included bread pots (large storage jars with either vertical or bowed sides, typically with everted rims with a flanged profile).
- 7.1.4 During the early post-medieval period there were considerable changes in tablewares and the choices available middle and lower class households. Importantly for pottery studies, the period from the mid-seventeenth to the mid-eighteenth-century saw pewter tablewares decline in popularity (Hornsby *et al* 1989), whilst glass tableware still remained a luxury item, both factors encouraged local potteries to produce a range of relatively cheap, durable, and good quality table wares, and especially drinking vessels, to fill the gap (McNeil 1989, 59). For a while these potteries flourished and multiplied, their market increasing as the population rose during the eighteenth century. In response, there was corresponding rise in the number of relatively small-scale country potteries, many appearing in the later eighteenth and early nineteenth centuries (Brears 1971, 56, 58).

- 7.1.5 The development of refined whitewares in the latter part of the eighteenth century, their increasing popularity, and increasing ease of access to them as the growing canal network brought them in bulk to towns like Blackburn, soon had an appreciable impact on the country potteries. Where once they produced a range of good-quality drinking vessels (mainly black-glazed wares), from the 1770s onwards these had been gradually replaced by the likes of industrial slipwares, where the scale of production offered attractive vessels of consistent quality and accessible prices (Barker 1993, 27). Thus, by the turn of the nineteenth century, where once the country pottery would have produced most of the vessels needed for both table and kitchen, it was now largely reduced to supplying utilitarian wares, such as storage jars and panchcons, for the kitchen and dairy. This change can be seen clearly in the North Midlands, where inventories illustrate the range of vessels produced at the Ticknall potteries over a protracted period (Spavold and Brown 2005). From the large and varied range of vessels produced for, and consumed by, the surrounding populace in the sixteenth and seventeenth centuries, it is possible to see a gradual reduction during the eighteenth century, culminating the 1780s when the few types named in the inventories are all for use in the kitchen or dairy (*op cit*, 78-9, fig 11-14).
- 7.1.6 The limited range of vessels produced at Grimshaw is therefore probably typical of its time, reflecting the decline in the popularity of black-glazed tablewares in the late eighteenth and earlier nineteenth century, and the concomitant contraction of the industry, falling back on durable utilitarian wares for the kitchen and dairy. Not all potteries at the time had quite such a restricted range of wares, and, for example, the Burton in Lonsdale potteries were still producing a wide variety of earthenware, and later, stoneware vessels (White 1989). These ranged from the more prosaic stoneware bottles, jugs, jars, plates and dishes, to specialist wares such as bird whistles, puzzle jugs and salt-kits (*ibid*). The same can be said for the Verwood potteries in Dorset, where besides the everyday items such as jugs, jars, flagons, and bread bins, forms such as costrels and colanders for cheese-making were also produced (Draper and Copland-Griffiths 2002). Where these potteries differed from Grimshaw, however, in serving remote rural communities, and, prior to the coming of the railways and increased access to national markets, both still supplied almost all of the domestic pottery needs in their respective localities.

## 7.2 GRIMSHAW POTTERY IN ITS WIDER CONTEXT

- 7.2.1 Despite the apparent ubiquity of black-glazed earthenwares in the post-medieval period, as seen from many urban and other assemblages in the North West, for example, Wigan, Lancaster and Liverpool (OA North 2008; Miller and White forthcoming; Philpott 1985), production sites have rarely been encountered or excavated (Brennand 2007), and Grimshaw is the first nineteenth-century pottery in the region to have been subject to controlled archaeological excavation. Earlier excavations examined part of a pot house in Prescott, but much of the pottery complex was beyond the limits of excavation (McNeill 1989, 49; Davey 1989, 105).

- 7.2.2 The area around Prescott and Rainford, now in Merseyside, was exploiting the local coal-measures clays, producing dark-glazed and yellow earthenwares from the sixteenth century onwards, with no less than six manufactories listed in Prescott in 1825 (Webb quoted in Davey 1989, 103), and there seems little doubt that they were supplying utilitarian wares to Liverpool from the eighteenth century onwards (Davey 1991), whilst Liverpool itself concentrated on finewares relying on imported clays (*ibid*), producing tin-glazed or delftware in the earlier eighteenth century, whilst the Herculaneum pottery produced refined white earthenwares between 1796-1840 (Hyland 2005). Coarse earthenwares were also produced in the St Helens area until 1925 (OA North forthcoming), and Buckley in North Wales, was also continuing to produce dark-glazed earthenware in the early years of the twentieth century (McGarva 2000, 10).
- 7.2.3 Production was not confined to the southern part of the region, and the dense distribution of small potteries producing dark-glazed earthenwares can be emphasised by the relatively large number of eighteenth- and nineteenth-century pottery production sites known from the north of the region, with, for example, four have been identified within 20km of Lancaster: Burton in Lonsdale (Brears 1972; White 1989); Newlands, in Lancaster (Penney 1979-80); Scotforth, also in Lancaster (White 1976); and Bilsborrow, near Garstang, a few kilometres to the south (White 1998); as yet none have been excavated. Recent excavations of a production site on Lancaster quayside (Town 2008), demonstrated that it produced exclusively tin-glazed earthenwares rather than coarser domestic pottery.
- 7.2.4 From the late eighteenth to the early nineteenth centuries there were eight or nine earthenware potteries active in and around Burton in Lonsdale, locally known as 'Black Burton', all were similar to Grimshaw in having their own supply of coal, which could be easily extracted from the nearby banks of the river Greta (Brears 1971, 221; Hudson 2000, 56-7; White 1989). South-east of Burnley, some 17.5km from Grimshaw, the township of Cliviger was also exploiting the local coal measures, probably from c 1792 to 1850. There, however, the wares were either glazed with a deep yellow lead glaze, or decorated with slip trailing (Brears 1971, 191). Halifax, in the old West Riding of Yorkshire, also had several potteries (*op. cit*, 223). All of these potteries shared a common factor, with their location on the coal measures allowing them easy access to both fuel and raw materials. Halifax, Blackburn, Cliviger, and Prescott, also had easy access to emerging industrial markets, whilst those around Lancaster and Burton were able to supply the growing populations of North Lancashire and Yorkshire Dales (*op cit*, 222), which were themselves experiencing industrial expansion (Winstanley 2000, 1-9).
- 7.2.5 The demise of what Brears (1971) termed the 'country potteries', is somewhat easier to chart since it appears to have coincided with the spread of cheaply available whitewares (*op cit*, 78) from the late eighteenth century onwards. Certainly, by the middle of the nineteenth century, all of the potteries around Lancaster had ceased to function. The date of the demise of the Scotforth pot house is problematic, but it appear to have stopped producing pottery by the 1850s (White 1976, 36-7). The situation is perhaps more complex than Brears



suggests, and it was probably the arrival of the railway that precipitated changes in both the Lancaster and the Burton pottery industries. In Lancaster the arrival of the railways undoubtedly undermined its largely maritime economy, which in turn affected the rural industries of Lune Valley, whilst, although the extractive industries around Burton found markets to the east, the subsequent population decline in the region after 1850 (Winstanley 2000, 9-14) served to reduce the market.

- 7.2.6 As for Grimshaw, the documentary evidence does not indicate the reason for its demise, although it was marked on the Ordnance Survey map of 1849 (surveyed in 1845-7) as the 'Old Pottery', implying that it had gone out of production by the time the map was surveyed. Perhaps, as with the Burton potteries, Grimshaw succumbed to the pressure of arrival of cheaper imports from Staffordshire with the opening of the Leeds and Liverpool Canal in 1816 (Clarke 1994), and the opening of the first railway line to the town in 1846. Although Grimshaw appears to have been a relatively early victim of these changing economic pressures, the era of the country pottery does not end in mid-nineteenth century. For a number of potteries, diversification was able to delay what would be the long, slow death of the industry. At Burton, the local discovery of fire-clays in the 1830s enabled the production of stonewares (Hudson 2000, 57; Humphreys 2003, 29). Fire-clays were also used to produce refractory bricks, and their production was another diversification that many potteries relied upon. Brickworks are known at several sites around Lancaster (Hudson 2000, 57-8), but only the Newlands pottery appears to have been producing bricks as well as pottery, although it had ceased production by the 1830s (White 1996, 25). The last pottery in Burton closed in 1945 (White 1989), Soil Hill at Halifax continued to produce wares such as pancheons and brewing jars until 1964, whilst Wetheriggs pottery in Cumbria continued to produce pots into the twenty-first century (Brears 1971, 65, 226; McGarva 2000, 66-9).

### 7.3 THE KILN

- 7.3.1 The pottery kiln appears to have been of a design typical to nineteenth-century bottle-shaped pot ovens, which developed from domed multi-flued updraught kilns that are known in England from the thirteenth century (Baker 1991, 6). The foundations of the kiln were of stone construction, and it was probably encased in a hovel. Although the foundations were of stone, it is likely that both the oven and hovel were constructed from brick, as the large quantities of brick found within the remains of the firing chamber almost certainly derived from the crown of the oven and the kiln's superstructure.
- 7.3.2 The excavation exposed the remains of five flues, although the projected dimensions of the kiln would suggest a further two flues existed beneath the baulk of the site, making a total of seven. The flues served to conduct heat into the oven, and to distribute heat throughout the firing chamber; the flues were clearly seen to extend into the firing chamber for this purpose. There was no evidence to suggest that further flues were present beneath the floor of the firing chamber, and there was certainly no suggestion of openings for underground flues at the base of the hovel.

- 7.3.3 Many later nineteenth-century bottle kilns incorporated a central flue beneath the floor of the kiln, which linked to a well-hole in the centre of the oven. This was intended to produce a more even spread of heat in the oven, and address the problems encountered from the differences in temperatures between the periphery and centre of an oven fitted with numerous firemouths (Baker 1991, 110). The results obtained from the excavation indicate that the kiln at Grimshaw Pottery had not adopted this advanced technology, but had seven flues spaced equidistant around the circumference of the oven.
- 7.3.4 The flues would have been positioned directly beneath firemouths into which the fuel was loaded and the fires were let for firing; unfortunately, no evidence for these remained due to the limited height of the remains of the oven wall. The presence of clinker within the flues provides evidence for the type of fuel utilised in firing the pot, namely coal. The adherence of masses of clinker fused to the refractory lining of the flues implies that the coal used was not of the highest quality, and had low ash fusibility.
- 7.3.5 The paved 'wicket' facilitated the placing and drawing of the kiln, and it is interesting to note that spreads of clay, fuel-waste and pot wasters were deposited within throwing distance of the wicket. Following the placing of wares into the oven, the wicket would have been blocked up with bricks, which in turn were sealed with clay, the seal being removed once firing was completed. The clay spread seen within the workshop, and lying close to the wicket, could be a remnant of this process.
- 7.3.6 It is not possible to determine accurately from the surviving physical remains the capacity of the kiln. However, in broad terms, a kiln of the dimensions recorded at Grimshaw could potential hold some 2,000 saggars, each containing a number of vessels for firing. Pending the actual size of the kiln, and the number of vessels for firing, a complete cycle from placing to drawing the ware could range from four to 14 days, requiring as much as 27 tons of coal (Nixon 1976, 52-4). The maximum temperature after about two days would have been in the region of 1000°C and 1250°C (1832°F to 2282°F).
- 7.3.7 The hovel would have been the most visible outer part of the kiln and probably stood to quite a considerable height, as illustrated by Haworth. Hovels were introduced in the early eighteenth century, and developed into what became the common bottle-shape. The hovel encased the oven and would have acted as a chimney, taking away smoke, and protected the oven from the weather (Brears 1971). At Grimshaw the stone foundations for the hovel wall allow very limited space between it and the oven, and it would have been the workshop which offered shelter to the potter during placing of the pot in the kiln (loading) and drawing (emptying) of the kiln, and also during the firing process, for feeding the firemouths and controlling the kiln temperature.
- 7.3.8 The stone piers seen adjacent to the external ends of the flues possibly relate to dampers. Dampers, flaps of iron and firebrick, were operated from ground level by means of a pulley system, in order to control the draught in different sections of the oven. By opening the damper the draught could be increased, causing the fire to burn more fiercely and raising the temperature. By closing the dampers the temperature could be kept steady or lowered (Baker 1991).

- 7.3.9 There is very little physical evidence for the function of the building that housed the kiln. However, it is very likely that fuel was stored here, and that one of the rooms served as a warehouse for finished wares. There is nothing to suggest domestic use, but this should not be ruled out as a possible function. This workshop and the workshops to the north would appear to be contemporary structures, or at least working at the same time, as there was no distinct difference in the pot retrieved from all three buildings, suggesting it was manufactured during the same period and using the same technology.

## 7.4 THE WORKSHOPS

- 7.4.1 The workshops appear to have been built in two phases, with the most westerly being the earlier of the two. A variety of tasks would have been undertaken here from clay processing and glaze preparation to pot drying. The horizontal flue within the eastern workshop was almost certainly for pot drying, suggesting the western end was where the clay was processed and the pots thrown.
- 7.4.2 Raw clay, almost certainly extracted from Shorrocks Delph, had to be treated before it could be converted in pottery. After weathering for two or three seasons, it would have undergone a process called blunging. During this process the clay was agitated in water to allow stones and heavy particles to separate from the clay (Brears 1971). This was undertaken in a number of ways, but with a simple, common system being the use of a trough and pushing a board backwards and forwards to allow the clay and water to mix. The clay was then run off through a sieve to separate the undesirable inclusions. Following blunging the clay mixture had to be brought to a state of plasticity. This would be done in the clayhouse by trampling the clay underfoot, and Brears (1971) suggests that clogs were worn for this purpose in the north of England. This system was mechanised by the introduction of the pug mill in the early eighteenth century. One of the two workshops is almost certainly the clayhouse.
- 7.4.3 Throwing and turning the clay to make the pottery was the next phase in the process. In the absence of evidence to suggest steam-power was utilised at Grimshaw, for driving cast-iron frame wheels, throwing was probably undertaken on crank wheels. After throwing the pot had to be dried before placing in the kiln. This could be undertaken outside, but in the north of England, where the climate was cold and damp, potters built permanent drying racks housed in the drying room (Brears 1971, 114). The horizontal flue in the west workshop probably relates to a drying system, and could have provided a current of hot air, directed below a series of drying racks. If so, the firebox and chimney have been lost. The west workshop could have served as a drying room.
- 7.4.4 It is uncertain where the dried pot (biscuit ware) was stored prior to firing in the kiln, but most potteries had a room known as a greenhouse for this purpose. One of the rooms within the west workshop could have served this purpose, or even the rooms in the kiln workshop.

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## 8. CURATION, CONSERVATION AND DISSEMINATION

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### 8.1 RECIPIENT MUSEUM

- 8.1.1 Blackburn Museum and Art Gallery has been nominated as the ultimate repository for the finds and the integrated project archive:

Museum Street,  
Blackburn,  
Blackburn with Darwen  
BB1 7AJ

Tel: 01254 667130

- 8.1.2 Arrangements were made with the Museum and Art Gallery prior to the commencement of the excavations for the deposition of the complete site archive from the excavation and Vinai Solanki, the Curator of History, acknowledged a willingness to accept the project archive and a representative sample of the pottery recovered from the excavation.

### 8.2 STORAGE

- 8.2.1 The complete project archive, which will include written records, plans, black and white and colour photographs, artefacts, ecofacts and sieved residues, 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).
- 8.2.2 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 small quantity of medieval glass constitute the only material categories that are potentially unstable; although these materials have been packaged in airtight plastic boxes, they will also need to be stored in controlled conditions.

### 8.3 DISSEMINATION

- 8.3.1 The complete results obtained from the archaeological investigation are incorporated in this excavation report, which includes the findings from the detailed analysis of the pottery. In addition to Balfour Beatty and Ramboll Engineering (UK), copies of this archive report will be forwarded to Blackburn Museum and Art Gallery, the Lancashire Historic Environment Record, and Blackburn library.
- 8.3.2 Given the regional, or even national, significance of the results, an agreement has been made to publish the site in order to disseminate the findings to a national audience. In the first instance, the results will be offered for



publication as an academic paper in an appropriate archaeological journal, such as *Post-Medieval Archaeology*. In addition, in line with the guidance provided by national planning policies on the conservation of the historic environment, which are set out in Planning Policy Statement PPS 5 *Planning for the Historic Environment*, the Planning Archaeologist has recommended that a ‘popular’ publication is also prepared. This would enable the results obtained from the archaeological works to be disseminated to the local community, and help to celebrate the rich industrial heritage of Grimshaw Park. This could perhaps be achieved most effectively via presentation in an illustrated booklet that could be distributed to schools, libraries and museums throughout Blackburn with Darwen.

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## 9. CONCLUSION

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### 9.1 CONCLUSION

- 9.1.1 The early nineteenth-century pot house at Grimshaw, near Blackburn, produced utilitarian dark-glazed pottery of a type commonly seen in most post-medieval excavations in the north of England. This fine, well-potted fabric, limited as it was, in terms of both vessel forms and glazes, was part of a tradition that started in the medieval period in the Midlands (Boothroyd and Courtney 2004) and was probably produced in centres throughout Lancashire, wherever there was a ready source of clay and fuel. In the case of the Grimshaw, the Prescott industries in Merseyside, and those in Burton in Lonsdale, North Yorkshire, all were situated upon the coal measures. The utilitarian black-glazed ware tradition, although production ceased at Grimshaw in the 1840s, continued on, most notably in Buckley and St Helens, into the twentieth century.
- 9.1.2 The pot house at Grimshaw produced a limited repertoire of forms, comprising pancheons, large storage jars, and a few smaller storage vessels, serving a limited market that was probably centred on Blackburn and its hinterlands in the Ribble Valley. It is probable that the market for Grimshaw's wares was destroyed, as it was for many country potteries, by the expansion of the transport system during the nineteenth century, bringing Staffordshire white earthenwares, by that time produced on an industrial scale, within reach of much of the growing urban conurbations of the region. Whilst some of the smaller rural potteries, for instance those of Burton in Lonsdale, prolonged their economic life by diversifying into stonewares, or brick-making, Grimshaw failed to do this and fell by the economic wayside.

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## APPENDIX 1: UPDATED WRITTEN SCHEME OF INVESTIGATION

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GRIMSHAW  
POTTERY,  
  
HASLINGDEN  
ROAD,  
  
BLACKBURN,  
  
LANCASHIRE

**OPEN-AREA  
EXCAVATION  
METHOD  
STATEMENT**



**Oxford Archaeology North**

October 2010

Balfour Beatty and Ramboll  
Uk Engineering

## 1. INTRODUCTION

### 1.1 PROJECT BACKGROUND

- 1.1 Balfour Beatty (hereafter the ‘client’) has requested that Oxford Archaeology North (OA North) submit proposals for a programme of open-area excavation at a site outlined for redevelopment as part of the Building Schools for the Future (BSF) scheme. The site is a former golf driving range on land adjacent to Haslingden Road, Blackburn, Lancashire (NGR centred SD 691270), and is known as Grimshaw Pottery. The request follows the results of a programme of evaluation trial trenching within the north of the development site (Area 1).
- 1.2 The course of a Roman road linking Manchester to Ribchester is known to lie close to the site, together with two pottery kilns, one of which, Grimshaw Park Pottery, is marked on the 1822 Gilles Survey of Blackburn. The evaluation trenching within Area 1 failed to find any evidence for the Roman road, which is believed to lie further to the west, outside of the development area. Physical remains for Grimshaw pottery were observed lying at a very shallow depth beneath the topsoil in two of the evaluation trenches (Trench 1 and Trench 4). The remains included possible flues, brick surfaces including refractory brick which is indicative of high temperatures, and an alignment of stone walls. The evaluation of the site of the putative second kiln (Area 2) failed to find any significant archaeological remains.
- 1.3 Following the results of the Area 1 evaluation, the LCAS Planning Archaeologist has requested that an open-area excavation be undertaken within the area of the trenching, but not encompassing the entire area. The following proposals are in accordance with the LCAS verbal brief. The open-area excavation will be contained to Area 1 (see figure), and undertaken in three stages:
- **Stage 1** - in the first instance, topsoil and overburden material will be removed to expose the first archaeological horizon. All archaeological features thus exposed will be sufficiently cleaned to allow a pre-excavation plan to be produced;
  - **Stage 2** - a site meeting will be held with the client, Ramboll UK and the Planning Archaeologist in order to determine the full extent of the excavation required.
  - **Stage 3** - then, following agreement of a strategy, any archaeology will be sample excavated and recorded. The sample will be appropriate and proportional to the importance, quantity and complexity of the archaeology exposed, as well as its perceived research value.



## 2. AIMS AND OBJECTIVES

2.1 **Stage 1:** the initial topsoil stripping will be designed to expose the character and nature of the archaeological remains, and assess their potential research value. The primary aims will be:

- i. To expose archaeological remains across the whole archaeological site by the mechanical removal of topsoil and any masking subsoil;
- ii. To create a pre-excavation plan of exposed deposits;
- iii. To collect datable/activity specific material from the surface of exposed deposits;
- iv. To confirm the priorities for further archaeological investigation.

2.2 **Stage 2:** the pre-excavation meeting will be held in order to determine the strategy for recording the archaeological remains exposed by the stripping. Further archaeological investigations will be designed to recover data sufficient to allow for “preservation by record” and establish the extent, date, character and significance of the archaeological remains.

2.3 **Stage 3:** based on the agreed strategy, the primary aims of the open-area excavation will be:

- i. To characterise the overall nature of the archaeological resource and to understand the process of its formation;
- ii. To create a detailed plan of all archaeological features;
- iii. To establish the character of those features in terms of surfaces, walls, kiln elements, working areas, etc;
- iv. To recover, where appropriate, across the archaeological site representative artefact and eco-samples to provide evidence of the manufacturing process, and a pottery type series;
- v. To establish in outline a dated sequence of structures and/or deposits and thus to define changes in site organisation over time.

## 3. METHODOLOGY

### 3.1 FIELDWORK

3.1.1 **Stage 1 - Stripping:** prior to the commencement the site will be secured with Herras fencing, and a CATscan undertaken in order to locate or confirm the presence of services. The stripping will be undertaken by a team of three archaeologists: one to machine watch and two to clean and plan. It is anticipated that the maximum period of time required would be five days, although this is dependent upon the level of archaeology encountered and weather conditions. During the strip and record investigation, a mechanical

excavator fitted with a toothless ditching bucket will remove the topsoil under archaeological supervision. Stripping will proceed until the uppermost horizons of significant archaeological remains have been revealed or, where these are absent, the natural substrate. The topsoil will be stockpiled separately from other deposits. The stripped areas, including the edges if necessary, will be cleaned sufficiently to enhance the definition of features.

- 3.1.2 The machine used will be safe, in good working order and powerful enough for the work and to be able to mound spoil and overburden neatly, at a minimum distance of 1m from the trench edges. It is anticipated that this would be a 15ton 360 tracked excavator. The topsoil will be stripped in a systematic and logical manner, to ensure that where practicable the excavators and machines used to remove spoil do not rut, compact or otherwise damage buried or exposed archaeological features and deposits by crossing previously stripped areas.
- 3.1.3 **Mapping (Pre-excavation plan):** the stripped area will be planned using either a Total Station or GPS and the resulting plan tied into the national grid. The stripping team will pay close attention to achieving a clean-stripped surface, using the mechanical plant under close archaeological supervision, to reduce the need for extensive hand cleaning. Limited areas may still require hand cleaning, to clarify complex feature intersections. The principal aim of the initial work will be to produce a plan of the revealed features that can be used to define and quantify the second stage of formal and detailed excavation. Plans will be maintained as stripping progresses and features will be defined on the ground. A general site plan will be produced at an appropriate scale to map the exposed features.
- 3.1.4 **Stage 2 - Strategy Meeting:** the pre-excavation strategy meeting will consider the research value of the archaeology and the necessity to achieve “preservation by record” in advance of the development. It will establish the excavation sampling strategies. The exact sampling levels will be determined by the nature of the remains.
- 3.1.5 Following the meeting an updated project design/WSI will be presented to the Archaeological Curator. This could cause a short delay in the progress of the fieldwork, however, in order to avoid any such delay it is anticipated that the fieldwork will progress on a verbal agreement basis.
- 3.1.6 **Stage 3 - Excavation:** at this stage the number of archaeologists on site would be likely to increase to a maximum of four, and it is anticipated that the excavation fieldwork would take in the region of ten days.
- 3.1.7 Any archaeological deposits will be excavated to the extent that they are sufficiently characterised and understood, this will involve excavating a representative range of elements such as flues, working surfaces, walls etc.
- 3.1.8 Any positive archaeological feature or deposit likely to obscure earlier features will be completely removed in the most appropriate fashion, after being recorded.

- 3.1.9 It should be noted that in most cases features will be half-sectioned, but where either no dating/functional evidence has been obtained, or where artefacts have been recovered of such a nature that the recovery of additional material of a similar nature is thought to be worthwhile, then further sampling will be undertaken. Where clusters of like features occur, it may prove sufficient to investigate a representative sample.
- 3.1.10 All contexts will be recorded using standard recording systems in accordance with the IFA Standards and Guidance for archaeological excavations; planning and surveying will be based on a site grid tied into the Ordnance Survey National Grid and ordnance datum levels will be taken where appropriate.
- 3.1.11 Any excavation, both by machine and by hand, will be undertaken with a view to avoiding damage to any archaeological features or deposits, which appear to be worthy of preservation *in situ*. Any hand excavation will respect the stratigraphy of archaeological layers, features, deposits and structures. When required, each context will be excavated in sequence.
- 3.1.12 Complex features and excavated interventions will be recorded by, individual hand-drawn plans made at a scale of 1:20 or 1:10. These detailed plans and the area plan produced in Stage 1 will be digitised and combined to produce a post-excavation plan of the site. Sections will be drawn at 1:10 or 1:20 unless circumstances dictate otherwise. All features revealed in the excavated area will be planned. A full digital photographic record will also be maintained.

## 3.2 HEALTH AND SAFETY

- 3.2.1 The status of the site should be determined prior to the commencement of fieldwork. No documentation has been issued as to CDM status; therefore it is assumed that the site does not fall under CDM regulations. Likewise, OA North has not been instructed to act as principal contractor. The clients representatives should make their intentions known to the Senior Project Manager prior to undertaking site visits. Any health and safety requirements not outlined in this document will be subject to a variation in costing.
- 3.2.2 **Risk Assessment:** OA North provides a Health and Safety Statement for all projects and maintains a Unit Safety policy. OA North will liaise with the client to ensure all health and safety regulations are met. The outline risk assessment to accompany these proposals will be updated in advance of any on-site works, with continuous monitoring during the fieldwork. All mechanical plant hire certificates will be inspected, and the driver inducted using the OA North Risk Assessment.
- 3.2.2 **Staff Issues:** all project staff will be Construction Skills Certification Scheme (CSCS) qualified, proof of which can be provided.
- 3.2.3 All project staff will wear full basic Personal Protective Equipment (PPE) whilst on site. PPE will include safety helmets, safety boots and high-visibility jackets. Noise defenders and eye protectors will be made available to staff as necessary.

- 3.2.4 **School Visits:** all visits to site must be arranged in advance with the OA North Senior Project Manager, who will decide on the suitability or otherwise of any such visit. All school parties must be escorted by the appropriate number of school staff, and wear suitable clothing, in particular, stout footwear.
- 3.2.5 **Contamination:** any contamination issues must also be made known to OA North in order that adequate PPE can be supplied prior to commencement. Should any presently unknown contamination be discovered during excavation, it may be necessary to halt the works and reassess the risk assessment. Any specialist safety requirements may be costed as a variation.
- 3.2.6 **Services/Utilities:** full regard will be given to all constraints (services etc) during the excavation as well as to all Health and Safety considerations. As a matter of course the field excavation team will use a CATscan and generator prior to any excavation to test for services. However, these are only approximate location tools. Any **information regarding services**, ie drawings or knowledge of live cables or services, within the study area and held with the client should be made known to the OA North Senior Project Manager prior to the commencement of the evaluation.
- 3.2.7 **Fencing Requirements:** similarly, the open-area will be protected with Herras fencing whilst open, and any appropriate signage displayed. Whenever possible deep features will be opened and backfilled within the same day for purposes of site security and health and safety reasons, once archaeological recording has been completed.

### 3.3 GENERAL PROCEDURES

- 3.3.1 **Finds:** all finds - with the exception of pottery wasters - will be exposed, lifted, cleaned, conserved, marked, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds*, 1998 (new edition) and the recipient museum's guidelines. A maximum of 5000 wasters will be collected.
- 3.3.2 Finds recovery and sampling programmes will be in accordance with best practice (current IFA guidelines) and subject to expert advice. OA employs in-house artefact and palaeoecology specialists, with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation. Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC). Emergency access to conservation facilities is maintained by OA North with the Department of Archaeology, the University of Durham.
- 3.3.3 Neither artefacts nor ecofacts will be collected systematically during the mechanical excavation of the topsoil. Finds recovered during the removal of overburden will be retained only if of significance to the dating and/or interpretation of the site, for example, pottery wasters. It is not anticipated that ecofacts (eg unmodified animal bone) will be collected during this procedure.



- 3.3.4 Otherwise, artefacts and ecofacts will be collected and handled as per specification. All material will be collected and identified by stratigraphic unit during the evaluation trenching process.
- 3.3.5 Any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996. Where removal cannot take place on the same working day as discovery, suitable security will be employed to protect the finds from theft.
- 3.3.6 **Environmental Sampling:** samples (bulk samples of 40 litres volume, to be sub-sampled at a later stage) will be collected from stratified undisturbed deposits and will particularly target negative features (gullies, pits and ditches). These will be returned to OA North's offices for processing. Deposits of particular interest may incur additional sampling, on advice from the appropriate in-house specialist. The location of all samples will be recorded on drawings and sections with heights OD etc.
- 3.3.7 Between 50%-100% of bulk samples shall be selected for processing, based on the advice from OA North's in-house environmental manager. However, the basis of the advice will be agreed with the client prior to processing commencing, which will be included in the final report.
- 3.3.8 In order to achieve the aims of the programme of work, it may be required to obtain dating evidence through scientific dating techniques. This would only be undertaken in consultation with the client.
- 3.3.9 **Human Remains:** any human remains uncovered will be left *in situ*, covered and protected. No further investigation will continue beyond that required to establish the date and character of the burial. The client, curator and the local Coroner will be informed immediately. If removal is essential the exhumation of any funerary remains will require the provision of a Home Office license, under section 25 of the Burial Act of 1857. An application will be made by OA North for the study area on discovery of any such remains and the removal will be carried out with due care and sensitivity under the environmental health regulations.
- 3.3.10 **Scientific Dating:** it is possible that heat-affected elements of such features as the kiln will be suitable for thermomagnetism dating. Any such requirement, made in agreement with the Planning Archaeologist, will be subject to a variation in costs.

## 4. REPORT AND ARCHIVE

### 4.1 EVALUATION-TYPE REPORT

4.1.1 In the event that the levels of archaeology exposed within the open-area excavation site are less than expected, then it is possible that the production of an evaluation-type report would be sufficient to present on the results. This would be at the discretion of the Planning Archaeologist. However, it should be noted that an article suitable for inclusion in an academic journal would also be required, as would assessment of the pottery. The production of an evaluation-type report would comprise the following:

4.1.2 ***Open-area Excavation Evaluation-type Report:*** an interim statement of results will be produced within approximately two weeks of the completion of the fieldwork. For the final evaluation report, one bound copy of a written synthetic report will be submitted to the client, together with a pdf version on CD. A pdf version of the report will also be forwarded to the Lancashire HER and LCAS within twelve weeks of completion of the fieldwork and any subsequent pottery assessment, unless an alternative deadline is agreed with the client beforehand. It will present, summarise, and interpret the results of the programme detailed above in order to come to as full an understanding as possible of the archaeology of the development area. The report will include;

- a site location plan related to the national grid
- a front cover to include the NGR
- a concise, non-technical summary of the results
- the circumstances of the project and the dates on which the fieldwork was undertaken
- description of the methodology, including the sources consulted
- description and interpretation, to include the results of any specialist work undertaken
- appropriate plans showing the location and position of features or sites located
- photographs as appropriate
- a copy of this project design, and indications of any agreed departure from that design
- the report will also include a complete bibliography of sources from which data has been derived, and a list of any further sources identified but not consulted.

4.1.3 In addition to the above the report will include an assessment of the pottery assemblage undertaken to comply with the *Minimum Standards for the processing, Recording, Analysis and Publication of Post-Roman Ceramics* (Medieval Pottery Research Group, 2001 9).

## 4.2 POST-EXCAVATION ASSESSMENT

4.2.1 In the event that the levels of archaeology exposed within the open-area excavation site are as expected, then a programme of post-excavation assessment and analysis will be required. This will comprise the following:

4.2.2 **Post-excavation Assessment:** subsequent to the completion of the fieldwork, it is probable that, following LCAS recommendations, it will be necessary to conduct a programme of post-excavation assessment in order to determine the size, complexity and potential of the site archive for further analysis. During the programme of post-excavation assessment, the excavation results will be collated and an assessment of the resource implications of the potential further analysis would be undertaken. The stratigraphic data and the finds assemblage would be quantified and assessed, and any environmental samples processed and a brief assessment of their potential for further analysis made. The assessment would, where appropriate, comprise:

- Quantification of all site records, including drawings
- Assessment of the stratigraphic sequence, in terms of complexity and, where possible, provisional chronology
- A summary description of the results of the excavation, including an identification of formation processes
- An assessment of the significance of any deposits from which dating evidence has been taken and the selection of specific samples for submission for analysis
- Processing of a selection of any environmental samples in order to establish the potential for preservation and further analysis of ecofacts and palaeoenvironmental materials
- A quantification and preliminary classification of the artefact assemblage and assessment of the potential of the assemblage for further analysis in terms of function, origin and dating.

4.2.3 **Post-excavation Assessment Report:** the assessment results would be presented within a post-excavation assessment report which would summarise the results of the excavation together with any initial hypotheses that can be drawn from the assessment of the finds and environmental samples. Within the framework of these initial results, an attempt would be made to place the data from the excavation within a regional context both in terms of a chronological narrative and of significance. The assessment report would make recommendations for a schedule, timescale and programme of analysis in accordance with MAP2 Appendix 4.

4.2.4 **Analysis:** a provisional programme of post-excavation analysis is anticipated. The extent of the programme, however, can only be reliably established on completion of the post-excavation assessment report, but it is likely that a full programme of analysis would be undertaken on all elements of the identified kiln (including production of detailed, phased plans and sections), of any associated features, and of the pottery finds assemblage in particular. The costings document, below, contains a provisional estimate for the cost of any

analysis. The final cost of analysis, however, will be based upon the results of the MAP2 assessment and will be outlined in further correspondence. The proposed programme anticipates both analysis of the site stratigraphy and the artefactual evidence leading to the production of a final report.

4.2.5 **Analysis Report:** depending upon the significance and extent of the excavation findings, the results of the analysis will be presented either as a bound document or as a publication draft. Three bound and one unbound copy of the report will be issued to the client, and further copies will also be deposited with the Lancashire HER and the Lancashire County Record Office when the fieldwork archive is deposited.

4.2.6 **Confidentiality:** the final report is designed as a document for the specific use of the Client, and should be treated as such; it is not suitable for publication as an academic report, or otherwise, without amendment or revision. Any requirement to revise or reorder the material for submission or presentation to third parties beyond the project brief and project design, or for any other explicit purpose, can be fulfilled, but will require separate discussion and funding.

### 4.3 PUBLICATION

4.3.1 It is anticipated that the results of the excavation will be worthy of publication. If possible, the publication text will be prepared in a suitable form for inclusion in either a regional or national journal.

### 4.4 ARCHIVE

4.4.1 The results of the fieldwork will form the basis of a full archive to professional standards, in accordance with current English Heritage guidelines (*The Management of Archaeological Projects*, 2nd edition, 1991) and the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (UKIC 1990). The project archive represents the collation and indexing of all the data and material gathered during the course of the project. The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the IFA in that organisation's code of conduct.

4.4.2 The finds (if appropriate) archive for the archaeological work undertaken at the site will be deposited with the nearest museum which meets Museums' and Galleries' Commission criteria for the long term storage of archaeological material (MGC 1992). The archive will be deposited with the appropriate repository within six months of the completion of the fieldwork.

4.4.3 Except for items subject to the Treasure Act, all artefacts found during the course of the project will be donated to the receiving museum, where they meet that museum's retention policy.



- 4.4.4 The paper archive will be deposited with the County record Office in Preston. A synthesis (in the form of the index to the archive and a copy of the publication report) will be deposited with the Lancashire HER

## 5 WORK TIMETABLE

- 5.1 **Stripping of the site:** a period of up to five days will be required for this first element of the programme.
- 5.2 **Open Area Excavation:** this will take in the region of ten days (weather permitting).
- 5.3 **Interim Statement of Results:** if required this will be produced within two weeks of completion of the fieldwork.
- 5.4 **Final Evaluation-type Report and Archive:** the report and archive will be produced following the completion of all fieldwork. The final report will be available within twelve weeks of completion of the fieldwork (subject to specialist reports). The archive will be deposited within six months.
- 5.5 **Post-excavation Assessment Report:** this will be issued within six months of completion of the fieldwork.
- 5.6 **Analysis Report:** to be agreed following completion of the assessment report.
- 5.7 **Notification of work:** in order that OA North can schedule the work as above, one week's notice is required from the receipt of a purchase order/commissioning letter. LCAS also require at least one week's notice prior to commencement for monitoring purposes.

## 6. PROJECT MONITORING

- 6.1 Whilst the work is undertaken for the client, monitoring of the archaeological investigations will be undertaken by LCAS on behalf of the local planning authority who will be afforded access to the site at all times. LCAS require that notification of site work is provided at least one week prior to its commencement.
- 6.2 OA North will ensure that any significant results are brought to the attention of the client and LCAS as soon as is practically possible.

## 7. STAFFING

- 7.1 The project will be under the direct management of **Alison Plummer BSc (Hons)** (OA North Senior Project Manager) to whom all correspondence should be addressed.
- 7.2 The open-area excavation would be supervised by an OA North Project Officer experienced in this type of project. All OA North project officers are experienced field archaeologists capable of carrying out projects of all sizes. The project officer will be assisted by up to three field archaeologist.
- 7.3 The site team will be supported by specialist staff based both on site and in the office in Lancaster. Finds management will be undertaken by **Christine Howard-Davis** who will also provide specialist input on certain finds categories. Environmental management will be undertaken by **Elizabeth Huckerby**, who will also provide specialist input on charred remains and pollen. Elizabeth will advise on site sampling procedures and co-ordinate the processing of samples and organise internal and external specialist input as required.

## 8 INSURANCE

- 8.1 OA North has professional indemnity to a value of £2,000,000, employer's liability cover to a value of £10,000,000 and public liability to a value of £15,000,000. Written details of insurance cover can be provided if required.

## APPENDIX 2: SUMMARY CATALOGUE OF THE POTTERY

| Context No      | Vessel type     | Quantity | Rim type | Glaze       | Fabric |
|-----------------|-----------------|----------|----------|-------------|--------|
| <i>Trench 1</i> | Pancheon        | 25       | R1       | Brown/black | F1     |
| <i>Trench 1</i> | Rounded jar     | 1        | R2b      | Black       | F1     |
| <i>Trench 1</i> | Cylindrical jar | 14       | R2b      | Brown       | F1     |
| <i>Trench 1</i> | Cylindrical jar | 1        | R2b      | Slip        | F1     |
| <i>Trench 1</i> | Cylindrical jar | 3        | R2b      | Unglazed    | F1     |
| <i>Trench 1</i> | Vessel          |          |          |             | F1     |
| <i>Trench 1</i> | Vessel          | 7        | R3       | Brown       | F1     |
| <i>Trench 1</i> | Vessel          | 5        | R3       | Slip        | F1     |
| <i>Trench 1</i> | Vessel          | 1        | R3       | Unglazed    | F1     |
| <i>Trench 1</i> | Vessel          |          |          |             | F1     |
| <i>Trench 1</i> | Plant pot       | 6        | R5       | Unglazed    | F1     |
| <i>Trench 1</i> | Bowl/pan        | 15       | R4       | Brown/black | F1     |
| <i>Trench 1</i> | Bowl/pan        | 2        | R4       | Mottled     | F1     |
| <i>Trench 1</i> | Bowl/pan        | 3        | R4       | Slip        | F1     |
| <i>Trench 1</i> | Vessel          | 1        | R4       | Unglazed    | F1     |
| <i>Trench 1</i> | Vessel          | 1        | R4       | Clear/brown | F1     |
| <i>Trench 1</i> | Vessel          |          |          |             | F1     |
| <i>Trench 1</i> | Vessel          | 2        | R2a      | Brown       | F2     |
| <i>Trench 1</i> | Vessel          | 8        | R2a      | Black       | F2     |
| <i>Trench 1</i> | Vessel          | 3        | R2a      |             | F2     |
| <i>Trench 1</i> | Vessel          | 1        | R2a      | Unglazed    | F2     |
| <i>Trench 1</i> | Vessel          |          |          |             | F2     |
| <i>Trench 1</i> | Pancheon        | 5        | R1       | Brown       | F2     |
| <i>Trench 1</i> | Pancheon        | 1        | R1       | Black       | F2     |
| <i>Trench 1</i> | Vessel          |          |          |             | F2     |
| <i>Trench 1</i> | Vessel          | 1        | R5       | Black       | F2     |
| <i>Trench 1</i> | Vessel          | 1        | R5       | Unglazed    | F2     |
| <i>Trench 1</i> | Vessel          |          |          |             | F2     |
| <i>Trench 1</i> | Vessel          | 1        | R3       | Slip        | F2     |
| <i>Trench 1</i> | Vessel          | 1        | R3       | Brown       | F2     |
| <i>Trench 1</i> | Vessel          | 1        | R3       | Unglazed    | F2     |
| <i>Trench 1</i> | Vessel          |          |          |             | F2     |
| <i>Trench 1</i> | Vessel          | 2        | R4       | Black       | F2     |
| <i>Trench 1</i> | Vessel          | 2        | R4       | Brown       | F2     |
| <i>Trench 1</i> | Vessel          |          |          |             | F2     |
| <i>Trench 1</i> | Vessel          | 106      |          | Brown       | F1     |
| <i>Trench 1</i> | Vessel          | 87       |          | Black       | F1     |
| <i>Trench 1</i> | Vessel          | 26       |          | Clear/brown | F1     |

| Context No      | Vessel type     | Quantity | Rim type | Glaze       | Fabric |
|-----------------|-----------------|----------|----------|-------------|--------|
| <i>Trench 1</i> | Vessel          | 12       |          | Slip        | F1     |
| <i>Trench 1</i> | Vessel          | 22       |          | Unglazed    | F1     |
| <i>Trench 1</i> | Vessel          | 2        |          | Mottled     | F1     |
| <i>Trench 1</i> | Vessel          | 10       |          |             | F1     |
| <i>Trench 1</i> | Vessel          | 1        |          | Brown       | F3     |
| <i>Trench 1</i> | Vessel          | 27       |          | Brown       | F2     |
| <i>Trench 1</i> | Vessel          | 21       |          | Black       | F2     |
| <i>Trench 1</i> | Vessel          | 6        |          | Clear/brown | F2     |
| <i>Trench 1</i> | Vessel          | 2        |          | Slip        | F2     |
| <i>Trench 1</i> | Vessel          | 4        |          | Unglazed    | F2     |
| <i>Trench 1</i> | Plant pot       | 12       |          | Unglazed    | F1     |
| <i>Trench 1</i> | Plant pot       | 1        |          | Unglazed    | F2     |
| <i>Trench 1</i> | Vessel          | 10       |          | Clear/brown | F1     |
| <i>Trench 1</i> | Vessel          | 1        |          | Slip        | F1     |
| <i>Trench 1</i> | Vessel          | 7        |          | Black       | F2     |
| <i>Trench 1</i> | Vessel          | 2        |          | Brown       | F2     |
| <i>Trench 1</i> | Vessel          | 24       |          | Brown       | F1     |
| <i>Trench 1</i> | Vessel          | 23       |          | Black       | F1     |
| <i>Trench 1</i> | Vessel          | 2        |          | Brown       | F3     |
| <i>Trench 1</i> | Vessel          | 4        |          |             |        |
| <i>Trench 1</i> | Vessel          | 4        | R4       | Black       | F1     |
| <i>Trench 1</i> | Cylindrical jar | 1        | R1       |             | F1     |
| <i>Trench 1</i> | Bowl/pan        | 1        | R4       | Mottled     | F1     |
| <i>Trench 1</i> | Rounded jar     | 1        | R4       |             | F1     |
| <i>Trench 1</i> | Cylindrical jar | 1        | R3       | Brown       | F1     |
| <i>Trench 1</i> | Vessel          | 1        |          | Black       | F1     |
| <i>Trench 1</i> | Bowl            | 1        | R4       | Black       | F1     |
| <i>Trench 1</i> | Jar             | 1        | R4       | Black       | F1     |
| <i>Trench 1</i> | Vessel          | 1        |          | Clear/brown | F1     |
| <i>Trench 1</i> | Vessel          | 1        | R3       | Slip        | F1     |
| <i>Trench 1</i> | Pancheon        | 1        | R1       | Brown       | F1     |
| <i>Trench 1</i> | Rounded jar     | 1        | R3       | Brown       | F1     |
| <i>Trench 1</i> | Vessel          | 1        | R4       |             | F1     |
| <i>Trench 1</i> | Vessel          | 1        |          | Black       | F2     |
| <i>Trench 1</i> | Vessel          | 1        |          |             |        |
| <i>Trench 1</i> | Vessel          | 10       |          | RWE         |        |
| <i>Trench 1</i> | Vessel          | 1        |          | Notts type  |        |
| <i>Trench 1</i> | Vessel          | 1        |          | Slip        |        |
| <i>Trench 1</i> | Vessel          | 1        |          | Yellow      |        |
| <i>Trench 1</i> | Vessel          | 8        |          | Brown/Black | F1     |
| <i>Trench 1</i> | Vessel          | 1        |          | Black       | F2     |



| Context No      | Vessel type     | Quantity | Rim type       | Glaze       | Fabric |
|-----------------|-----------------|----------|----------------|-------------|--------|
| <i>Trench 1</i> | Vessel          | 4        |                | Black       | F1     |
| <i>Trench 1</i> | Vessel          | 1        |                | Brown       | F1     |
| <i>Trench 1</i> | Vessel          | 4        |                | Slip        | F1     |
| <i>Trench 1</i> | Vessel          | 2        |                | Brown       | F1     |
| <i>Trench 2</i> | Vessel          | 1        |                | Slip        | F1     |
| <i>Trench 2</i> | Vessel          | 6        |                | Clear/brown | F1     |
| <i>Trench 2</i> | Vessel          | 3        |                | Unglazed    | F1     |
| <i>Trench 2</i> | Vessel          | 9        |                | Brown       | F1     |
| <i>Trench 2</i> | Vessel          | 6        |                | Black       | F1     |
| <i>Trench 2</i> | Vessel          | 11       |                | Black       | F1     |
| <i>Trench 2</i> | Vessel          | 10       |                | Black       | F2     |
| <i>Trench 2</i> | Vessel          | 1        |                | Brown       | F2     |
| <i>Trench 2</i> | Vessel          | 4        |                | Slip        | F1     |
| <i>Trench 2</i> | Vessel          | 1        |                | Slip        | F2     |
| <i>Trench 2</i> | Vessel          | 6        |                | Clear/brown | F1     |
| <i>Trench 2</i> | Vessel          | 1        |                | Unglazed    | F3     |
| <i>Trench 2</i> | Vessel          | 7        |                | Unglazed    | F1     |
| <i>Trench 2</i> | Vessel          | 12       |                | -           | -      |
| <i>Trench 2</i> | Vessel          | 1        |                | Unglazed    | F1     |
| <i>Trench 2</i> | Vessel          | 15       |                | Brown/black | F1     |
| <i>Trench 2</i> | Vessel          | 31       |                | Black       | F1     |
| <i>Trench 2</i> | Vessel          | 53       |                | Brown       | F1     |
| <i>Trench 2</i> | Vessel          | 37       |                | Black       | F1     |
| <i>Trench 2</i> | Rounded jar     | 2        | R3             | Black       | F1     |
| <i>Trench 2</i> |                 | 1        | R3             | Unglazed    | F1     |
| <i>Trench 2</i> | Rounded jar     | 1        | R4             | Black       | F1     |
| <i>Trench 2</i> | Cylindrical jar | 1        | R2b            | Brown       | F1     |
| <i>Trench 2</i> | Cylindrical jar | 1        | R3             | Slip        | F1     |
| <i>Trench 2</i> | Bowl            | 1        | R3             | Black       | F1     |
| <i>Trench 2</i> | Cylindrical jar | 1        | R3             | Black       | F1     |
| <i>Trench 2</i> | Bowl            | 1        | R3             | Brown       | F1     |
| <i>Trench 2</i> |                 | 1        | R3             | Clear/brown | F1     |
| <i>Trench 2</i> |                 | 1        | R6             | Slip        | F1     |
| <i>Trench 2</i> |                 | 1        | R6             | Unglazed    | F1     |
| <i>Trench 2</i> |                 | 3        | Not identified |             | F1     |
| <i>Trench 2</i> | Plant pot       | 1        | R5             | Unglazed    | F1     |
| <i>Trench 2</i> | Cylindrical jar | 1        | R5             | Black       | F1     |
| <i>Trench 2</i> | Bowl            | 1        | R4             | Black       | F1     |
| <i>Trench 2</i> | Pantheon        | 1        | R4             | Brown       | F1     |
| <i>Trench 2</i> | Bowl            | 1        | R4             | Slip        | F1     |
| <i>Trench 2</i> | Cylindrical jar | 6        | R2a            | Black       | F1     |

| Context No      | Vessel type     | Quantity | Rim type       | Glaze    | Fabric |
|-----------------|-----------------|----------|----------------|----------|--------|
| <i>Trench 2</i> | Vessel          | 2        | R2a            | Brown    | F1     |
| <i>Trench 2</i> | Cylindrical jar | 2        | R2a            | Brown    | F1     |
| <i>Trench 2</i> | Pancheon        | 7        | R1             | Black    | F1     |
| <i>Trench 2</i> | Pancheon        | 3        | R1             | Brown    | F1     |
| <i>Trench 2</i> | Vessel          | 3        | R2a            | Black    | F2     |
| <i>Trench 2</i> | Vessel          | 3        | R1             | Black    | F2     |
| <i>Trench 3</i> | Vessel          | 2        | R4             | Brown    | F1     |
| <i>Trench 3</i> | Vessel          | 2        | R4             | Brown    | F2     |
| <i>Trench 3</i> | Rounded jar     | 1        | R4             | Black    | F1     |
| <i>Trench 3</i> | Cylindrical jar | 1        | R4             | Black    | F1     |
| <i>Trench 3</i> | Cylindrical jar | 1        | R4             | Unglazed | F1     |
| <i>Trench 3</i> | Vessel          | 1        | R4             | Brown    | F1     |
| <i>Trench 3</i> | Vessel          | 7        | Non-diagnostic | -        | F1     |
| <i>Trench 3</i> | Vessel          | 1        | Non-diagnostic | Slip     | F1     |
| <i>Trench 3</i> | Vessel          | 1        | Non-diagnostic | Black    | F2     |
| <i>Trench 3</i> | Bowl            | 6        | R3             | Slip     | F1     |
| <i>Trench 3</i> | Cylindrical jar | 4        | R3             | Brown    | F1     |
| <i>Trench 3</i> | Vessel          | 2        | R3             | Brown    | F1     |
| <i>Trench 3</i> | Cylindrical jar | 3        | R3 collared    | Unglazed | F1     |
| <i>Trench 3</i> | Cylindrical jar | 2        | R3             | Unglazed | F1     |
| <i>Trench 3</i> | Bowl            | 2        | R3             | Slip     | F1     |
| <i>Trench 3</i> | Cylindrical jar | 5        | R3             | Slip     | F1     |
| <i>Trench 3</i> | Vessel          | 2        | R3             | Slip     | F1     |
| <i>Trench 3</i> | Vessel          | 5        | R3             | Unglazed | F1     |
| <i>Trench 3</i> | Bowl            | 1        | R3             | Brown    | F1     |
| <i>Trench 3</i> | Cylindrical jar | 4        | R3             | Brown    | F1     |
| <i>Trench 3</i> | Cylindrical jar | 2        | R3             | Black    | F1     |
| <i>Trench 3</i> | Bowl            | 1        | R3             | Black    | F1     |
| <i>Trench 3</i> | Cylindrical jar | 3        | R2a            | Black    | F1     |
| <i>Trench 3</i> | Cylindrical jar | 8        | R2a            | Brown    | F1     |
| <i>Trench 3</i> | Vessel          | 1        | R2a            | Unglazed | F1     |
| <i>Trench 3</i> | Vessel          | 2        | R2b            | Unglazed | F1     |
| <i>Trench 3</i> | Cylindrical jar | 1        | R2b            | Brown    | F1     |
| <i>Trench 3</i> | Cylindrical jar | 1        | R2b            | Brown    | F2     |
| <i>Trench 3</i> | Rounded jar     | 1        | R2b            | Black    | F1     |
| <i>Trench 3</i> | Cylindrical jar | 1        | R2b            | Black    | F1     |
| <i>Trench 3</i> | Pancheon        | 1        | R1             | Black    | F1     |
| <i>Trench 3</i> | Vessel          | 4        | R1             | Unglazed | F1     |
| <i>Trench 3</i> | Pancheon        | 10       | R1             | Brown    | F1     |
| <i>Trench 3</i> | Pancheon        | 4        | R1             | Black    | F1     |
| <i>Trench 3</i> | Pancheon        | 9        | R1             | Black    | F1     |

| Context No      | Vessel type | Quantity | Rim type | Glaze                     | Fabric |
|-----------------|-------------|----------|----------|---------------------------|--------|
| <b>Trench 3</b> | Vessel      | 35       |          | Unglazed                  | F1     |
| <b>Trench 3</b> | Vessel      | 8        |          | Unglazed                  | F2     |
| <b>Trench 3</b> | Vessel      | 7        |          | Slip                      | F1     |
| <b>Trench 3</b> | Vessel      | 1        |          | Slip                      | F2     |
| <b>Trench 3</b> | Vessel      | 8        |          |                           |        |
| <b>Trench 3</b> | Vessel      | 16       |          | Clear/brown               | F1     |
| <b>Trench 3</b> | Vessel      | 96       |          | Black                     | F1     |
| <b>Trench 3</b> | Vessel      | 11       |          | Black                     | F2     |
| <b>Trench 3</b> | Vessel      | 127      |          | Brown                     | F1     |
| <b>Trench 3</b> | Vessel      | 4        |          | Brown                     | F2     |
| <b>Trench 3</b> | Vessel      | 4        |          | Unglazed                  | F1     |
| <b>Trench 3</b> | Vessel      | 2        |          | Unglazed                  | F2     |
| <b>Trench 3</b> | Vessel      | 6        |          | Brown                     | F1     |
| <b>Trench 3</b> | Vessel      | 1        |          | Slip                      | F1     |
| <b>Trench 3</b> | Vessel      | 2        |          | Clear/brown               | F1     |
| <b>Trench 3</b> | Vessel      | 3        |          | Unglazed                  | F2     |
| <b>Trench 3</b> | Vessel      | 1        |          | Unglazed                  | F1     |
| <b>Trench 3</b> | Vessel      | 2        |          | Clear/brown               | F1     |
| <b>Trench 3</b> | Vessel      | 8        |          | Brown                     | F1     |
| <b>Trench 3</b> | Vessel      | 4        |          | Black                     | F2     |
| <b>Trench 3</b> | Vessel      | 9        |          | Black                     | F1     |
| <b>Trench 3</b> | Vessel      | 11       |          | Brown                     | F1     |
| <b>Trench 3</b> | Vessel      | 10       |          | Black                     | F1     |
| <b>Trench 3</b> | Vessel      | 4        |          | Refined white earthenware |        |
| <b>Trench 4</b> | Vessel      | 1        |          | -                         |        |
| <b>Trench 4</b> | Vessel      | 1        |          | Black                     | F1     |
| <b>Trench 4</b> | Vessel      | 2        |          | Brown                     | F1     |
| <b>Trench 4</b> | Plant pot   | 8        |          | Unglazed                  | F1     |
| <b>Trench 4</b> | Vessel      | 4        |          | Black                     | F1     |
| <b>Trench 4</b> | Vessel      | 2        |          | Unglazed                  | F1     |
| <b>Trench 4</b> | Vessel      | 5        |          | Brown                     | F1     |
| <b>Trench 4</b> | Vessel      | 2        |          | Clear/brown               | F1     |
| <b>Trench 4</b> | Vessel      | 3        |          | Clear/brown               | F1     |
| <b>Trench 4</b> | Vessel      | 16       |          | Brown                     | F1     |
| <b>Trench 4</b> | Vessel      | 16       |          | Black                     | F1     |
| <b>Trench 4</b> | Vessel      | 54       |          | Clear/brown               | F1     |
| <b>Trench 4</b> | Vessel      | 2        |          | Slip                      | F1     |
| <b>Trench 4</b> | Vessel      | 77       |          | Brown                     | F1     |
| <b>Trench 4</b> | Vessel      | 21       |          | Unglazed                  | F1     |
| <b>Trench 4</b> | Vessel      | 168      |          | Black                     | F1     |

| Context No      | Vessel type     | Quantity | Rim type    | Glaze       | Fabric |
|-----------------|-----------------|----------|-------------|-------------|--------|
| <b>Trench 4</b> | Vessel          | 1        | R6          | Unglazed    | F1     |
| <b>Trench 4</b> | Vessel          | 4        | R1          | Unglazed    | F1     |
| <b>Trench 4</b> | Vessel          | 2        |             | Unglazed    | F1     |
| <b>Trench 4</b> | Vessel          | 2        | R3 collared | Unglazed    | F1     |
| <b>Trench 4</b> | Dish/bowl       | 1        | R5          | Unglazed    | F1     |
| <b>Trench 4</b> | Cylindrical jar | 24       | R5          | Unglazed    | F1     |
| <b>Trench 4</b> | Vessel          | 3        | R3          | Slip        | F1     |
| <b>Trench 4</b> | Vessel          | 2        | R3          | Brown       | F1     |
| <b>Trench 4</b> | Cylindrical jar | 1        | R3          | Brown       | F1     |
| <b>Trench 4</b> | Vessel          | 2        | R3          | Black       | F1     |
| <b>Trench 4</b> | Cylindrical jar | 2        | R6          | Brown       | F1     |
| <b>Trench 4</b> | Vessel          | 1        | R5          | Brown       | F1     |
| <b>Trench 4</b> | Vessel          | 1        | R5          | Brown       | F1     |
| <b>Trench 4</b> | Vessel          | 3        | R5          | Brown       | F1     |
| <b>Trench 4</b> | Cylindrical jar | 1        | R4          | Black       | F1     |
| <b>Trench 4</b> | Vessel          | 5        | R5          | Black       | F1     |
| <b>Trench 4</b> | Vessel          | 1        | R1          | Unglazed    | F1     |
| <b>Trench 4</b> | Pancheon        | 10       | R1          | Black       | F1     |
| <b>Trench 4</b> | Cylindrical jar | 2        | R2a         | Black       | F1     |
| <b>Trench 4</b> | Pancheon        | 2        | R4          | Brown       | F1     |
| <b>Trench 4</b> | Cylindrical jar | 4        | R2a         | Brown       | F1     |
| <b>Trench 4</b> | Pancheon        | 14       | R1          | Brown       | F1     |
| <b>Trench 4</b> | Cylindrical jar | 1        | R2b         | Brown       | F1     |
| <b>Trench 4</b> | Cylindrical jar | 1        | R4          | Black       | F1     |
| <b>Trench 4</b> | Vessel          | 1        | R2          | -           | F1     |
| <b>Trench 4</b> | Vessel          | 1        | R3          | -           | F1     |
| <b>Trench 4</b> | Vessel          | 1        | R4          | Brown       | F1     |
| <b>Trench 4</b> | Vessel          | 1        |             | Black       | F1     |
| <b>Trench 4</b> | Rounded jar     | 1        | R5          | Slip        | F1     |
| <b>Trench 4</b> | Rounded jar     | 2        | R3          | Slip        | F1     |
| <b>Trench 4</b> | Rounded jar     | 1        | R4          | Brown       | F1     |
| <b>Trench 4</b> | Vessel          | 1        | R5          | Unglazed    | F1     |
| <b>Trench 4</b> | Vessel          | 1        | R1          | Unglazed    | F1     |
| <b>Trench 4</b> | Pancheon        | 1        | R4          | Brown       | F1     |
| <b>Trench 4</b> | Rounded jar     | 1        | R2b         | Black       | F1     |
| <b>Trench 4</b> | Pancheon        | 3        | R1          | Black       | F1     |
| <b>Trench 4</b> | Vessel          | 1        | R5          | Clear/brown | F2     |
| <b>Trench 4</b> | Vessel          | 1        |             | Brown       | F1     |
| <b>Trench 4</b> | Vessel          | 1        |             | -           | F1     |
| <b>Trench 4</b> | Vessel          | 1        |             | Brown       | F1     |
| <b>Trench 4</b> | Vessel          | 1        |             | Black       | F1     |



| Context No | Vessel type     | Quantity | Rim type    | Glaze        | Fabric |
|------------|-----------------|----------|-------------|--------------|--------|
| 1003       | Vessel          | 7        |             | Slip         | F1     |
| 1003       | Vessel          | 1        |             | Ind Slipware | F1     |
| 1003       | Vessel          | 1        |             | Slip         | F1     |
| 1003       | Vessel          | 8        |             | Clear/brown  | F1     |
| 1003       | Vessel          | 1        |             | Slip         | F1     |
| 1003       | Vessel          | 4        |             | Black        | F2     |
| 1003       | Vessel          | 10       |             | Unglazed     | F1     |
| 1003       | Vessel          | 265      |             | Brown        | F1     |
| 1003       | Vessel          | 112      |             | Black        | F1     |
| 1003       | Vessel          | 1        | R6          | Clear/brown  | F1     |
| 1003       | Cylindrical jar | 1        | R2a         |              | F1     |
| 1003       | Vessel          | 1        |             | Clear/brown  | F1     |
| 1003       | Rounded jar     | 1        | R3          | Brown        | F1     |
| 1003       | Cylindrical jar | 1        | R2b         | Brown        | F1     |
| 1003       | Jar             | 1        | R5          | Brown        | F1     |
| 1003       | Pancheon        | 1        | R4          | Brown        | F1     |
| 1003       | Vessel          | 1        | R2b         | Brown        | F1     |
| 1003       | Rounded jar     | 1        | R3          | Black        | F1     |
| 1003       | Cylindrical jar | 1        | R5          | Brown        | F1     |
| 1003       | Rounded jar     | 1        | R4          | Brown        | F1     |
| 1003       | Pancheon        | 1        | R2b         |              | F1     |
| 1003       | Jar             | 10       | R3          | Brown        | F1     |
| 1003       | Vessel          | 1        | R5          | Slip         | F1     |
| 1003       | Bowl            | 2        | R4          | Slip         | F1     |
| 1003       | Vessel          | 1        | R4          | Brown        | F1     |
| 1003       | Vessel          | 1        |             | Black        | F1     |
| 1003       | Cylindrical jar | 2        | R6          | Brown        | F1     |
| 1003       | Plate           | 1        |             | Brown        | F1     |
| 1003       | Vessel          | 4        | R5          | Brown/black  | F1     |
| 1003       | Vessel          | 2        | R5          | Unglazed     | F1     |
| 1003       | Pancheon        | 9        | R4          | Brown/black  | F1     |
| 1003       | Jar             | 2        | R4          | Brown/black  | F1     |
| 1003       | Jar             | 1        | R6          | Brown        | F1     |
| 1003       | Vessel          | 1        | Hammerhead  | Unglazed     | F1     |
| 1003       | Rounded jar     | 10       | R3          | Brown/black  | F1     |
| 1003       | Cylindrical jar | 4        | R3          | Brown/black  | F1     |
| 1003       | Cylindrical jar | 1        | R3          | Slip         | F1     |
| 1003       | Cylindrical jar | 1        | R6 collared | Un-glazed    | F1     |
| 1003       | Inturned jar    | 17       | R2a         | Brown/black  | F1     |
| 1003       | Cylindrical jar | 10       | R2a         | Brown/black  | F1     |
| 1003       | Pancheon        | 3        | R2b         | Brown/black  | F1     |

| Context No  | Vessel type     | Quantity | Rim type       | Glaze       | Fabric |
|-------------|-----------------|----------|----------------|-------------|--------|
| <b>1003</b> | Cylindrical jar | 3        | R2b            | Brown/black | F1     |
| <b>1003</b> | Vessel?         | 1        | Non-diagnostic | Unglazed    | F1     |
| <b>1003</b> | Cylindrical jar | 19       | R2b            | Brown/black | F1     |
| <b>1003</b> | Pancheon        | 7        | R2b            | Brown/black | F1     |
| <b>1003</b> | Pancheon        | 3        | R1             | Brown/black | F1     |
| <b>1003</b> | Cylindrical jar | 4        | R1             | Brown/black | F1     |
| <b>1003</b> | Pancheon        | 47       | R1             | Brown/black | F1     |
| <b>1003</b> | Vessel          | 3        |                | Unglazed    | F1     |
| <b>1003</b> | Vessel          | 8        |                | Brown       | F1     |
| <b>1003</b> | Vessel          | 1        |                | Unglazed    | F1     |
| <b>1003</b> | Vessel          | 11       |                | Black       | F1     |
| <b>1003</b> | Vessel          | 1        |                | Black       | F1     |
| <b>1003</b> | Vessel          | 4        |                | Brown       | F1     |
| <b>1003</b> | Vessel          | 8        |                | Black       | F1     |
| <b>1003</b> | Vessel          | 12       |                | Black       | F1     |
| <b>1003</b> | Vessel          | 23       |                | Brown       | F1     |
| <b>1003</b> | Vessel          | 3        |                | Black       | F1     |
| <b>1003</b> | Vessel          | 3        |                | Unglazed    | F1     |
| <b>1003</b> | Vessel          | 3        |                | Brown       | F1     |
| <b>1003</b> | Vessel          | 1        |                | Slip        | F1     |
| <b>1009</b> | Bowl            | 2        |                | Slip        | F1     |
| <b>1009</b> | Vessel          | 3        |                | Slip        | F1     |
| <b>1009</b> | Cylindrical jar | 10       | R5             | Slip        | F1     |
| <b>1009</b> | Bowl            | 5        | R5             | Slip        | F1     |
| <b>1009</b> | Vessel          | 3        | R5             | Slip        | F1     |
| <b>1009</b> | Bowl            | 6        | R3             | Slip        | F1     |
| <b>1009</b> | Cylindrical jar | 12       | R3             | Slip        | F1     |
| <b>1009</b> | Rounded jar     | 5        | R3             | Slip        | F1     |
| <b>1009</b> | Vessel          | 17       | R3             | Slip        | F1     |
| <b>1009</b> | Cylindrical jar | 1        | R3             | Black       | F1     |
| <b>1009</b> | Rounded jar     | 1        | R3             | Black       | F1     |
| <b>1009</b> | Cylindrical jar | 4        | R3             | Brown       | F1     |
| <b>1009</b> | Vessel          | 5        | R3             | Brown       | F1     |
| <b>1009</b> | Rounded jar     | 7        | R3             | Brown       | F1     |
| <b>1009</b> | Vessel          | 8        | Non-diagnostic |             | F1     |
| <b>1009</b> | Cylindrical jar | 6        | R5 collared    | Unglazed    | F1     |
| <b>1009</b> | Cylindrical jar | 5        | R5             | Brown       | F1     |
| <b>1009</b> | Cylindrical jar | 1        | R5             | Unglazed    | F1     |
| <b>1009</b> | Rounded jar     | 2        | R5             | Brown       | F1     |
| <b>1009</b> | Vessel          | 4        | R5             | Brown       | F1     |
| <b>1009</b> | Vessel          | 1        | R6 everted     | Brown       | F1     |

| Context No | Vessel type     | Quantity | Rim type | Glaze       | Fabric |
|------------|-----------------|----------|----------|-------------|--------|
| 1009       | Rounded jar     | 1        | R4       | Mottled     |        |
| 1009       | Pancheon        | 17       | R1       | Black       | F1     |
| 1009       | Pancheon        | 30       | R1       | Black       | F1     |
| 1009       | Pancheon        | 41       | R1       | Brown       | F1     |
| 1009       | Pancheon        | 2        | R1       | Brown       | F1     |
| 1009       | Pancheon        | 1        | R1       | Unglazed    | F1     |
| 1009       | Bowl            | 5        | R4       | Slip        | F1     |
| 1009       | Cylindrical jar | 1        | R4       | Slip        | F1     |
| 1009       | Bowl            | 3        | R4       | Clear/brown | F1     |
| 1009       | Rounded jar     | 1        | R4       | Brown       | F1     |
| 1009       | Pancheon        | 22       | R4       | Brown       | F1     |
| 1009       | Rounded jar     | 1        | R4       | Black       | F1     |
| 1009       | Cylindrical jar | 4        | R4       | Black       | F1     |
| 1009       | Pancheon        | 22       | R4       | Black       | F1     |
| 1009       | Cylindrical jar | 3        | R2b      | Brown       | F1     |
| 1009       | Cylindrical jar | 3        | R2b      | Black       | F1     |
| 1009       | Cylindrical jar | 1        | R2b      | Unglazed    | F1     |
| 1009       | Rounded jar     | 2        | R2b      | Brown       | F1     |
| 1009       | Vessel          | 1        | R2b      | Unglazed    | F1     |
| 1009       | Pancheon        | 3        | R2b      | Black       | F1     |
| 1009       | Pancheon        | 1        | R2b      | Black       | F1     |
| 1009       | Cylindrical jar | 1        | R2b      | Slip        | F1     |
| 1009       | Pancheon        | 2        | R2b      | Brown       | F1     |
| 1009       | Cylindrical jar | 1        | R2b      | Brown       | F1     |
| 1009       | Rounded jar     | 1        | R2b      | Brown       | F1     |
| 1009       | Pancheon        | 8        | R2b      | Brown       | F1     |
| 1009       | Cylindrical jar | 3        | R2b      | Unglazed    | F1     |
| 1009       | Cylindrical jar | 4        | R2a      | Black       | F1     |
| 1009       | Cylindrical jar | 6        | R2b      | Black       | F1     |
| 1009       | Cylindrical jar | 9        | R2b      | Brown       | F1     |
| 1009       | Vessel          | 1        |          | Black       | F1     |
| 1009       | Vessel          | 3        |          | Black       | F1     |
| 1009       | Vessel          | 1        |          | Black       | F1     |
| 1009       | Puzzle jug?     | 1        |          | Black       | F1     |
| 1009       | Bowl            | 9        | R4       | Brown       | F1     |
| 1009       | Bowl            | 2        | R4       | Slip        | F1     |
| 1009       | Rounded jar     | 4        | R3       | Brown       | F1     |
| 1009       | Bowl            | 1        | R3       | Brown       | F1     |
| 1009       | Cylindrical jar | 1        | R3       | Brown       | F1     |
| 1009       | Vessel          | 1        | R3       | Brown       | F1     |
| 1009       | Cylindrical jar | 8        | R3       | Slip        | F1     |

| Context No | Vessel type     | Quantity | Rim type | Glaze       | Fabric |
|------------|-----------------|----------|----------|-------------|--------|
| 1009       | Pancheon        | 5        | R3       | Slip        | F1     |
| 1009       | Pancheon        | 3        | R5       | Brown       | F1     |
| 1009       | Cylindrical jar | 4        | R5       | Brown       | F1     |
| 1009       | Rounded jar     | 2        | R5       | Brown       | F1     |
| 1009       | Rounded jar     | 1        | R5       | Black       | F1     |
| 1009       | Cylindrical jar | 2        | R5       | Un-glazed   | F1     |
| 1009       | Cylindrical jar | 5        | R5       | Slip        | F1     |
| 1009       | Bowl            | 1        | R5       | Slip        | F1     |
| 1009       | Vessel          | 3        | R1       | Unglazed    | F2     |
| 1009       | Vessel          | 6        | R1       | Unglazed    | F1     |
| 1009       | Cylindrical jar | 1        | R1       | Brown       | F1     |
| 1009       | Pancheon        | 24       | R1       | Brown       | F1     |
| 1009       | Pancheon        | 10       | R1       | Black       | F1     |
| 1009       | Pancheon        | 3        | R1       | brown       | F1     |
| 1009       | Pancheon        | 1        | R1       | Black       | F2     |
| 1009       | Pancheon        | 10       | R1       | Black       | F1     |
| 1009       | Cylindrical jar | 3        | R2a      | Brown       | F1     |
| 1009       | Cylindrical jar | 1        | R2a      | Black       | F1     |
| 1009       | Pancheon        | 1        | R2b      |             | F1     |
| 1009       | Pancheon        | 1        | R2b      | Un-glazed   | F1     |
| 1009       | Pancheon        | 16       | R2b      | Brown       | F1     |
| 1009       | Pancheon        | 5        | R2b      | Black       | F1     |
| 1009       | Pancheon        | 6        | R2b      | Black       | F1     |
| 1009       | Cylindrical jar | 1        | R2b      | Slip        | F1     |
| 1009       | Cylindrical jar | 3        | R2b      | Black       | F1     |
| 1009       | Vessel          | 67       |          | Slip        | F1     |
| 1009       | Vessel          | 17       |          |             |        |
| 1009       | Vessel          | 42       |          | Unglazed    | F1     |
| 1009       | Vessel          | 1        |          | Unglazed    | F2     |
| 1009       | Vessel          | 5        |          | Black       | F2     |
| 1009       | Vessel          | 6        |          | Brown       | F2     |
| 1009       | Vessel          | 213      |          | Black       | F1     |
| 1009       | Vessel          | 90       |          | Clear/brown | F1     |
| 1009       | Vessel          | 327      |          | Brown       | F1     |
| 1009       | Vessel          | 556      |          | Brown/black | F1     |
| 1009       | Vessel          | 5        |          | Brown/black | F1     |
| 1009       | Vessel          | 1        |          | Brown/black | F1     |
| 1009       | Vessel          | 1        |          | Yellow      | F1     |
| 1009       | Object          | 1        |          | Unglazed    | F1     |
| 1009       | Vessel          | 6        |          | Black       | F1     |
| 1009       | Vessel          | 1        |          | Clear/brown | F2     |



| Context No          | Vessel type     | Quantity | Rim type | Glaze               | Fabric      |
|---------------------|-----------------|----------|----------|---------------------|-------------|
| <b>1009</b>         | Vessel          | 1        |          | Slip                | F2          |
| <b>1009</b>         | Vessel          | 2        |          | Clear/brown         | F1          |
| <b>1009</b>         | Vessel          | 4        |          | Unglazed            | F1          |
| <b>1009</b>         | Vessel          | 5        |          | Brown               | F1          |
| <b>1009</b>         | Vessel          | 3        |          | Brown               | F2          |
| <b>1009</b>         | Vessel          | 1        |          | Slip                | F1          |
| <b>1009</b>         | Vessel          | 6        |          | Clear/brown         | F1          |
| <b>1009</b>         | Vessel          | 3        |          | Unglazed            | F1          |
| <b>1009</b>         | Vessel          | 45       |          | Brown/black         | F1          |
| <b>1009</b>         | Vessel          | 74       |          | Brown/black         | F1          |
| <b>1009</b>         | Vessel          | 1        |          | Brown/black         | F2          |
| <b>1009</b>         | Vessel          | 16       |          | Clear/brown         | F1          |
| <b>1009</b>         | Vessel          | 1        |          | Unglazed            | F1          |
| <b>2000</b>         | Vessel          | 4        |          |                     | FBF1        |
| <b>2000</b>         | Vessel          | 2        |          | Black               | F1          |
| <b>2000</b>         | Vessel          | 6        |          | Brown               | F1          |
| <b>2000</b>         | Vessel          | 1        |          | Slip                | F1          |
| <b>2000</b>         | Vessel          | 16       |          | Brown               | F2          |
| <b>2000</b>         | Vessel          | 1        | R1       | Brown/black         | F1          |
| <b>2000</b>         | Cylindrical jar | 2        | R2a      | Brown/black         | F2          |
| <b>2000</b>         | Rounded jar     | 1        | R3       | Brown               | F1          |
| <b>2000</b>         | Vessel          | 1        | R3       | Slip                | F1          |
| <b>2000</b>         | Vessel          | 1        |          | Brown               | F2          |
| <b>2000</b>         | Bowl            | 1        | R4       | Slip                | F1          |
| <b>2000</b>         | Vessel          | 1        |          | Clear/brown         | F1          |
| <b>6001</b>         | Vessel          | 1        |          | Black               | F2          |
| <b>6001</b>         | Bottle          | 1        |          | Industrial slipware |             |
| <b>6001</b>         | Bottle          | 1        |          | Mottled             | Pale fabric |
| <b>7</b>            | Brick           | 2        |          |                     |             |
| <b>7</b>            | Vessel          | 1        |          | Black               | F1          |
| <b>Unstratified</b> | Vessel          | 7        |          |                     | F1          |
| <b>Unstratified</b> | Vessel          | 2        |          |                     | F1          |
| <b>Unstratified</b> | Vessel          | 2        |          |                     | F1          |
| <b>Unstratified</b> | Vessel          | 3        |          |                     | F1          |
| <b>Unstratified</b> | Vessel          | 1        |          |                     | F1          |
| <b>Trench 1</b>     | Kiln fabric     | 2        |          |                     | FBF2        |
| <b>Trench 1</b>     | Brick           | 2        |          |                     | FBF1        |
| <b>Trench 1</b>     | Saggar          | 1        | Bevelled |                     |             |
| <b>Trench 1</b>     | Saggar          | 1        |          |                     | F2          |
| <b>Trench 1</b>     | Saggar          | 1        | Simple   |                     | FBR         |

| Context No      | Vessel type      | Quantity | Rim type | Glaze                                      | Fabric  |
|-----------------|------------------|----------|----------|--|---------|
| <i>Trench 1</i> | Spacer           | 2        |          |  |         |
| <i>Trench 1</i> | Spacer           | 29       |          |  | 1 and 2 |
| <i>Trench 1</i> | Ring             | 7        |          | Fired to vitrified purple; traces of glaze | FBF2    |
| <i>Trench 2</i> | Spacer           | 3        | -        | -  | -       |
| <i>Trench 2</i> | Object           | 1        | -        | -  | FBF2    |
| <i>Trench 2</i> | Ring             | 6        | -        | -  | FBF1    |
| <i>Trench 2</i> | Saggar           | 1        |          | -  | F1      |
| <i>Trench 2</i> | Brick            | 2        |          | --   | FBF2    |
| <i>Trench 2</i> | Spacer           | 5        |          | -  | -       |
| <i>Trench 3</i> | Saggar           | 1        |          |  | F2      |
| <i>Trench 3</i> | Saggar           | 2        | R6       |  | FBF1    |
| <i>Trench 3</i> | Saggar           | 1        |          |  | FBF1    |
| <i>Trench 3</i> | Spacer           | 10       |          |  |         |
| <i>Trench 3</i> | Ring             | 6        |          |  |         |
| <i>Trench 3</i> | Object           | 1        |          |  |         |
| <i>Trench 3</i> | Spacer           | 1        |          |  |         |
| <i>Trench 3</i> | Brick            | 1        |          |  |         |
| <i>Trench 4</i> | Spacer           | 22       |          | -  |         |
| <i>Trench 4</i> | Spacer           | 1        |          | -  |         |
| <i>Trench 4</i> | Ring             | 25       |          | -  | FBF1    |
| <i>1003</i>     | Spacer           | 20       |          | -  |         |
| <i>1003</i>     | Ring             | 19       |          | -  |         |
| <i>1003</i>     | Spacer           | 41       |          | -  |         |
| <i>1003</i>     | Saggar           | 2        | R6       | -  | FBF1    |
| <i>1003</i>     | Brick            | 6        |          | -  | FBF2    |
| <i>1009</i>     | Spacer           | 7        |          | -  | -       |
| <i>1009</i>     | Ring             | 28       |          | -  | -       |
| <i>1009</i>     | Spacer           | 25       |          | -  | -       |
| <i>1009</i>     | Saggar           | 1        |          | -  | -       |
| -               | Ring prop spikes | 2        |          |  |         |

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## ILLUSTRATIONS

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### LIST OF FIGURES

- Figure 1: Site location
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- Figure 3: Plan of Area A showing the location of the kiln, workshops and pottery waster dump
- Figure 4: Plan of the workshop and kiln
- Figure 5: Plan of the east and west workshops and the horizontal flue