Archaeological Investigations at
Sharpe's Pottery Heritage & Art Centre
Swadlincote
Derbyshire
NGR SK 2983 1954

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Sharpe's Pottery Heritage & Arts Trust

by

Richard Cramp and Jonathan Goodwin

with contributions by Dr David Barker and John Tibbles

Stoke-on-Trent Archaeology

Bethesda Street, Hanley, Stoke-on-Trent

Staffordshire ST1 3DW

Tel: 01782 235413

Fax: 01782 232500

Email: jon.goodwin@stoke.gov.uk

Website: www.stoke.gov.uk/archaeology

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Non-technical summary

In response to planning permission to build a new café at Sharpe's Pottery Heritage and Art Centre in Swadlincote, Derbyshire (NGR SK 2983 1954), a programme of archaeological works was undertaken in the development area (DA) to uncover the buried remains of a 19th-century pottery kiln, which is listed in the Derbyshire Historic Environment Record (PRN 26813) as once occupying the site. Stoke-on-Trent Archaeology carried out an excavation and watching brief prior to and during the development in order to assess and record the kiln and any associated structures or deposits.

The excavation phase was undertaken between the 14th and 22nd June, and the subsequent watching brief from the 21st October to 29th November 2010. The project revealed the remains of three circular pottery kilns, fragments of two factory buildings and a deposit of late 19th-century pottery waste used as levelling material on site. Only one kiln (Kiln 1) was fully uncovered and excavated during the project, and was a multi-flued, coal-fired, up-draught kiln with separate hovel. The other kilns were exposed only in part and may have been close-coupled structures in which the stack was built on top of the firing chamber. Kiln 1 was constructed on a 'cork' foundation, which utilised pre-fired material to provide a moisture barrier between the kiln and the surrounding earth. This construction method has been observed in pottery kilns elsewhere in the country. It was not possible to establish whether any of the kilns were used for glost or biscuit firings. The pottery assemblage provided an insight into the production repertoire of the factory during the late 19th-century.

1.0 Introduction

1.1 In response to planning permission to build a new café at Sharpe's Pottery Heritage and Art Centre in Swadlincote, Derbyshire, a programme of archaeological works was undertaken in the development area (DA) to uncover the buried remains of a 19th-century pottery kiln, which is listed in the Derbyshire Historic Environment Record (HER) (PRN 26813) as once occupying the site. Stoke-on-Trent Archaeology (SOTARCH) carried out an excavation and watching brief prior to and during the development in order to assess and record the kiln and any associated structures or deposits.

2.0 The development area

2.1 *Planning background*

2.1.1 The planning application submitted by Sharpe's Pottery Heritage and Arts Trust Limited to build a single-storey café extension was registered with the Local Planning Authority (LPA), South Derbyshire District Council, on 29th January 2010 (ref. no. 9/2010/0089). A pre-determination recommendation by the LPA's Development Control Archaeologist for a conditioned scheme of archaeological works was issued on 23rd February 2010 which advocated full excavation of the DA and a watching brief on groundworks located outside the footprint of the target kiln.

2.1.2 An excavation is defined by the Institute for Archaeologists (IfA) *Standard and guidance for archaeological excavation* (revised October 2008) as a programme of controlled, intrusive fieldwork with defined research objectives to examine, record and interpret archaeological deposits, features and structures. The IfA's *Standard and guidance for an archaeological watching brief* (revised October 2008) defines a watching brief as a formal programme of observation and investigation conducted during an operation carried out for non-archaeological reasons.

2.1.4 The project was conducted in accordance with the LPA's development control policy *EV14 (Archaeological and Heritage Features)* and was consistent with the relevant national guidelines and government legislation established in *PPG16 (Archaeology and Planning, 1990)*, superseded by *PPS5 (Planning for the Historic Environment)* in April 2010. SOTARCH was appointed to undertake the project by the developer, Sharpe's Pottery Heritage and Arts Trust Limited.

2.2 ***Site location***

2.2.1 Swadlincote is the most southerly town in Derbyshire, located on a peninsula of land between Staffordshire and Leicestershire, with Burton-on-Trent 8km to the north west and Ashby-de-la-Zouche 8km to the south east. Sharpe's Pottery is within a designated Conservation Area, approximately 150m south west of the Market Place in the town centre, on the corner of West Street and Alexandra Road and centred on Ordnance Survey (OS) National Grid Reference (NGR) SK 2983 1954 (Fig. 1).

2.2.2 The DA was located in the south yard of the museum, at the south end of the main museum building. Pre-existing standing structures were cleared in *c.*2005, leaving a broadly rectangular open area of brick hard standing aligned east – west, bounded to the south by a builders' yard, defined by a brick wall and both fixed wooden and temporary mesh fencing, and to the west by Alexandra Road (Fig. 2). Topographically the site was flat and lay at an elevation of approximately 100m aOD.

2.3 ***Geology***

2.3.1 Swadlincote lies in the western basin of the South Derbyshire and Leicestershire Coalfield. The solid geology (bedrock) consists of Carboniferous coal measures overlain by sandstone and conglomerates, below sandstone with bands of marl (Stroud 1999, 1).

3.0 Archaeological and historical background

3.1 ***Site history***

3.1.1 Thomas Sharpe established Sharpe's Pottery in 1821 after he acquired a parcel of farm land from the Bullivant family, who had themselves purchased the plot in 1771 (Heath 1999, 11). According to a plan drawn by James Shenton in 1827, this inceptive phase of the manufactory's development would seem to have comprised little more than a pair of kilns at either end of a north – south aligned range of workshops (Heath 2004, 1; Smith 2008, 107). Map evidence shows that a small kiln had been added to the west side of the workshop range by 1856 (Heath 1999), its size suggesting that it may have been a muffle kiln, used for hardening and fixing over-glaze decoration.

3.1.2 Sharpe's was just one of several new potteries founded in the Swadlincote area at around the same time producing Derbyshire ironstone cane ware, a coarse domestic earthenware better known as yellow ware (Godden 1972, xxviii; Smith 2008, 107), the

creamy-yellow complexion deriving from the natural colour of the local clays when burnt (Heath 2004, 4). By the 1870s Sharpe's was creating an endless variety of cheap, everyday utilitarian items including tea and coffee-pots, jugs, mugs, cups, jars, ewers, basins, pans and various flatwares. These products were in great demand and Sharpe's flourished. Its output was primarily yellow ware but also included buff drab, fire-proof, Rockingham, mottled and black lustre wares. Between *c.*1850-75 the works also produced ornamental items, particularly 'Toby Fillpot' jugs in enamelled earthenware and Rockingham ware, using patterns copied from old models (Hughes 1959, 148; Godden 1972, 225).

3.1.3 The business was operated by Thomas Sharpe alone until his death in 1838, whereupon production was carried on by his brothers Edmund and William, as 'Sharpe, Brothers & Co.' (Godden 1972, 225), retaining this trade name until the works closed. William died in 1870 (Free BMD) but the pottery continued to prosper under the direction of Edmund, who was instrumental in establishing strong links with overseas markets after 1845, notably in the United States and Canada (Heath 1999, 12; Smith 2008, 108).

3.1.4 Although the manufactory had been modestly expanded in 1832, at which time it was employing a workforce of 40 hands (Heath 1999, 12), Edmund developed the works significantly and by the time of the 1871 census was employing 86 men, 31 women, 20 boys and 28 girls. The men were earning wages of between 18s and £2 for a six-day week, while women received from 7s – 9s (Smith 2008, 107). In the 1881 census Edmund stated that his workforce numbered '106 men, women, boys & girls'. The decline in the number of employees may reflect the impact of factory legislation regarding the employment of young children and improvements in working conditions. By the mid 19th century, Sharpe's also operated a subsidiary works immediately to the north of the main factory, across West Street (Heath 1999, 17, 34). Another nearby factory, the Waterloo Pottery was added to the business in 1883 (Heath 1999, 12). This latter works appears to have been sold sometime around the turn of the century (Heath 1999, 12), whereas the subsidiary works was closed in 1903 and sold to the Burton on Trent Co-operative Society in 1915 (Heath 1999, 13).

3.1.5 The effect of the Public Health Acts of 1848 and 1875 with regard to improving standards of urban hygiene stimulated a demand for inexpensive ceramic toilets and

prompted Edmund to diversify into producing sanitary goods, utilising the fireclay seams in the local coal measures. Contemporary trade directories disclose that in 1857 (White, 353) Sharpe's described itself as 'a manufacturer of the improvements in the construction of closet pans' and that by 1870 the firm chiefly regarded itself as 'a patentee and manufacturer of closet basins, traps and urinals etc.' (Harrod 1870a, 294). By *c.*1895 Sharpe's had succeeded in becoming a world leader in the production of cane (yellow), white and blue-printed earthenware sanitary items (Godden 1972, 225), developing into one of the most important of the several sanitary ware potteries which flourished in south Derbyshire until the mid-20th century (Smith 2008, 108).

3.1.6 Sharpe's was responsible for introducing a number of innovative sanitation designs, including a successful improvement of the flushing rim for water closet pans, patented by Edmund Sharpe in 1855 (Meeson 1999, 2) and which is still an integral part of the modern toilet bowl. The company also produced bespoke sanitary articles, such as 'squatting closets' for the Far East market, such as a closet sent to Calcutta that was specifically designed to prevent snakes entering the pan via the trap (Heath 2004, 6). By the late 19th century a Sharpe's WC was regarded as a status symbol in Russia (Sharpe's Pottery Museum). The firm also produced sanitary ware which bore the retail badges of other companies, such as Thomas Crapper & Co. in London (Heath 2004, 6).

3.1.7 The firm continued to produce domestic pottery until at least 1899 (Kelly, 368). The commercial directories emphasise the pottery's production of yellow ware goods from 1829 (Glover, 103), but at different times other wares were also promoted, including 'Ivanhoe drab' in 1842 (Pigot, 30) and Rockingham in 1857 (White, 353). By 1912 (Kelly, 417) there is only mention of sanitary ware, which may reflect the real impact of the public health and sanitary acts as they began to take effect at the end of the 19th century (Stroud 1999, 9).

3.1.8 Edmund Sharpe's death in 1894 (FreeBMD) may also be relevant to the manufactory concentrating on the production of sanitary ware. Although the Sharpe family remained the majority shareholders, new investors were brought in and the business was incorporated as a limited company by 1895 (Kelly, 356). During the 1890s alterations and substantial improvements were made to the 'ovens, saggar houses and the

dipping house' and by 1900 it was reported that 'the works was well-equipped for the manufacture of sanitary earthenware' (Meeson 1999, 2-3).

3.1.9 Sharpe Brothers was sold in 1923 to three local businessmen, Messrs. Aldridge, Boddice and Whitaker, with Solomon Whitaker acquiring the entire business in 1939. In the mid-20th century, Sharpe's switched from earthenware sanitary goods to the stronger, less porous and more hygienic Vitreous ware. This could not be fired in the traditional kilns and although some electric ovens were installed in the 1950s, the firm found that it was unable to compete with the large, modern manufactories in Stoke-on-Trent and finally closed in January 1968 (Heath 1999, 12-14).

3.1.10 In 1973 part of the works was badly damaged by fire and several buildings were subsequently demolished. The last extant kiln hovel, located at the north end of the museum building (NGR SK 2984 1957), was granted Grade II Listed Building status (No. 82585) by English Heritage in 1981 and the last remaining kilns were demolished in 1994 (Meeson 1999, 4). Renovation of the surviving structures began in 1999 and the works opened as an arts and heritage museum and gallery in 2003.

3.1.11 The floor of the surviving northern hovel was the subject of a small evaluation by Northampton Archaeology in 1999 (Parry & Hayward 1999). This was followed by an excavation of the whole floor undertaken by Derbyshire Archaeological Society in 2001 (Sharpe's Pottery Museum), the results of which have not yet been disseminated. An area on the west side of the main museum building was monitored during a watching brief by University of Leicester Archaeological Services (ULAS) in 2006 (Jones 2006), which slightly overlapped with the current study area.

3.2 ***Site development***

3.2.1 The earliest incarnation of Sharpe's Pottery probably comprised two kilns – that represented by the extant hovel and the second by excavated Kiln 1 (see below, section **5.2**) – connected by a workshop range, which survives as part of the present museum building (Heath 1999, 17). This early layout is discernible on a plan of 1856 (Fig. 3), which also indicates the addition of a rectangular range with a small kiln, possibly a muffle, on the western side of the original block. Ground works in the location of this kiln were monitored by ULAS in 2006 (Jones 2006).

3.2.2 By 1873 the works had expanded considerably, with significant extensions to the original core of the factory and new ranges to the south, north and east (Fig. 4). Both the original kilns are still apparent on the 1873 OS edition, although Kiln 1 has been enclosed within a new range and it is probable that the northern example had been converted to a warehouse by this time (Parry & Hayward 1999, 1; Heath 2004, 7). Three new kilns are shown within the expanded works, one of which, located to the south west of Kiln 1, is excavated Kiln 3 (see below, section **5.4**). The earlier possible muffle kiln features, although a new range is shown extending to the south-west from its southern edge, passing close to Kiln 1. Structure 1 uncovered during the excavation project probably represents part of this building (see below, section **5.5**).

3.2.3 The 1883 OS map (Fig. 5) illustrates further additions and alterations to the main factory building. The northernmost of the original kilns (or at least its hovel) is still shown, as is that to the south east and the possible muffle. Two kilns are shown in the positions of Kilns 1 and 3, although these are depicted much smaller than on the earlier maps and are comparable in size to the possible muffle. It is not clear if these are the kilns illustrated on the earlier maps or two new structures. The kiln shown to the east of Kiln 3 on the 1873 map is no longer shown.

3.2.4 By the time of the 1901 OS edition, the factory had expanded again, with additions to the southern part of the main building, conjoining which is a new north-south aligned, rectilinear range, contiguous with the factory's western boundary (Fig. 6). Probable remnants of this latter building were recorded as Structure 2 during the excavation project (see below, section **5.6**). The original, northernmost kiln is still shown on the map, as is that to the south east and the possible muffle. Kilns 1 and 3 are no longer indicated within the southern part of the main factory building.

3.2.5 Ordnance Survey maps for the period 1901-1968 show various alterations to the works. The 1923 OS map indicates that the possible muffle kiln had been removed by this date. By 1960, the building recorded as Structure 2 during the recent archaeological project appears to have been replaced by another, larger building, identified as a steel-framed glost warehouse (Heath 1999, 23), which filled the space between the site's western boundary and the main factory block. This building also appears to have removed Structure 1. With the exception of the hovel of the original, northernmost kiln and the

example first shown to the south east in 1873, no kiln structures are depicted within the works after 1901. This is odd, as surviving firing rotas indicate that the works retained six of its bottle kilns until at least the 1950s (Meeson 1999, 10); electric kilns appear not to have been used at Sharpe's before 1956/7 (Heath 2004, 3).

3.3 *Production flow within the works*

3.3.1 Tracing the historical production flow at Sharpe's Pottery is problematic. During almost 150 years of pottery production Sharpe's underwent significant development and expansion, growing from its original linear plan to one which employed at least two courtyards and culminating in a factory which was largely enclosed. In line with the majority of potworks that expanded during the late 19th and early 20th centuries, Sharpe's development was a somewhat organic, piecemeal affair, driven by changes in the nature of production and the introduction of new technologies, but governed by the availability of both funding and land. In general, small potworks with little or no additional land in which to expand their facilities were particularly cramped, although larger works and those with more available space often suffered similar problems. The sizeable Spode Works in Stoke-on-Trent, for example, was described in 1848 as a 'labyrinth of courts and passages, bounded by buildings in every direction, so that it is difficult to obtain a clear idea of the arrangement of the place' (Baker 1991, 60-61).

3.3.2 At Sharpe's, historical map evidence suggests that the principal focus of production remained constant throughout its history. Development took place around an historic core and did not spread too far into adjacent areas, which remained comparatively open. This raises the possibility that, despite the expansion of the factory, the location of at least some production processes remained relatively stable over time. A clue to the historical uses of the various buildings on site is provided by Meeson (1999, 10-11) and Heath (1999, 20-25, 29-33), both of whom draw upon documentary evidence and oral accounts, principally relating to the latter phases of the factory's active life. A summary of Heath and Meeson's allocations is provided in Table 1 and illustrated in Figure 7. Although the two offer differing functions for some buildings (notably F), the information presented suggests a general north-south flow within the main block, with the production and storage of biscuit wares in buildings B and D (and possibly F); biscuit firing in adjacent kilns (and originally C); decorating and dipping in G and H (and again, possibly F); glost firing in kilns adjacent to G, H and I; and glost storage in H and I. Other processes such as

saggar making (K), slip preparation (Q) and administration (A) took place in outlying buildings. The production of cane ware was confined to a separate range (M and N) with its own dedicated slip house (O).

3.3.3 Whilst this information provides a useful insight into the arrangement of tasks within the potworks, it cannot confirm or discount the possibility that these functions have, over time, shifted from one part of the complex to another. Has biscuit production always been located in the northern part of the factory, with glost to the south? Heath certainly speculates that this might have been the case from the factory's origin (1999, 29-31), but this again appears to be based upon later accounts rather than any contemporary evidence. What is also unclear is the role played in the factory's output by the other sites owned by the business (see above, section **3.1.4**). Did these works operate independently or did they fulfil or assist in some of the production tasks for the main site?

4.0 Methodology

4.1 The project was undertaken in accordance with a specification produced by the Development Control Archaeologist (Baker 2010) and a Written Scheme of Investigation (WSI) formulated by SOTARCH (Goodwin 2010). The primary objectives are broadly summarised below as:

- confirming the presence or absence of buried remains pertaining to the kiln,
- providing evidence for the date, nature, chronological phasing and spatial relationships of the structures on site,
- furnishing information regarding kiln construction, the pottery manufacturing processes employed on site and their development through time, and the range of wares produced,
- preserving by record the archaeological evidence found.

4.2 The project was divided into two phases, the first of which was an archaeological excavation within the footprint of the proposed extension to uncover evidence of the 19th-century pottery kiln and any associated structures or artefacts. The limits of the excavation were dictated by the proposed footprint of the new development and certain site constraints, principally the extant museum building and the site's southern boundary

wall and fence. This led to the initial excavation trench measuring 11.55m NE-SW x 5.70m NW-SE, amounting to an area of 65.84m².

4.3 Following the evaluation, all groundworks undertaken by the building contractors were subject to monitoring *via* an archaeological watching brief, both active and continuous. This second phase saw an enlargement of the original excavation area, partly as a result of the removal of the southern boundary wall. As such, the project ultimately recorded an area measuring a maximum of 20.40m NE-SW x 8.60m NW-SE (175.44m²) (Fig. 2).

4.4 The excavation phase was undertaken between the 14th and 22nd June, and the subsequent watching brief from the 21st October to 29th November 2010. The project complied with current best archaeological practice and conformed to relevant national codes of conduct, standards and guidance as advocated in the *By-laws of the Institute for Archaeologists* (revised October 2008).

4.5 All mechanical excavation was carried out by a 180° backhoe or 360° tracked excavator equipped with a 1.70m-wide toothless ditching bucket, operating under archaeological supervision. During the excavation, overburden was removed by machine down to the first discernible archaeological horizon at which point hand-cleaning commenced. A similar methodology was employed during the watching brief, with ground levels reduced mechanically in level spits, allowing the monitoring archaeologist to identify structures or features and then clean and examine them by hand. If no archaeological structures or features were encountered, excavation continued to a pre-determined formation depth of 0.92m bgl.

4.6 All archaeological horizons were cleaned by hand and documented by means of a written record (site notes and individual *pro-forma* context sheets) and measured drawings (1:10 for sections and 1:20 for plans) or annotated sketches during the watching brief. Stratigraphic units were recorded as context numbers 1000+ during the excavation phase and for the watching brief as numbers 500+. A full list of contexts is available in Appendix 1.

4.7 A high-resolution digital colour and 35mm monochrome print photographic record was maintained throughout the project, showing specific stages of the fieldwork and the layout and relationship of archaeological features. An OS bench mark with a value of 101.28m aOD was identified on Alexandra Road and all site levels were related to this value. Finds were sampled where appropriate.

4.8 This report follows an interim statement and assessment of the site's archaeological potential (Cramp & Goodwin 2011) submitted to Sharpe's Pottery Heritage and Arts Trust Limited by SOTARCH on 17th February 2011.

4.9 The site archive is currently stored at The Potteries Museum & Art Gallery, Bethesda Street, Hanley, Stoke-on-Trent, Staffordshire, pending transfer to Derby Museum & Art Gallery, The Strand, Derby (site codes **SPSX 10** for the excavation, **SPS 10** for the watching brief, Museum Accession No. **DBYMU 2009-228**).

5.0 Results of the project

5.1 Groundworks revealed the remains of three circular kilns (numbered 1-3), the most intact of which (Kiln 1) comprised a firing chamber and surrounding hovel. A number of adjacent factory structures (numbered 1-2) were also partially uncovered. Once all structures, features and associated deposits identified during the excavation or watching brief aspects of the project had been recorded, the DA was reduced to the pre-determined formation depth.

5.2 ***Kiln 1*** (Figs. 8-10; Plates 1-7)

5.2.1 The most complete of the three kilns revealed during the project was Kiln 1, which was initially uncovered during the excavation project, with additional elements identified and recorded during the subsequent watching brief.

5.2.2 The bulk of the kiln and hovel lay beneath a 0.08m-thick former factory floor surface (1000) consisting of red/blue bricks laid flat on a 0.05m-thick grey/black ashy bedding layer (1005). A similar brick floor surface (1002) was present to the east, separated from (1000) by a 4.54m wide area of modern disturbance (1001). The northern edge of (1000) had also been cut by a drainage feature [1034] that extended along the base of the museum building. Subsequent excavations revealed that this feature had also

truncated the kiln and hovel (see below **5.2.4**), and that beyond [1034], both structures sat beneath the main museum building.

5.2.3 During the formal excavation stage of the project, the southern edge of the kiln and hovel were not investigated as they extended beyond the site's southern property boundary. This boundary was eventually removed during the watching brief phase of the scheme and ground excavations were extended further to the south. The removal of the wall and fence post foundations, along with a 0.12m-thick modern tarmac surface (506), which sat above a 0.42m-thick grey/brown gritty ash deposit (509), exposed further traces of the kiln and hovel.

5.2.4 Once exposed it was clear that the kiln and hovel had been significantly disturbed by what appeared to be 20th-century services, principally [1011]/(1012), [1034]/(1035), [1051]/(1052), (1006) and (1014)/(1017). The southern extent of both these structures had undergone significant disturbance, due in part to the construction of the boundary wall and installation of concrete posts for the adjacent fencing, but also as a result of the installation of concrete stanchion bases for a steel-framed building constructed in the 20th century.

5.2.5 The kiln itself survived as a brick structure, originally some 6.50m in diameter, which comprised two incomplete, abutting rings of brickwork (1016) and (1023) positioned concentrically to a central void approximately 3.40m in diameter filled with compacted sand, kiln furniture and pottery sherds (1028). The outer ring (1016) comprised two courses of common and refractory bricks laid flat and jointed with white/grey fireclay. The lower course of (1016) sat directly upon the natural yellow clay subsoil (1048).

5.2.6 The partial remains of three rectangular ash pits (numbered 1-3) featured within (1016), each representing the position of one of the kiln's fireboxes. Given the distribution of the surviving ash pits, the kiln would have originally featured at least nine fireboxes. Two of the surviving ash pits (1019) and (1021) were located within the western portion of the kiln, with the third (1017) to the east. Ash pit 1 (1017) had been heavily disturbed by a ceramic pipe (1014), backfilled with sand (1015), and ash pit 2 (1019) had also been damaged by a later intrusion. Ash pit 3 (1021) was the most intact of

the three, although it partially underlay the north-facing trench section and had also been truncated by a stanchion base (1053). Internally, the pit was 0.95m long x *c*.0.50m wide with a maximum depth of 0.14m. The base of the pit was formed by greyish bricks laid flat and sloped slightly up towards the mouth, presumably to assist in raking out ash and clinker. The sides of the pit were lined with grey/yellow refractory bricks.

5.2.7 Each ash pit featured traces of brickwork mortared to the base - (1036) in ash pit 3, (1042) in ash pit 2 and (1038) in ash pit 1 (Plate 4). These additions survived to one or two courses. It was not clear if they represented an attempt to reline the pits during the active life of the kiln or block the pits after it fell into disuse. Kiln 2 featured a secondary brick lining in the base of its ash pit (see below, section **5.3.2**) and it possible that the Kiln 1 pits served a similar function. A loose, mixed fill of brick, saggar, kiln furniture and pottery waste in a gritty, sandy matrix (1018), (1020) and (1022), was present in ash pits 1, 2 and 3 respectively. These fills appeared to have been deposited in a single phase.

5.2.8 A NW-SE aligned row of red-brick headers (511), 0.37m long x 0.09m wide, discovered to the south of the main kiln remains during the watching brief, was tentatively identified as a fragment of another possible ash pit (Plate 7). The structure comprised bricks laid on edge, apparently directly onto the natural clay (1048). The row was positioned 0.29m north east of a stub of hovel wall (1013) (see below, section **5.2.15**).

5.2.9 The kiln's inner ring (1023) was constructed of two courses of refractory bricks jointed with fireclay. The basal course sat on the orange sandy material (1028) that was also exposed in the centre of the kiln and appeared to have been laid more neatly than the brickwork above. The lower course also appeared to extend further into the centre of the kiln than the upper brickwork and where the lower course projected out from beneath the overlying bricks, it had been covered over with what appeared to be sandy material (1028). A number of bricks within the upper course of (1023) were stamped 'J.W. BOURNE/CHURCH GRESLEY' (Plate 5) (see below, section **7.0**).

5.2.10 An isolated 0.59m long x 0.18m wide fragment of brickwork (1024) was located 0.25m to the south west of (1023). Brickwork (1024) comprised two rows of NW-SE aligned bricks, laid flat in a single course (0.08m) on top of the compacted orange sandy

material (1028). It is possible that (1024) represented the former presence of (1023) across the entire kiln centre.

5.2.11 Sitting within sandy deposit (1028) was a slightly splayed 'U'-shaped arrangement of refractory bricks (1026), 0.64m E-W x 0.36m N-S, laid flat in a single course (Plate 6). The edge of the open, northern end of (1026) appeared to overlay the lower course of (1023), although the rest of the structure sat within (1028). The centre of (1026) was filled with friable purple/red sand with some early-mid 19th-century kiln furniture and pottery waste (1027), 0.07m thick and very similar in texture and composition to (1028). The nature of (1026) was not clear. It appeared to abut the upper course of (1023), but there was no evidence to indicate what function it served in conjunction with the main body of the kiln.

5.2.12 A patch of purplish/red gritty sand (1055), 0.38m NE-SW x 0.32m NW-SE, was located *c*.0.70m to the west of (1026). The patch had little substance and was only *c.*0.05m thick. It seemed not to constitute a discrete layer, but rather the localised burning or staining of (1028). In plan, (1055) abutted the inner face of the upper course of (1023) and subsequent sectioning indicated that the patch sat within the element of (1028) that had been deposited over the lower brickwork of (1023). As with (1026), the nature of (1055) was somewhat obscure. If the distribution of ash pits and fireboxes around the kiln followed the spacing between (1019) and (1021), then (1055) would have been positioned approximately to the rear of one of the boxes. The flues that would have extended out from the back of the box may offer a possible explanation for the localised burning, although they would normally have occurred at a much higher level than (1055), and it is somewhat doubtful that the heat from this source could have penetrated through the underlying brickwork to the extent displayed by (1055).

5.2.13 The sandy deposit (1028) located in the centre of the kiln was 0.23m thick and sat above the natural clay subsoil (1048). It was composed of sand, biscuit-fired extruded clay strips, kiln furniture and pottery sherds dating to the first half of the 19th century. In the centre of the kiln (1028) displayed some variations in colour from light orange to brownish orange, probably as a result of burning. Although (1028) provided the construction horizon for brickwork (1023), it did not extend beneath the outer ring of the kiln's foundations (1016). This form of foundation design was common during the 19th

and early 20th centuries and is referred to in contemporary sources as a 'cork' (see below, section **8.5**).

5.2.14 The hovel structure surrounding the kiln was represented by three sections of curving wall (1013) (Plates 2, 3 & 7) and small patches of an internal blue-brick floor (1008) and (1010) (Plate 2). Originally the external diameter of the hovel would have been approximately 9.45m, which would have given it a circumference of 29.7m. Interestingly, the firing chamber remains appeared to be positioned eccentrically to the hovel, with a distance of 0.30-0.40m between the mouth of ash pit (1021) and the inner face of (1013). This would have made the raking out of the ash pit and the stoking of the fire mouth above it extremely difficult (see below, section **8.6.2**).

5.2.15 The hovel wall itself (1013) was a double-skinned, mortared red-brick structure, 0.47m wide, which survived to a maximum of five courses (0.88m). The wall was cut into the natural clay subsoil (1048), although apparently to a greater depth in its western half than its surviving eastern extent.

5.2.16 The hovel's internal firing floor was largely absent, with the exception of two curving patches of randomly-arranged engineering and common brick pavers (1008) and (1010) that survived to the east of the kiln. Both patches consisted of a single, 0.06m-thick layer of bricks of uneven size and shape. One of the bricks sampled from (1010) was stamped 'WALL… NOTTING...'. These brick patches had been bedded on a 0.04m-thick layer of black ash and coarse sand (1009), traces of which were also encountered on the western side of the kiln, although no trace of brickwork was found in this area. what was described as a 'band of scorched ashy clay (2/8)' during the evaluation on the northern kiln was probably a similar bedding layer for the hovel floor as (1009) and was almost certainly not formed by workers trampling down the rakings of the kiln (Parry & Hayward 1999, 3).

5.2.17 A 2.56m long, NW-SE aligned 'L'-shaped feature [1046] was recorded on the western side of (1013) with the base of the 'L' abutting the outer face of the hovel wall. Sectioning revealed that [1046] was a straight-sided cut, 0.50m deep x 0.30m wide. It had cut through a 0.10m thick layer of compacted grey clay and ash (1032) and the underlying natural clay subsoil (1048). There was no indication that [1046] had been cut through the

overlying concrete (1004) and its bedding layer (1005) that has been present in the area prior to excavation. Cut [1046] contained two fills, the lower of which (1047) was a 0.30m thick mix of ash, 19th-century pottery, kiln furniture and saggar fragments, several of which had been deliberately laid in the base of the feature in a vertical arrangement. The upper fill was a yellow compacted clay (1056), probably redeposited natural, 0.20m thick. The feature seemed to be a simple soak-away and was found to be still functioning as such when sectioned. Although [1046] appeared to post-date the construction of (1013), it was not clear whether it functioned contemporaneously with the hovel.

5.3 *Kiln 2* (Figs. 8 & 11; Plates 8 & 9).

5.3.1 The remains of a second pottery kiln were uncovered on the eastern edge of the DA, which is believed to have been built in the 1920s or 1930s (Heath 2004, 3). Its presence was not entirely unexpected, as elements of the kiln had been preserved in an area of brick paving at the east end of the site. The western edge of Kiln 2, however, lay beneath a skin of red bricks (536), 0.08m thick, and a 0.11m thick sand bedding layer (537) that had been laid over the original fabric, although mirroring the kiln's original outline. A 0.45m thick deposit of mixed brown clay loam and brick rubble (535) was excavated from the western side of the kiln exposing the edge of the kiln in section.

5.3.2 The kiln survived to a maximum of six courses (0.28m) of red brick bonded with a buff sandy mortar (527). The two basal courses of (527) were stepped and sat upon the natural clay subsoil (1048), within which was a length of ceramic drain pipe (534) that extended beneath the kiln. Brickwork (527) included two ash pits (528) and (530), the former of which, although slightly truncated on its northern side by the construction of a modern drainage inspection chamber (531), was the more complete of the two examples. Internally, (528) was 0.60m wide and 0.33m deep, with a red-brick floor and side walls constructed with refractory bricks. A layer of mortared red bricks (532) laid on edge, side by side, had been placed at the bottom of the pit above (528). The pit contained a lower fill of compacted black/grey ash with crushed red brick (533), 0.11m thick, and an upper fill of sand (537), 0.13m thick. No trace of a hovel for the kiln was encountered.

5.4 *Kiln 3* (Figs. 8 & 12; Plate 10)

5.4.1 Traces of another probable kiln were observed during the watching brief in the north-facing section of the DA, which is believed to represent the truncated southern edge

of a glost kiln which, on the evidence of the historical mapping, was established to the south west of Kiln 1 by 1873 (Fig. 4).

5.4.2 The structure (518) lay 0.50m below ground level, beneath the modern tarmac surface (506) and underlying ashy made ground (509), which also contained a modern gas pipe. A *c*.5.70m-long section of the structure was revealed and was constructed of common and refractory brick, laid flat in two courses. The kiln had been cut into the natural clay (1048). It was more intact at its eastern end than to west, where its terminus was obscured by a slump in the overlying made ground (509).

5.5 ***Structure 1*** (Fig. 8; Plate 11)

5.5.1 A brick floor surface (1031) was revealed to the north west of Kiln 1, abutting the outer face of hovel wall (1013). Surface (1031) comprised a single skin of half-bricks, jointed with sand and laid randomly on a 0.05m thick bedding layer of black ash (1057). The surface was bounded to the south and west respectively by red-brick walls (1029) and (1030), the former of which abutted hovel wall (1013) (Plate 4). Walls (1029) and (1030) had been cut into the natural clay (1048).

5.5.2 Although the full extent of walls (1029) and (1030) and floor surface (1031) were not revealed as they extended north beyond the excavation area, it is likely that they formed part of a structure and floor surface uncovered by ULAS (Jones 2006). This was a rectangular structure positioned on the western side of the museum building, which originally extended north from hovel (1013) to a small kiln, which was also recorded by ULAS and is probably the possible muffle kiln first shown on the 1856 plan. This building and the small kiln are both shown on late 19th- and early 20th-century OS maps of the site (Figs. 3-6). The ULAS report numbers walls (1029) and (1030) as (8) and (7) respectively, and surface (1031) as (10) (Jones 2006, 3-5).

5.5.3 A stub of mortared red-brick wall (508) was located 1.45m south west of wall (1029). Wall (508), aligned NE-SW, was 0.90m long x 0.25m wide and survived to three courses in height (0.26m) and appeared to have been laid on, rather than cut into, the natural clay (1048). It seemed to be the western return of wall (1029) and, again, had been located during the ULAS watching brief and recorded as wall 8 (Jones 2006, 3-5). This

was part of the western wall of the southern extension of the works and was also constructed by 1873 (Fig. 4) to enclose Kiln 1 and two new kilns (including Kiln 3).

5.6 ***Structure 2*** (Figs. 2 & 14; Plate 12)

5.6.1 To the west of (1029), (1030) and (508) were the remains of another linear red-brick wall (507). The wall was aligned north – south and survived in two sections, the longest of which extended beyond the excavation area, but was at least 2.40m in length. Wall (507) was 0.48m thick, stood to a maximum of five courses (0.45m) and was cut into the natural clay (1048).

5.6.2 A ceramic drain (512) extended north west from the north-facing trench section for approximately 4.60m, before stopping *c*.0.40m short of (507). The now absent southern continuation of (507) would certainly have cut the drain, but it was not clear if this was indeed the case. Alternatively, the drain may have functioned contemporaneously with the building represented by (507).

5.6.3 A possible east-west return of (507) was observed in the east-facing section of the DA. This stub of red-brick wall (513) was 0.24m wide, although its three basal courses were stepped out to a maximum width of 0.40m. It survived to a maximum of eight courses (0.78m), five of which were cut into the natural clay (1048). The cut [514] for the wall was visible in section and was backfilled on the northern side of (513) with a mix of pottery waste and ash (504) that was also present above the natural clay subsoil along the entire northern half of the section (see below, section **5.6.4**). On the southern side of (513), cut [514] was filled with a mix of grey ashy loam, brick and angular sandstone fragments (538), above which was ashy made ground (509). A large brick stanchion base (516) had been cut through (509) and into (1048) just to the south of (513).

5.6.4 It is probable that (507) and (513) represented elements of, respectively, the eastern and southern walls of a rectangular building constructed on the western boundary of the site by 1901 (Fig. 6). Traces of the floor (503) for this structure survived along the western edge of the DA prior to groundworks and were revealed in section to comprise a single skin of red bricks laid on edge on top of a 0.40m thick layer of mixed pottery waste and ash (504), which in turn sat above the natural clay and also filled cut [514] for wall (513). In plan (504) was present in the north-western corner of the DA, abutting the

western side of wall (507). It appears, therefore, that (504) was deposited as levelling material for the internal floor of the late 19th-century building.

6.0 Ceramic finds *by Dr David Barker*

6.1 Introduction

6.1.1 The pottery established by Thomas Sharpe in 1821 was a significant component of the important south Derbyshire ceramics industry which flourished during the 19th century. The products of this industry clearly had a major impact on consumers throughout the Midlands and beyond, with products in a range of bodies such as 'Derbyshire Ironstone Cane (or Yellow) Ware, buff drab ware, fire-proof ware, Rockingham ware, mottled ware, and black lustre ware' (Jewitt 1883, 375-6). Despite the size of this industry and its longevity, neither its products nor their true impact upon consumers are properly understood and the wares have not received the attention of scholars and collectors that contemporary white-bodied earthenwares, fine stonewares and bone chinas have. Consequently there is little published information on this industry and, to date, little has been contributed by archaeological investigations on production sites in the area.

6.1.2 Limited archaeological work has been carried out on the Sharpe's Pottery site, detailed elsewhere in this report (see **3.1.10**), but specialist analysis of the excavated material has not been undertaken and the results of the fieldwork have not been disseminated. This is detrimental to an understanding of production on the site, necessitating a reliance primarily upon documentary sources, and also limits an understanding of the context for the present assemblage.

6.1.3 Nevertheless, despite these limitations, this first attempt to characterise and interpret an assemblage that has been recovered archaeologically on the site is an important step forward. The size of the assemblage is not large, comprising just 589 ceramic sherds (34029g), of which 278 are kiln furniture or relate directly to production processes and firing practices. Nonetheless, the material has the potential to contribute to some of the stated aims highlighted in the *Interim Archaeological Statement and Assessment of Potential* (Cramp & Goodwin 2011, 12), namely Aims 2 - 'to provide evidence for the chronological sequence of structures on the site' - and 4 - 'to provide evidence for the products of the potworks, the range of pottery manufacturing processes undertaken on

site, and their development through time'. The results of the current work, when considered in conjunction with other local, regional and international studies of ceramic assemblages, may provide important contextual evidence, contributing indirectly to a furthering of Aim 5 - 'to provide evidence of other local and regional trade networks, such as that for bricks and firebricks'.

6.1.4 For the purposes of the present analysis, finds have been examined individually, characterised by ware type where this can be determined with a degree of certainty, counted and weighed. Vessel equivalents have been determined as a minimum number of vessels, where relevant to the discussion. Particular attention has been paid to evidence for manufacturing techniques, placing methods and faults encountered during production, for by an understanding of these we may be better able to appreciate the limitations of manufacture and the range of problems which may have been encountered with some regularity, as well as identifying measures adopted to counter these.

6.1.5 All finds are discussed by context, with a full archive catalogue in the form of an Excel file. Photographs have been taken of significant or diagnostic material, some of which are included in this report. The importance and potential of the largest of the groups of ceramics, that from context (504), has been noted in the interim report (Cramp & Goodwin 2011, 11-14), and consequently the description of this occupies a substantial part of the present report.

6.2 The wares by context

6.3 Context 504

6.3.1 This context contained a total of 256 sherds (26913g) of biscuit and glazed yellow wares, Rockingham wares, white-glazed sanitary ware, saggars and kiln furniture as described below. Most of the 51 biscuit-fired sherds (4064g) recovered from this context can be identified as either yellow ware or Rockingham on the basis of their surface decoration or their relief-moulded designs, but others are less certain.

6.3.2 ***Glazed Yellow Ware***. Seventy yellow ware sherds (6386g) were recovered from this context. Sixty-five of these represent a minimum of 25 vessels, while the others are of sanitary ware. Vessels are undecorated, decorated with banded coloured slips, or have relief-moulded decoration.

6.3.3 Three base sherds, two complete, are probably from relief-moulded jugs with base diameters of 82mm (two bases) and 96mm. Their external glaze colour is a distinctive pale yellow or straw colour, which is also present on the pouring lip of a large jug or ewer with relief-moulded decoration which comprises ears of corn. This moulded pattern is mirrored in a relief-moulded mark which occurs on the undersides of the base sherds (Plate 13). This combines a diamond registration mark with ears of corn, but unfortunately the details of the diamond registration marks are illegible. All of the sherds have internal pearl glazes. The larger base has small ceramic fragments adhering to the interior base.

6.3.4 Twenty-five sherds are from moulded mixing bowls of a wide-rimmed round-bodied form. Two different styles of relief-moulded decoration are present. The first design comprises large acanthus leaves arranged at intervals below the rim, each within a 'U'-shaped moulded frame; horizontal ridges separate the lower edge of these frames from the bowls' feet. This pattern occurs on nineteen sherds of bowls whose rim diameter is *c*.365mm. Despite the absence of a complete profile the height of these can be estimated to be *c*.352mm. The second relief-moulded design is present on just six sherds of bowls whose rim diameter cannot be determined, as the most complete rim sherd appears to incorporate a pouring lip which distorts the rim outline. Again there is no complete profile, but the bowls' height is in the region of 130mm. This relief-moulded design comprises two bands of elongated arcs which run horizontally around the bowl, one above the other. Different leaf arrangements are present in arcs of the upper and lower bands. The exterior glazes of these bowl sherds varies from an orange-yellow to a cane-coloured yellow; all have internal pearl glazes. One further base sherd has a moulded foot similar to those of the mixing bowls, but is of a smaller size and without any hint of moulded decoration to the body. It, too, has an internal pearl glaze.

6.3.5 The majority of the thrown vessel forms are decorated with coloured slip bands. Two rim/body sherds are from a single chamber pot with banded slip decoration in white, blue and dark brown. The everted rim has a diameter of *c*.220mm. Three joining sherds of a cover of a wide, low rounded form may be a chamber pot cover whose rim diameter is similar to that of the chamber pot rims. It is decorated with alternating wide bands of white and blue slip, framed by narrower lines of dark brown slip; the cover's rim is

picked out by a single band of blue slip. A second cover is smaller, having a diameter of *c.*140mm. The presence of a steam hole suggests a function connected with hot food preparation, although its size precludes its use as a teapot cover.

6.3.6 Nine sherds belong to at least five bowls which vary in size from *c.*135mm – 190mm. One rim may be from a low hemispherical form, but other rims and three bases are of 'London' shape. All of the rim sherds are decorated with slip bands in white, dark brown or blue (Plate 14). One base sherd has a grit-coated interior base. Two sherds belong to large jugs or ewers, all with banded slip decoration. A base sherd is probably from a baluster-shaped vessel with banded slip decoration in white and dark brown, while a body sherd has banded slip in blue, white and brown. Two further decorated sherds are from round-bodied vessels of indeterminate form.

6.3.7 Undecorated vessels include dishes and baking dishes. Six sherds are from rectangular baking dishes with squared rims with a collar beneath and flat bases. Their exact size cannot be determined, but vessels with heights of 56mm and 71mm are present. All of these have internal pearl-coloured glazes. Another vessel is of a bowl or baking dish with slightly rounded sizes and a rounded, collared rim; its exact form and dimensions are uncertain, but it, too, has an internal pearl glaze. A base sherd from a bowl or baking dish with an internal pearl glaze has an impressed garter mark to its underside, but the details of this are illegible. Three everted rim sherds are from dishes of a rectangular form whose dimensions are uncertain. Further everted rim/body sherds of three dishes of uncertain form and dimensions have fused together into a single mass. A final base/body sherd is probably of a dish.

6.3.8 Five pieces of sanitary ware (1269g) include a water closet rim of a squared section in a dull straw-coloured fabric, the rim and overflow pipe of a valve closet bowl, with an external yellow glaze and internal pearl glaze, two sherds of uncertain form which also have internal pearl glazes, and a sherd of what is probably a wash-out closet bowl, with part of the waste pipe.

6.3.9 ***Glazed Rockingham Ware***. Eighty sherds (4269g), representing a minimum of nineteen vessels were recovered. At least seventeen of these are teapots, with nine bases of thrown forms and at least eight different moulded vessels.

6.3.10 Seven of the nine moulded teapots are faceted ovoid forms, most with relief-moulded decoration, in a range of sizes. Three teapots with recessed lid seatings feature an oriental figure with moustache, pigtail and hat, although the full design cannot be determined. One teapot with a rim diameter of *c.*80mm has an oriental-looking fretwork border pattern, with a profile view of a Chinese gentleman beneath (Plate 15), and a second rim sherd with only a hint of relief decoration may be from the same vessel. An example of a teapot of this type was sold in 2005 at Bamford's auction house in Derby, showing that the design comprises two figures, one seated, the other standing (Bamfords). Another teapot of the same size bears the head, full face, of a similarly attired Chinese gentleman but without the fretwork border pattern. Two joining sherds of a larger teapot, with a rim diameter of 90mm, have the same relief-moulded decoration as the last.

6.3.11 Other relief-moulded designs are present on ovoid faceted teapots, such as the leaves evident on one teapot rim. One body sherd and another base/body from teapots of different sizes have an identical moulded design which is distinctive, but too fragmentary to be identified. Another body sherd features part of a relief-moulded design, beneath which is the word 'WELL' in a rectangular frame, indicating that this scene is the Biblical 'Rebekah at the Well' (Plate 16). One other faceted sherd has relief-moulded decoration, but the design cannot be identified. Two faceted sherds have no hint of relief-moulded decoration – a base of *c.*140mm diameter and a body sherd with the remains of a handle with moulded wood-grain detail.

6.3.12 Another teapot, ovoid or barrel-shaped, is represented by two joining rim and body sherds. The rim has a diameter of 103mm and has recessed lid seating which retains one lug for securing the cover. The relief-moulded decoration resembles a wooden barrel with broad leaves on its surface. There are four base sherds of moulded teapots, two of which appear to be faceted. Base diameters are 95mm and *c.*155mm. The smaller size is represented by two joining sherds which have an impressed mark to the base, which appears to be the letter 'H'. One of the larger sherds is a clear waster with a large moulded fragment fused to the interior base which has come from elsewhere on this teapot or perhaps from another, unrelated vessel. There are ten moulded spouts from teapots of different sizes. Best represented, with five examples, is a crabstock-type spout with an eagle's head at the pouring end (Plate 17). There are two sizes: four examples

have a length (tip to base) of *c.*115mm; the other is larger, but incomplete. Two spouts, one with a length of *c.*115mm, the other of *c.*105mm, have relief-moulded fluted decoration, which is in the style of bamboo. One near complete spout has moulded flutes and oak leaves and another incomplete spout has a design of distinctive scrolls and leaves.

6.3.13 There are six moulded teapot covers with relief-moulded decoration of two types. All are of a domed form with floral knops, of which only one example survives, and all have arcs cut out of the rim to accommodate the securing lugs on the teapots' rims (Plate 18). A single complete cover, with a maximum diameter of 70mm and a height of 44mm has a faceted body and a design of three leaves and twigs moulded in relief; the knop is formed of a four-petal flower head which leans away from the cut-out on the rim. The other relief-moulded design comprises five leaves and twigs and occurs on covers of two sizes. The largest has a maximum diameter of 85mm, the smallest of 78mm; there are two and three examples respectively of these.

6.3.14 The Rockingham wares also include thrown teapots which appear to be of two forms. Most sherds, including three bases, three rims and twelve bodies, belong to a form with a squat, rounded lower body, a shoulder defined by a turned band, and a narrower raised neck with a recessed rim. A single complete profile has a height of 135mm, a rim diameter of 100mm and a base diameter of 110mm. This type of teapot uses a short, stubby spout with relief moulded decoration confined to a small leaf on the top edge of the spout tip. There are six spouts amongst the sherds, one of which is almost complete. Two body sherds and one rim/neck sherd have handle junctions, but too little survives for the handle type to be identified. Two of the three rims sherds have lugs to secure covers. Four base sherds are almost certainly from this teapot form. Two have impressed marks 'FIRE / PROOF' (Plate 19).

6.3.15 A second thrown teapot form is represented by a single sherd. This is a raised rim of an otherwise globular-bodied vessel. The shoulder bears traces of two rouletted bands. Two further bases, consisting of seven joining sherds, are probably from thrown teapots, although their form is uncertain. Another base sherd, of indeterminate size, has two impressed marks to the base which appear to be the letter 'I'; it may be from a thrown teapot.

6.3.16 There are two examples of thrown teapot covers (Plate 18), together with a further rim sherd. These are of a low conical form, with a gently sloping rim, and a squat, rounded knop, with a maximum diameter of 77mm and a height of 53mm. The complete example has a steam hole pierced through its upper face; the incomplete example does not. The size and form of these are such that they cannot belong to teapots of the types described above.

6.3.17 A final moulded vessel is probably a jug, of near cylindrical form, but with a rounded lower body. Three joining body sherds have relief-moulded decoration comprising vertical pilasters around which are entwined training leaves. The group contains six moulded handle sherds, which could belong to teapots or jugs. All have a moulded wood-grain effect, but with the exception of one which has a thumb rest in the form of a knot on a branch (which is the handle itself), they are not especially distinctive. The remaining vessel is a thrown wide form, such as a jar or chamber pot, with a base diameter of 140mm.

6.3.18 ***White-glazed Sanitary Ware.*** Thirty-six sherds (7157g) represent at least five separate water closet bowls, identifiable by their rims. There are both valve closet bowls with squared, or everted rims, and wash down closet bowls. Three printed patterns in blue are identifiable, one featuring a bold flying fish on the front of a wash down closet bowl. One sherd of a valve closet bowl has an impressed sword mark on its underside, adjacent to the waste outlet (Plate 20).

6.3.19 ***Biscuit Yellow Ware***. The 21 definite biscuit-fired yellow wares include the base of a mixing bowl with the first of the relief-moulded designs described above, and two rims and one body sherd of the second of the designs which exist as glazed examples. One of these rims incorporates a pouring lip, the presence of which was noted on one of the glazed sherds. All of these sherds have internal light blue slip coats, which clearly serve as the colouring medium for the internal pearl-coloured glazes of these vessels. There are also biscuit sherds of another moulded form. This is the relief-moulded jug with a moulded design comprising ears of corn referred to above. A rim/body sherd has an internal light blue slip coat, and a handle has moulded detail which incorporates an ear of corn as a thumb rest.

6.3.20 Unglazed sherds with banded slip decoration were clearly produced to be yellow wares. At least one sherd belongs to a chamber pot with an everted rim and banded decoration in blue, framed above and below by brown slip. Another four body sherds have a rounded profile suggestive of chamber pots, while four further bodies may be from bowls, basins or dishes.

6.3.21 A number of undecorated sherds are also probably yellow wares. These include three 'London-shape' bowl bases with diameters of 80mm, 125mm and 146mm. Two sherds are from rectangular dishes with everted rims and the base of a blacking pot, in the form of a truncated inverted cone, is a form which is known in yellow ware, with an example present in (1009); it has a base diameter of *c.*37mm. Six sherds (1033g) are from unglazed yellow ware closet pans of uncertain form.

6.3.22 ***Rockingham Ware***. Fifteen biscuit sherds are of Rockingham ware. Four rims/body sherds are from moulded teapots of ovoid faceted forms. Two, with rim diameters of 80mm and 95mm, have the relief-moulded oriental-style fretwork border pattern on the shoulder which is present on one glazed teapot sherd. The larger of the two has a single projecting lug for securing the cover. One large ovoid faceted form, with a rim diameter of *c.*100mm, has relief-moulded decoration in the form of trailing leaves and flower heads, although the detail is not clear; it too has a projecting lug for securing the cover. The last unglazed teapot is ovoid or barrel-shaped, with a rim diameter of 90mm; the relief-moulded decoration resembles a wooden barrel with broad leaves on its surface. An example of a larger size of this teapot is represented amongst the glazed sherds.

6.3.23 Three spouts, two with a length of *c.*106mm, the other of *c.*125mm, have relief-moulded fluted decoration, which is in the style of bamboo. Glazed examples of this spout have been recovered. One moulded spout not represented amongst the glazed sherds appears to have leaves at the base, where it joins the teapot, and flutes running up the body of the spout, but the details are unclear.

6.3.24 Three moulded teapot covers are of the domed faceted form with relief-moulded decoration comprising five leaves and twigs which are present as glazed examples. The unglazed covers occur in three size, with base diameters of 46mm, *c.* 55mm and 66mm. The two complete covers have arcs cut out of their rims to accommodate the securing lugs

on the teapots' rims. Another moulded cover is probably too wide, with a diameter of 120mm, to be a teapot cover. The details of its moulding are unclear. There are also three thrown teapot covers with the low conical profiles seen amongst the glazed sherds. Their diameters are 67mm, 70mm and 74mm, while their heights are 50mm, 44mm and 50mm respectively. Only one of these has a stream hole.

6.3.25 ***Uncertain biscuit.*** Nine sherds from context 504 cannot be characterised with any certainty as yellow ware or Rockingham, although the base of a teapot and two moulded handles are most likely to be of Rockingham, and two plain handle sherds are probably of yellow ware.

6.3.26 ***Kiln furniture***. Nineteen items of kiln furniture (5037g) were recovered. Purpose-made items include a large spur, two stilts and two thimbles, all machine-made in a white body, as well as two joining sherds of what is probably a thrown shelf support in a buff yellow ware body, and six saggar fragments.

6.3.27 The spur is quite large, having a height of 25mm and a distance of 35mm between the points of the underside; it has a moulded size number '7' with the manufacturer's initials 'G & Co.' in relief. This is the firm of Joseph Gimson & Co. of Market Street (now City Road), Fenton, Stoke-on-Trent, first recorded as 'stilt & spur manufacturers' in *Slater's Directory of 1862* (Slater 1862, 116). In 1870 they were listed as 'manufacturers of patent spurs, stilts, etc.' (Harrod 1870b, 846). The company continued in business throughout the last century, until the closure of the Fenton factory in 1999.

6.3.28 The stilts, both with double points on their extremities, are in two sizes with arm lengths of 38 and 45mm (Plate 21). They bear the size numbers '6' and '7' respectively moulded in relief, together with the latter 'A', which probably relates to the Thomas Arrowsmith & Sons, 'Patentee and Manufacturers, Stilts, Spurs, Thimbles, and every requisite for firing tiles and pottery' of the Wedgwood and Moorland Road Works, Burslem, Stoke-on-Trent (*The Pottery Gazette Diary*, 1905, 1915). Thomas Arrowsmith is first listed under 'spur and stilt makers for pottery manufacturers' in 1884 (Kelly, 662), and appears regularly in later trades directories. Two thimbles, used in the placing of flatware, have a height of 47mm and a maximum width of 44mm. They, too, bear the

initial 'A' with a size number which appears to be '3', and would therefore appear to be products of Thomas Arrowsmith & Sons.

6.3.29 The saggar sherds are unremarkable. All but one are in a coarse, grogged buff fabric. Bases are in the region of 17 - 20mm thick, with walls a fraction thicker. The size of the sherds is such that dimensions are difficult to determine, but there are two saggars which appear to have diameters of *c.*465mm and *c.*300mm, although these are uncertain because of the possibility that some saggars were oval in shape. The largest of these, represented by two joining sherds, was clearly used as for glost placing, having a yellow glaze to the wall interiors and to the underside of the base, with the base interior covered by a layer of bitstone, which appears to be of sand and crushed pot or saggar. In one place, there is a ring of a darker colour, which is probably glaze which has run from a hollow ware vessel possibly of Rockingham ware.

6.3.30 There are two other fragments of glost saggars with internal glazes and varying amounts of bitstone on the base interiors, although there are no clues as to what may have been fired inside these. Another fragment has only a thin sheen to the base interior, which may or may not be glaze, and the absence of either an all-over glaze coat or of bitstone suggests that this may have been used for biscuit firing. These saggars all have a broad band of white flint slip brushed around the edge of their base undersides. One final saggar sherd is in a coarse grogged cream-white body with a heavy coating of glaze and clinker which has fused to it a sherd of what appears to be a white-bodied, brown glazed vessel of indeterminate form.

6.3.31 Two joining sherds are of what is probably a kiln shelf support. This is of a sub-conical form with a wide base of 151mm diameter, with the body tapering to *c.*64mm at its maximum height of 70mm. The item is in a refined buff fabric with an external yellow glaze. There is a band of what may be white glaze around the lower body and base, with dribbles of the same running down the exterior sides.

6.3.32 Last amongst the kiln furniture and related material are pieces of extruded clay. One cylinder of refined buff-coloured clay has a thin glaze sheen and may have been used to separate items during the glost firing. Another thin (10mm) extruded strip is in a refined white clay body; one end has been pinched off, the other has been flattened. Of

the four pieces of wad clay, two are in a coarse buff body and two in a coarse cream white body. All bear signs of other items – vessel or saggars – having been pressed into them during biscuit firing.

6.4 Context 523

6.4.1 Six unglazed yellow ware sherds (130g) are from a dish or baking dish of oval form, a round-bodied chamber pot (four joining sherds) and another vessel of uncertain form. The round-bodied vessel is decorated with a wide band of white slip upon which there is further blue dendritic or mocha decoration.

6.5 Context 525

6.5.1 This contained three biscuit yellow ware sherds (117g) in a cream-buff fabric. Two joining base sherds are of a bowl or basin. A third everted rim sherd may be of the same vessel or, more likely, a chamber pot; it has a band of white slip to its outer edge. All are of an uncertain 19th-century date, with their fine, well-made forms suggesting the mid 19th century or earlier.

6.6 Context 1009

The 23 sherds (221g) from this context comprise eleven of yellow ware and twelve of kiln furniture. Diagnostic yellow wares include the rim and base of a blacking pot, the base of an oval dish or baking dish, and bowl or basin base, and two (or three) sherds of a low rounded basin or bowl with blue mocha decoration on a band of white slip. One small undiagnostic sherd is unglazed. Amongst the kiln furniture is a hand-made cockspur in a buff-coloured fabric which, the hint of glaze on the point suggests, was used in the placing of yellow wares during glost firing. There are three incomplete arms with a V-shaped profile from moulded, but hand-made stilts with cut, angled extremities. They are in a light buff fabric, and one has a thin coat of yellow glaze, suggesting that they were used for placing yellow wares. Eight pieces of wad clay are in a light refined buff fabric, but one has a coating of glaze and sand. A mid 19th-century, or slightly earlier, date is suggested for the material from context.

6.7 Context 1013

6.7.1 A single rim sherd (6g) of a biscuit yellow ware blacking pot dates broadly to the 19th century.

6.8 Context 1015

6.8.1 The 17 sherds (241g) from this context are all of kiln furniture. There are six machine-made spurs in a white refractory body. Four are marked 'A 6' in relief, and two 'A 7', suggesting manufacture by Thomas Arrowsmith & Sons. Two glost saggar fragments and nine pieces of wad clay complete the group, which must date to the late 19th or early 20th century.

6.9 Context 1018

6.9.1 The contents of ash pit 1 consist entirely of kiln furniture. Of the eight fragments (619g), three are of glost saggars, in a coarse grogged cream-coloured fabric, with glazed internal walls. One of these is the rim of a saggar of a rectangular form. There are also two pieces of extruded wad clay in a refined buff fabric. The mass-produced, factory-made items are all in white refractory bodies. They include a fragmentary 'saddle', an extruded refractory bar of triangular section; a large cockspur, with the marks 'A' and '6' in relief on the concave underside; and an item known as a 'bowl pin' or 'dump' used in placing basins. The manner of their use in glost placing is discussed below. A late 19th- or early 20th-century date is possible for this material, given the presence of the 'A' mark on the spur which may relate to the stilt and spur maker Thomas Arrowsmith & Sons.

6.10 Context 1020

6.10.1 Of the 15 fragments (2376g) recovered from ash pit 2, all but one are of kiln furniture. There are eight pieces of glost saggars in a coarse cream-buff fabric with internal yellow glazes and six pieces of wad clay. One unglazed white earthenware sherd may be part of a tile, but its identity is uncertain. A mid to late 19th-century date is possible for this material.

6.11 Context 1022

6.11.1 Three joining biscuit sherds (10g) of a yellow ware bowl in a cream-buff fabric were found in ash pit 3. Below the rim are two narrow lathe-turned bands which are filled with light blue slip. The vessel is well-made, suggesting a mid 19th-century or earlier date.

6.12 Context 1027

6.12.1 Twenty-six sherds (202g) include two possible saggar sherds and sixteen pieces of wad clay. The ceramics include two joining sherds of a biscuit yellow ware bowl in a

cream-buff fabric. Below the rim are two narrow lathe-turned bands which are filled with light blue slip. Five joining sherds are of an unglazed round-bodied teapot in an orange-red fabric, which may be a glazed blackware type. One final sherd is an undiagnostic body sherd of yellow ware or Rockingham ware. A mid 19th-century date is likely for this context.

6.13 Context 1028

6.13.1 Of the 157 sherds (973g) from this context, six are of yellow ware, five are unidentifiable under a thick ash and clinker coat, and the remainder are kiln furniture. The latter includes five pieces moulded but hand-made stilts, of an inverted V-section, one in an orange-pink fabric, the others in a refined buff fabric. One saggar rim, two possible saggar fragments and 138 pieces of extruded wad clay in buff, pink and red fabrics complete the kiln furniture component.

6.13.2 One biscuit yellow ware rim sherd of a 'London-shape' bowl is decorated with narrow bands of white slip, while another unglazed body sherd of uncertain form also has banded slip decoration. There are two sherds of unglazed yellow ware blacking pots of different sizes, a heavy base of uncertain form and one glazed yellow body sherd of an unidentified hollow ware form. One everted rim sherd is from an oval or rectangular dish or baking dish, a yellow ware form; it is coated with ash and clinker. Three further body sherds are also unidentifiable due to the presence of ash and clinker. A final sherd is from a dark-glazed hollow ware vessel, perhaps in mottled ware, Rockingham or blackware. The presence of hand-formed stilts suggests a mid 19th-century date for this context.

6.14 Context 1032

6.14.1 Twelve sherds (68g) are include four of yellow ware; one of what appears to be an unglazed white-bodied earthenware, such as creamware, pearlware or whiteware; one each of Rockingham ware (a teapot), blackware and mottled ware; together with four pieces of wad clay. The yellow wares are a glazed bowl or basin rim with banded white and blue slip and blue mocha decoration, a biscuit bowl with banded white slip decoration, a moulded mixing bowl rim with and internal cream-coloured glaze over a white slip coat, and an undiagnostic biscuit sherd. A mid to late 19th-century date is likely for this group.

6.15 Context 1047

6.15.1 This contained 23 sherds (723g), of which seven are of yellow ware, all glazed, and three of Rockingham ware or mottled ware with a dark brown glaze. The remainder are of kiln furniture. The yellow wares include a low-walled oval dish with flaring sides, two joining sherds of a mixing bowl with relief-moulded decoration, two joining sherds of a water closet pan and two further body sherds. The mixing bowl and one other body sherd have an internal cream-coloured glaze, over a white slip coat, while the closet pan has an internal pearl glaze over a light blue slip coat. A low, barely conical teapot cover is of Rockingham or mottled ware. It has a fine brown fabric, perhaps the result reduction during firing, and a dark brown glaze, almost black, which appears to be slightly streaked. Two further small body sherds are of a similar type.

6.15.2 The kiln furniture includes six pieces of three hand-made stilts in a buff-coloured fabric in two sizes, with arms of 45mm and 65mm. These lack point on their extremities. The thinnest of glaze sheens is present on these, but all bear brown-glazed scars from contact with Rockingham ware vessels which were placed upon them. Seven pieces of wad clay are all in a fine buff fabric, although one has reduced to a grey colour. Five of the pieces have impressions from other items which have been pressed into them for biscuit firing. A mid 19th-century date is possible for this context.

6.16 Context 1049

6.16.1 This contained just one rim sherd (3g) of a whiteware dinner plate with a concave edge and an undiagnostic transfer printed leaf or flower pattern in black. It probably dates to the mid 19th century.

6.17 Discussion of the ceramic assemblage

6.17.1 Although not large, the assemblage from this recent phase of work at the site is interesting in a number of respects. The presence together of both yellow ware and Rockingham wares confirms what has long been known – that the two types were typically produced together at the same time at this and other yellow ware potteries. The presence of biscuit sherds which relate directly to recognisable glazed sherds of the two types confirm that here the two ware types were made of clay bodies which are, if not identical – for only scientific analysis would confirm this – at least visually indistinguishable.

6.17.2 Only a limited range of vessel forms has been recovered and whether these are in any way representative of the wider production at the factory is impossible to determine. Documentary sources refer to vessel forms not present in this assemblage, such as mugs and toby jugs (Jewitt 1883, 376), and there is little evidence for printed wares, with the exception of one sherd from (1049) and the printed water closet bowls from (504). Sanitary wares are present, but not in great numbers, and there is little that would correspond to the descriptions 'buff drab ware' and 'black lustre ware' (Jewitt 1883, 376). Such a small sample from a limited archaeological intervention will inevitably lack documented forms and types.

6.17.3 What is present in some quantity, in context (504), is a range of the yellow wares and Rockingham wares – and no vessels of any other type - that are associated with Sharpe's and other South Derbyshire potteries. Vessels of Rockingham constitute 52% of the utilitarian wares and comprise mainly thrown and moulded teapots in a limited range of designs, amongst which is a sherd of the well-known design 'Rebekah at the Well'. This was one of the most popular moulded scenes on Rockingham teapots from the middle of the 19th century, finding particular favour in the United States where the scene of Rebekah carrying water from the well, from Genesis 24, was viewed as a metaphor for the domestic and religious virtues embodied in the housewife (Stradling 2005, 72). Teapots with this design remained popular in the United States well into the 20th century. Other teapots with relief-moulded subjects include at least two with male Chinese figures, another moulded in the form of a wooden barrel, and one with a hint of a leaf pattern. A biscuit teapot sherd from the same context has an indistinct moulded pattern which includes leaves and flowers. A range of moulded spouts and handles may be helpful in identifying Sharpe's products encountered in domestic groups elsewhere. One probable moulded jug is present. Rockingham ware bases bear impressed 'FIRE PROOF' marks (Plate 17), which are well-known on this type, and other impressed marks whose meaning is less certain.

6.17.4 Yellow wares constitute 48% of the ceramic vessels recovered from (504), but elsewhere on the site they are considerably more numerous than sherds of Rockingham ware (in the proportion of 13:1), perhaps reflecting a wider chronological range for their manufacture. The utilitarian forms are typical of this type, with dishes, baking dishes, bowls, mixing bowls, basins, chamber pots, jugs and blacking pots reflecting functions

primarily associated with hygiene and food preparation. The presence, too, of closet pans reflects the particular emphasis of much of Sharpe's production on sanitary wares. It is certain that not all forms have been identified, given the small size of some of the sherds. Decoration, where it is present is primarily of banded slip in white, brown and blue, combined on a few sherds with blue dendritic mocha patterns. Moulded wares include sherds of relief-moulded jugs in a corn pattern, present in (504), and mixing bowls in at least three designs and a range of sizes. The moulded wares have internal pearl glazes over a light blue slip coat.

6.17.5 The recovery of marked sherds, albeit illegible, holds out some hope for future identification of wares produced by at this factory. The impressed 'FIRE PROOF' and other marks present on Rockingham base sherds have already been referred to, but they are not especially helpful for attribution. However, examples of two types of mark have been found on yellow ware sherds. One, on the underside of a bowl or similar vessel, is an impressed garter mark which may incorporate the manufacturer's name, or perhaps the name of the moulded form. An example of what may be an identical garter mark has been found on a sherd found in Hawaii (Sharpe's Pottery Museum). This includes the name 'SHARPE' in the centre with the term 'WARRANTED' and further illegible text within the garter itself, in a manner which appears to coincide with the illegible mark from (504). Unfortunately this sherd has no sound archaeological context to aid its dating.

6.17.6 There are three examples of the second mark. Moulded in relief, they occur on the bases of relief-moulded jugs of two sizes. The mark incorporates a diamond registration mark within an arrangement of ears of corn (Plate 13). The registration of designs was introduced in 1842 as a form of copyright, protecting designs from being copied for a period of three years (Godden 1991, 526). The day, month and year of registration was recorded within the diamond mark, which could be printed, impressed or moulded in relief. In an ideal world, the presence of diamond registration marks on sherds such as those found here should provide a useful *terminus post quem* for the manufacture of the vessels upon which they are found, but here the details of these marks are quite illegible. However, this style of mark was only in use between 1842 and 1883. Allowing for the use of moulded wares, with their registration marks, for some years beyond the expiry of the protection afforded by the registration of the designs, deposition of these wares is unlikely to have occurred much later than the 1890s.

6.17.7 Research of the design registration records at The National Archives may reveal the exact date upon which this moulded shape was registered, although some manufacturers included 'false' diamond marks to give the impression that a design was protected. Whether this was the case here cannot be known at present, but it may be significant that only one design is listed as having been registered by Sharpe Brothers & Co. in Cushion's useful, but admittedly incomplete, 'Index of Names and Dates of Manufacturers, Retailers, Wholesalers and others who registered deigns from 1842 to 1883' (Cushion 1980, 177). This registration was on 3rd September 1858.

6.17.8 Few sherds of other ware types were recovered, although there is a printed whiteware plate rim from (1049), a couple of possible mottled ware sherds – including a teapot cover from (1047) – and others which are possible examples of a blackware, including a biscuit teapot body from (1027). However, the assemblage does nothing to further an understanding of this aspect of manufacture at Sharpe's.

6.17.9 It must be assumed that all of the wares from this assemblage are wasters, discarded at different stages of manufacture, and the quantity of biscuit wares supports this interpretation. With glazed wares, however, it is less easy to be certain of the reason for discard, with the context, rather than the wares themselves helping to determine this. Given the poor quality evident in many Rockingham and yellow wares excavated on domestic sites, it is clear that there was some latitude in determining what did, and did not constitute a waster. The presence of bitstone on some bases in this assemblage may suggest nothing more than poor finishing, rather than that the wares are wasters, and numerous examples can be cited of domestic wares of all types with bitstone adhering to bases and other major blemishes and flaws. Even blistered glazes – such as that on one Rockingham teapot sherd from (504) (Plate 22) – does not necessarily indicate that the piece was a waster.

6.17.10 One Rockingham vessel can be highlighted as a waster with some confidence. This is a teapot base, to whose interior is fused the moulded remnant of another part of the same vessel or of another unrelated vessel, damaged during a mid-firing explosion. There is no ambiguity whatsoever about the status of the three yellow ware dishes from (504) which have fused together, suffered significant reduction during firing and warped to the point that their precise form is uncertain. A yellow ware blacking pot rim from

(1009) has also suffered during the glost firing, with part of the rim having blown away to be glazed over. A yellow ware bowl base is also most probably a waster, its interior being coated with grit, probably the result of the movement of ash and other fine particles during the glost firing.

6.17.11 There are a number of pieces of hand-made kiln furniture in a fine buff-coloured fabric, including a cockspur and V-profile stilts from (1009), sherds of three separate hand-made stilts from (1047), four from (1028) and another from (103); a further stilt arm from (1028) is in an orange-pink fabric. The presence of hand-made items suggests a date in the mid 19th century, or earlier, before the widespread adoption of mass-produced machine-made kiln furniture. Such mass-produced items, typically acquired from specialist stilt and spur manufacturers based in the Staffordshire Potteries, can be seen in the spurs, stilts and thimbles from (504), (1015) and (1018).

6.17.12 The distinction between hand-made (and probably made on-site) and mass-produced and bought-in kiln furniture offers something of a rough chronological indicator for ceramic production groups. On this basis, it is possible to suggest with some certainty that the group from (504) and the other smaller groups containing machine-made items, such as those from (1015) and (1018), were deposited during the second half of the 19th century. Machine-made stilts and spurs were only introduced in 1846, following the patent taken out by Charles Ford of Hanley (UK Patent No. 11488, 'Improvements in the manufacture of pottery or earthenware ...), while thimbles, of which there are two in (504), were patented in 1856 (Elias Leak, UK Patent No. 1715, 'A Thimble Pillar with Points and Branches, to be used in placing 'Glost' China and Earthenware….'). This, combined with the known dates of the manufacturers represented, Joseph Gimson & Co. on a spur from (504), and Thomas Arrowsmith & Sons (see above) on stilts and spurs in (504) other contexts, suggests that these items – and consequently the groups in which they were found – were deposited at some time after the mid 1880s.

6.17.13 The majority of the machine-made kiln furniture items are spurs and stilts. Stilts, with three arms and varying arrangements of point on their extremities, were used in the glost placing of various hollow ware forms. Scars on these forms may indicate which items were so placed. Two examples from (504) have sizes '6' and '7' moulded in relief, alongside the initial 'A' which, it is suggested relates to the stilt and spur maker Thomas

Arrowsmith & Sons (Plate 21). The 'A' mark appears on several examples of spurs, with six examples from (1015) (in sizes 6 and 7) and one from (1018). Since the late 18th century spurs were normally used in the placing of plates and serving dishes. They were cheap to produce, especially with the introduction of die-pressing, and easy to use.

6.17.14 With wares fired upside down, three spurs placed upon the underside of a plate's rim would separate one plate from another with only minimal scarring to the upper surface of the rim of the plate above, and leaving just three small single scars on the underside of that below (Barker 1998, 337). However, despite the obvious effectiveness of 'spurring up' in this way, it is not unusual to find spurs used in less discrete positions which ignored the effects scarring on the visible upper surface of ware. Sometimes the spurs were placed on the underside of the base, leaving three single scars on the interior of the plate supported above, but occasionally plates were fired face upwards with spurs resting on the plate interior, thereby leaving highly visible scars in three groups of three (Barker 1998, 337).

6.17.15 Thimbles, too, relate to the placing of flat ware, and both spurs and thimbles can involve the use of saddles, an example of which was found in (1018). The placing of flat wares with thimbles, spurs and saddles is described by Sandeman (1921, 259-61). Ordinary wares were 'reared' to a near-vertical position within the saggar upon a pair of saddles'and could be 'thimbled', with their upper rims resting upon a single horizontal row of interlocked thimbles which ran across the top of the saggar and was fixed to the saggar wall at both ends by wad clay. Alternatively, 'running' plates involved rearing them upon a pair of 'saddles', but separating their upper rims by a single spur upon which they rest, rather than by a thimble.

6.17.16 Another item of machine-made kiln furniture, present in the fill (1018) of ash pit 1, is a 'bowl pin', also known as a 'dump' or 'hand-basin prop'. This is a wedge-shaped item 49mm in height, with a maximum width of 26mm, a minimum width at the top of 16mm, a maximum depth of 36mm and a minimum depth of 20mm; it has a rectangular slot in the inner face. Bowl pins were arranged one on top of another in three equally-spaced vertical columns set against the inner wall of the saggar. The widest point of the bowl pin projected inwards and upon three of these rested the rims large bowls or basins, separated during the glost firing. The manner of use within a 'ringer' saggar (*i.e.* a saggar

with an open base which allows the base of a deep vessel form in a saggar below to extend into the saggar above, thereby maximising use of space within the kiln) is illustrated by Sandeman (1921, 273) who also describes the manner of their use, adding that 'Second quality basins may be placed off three large thimbles, one over the other, upside down, which will leave three small marks on their edges…'.

6.17.17 Fragments of saggars, coarse ceramic containers or boxes in which wares were placed for both biscuit and glost firings, are present in many of the contexts. Typically these are in a coarse, grogged (i.e. with fired ceramics material deliberately added to the body) cream-coloured fabric. Most of the saggars found appear to have been used for glost firing. Their interiors and undersides have a coating of yellow glaze and their bases have a coating of bitstone to minimise contact between glazed wares and the saggar itself. Typically, bitstone consists of sand, crushed quartz pebbles and both are found here. However, some of the saggars from context (504) appear to have crushed ceramic material or crushed saggar mixed in with the sand on their bases. Vessels placed upon a bitstone layer often have fragments of the material adhering to their bases, and in the case of wasters this is unlikely to have been removed. It is interesting to note that some of the glazed Rockingham covers retain fragments of bitstone on the lower edges, indicating that these items were also place upon the saggar base during the glost firing.

6.17.18 The most common find on the site was wad clay – extruded cylinders of clay in a variety of fine and less fine bodies which were used for a wide range of supporting and sealing tasks. Saggars, for example, were sealed with strips of wad clay to prevent noxious gases penetrating during firing, while all manner of complex ceramic forms might be supported during the biscuit firing with pieces of clay extruded in this way. The presence of so many pieces of wad clay comes as no surprise, especially on a factory which specialised in the production of large, heavy vessels and sanitary ware. Many of the pieces of wad clay bear impressions of items which have been pressed into them during firing, but overall these tell us little.

6.18 The ceramic assemblage: conclusions

6.18.1 This present assemblage offers some useful insights into the range of wares produced by Thomas Sharpe and by Sharpe Brothers & Co. during the 19th century. The range of material is admittedly limited and many more assemblages of this kind are

needed before a realistic picture of production can be gained. It also illuminates some technical aspects of manufacture, and seems to confirm that the factory was typical for its period in the methods used for making, decorating and placing. Sharpe's was clearly very much part of the pottery-manufacturing infrastructure which centred upon north Staffordshire, buying in kiln furniture from specialist manufacturers in that area and, potentially, all manner of other potters' equipment, moulds and engraved copper plates, although the evidence for this is not forthcoming from the present assemblage. The analysis of this assemblage has underlined the need to revisit material recovered from earlier archaeological interventions at the site and suggests that full analysis and publication of this would be worthwhile.

7.0 Ceramic building materials *by John Tibbles*

7.1 Introduction

7.1.1 An assemblage of eleven complete and partial bricks, with a combined weight of 29.263 kg was submitted. It should be noted that the diversity of size and colour within brick and tile caused during the manufacturing process must be taken into consideration when comparing samples within collected assemblages and local typologies. The varying sizes and colours can often be attributed to the variation in the clays and clay mixes used, shrinkage during drying, firing within the kiln or clamp and the location of the brick/tile within the kiln. Three distinctive brick types were, however, identified, including firebricks. Hand-made and machine-made bricks were identified exhibiting manufacturers initials or name.

7.2 Statement of potential

7.2.1 The ceramic building materials can provide valuable information as to the method of construction of structures and the sources of materials used within them.

7.3 Methodology

7.3.1 The assemblage was examined using a x15 magnification lens where applicable to aid dating. Fabric analysis was not undertaken as this was considered beyond the scope of this assessment. Information regarding the dimensions, shape and fabric (where applicable) was recorded and catalogued accordingly. The presence and condition of the original surfaces was also taken into consideration to aid identification. A full description of the individual bricks is available in Appendix 2.

7.3.2 The dating of ceramic building material can be highly contentious due to its re-usable nature. Bricks alone cannot therefore provide a firm date but it is possible to date types of brick by their earliest occurrence within dated contexts and also from the manufacturer's stamps.

7.4 The assemblage

7.4.1 The majority of bricks within the Sharpe's assemblage bore evidence characteristic of their method of manufacture. The hand-made material included moulding lips, drying sand and finger impressions. Pressed-bricks have been manufactured in hand-presses creating sharp arrisses. Four of the pressed bricks exhibited stamped impressions of the manufacturer's name or initials, two of which have been identified.

7.4.2 ***Firebricks*.** These are so named because of the resistance they offer to high temperatures. All bricks are heat resisting, but those having a fusing point less than 20,000º F would not be classed as firebricks. Their resistance depends upon the relative qualities of silica, alumina and iron oxide present in the clay.

7.4.3 The iron of oxides is prone to contraction within particular clay mixes and therefore the sand is often substituted for broken crucibles, old firebricks and glasshouse pots ground to a powder (Dobson 1850, 14). Part bricks are more difficult to allocate a category due to the width and thickness corresponding to more then one type. The majority of the brick assemblage falls within the above categories based upon a best-fit policy. Identification of a small proportion of examples from the assemblage was not possible due to abraded surfaces and size.

7.4.4 ***Standard bricks***. Where identified the complete non-fire bricks within the assemblage displayed dimensions ranging between 225-235mm x 108-110mm x 63mm-70mm and were comparable with bricks manufactured within the late 18th to mid-late 19th century (Lloyd 1925, 100). Sample 7 has a date range of between 1720-1750, suggesting re-use of earlier material. The part bricks were classified by adopting a best-fit policy based on surviving dimensions, fabrics and general characteristics. Although incomplete, they are consistent with the measurable dimensions of the complete examples within the assemblage.

7.4.5 Firebrick/industrial bricks were especially manufactured for use in blast furnaces (iron), open hearth furnaces (steel), coke ovens boilers rotary kilns and incinerators (Douglas & Oglethorpe 1993). They are made from fireclay in the same manufacturing process as ordinary bricks. By the turn of the 20th century there were several varieties in general use usually named after the area providing the fire clay. Three different fireclay fabrics were tentatively identified ranging between coarse and fine yellow/white fabrics.

7.5 Brick discussion

7.5.1 Dating of bricks is highly contentious due to their re-use nature as a valuable building commodity. The standardisation of bricks by Parliament over the centuries helped to create a more uniform brick and better architecture. However, it should be noted that although these statutes were binding with severe fines for those contravening, it would be naive to believe that all pre-mechanical brickmakers adhered strictly to these sizes at all times.

7.5.2 Six (54%) of the examined bricks bore evidence of mortar, either a hard dark grey (possibly fire clay) or a white, charcoal-flecked lime mortar. The evidence of re-used material was confined to sample 7, which displayed a smooth worn surface which may have resulted from its earlier incorporation within a floor or yard surface. The residual dimensions suggest an early to mid 18th-century date.

7.5.3 Samples 1 and 2 bore the residual elements of a manufacturer's stamp interpreted as J.W. BOURNE / CHURCH GRESLEY. Glover's commercial directory for Derbyshire in 1829 (Glover, 31) has an entry for a 'Joseph Bourne - coal master and earthenware manufacturer' in Church Gresley who had become a fire-brick maker by 1835. No entries were recorded under his name by 1846. Two further bricks also bore partial manufacturers' stamps of which sample 7 has been provisionally identified as possibly Walker of NOTTINGHAM/NOTTINGLEY, or WALKERINGHAM / NOTTINGHAM. The latter was the location of brick-maker Michael Atkinson operating in 1842. Sample 3 displayed the residual elements of a stamp possibly HUNCOAT. However, although such a company existed, it was a late 19th-century production and at the present time no other record has been found.

7.5.4 Sample 3 displayed the residual elements of a stamp, possibly HUNCOAT. Although such a company existed, it was a late 19th-century firm. At the present time no other record has been found. Sample 4 displayed two linear slots along its stretcher edges suggesting 'locking slots' for raised kiln floor surfaces. Sample 7 displayed a smooth upper stretcher surface suggesting a floor or yard surface, whilst sample 9 represented part of the kiln fabric with fire-clay bonding.

8.0 Discussion

8.1 The archaeological features encountered during the investigations at Sharpe's Pottery broadly conformed to the evidence of the historical and cartographic sources. The majority of anticipated features were present within the DA, although their preservation was incomplete.

8.2 The project uncovered the partial remains of three circular, multi-flued, coal-fired up-draught kilns. Kiln 1 was also the only example to comprise a separate hovel and firing chamber; Kilns 2 and 3, although revealed only in part, appeared to represent 'close-coupled' structures, in which the stack was constructed directly on top of the firing chamber. Up-draughts were heated via a series of fireboxes set into the circumference of the circular firing chamber. The base of each firebox was formed by several removable iron firebars, positioned laterally over an ash pit. A layer of refractory bricks was usually placed over these bars during firing, to provide a platform for the burning coal. Each firebox was connected to the 'med-feather' and side flues that ran beneath the firing chamber, which converged in a well hole that was positioned centrally within the chamber floor. A vertical flue also extended from each box, terminating in a refractory brick chimney or 'bag', set around the internal perimeter of the firing chamber. During firing, heat, smoke and gasses were drawn up and around the wares, which were stored in refractory containers called saggars, and out through the firing chamber via a series of vents in the crown, before finally discharging from the stack above. The vents were fitted with flaps or 'dampers' that could be opened and closed during firing to regulate the amount of draught in the chamber.

8.3 In contrast, down-draught kilns employed a more efficient system of heat distribution within the firing chamber. Rather than exiting up through the crown, heat instead was drawn back around the chamber and down through a series of vents in the floor that were

connected to a central well built into the kiln's foundations. This was in turn linked to a separate chimney that could serve one or more kilns. None of these characteristic features of the down draught type were observed within the kilns at Sharpe's Pottery, although, as stated above, Kilns 2 and 3 were not fully revealed.

8.4 It was not possible to conclusively establish if the excavated Sharpe's kilns were originally used for biscuit or glost firings (or both), or indeed if their designation changed over time. The excavation of numerous pottery kilns in Stoke-on-Trent has revealed that up-draughts shared a basic structural design that appears to have been largely unaffected by their precise function. As such it is difficult to distinguish between a biscuit and a glost kiln from archaeological remains alone. A possible source of assistance in determining function is provided by S. R. Hind, who, in 1937 (61-3), related the function of a pottery kiln to the internal diameter of its firing chamber. The internal diameter of the chamber of Kiln 1, the most complete of the examples excavated at Sharpe's, was approximately 4.60m, placing it within Hind's size range for an up-draught, earthenware glost kiln (Hind 1937, 63). This attribution is feasible and may add weight to speculation that, historically, the southern half of the works was the scene of glost production (see above, section **3.3.2**). Some caution regarding Hind's figures should be exercised, however, as a consistent correlation between his designations and the chamber diameters of kilns of known function has yet to be demonstrated. It is also probable that a variety of factors influenced kiln size, including as the overall scale of the individual factory's output, the total number of kilns within the works and perhaps even the date at which they were built.

8.4.1 Small quantities of ceramics were found amongst the ash-pit fills of Kiln 1, the majority of which were either glazed vessel sherds or items related to glost production, principally kiln furniture and glazed saggars. Although this material may again be evidential of the kiln's use in glost firing, its deposition within the ash pits post-dated the structure's active life and, consequently, cannot be presented as definitive proof of its function.

8.5 Kiln 1 was constructed upon a foundation known as a 'cork' (1028). This was a deposit of pre-fired material, typically brick, saggar, pottery sherds and sand that had passed through a biscuit firing, which was used beneath the brickwork of the firing chamber. Its purpose was to prevent the kiln from drawing moisture from the ground

during firing, with the desiccated material acting as a barrier between the two. This was an important constructional element, as any significant drying out and contraction of the earth around the kiln's foundations could lead to subsidence, resulting in damage to the flues (Sandeman 1921, 195). This foundation design appears to have been employed throughout the pottery industry from at least the early 1800s until the mid 20th century. Cork foundations have been observed in almost all up-draught kilns (down-draughts have a different foundation design) excavated in the north Staffordshire Potteries (see Forrester 2007, 8; Cramp & Goodwin 2009, 10), and have also been encountered in other ceramic-producing sites, such as the Lanwill Works, Brierley Hill (Nichol & Ratkai 2005) and the Denaby Pottery, South Yorkshire (Gregory 2004, 151). As such, Kiln 1 at Sharpe's Pottery fits comfortably into a regional and national pattern of pottery kiln design.

8.6 Pottery kilns underwent regular repair as a result of the thermal stresses they endured, particularly in those parts of the firing chamber exposed to the most intense heat. The structure had not only to deal with high temperatures for up 30 hours (Goodwin 2005, 49), but also cope with the inherent inefficiency of the up-draught model. It was estimated that during each firing the brick shell enclosing the kiln chamber would absorb 36.36% of the total heat generated by the fireboxes; the wares in comparison were subjected to only 11.34% (Hind 1937, 70). The damage that each firing inflicted upon the kiln structure, therefore, was great enough to necessitate frequent repairs and periodic rebuilding, typically limiting the commercial life of a kiln to approximately 20 years (Sandeman 1921, 200). Elements of Kiln 1 suggested that some degree of repair or rebuilding had been undertaken on the structure, but the nature and extent of this activity was unclear. The presence of brick feature (1026) within (1028) and its relationship with the basal course of kiln structure (1023) (see above, section **5.2.11**) are perplexing. The function of (1026) was obscure; its shape was somewhat reminiscent of the proximal end of an ash pit, although it lacked the robust construction typical of such features. Whatever the original purpose of (1026) it appeared to serve no obvious role within Kiln 1. Remnants of earlier fabric are commonly found incorporated within the foundations of pottery kilns (see Goodwin 2001, 7), but (1026) appears to post-date at least the lower course of (1023), which constituted the inner brickwork of Kiln 1. It seems, therefore, that (1026) represented a repair or modification of Kiln 1, which may also have necessitated the partial relaying of (1023). Brick samples from the upper course of (1023) (nos. 1-3) and (1026) (9) have been dated to the first half of the 19th century; two from (1023) (1 and 2)

belong to the period *c*.1829-*c*.1840 and the example from (1026) dates to *c*.1850. Despite the shortcomings already noted for utilising bricks as dating evidence (see above, section **7.3.2**), these examples at least raise the possibility that the introduction of (1026) and changes to (1023) could have occurred contemporaneously at some point around *c*.1850. A brick sample (8) taken from ash-pit 1 (1017) is of a similar date and could suggest that these changes formed part of a more significant alteration or even wholesale rebuilding of Kiln 1, rather than a localised repair. Although this provides a potential context for the introduction of (1026), its original function remains enigmatic.

8.6.1 Other elements of Kiln 1 appeared to represent later alteration and/or repair. A brick sample (11) from Kiln 1's outer brickwork (1016) has been dated to *c*.1880, whereas another (7) recovered from the same part of the kiln is much older, dating from the period *c*.1720-*c*.1750, and representing a somewhat surprising addition to the kiln structure.

8.6.2 Brick samples taken from the hovel wall (1013) (4 & 5) and floor (1008) (6), can again be placed within the first half of the 19th century. This may indicate that the hovel fabric belonged to the original phase of the kiln's life, or could at the very least date to the same mid 19th-century period of alteration or rebuilding potentially evidenced by part of (1023), (1026) and (1017). The relationship between the hovel wall and the remains of the firing chamber of Kiln 1 was interesting, as the latter was situated eccentrically to the former. This arrangement initially suggested that the hovel and the firing chamber may not have operated contemporaneously, as the positioning of the two elements would have created a very narrow space between the southern edge of the chamber and the hovel wall. Further excavation, however, seemed to suggest that the two did function together and no conclusive evidence of any other hovel or kiln structures was located within the area of Kiln 1. The reasons for this odd positioning of hovel and firing chamber are elusive, although excavations within the extant northern hovel revealed potential evidence of a similar arrangement (Parry & Hayward 1999, 3). As these two kilns were probably the first to be constructed within the works, the possibility that both were characterised by off-set firing chambers is interesting. Presumably, the initial component of each kiln to be constructed first, would have dictated the positioning of the second element. Unfortunately not enough is known about the sequence in which kilns and hovels were built to determine which this was, but is it possible that the siting of the initial element of each kiln led to this unusual relationship between the two parts? If so, was there a site

constraint common to the locations of both kilns that contributed to their eventual positioning? Space certainly does not seem to have been a factor; historical map evidence appears to show that over 30 years after the kiln's construction much of the site remained undeveloped (Fig. 3).

8.7 Kiln 1 appears to have been demolished by 1901 at the very latest (Fig. 6). As discussed above (section **8.6.1**), evidence from the fabric of the kiln would suggest that it was still standing and being repaired in *c.*1880. Ash-pit fills (1018), (1020) and (1022) represent deposits that are likely to post-date the kiln's active life, but unfortunately, these contained only a small quantity of datable pottery sherds, the majority of which can be assigned a general date of the late 19th century, with some additional residual material. The pottery recovered from (504), the floor levelling layer for the adjacent Structure 2 (a building that almost certainly belonged to a phase of development which commenced after Kiln 1 had gone) can be dated more precisely to the late 1880s or 1890s. The depiction of the factory on the 1883 OS map, however, generates some doubt regarding the end of the kiln's life and what may have replaced it.

8.7.1 The structure thought to represent Kiln 1 is clearly depicted on the 1873 plan of the site (Fig. 4), but in 1883, a much smaller circular structure is shown in its approximate position (Fig. 5). A circular structure of identical size is also shown in the position of Kiln 3 on the 1883 OS edition. The probable muffle kiln, first shown to the north of Kiln 1 in 1856, appears on the 1883 OS map and, despite being considerably smaller than Kilns 1 and 3 on the 1873 plan, is of comparable size on the later map. The original northernmost kiln is also shown unchanged from the 1873 plan, as is the example situated to the south east. What exactly is the 1883 OS map depicting? Although too little was revealed of Kiln 3 during the project to comment conclusively on its size and nature, Kiln 1 was comprehensively investigated and did not correlate with the structure shown in its place in 1883. Unlike Kiln 1, the kiln illustrated on the 1883 OS map appears too small to have incorporated a hovel. Even if the possibility is entertained that the 1883 OS map shows the firing chamber of Kiln 1 without its hovel, perhaps as some sort of close-coupled modification, the diameters of the two structures still do not appear to match. The 1883 kiln looks to be comparable in size to the probable muffle shown to the north, the diameter of which was recorded during its excavation in 2006 as approximately 4.5m (Jones 2006, 7). Assuming that the diameter of the kiln shown in 1883 is similar to this, it

cannot represent the excavated remains of Kiln 1, as the firing chamber of this structure alone was *c*.6.50m in diameter. It is clear then, that the 1883 OS map either does not show Kiln 1 accurately, or illustrates a different kiln altogether. Neither possibility can be proved; if the former is true, no explanation presents itself for the method chosen to map Kiln 1. If on the other hand the latter option is more likely, then, by 1883, Kiln 1 had been demolished to be replaced by a structure of which no trace remained on site by the time of the recent project.

8.8 Some idea of the trade networks utilised by the factory can be gleaned from the material recovered from site. Rockingham vessels with the moulded design 'Rebekah at the Well' are known to have been supplied to the North American market from the mid 19th century onwards. That wares with this scene were produced by Sharpe's is evidenced by a Rockingham sherd from (504) and, as such, it is likely that the firm were engaged in this important overseas trade. Another Rockingham sherd from (504) has a moulded mark that may well match one found in Hawaii, potentially highlighting another international market supplied by Sharpe's. Contact with the north Staffordshire Potteries is revealed by examples of kiln furniture manufactured in Fenton and Burslem (see above **6.3.27**).

8.8.1 Firebricks stamped with manufacturers' marks indicate that local, regional and national sources were utilised for the supply of refractory building materials, with the most distant producer located in Accringtion, some 110km from Swadlincote. It was not unusual for pottery manufacturers to source firebricks from non-local sources; although Stoke-on-Trent made use of the readily-accessible, substantial fireclay industries of Stourbridge, local pottery manufacturers also obtained refractory bricks from as far afield as Scotland (Cramp & Goodwin 2009, 9). Improved transportation networks facilitated the movement of goods; by the early 19th century, Swadlincote was connected to a system of turnpike roads and in 1849 was served by a rail connection (Stroud 1999, 7).

9.0 Conclusions

9.1 Despite the global prominence of the region's pottery industry during the 19th century, south Derbyshire is one of the least studied areas of ceramic manufacture (Campion 2006, 251). The recent programme of excavation and monitoring carried out at Sharpe's Pottery has sought to address this situation, although its scope was limited to the examination of a small part of just one of the area's pottery manufactories. The project, therefore, is best

seen as a starting point for the systematic archaeological investigation of the south Derbyshire industry. It has successfully generated information regarding the pottery kilns used on site and related the construction method employed on at least one of these examples to that utilised in other potting centres. Although a determination of the precise function of the kilns was not possible from the archaeological remains alone, their discovery has at least prompted a discussion of the limits of such evidence and the value of supporting sources. Furthermore, ceramic material recovered from Sharpe's has, for the first time, been subject to detailed archaeological assessment, providing an insight into the factory's repertoire and markets, and highlighting the need for the further study of its products.

9.2 It is important that the results of the Sharpe's project are disseminated to a wide audience. This will be achieved in the first instance by a forthcoming paper in the *Derbyshire Archaeological Journal*.

10.0 Acknowledgements

10.1 Fieldwork was undertaken by Heather Anne Cope, Richard Cramp, Joe Perry, Peter Stuart and Zoë Sutherland of SOTARCH. This report was written by Richard Cramp and Jonathan Goodwin, with illustrations by Alison Nicholls. The project was managed by Jonathan Goodwin. Pottery finds were identified by Dr. David Barker and ceramic building materials by John Tibbles. Thanks are also extended to Steve Baker, Development Control Archaeologist, Derbyshire County Council; Philip Heath, Heritage and Conservation Officer, South Derbyshire District Council; Emma Fyffe and Paul Patten of Sharpe's Pottery & Heritage Trust; and CW Plant Hire Ltd. for their valuable assistance and co-operation during the project.

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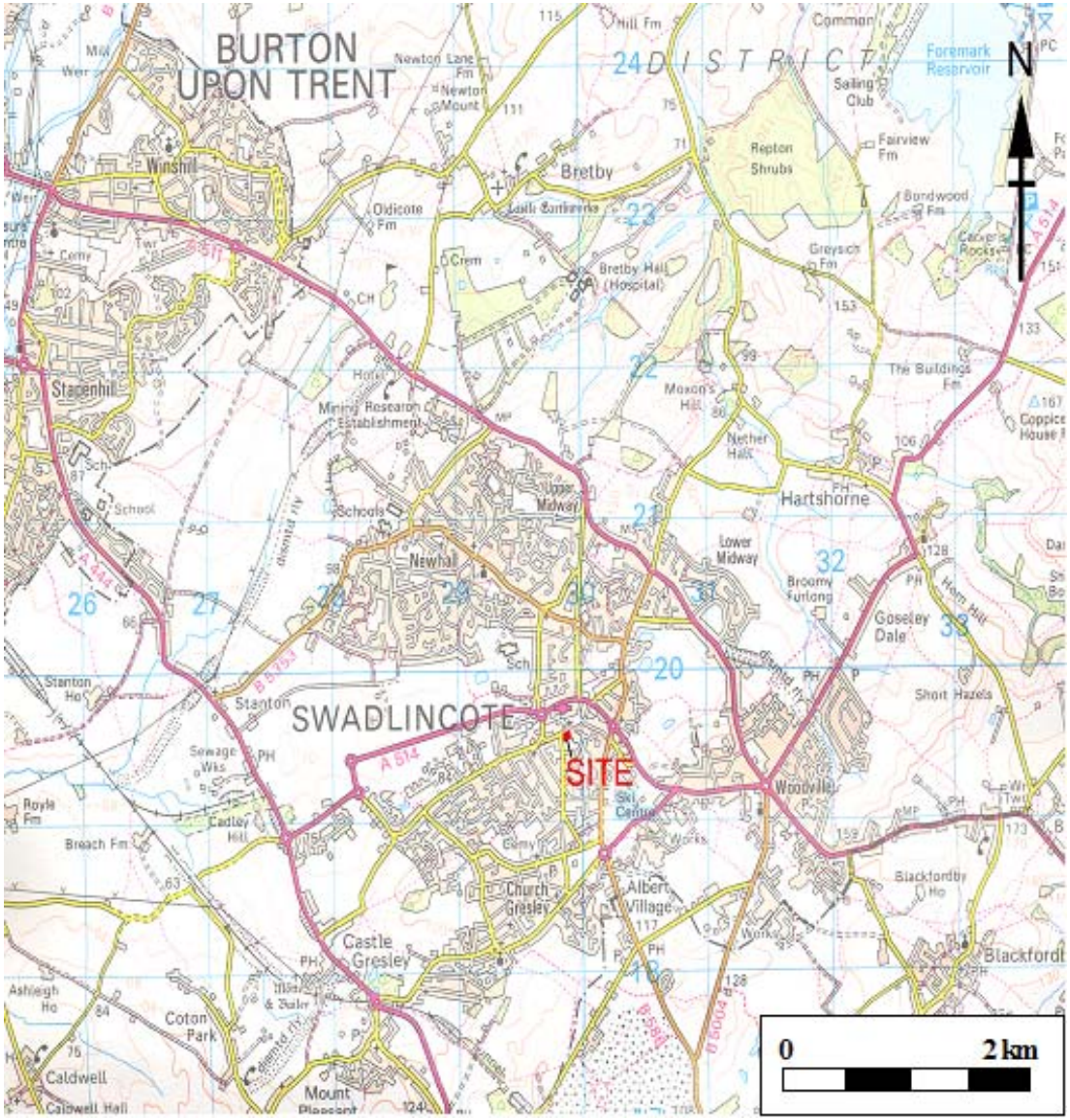

FIG. 1

Site location

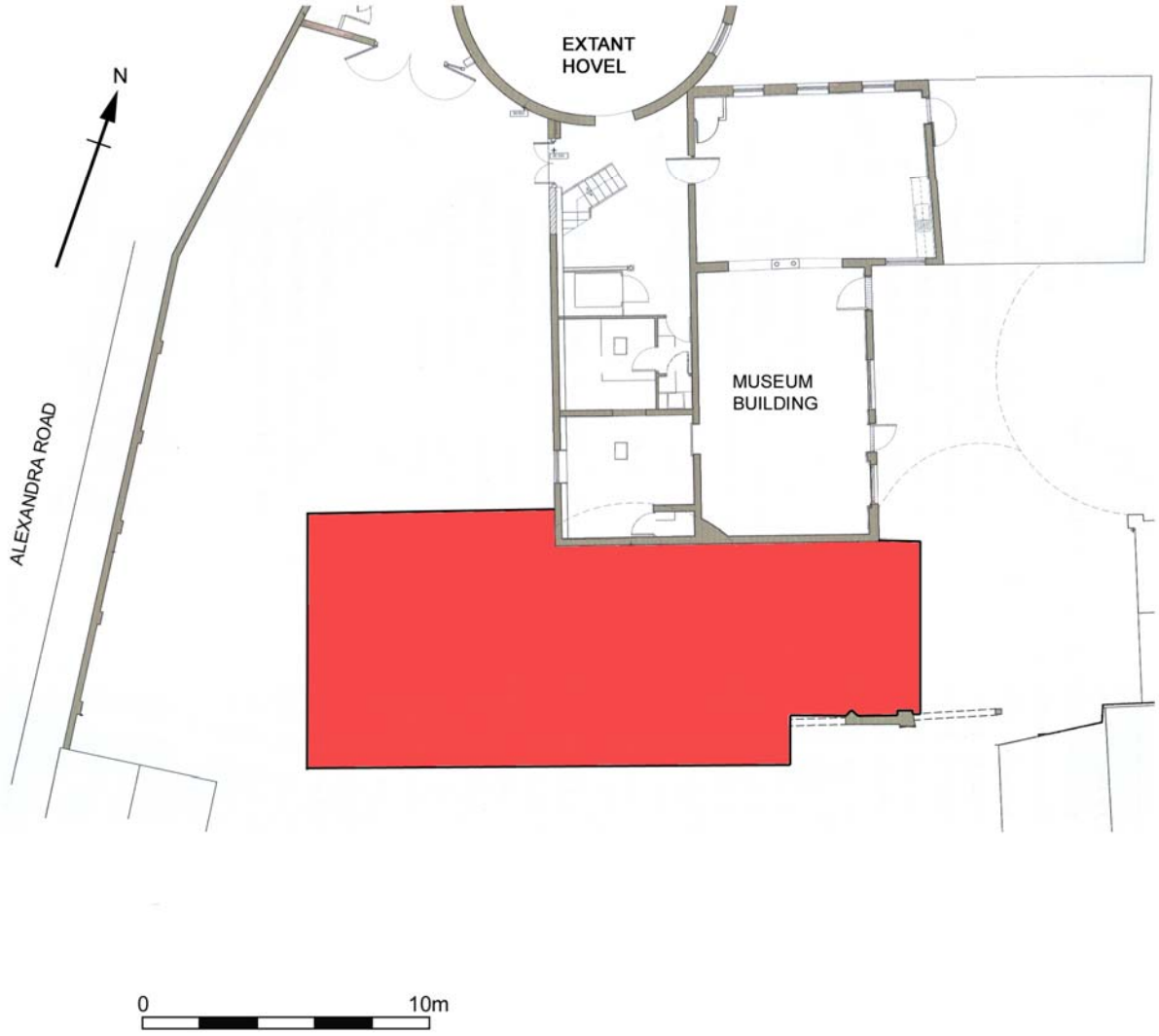

FIG. 2

Plan of Sharpe's Pottery showing the development area (marked in red).

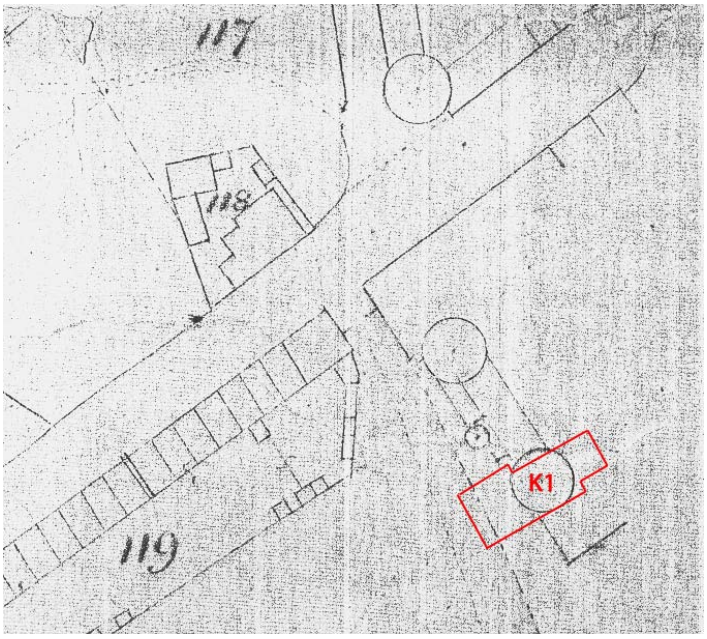

FIG. 3

Extract from a plan of 1856 showing Sharpe's Pottery (the approximate location of the development area is outlined in red and excavated Kiln 1 is also marked).

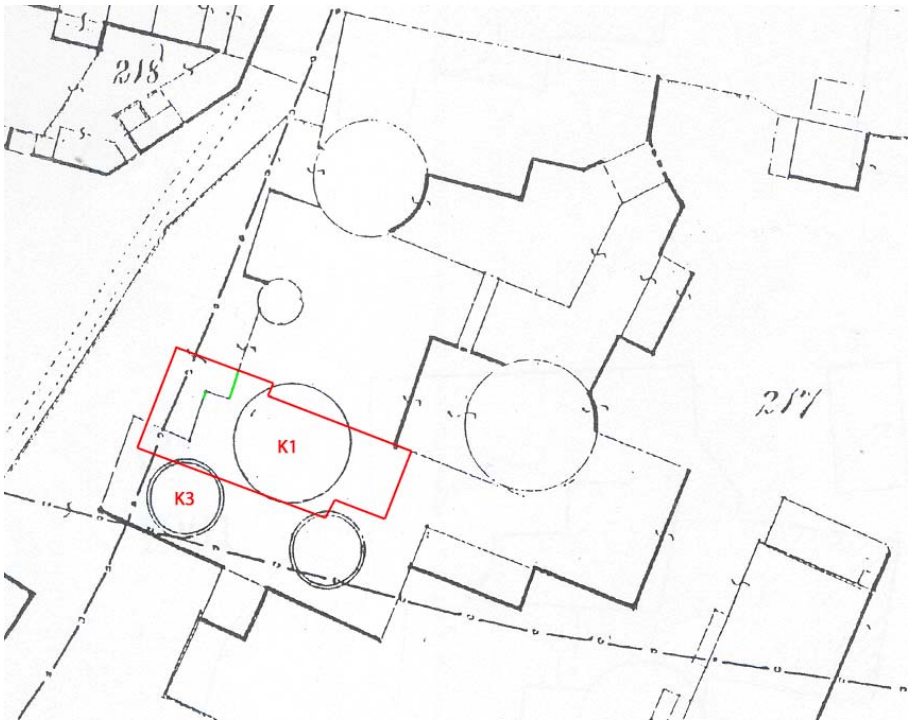

FIG. 4

Extract from Swadlincote Local Board District map 1873 showing Sharpe's Pottery. The approximate location of the development area is outlined in red. Excavated Kilns 1 and 3 are also marked. Probable elements of Structure 1 are indicated in green.

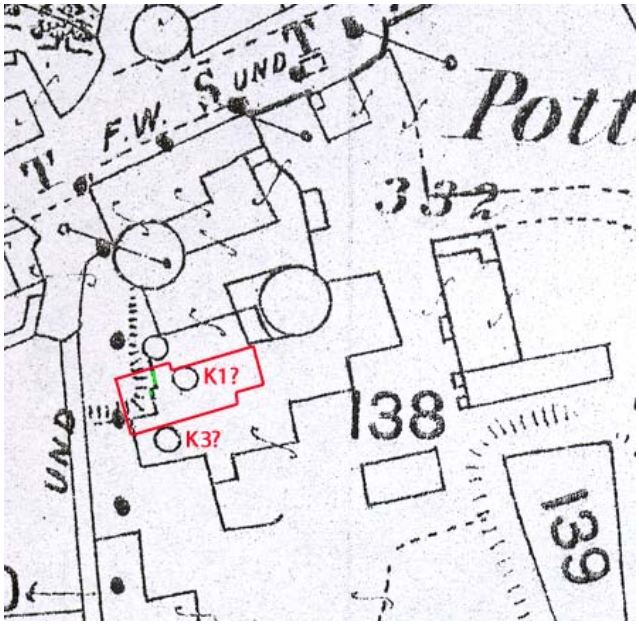

FIG. 5

Extract from the 1883 Ordnance Survey map showing Sharpe's Pottery. The approximate position of the development area is outlined in red. The structures that possibly represent Kilns 1 and 3 are also marked and probable elements of Structure 1 are highlighted in green.

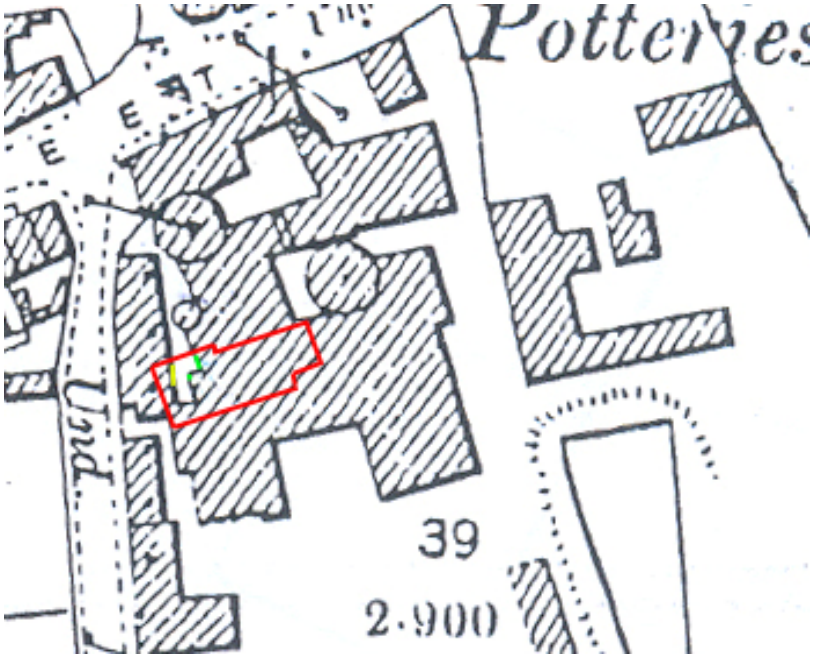

FIG. 6

Extract from the 1901 Ordnance Survey map showing Sharpe's Pottery. The approximate position of the development area is outlined in red. Probable elements of Structure 1 are highlighted in green and Structure 2 in yellow.

FIG. 7

Plan of Sharpe's pottery showing existing (in 2010) and demolished structures (adapted from Heath 1999, 26). The alpha-numerical building labels relate to the table presented in Table 1.

Building/kiln	Function	Date function applied
A	Office (Heath 1999, 20; Meeson 1999, 10).	Late 19th century +
B	Ground-floor pressing shop; first-floor biscuit store; clay store in cellar (Heath 1999, 20; Meeson 1999, 10).	19th/20th century? Cellar backfilled in 1960 (Meeson 1999, 10).
C	Biscuit kiln? (Heath 1999, 29)	*c*.1821-*c*.1860s?
	Warehouse (Heath 2004, 7)	*c*.1860s-*c*.1960s?
D1 & D2	Pressing shop, storage, mess room (Heath 1999, 21).	Late 19th century+?
D3	Joiner's Shop (Heath 1999, 21)	20th century.
D4	Saggar house and biscuit warehouse (Heath 1999, 22)	Late 19th century+?
D5	Biscuit kiln (Heath 1999, 22)	Late 19th-1950s.
D6 (excavated kiln 2)	Glost kiln (Heath 1999, 22)	*c*.1930-1950s.
F	Ground-floor saggar store; first- and second-floor biscuit store (Heath 1999, 23).	Late 19th century+?
	First-floor transfer shop; second-floor transfer production (Meeson 1999, 10).	19th/20th century?
G	Ground-floor dipping house and spraying shop; first-floor printing shop; second-floor biscuit store (linked with F) (Heath 1999, 23).	Late 19th century+?
H	Workshop (Heath 1999, 20)	Early 19th century
	Dipping house (Meeson 1999, 10)	19th century?
	Glost warehouse (Heath 1999, 20)	19th/20th century?
I	Warehouse – finished goods (Heath 1999, 23). Replaced earlier building (present on site by 1900) of unknown function.	20th century.
J	Mould shop (Heath 1999, 23; Meeson 1999, 10).	1883-1901 – 1960s.
K	Saggar house (Heath 1999, 24; Meeson 1999, 10).	1873+?
L	Electric glost kiln building. Erected in 1950s to replace earlier glost kiln (Heath 1999, 24).	1955-6+
M & N	Cane shops, with pressing and casting facilities (Heath 1999, 24).	1873-1901+?
O	Cane slip house.	Late 19th century+?
P & S	Modern buildings - function unknown	1982+
Q	Whiteware shop, including clay store and adjacent slip house (Heath 1999, 24; Meeson 1999, 11).	1924-1965?
R	Chimney (Heath 1999, 25).	Late 19th century+
Excavated kiln 1	Glost kiln? (Heath 1999, 29).	*c*.1821-1890s?
Excavated kiln 3	Glost kiln (Heath 1999, 28).	c.1873-1950s?

TABLE 1

Key to Fig. 7, outlining known and/or speculated functions of buildings at Sharpe's Pottery.

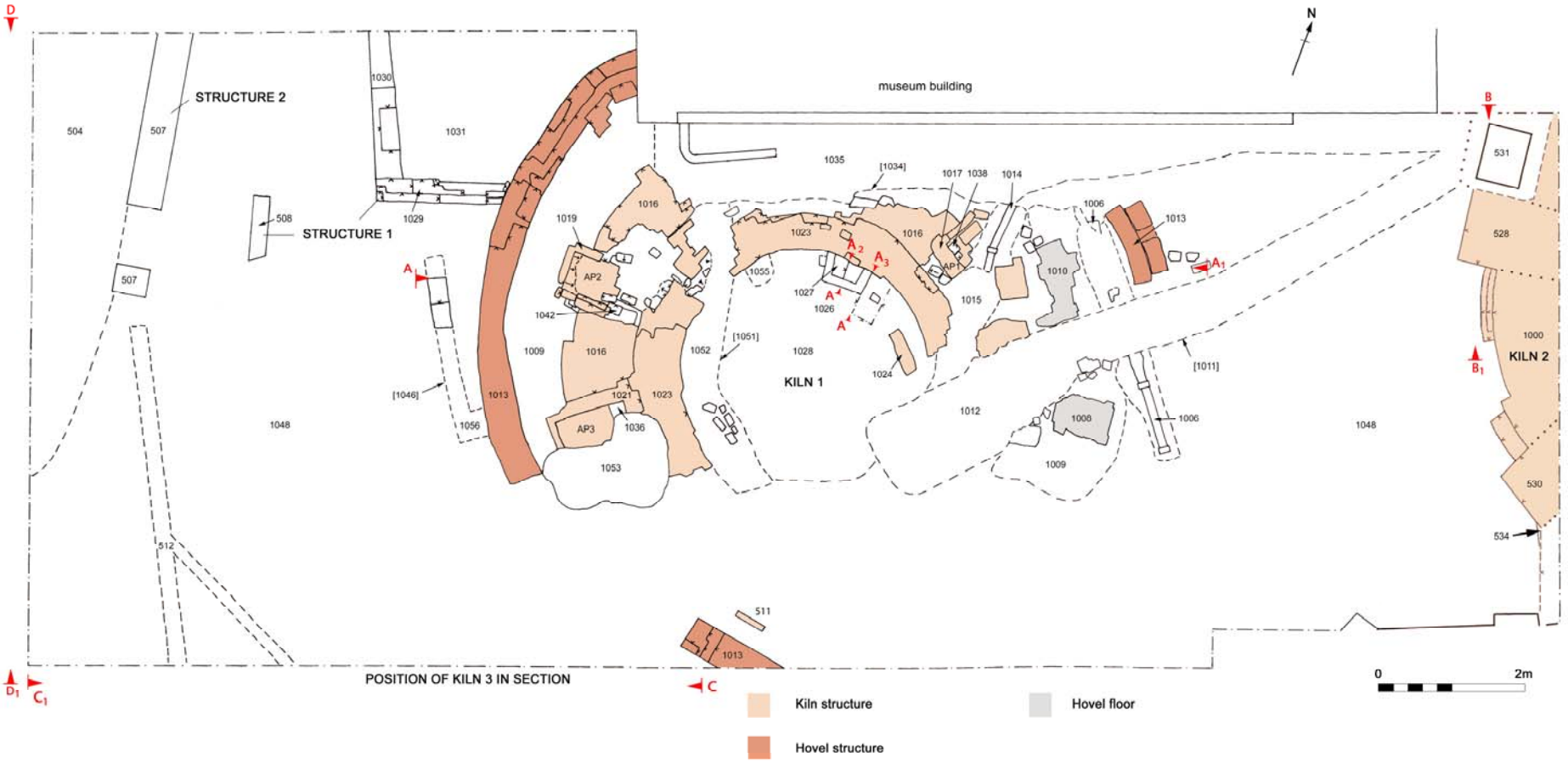

FIG. 8

Post-excavation plan of the development area showing archaeological structures and features.

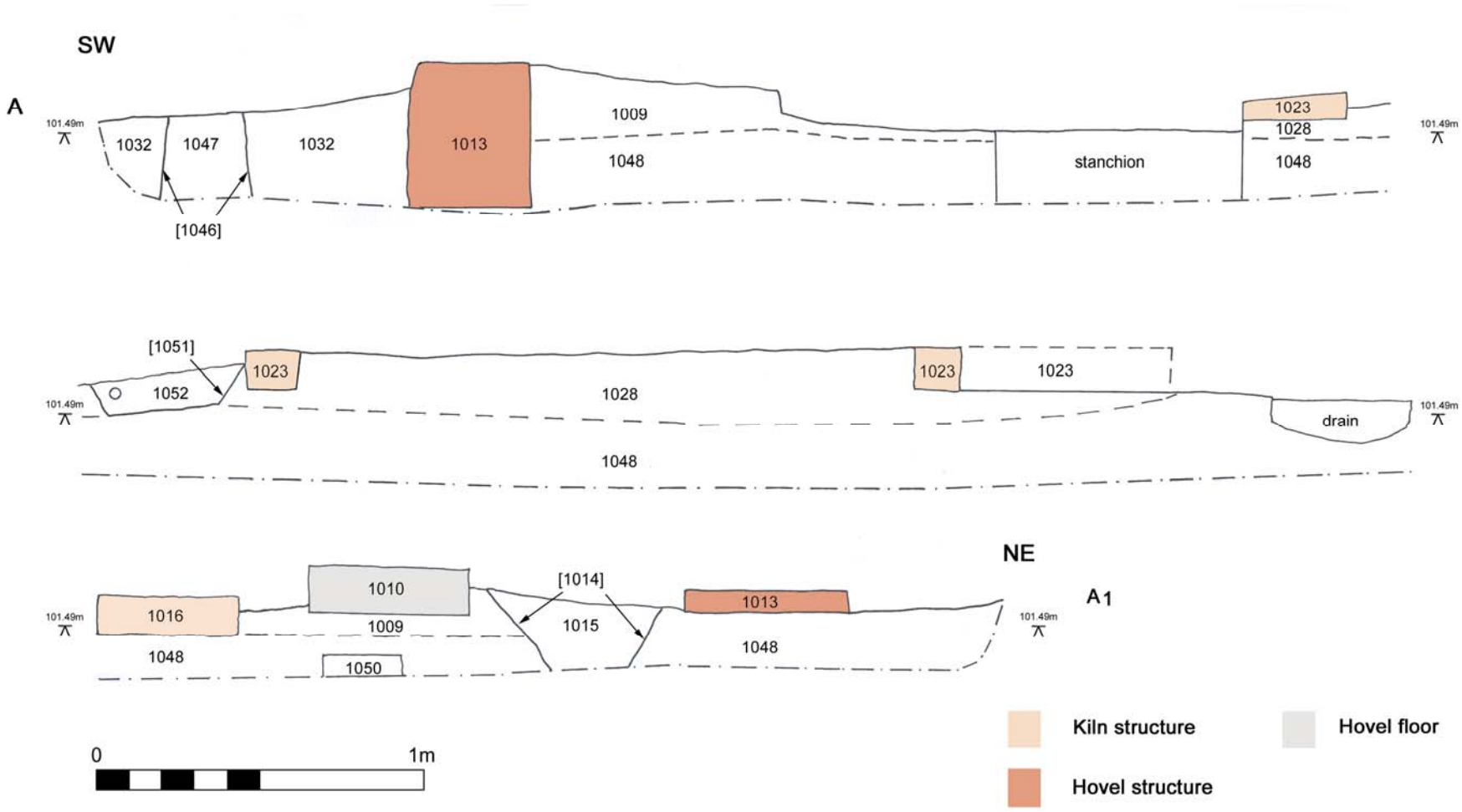

FIG. 9

South-east-facing section through Kiln 1 (section A-A_1).

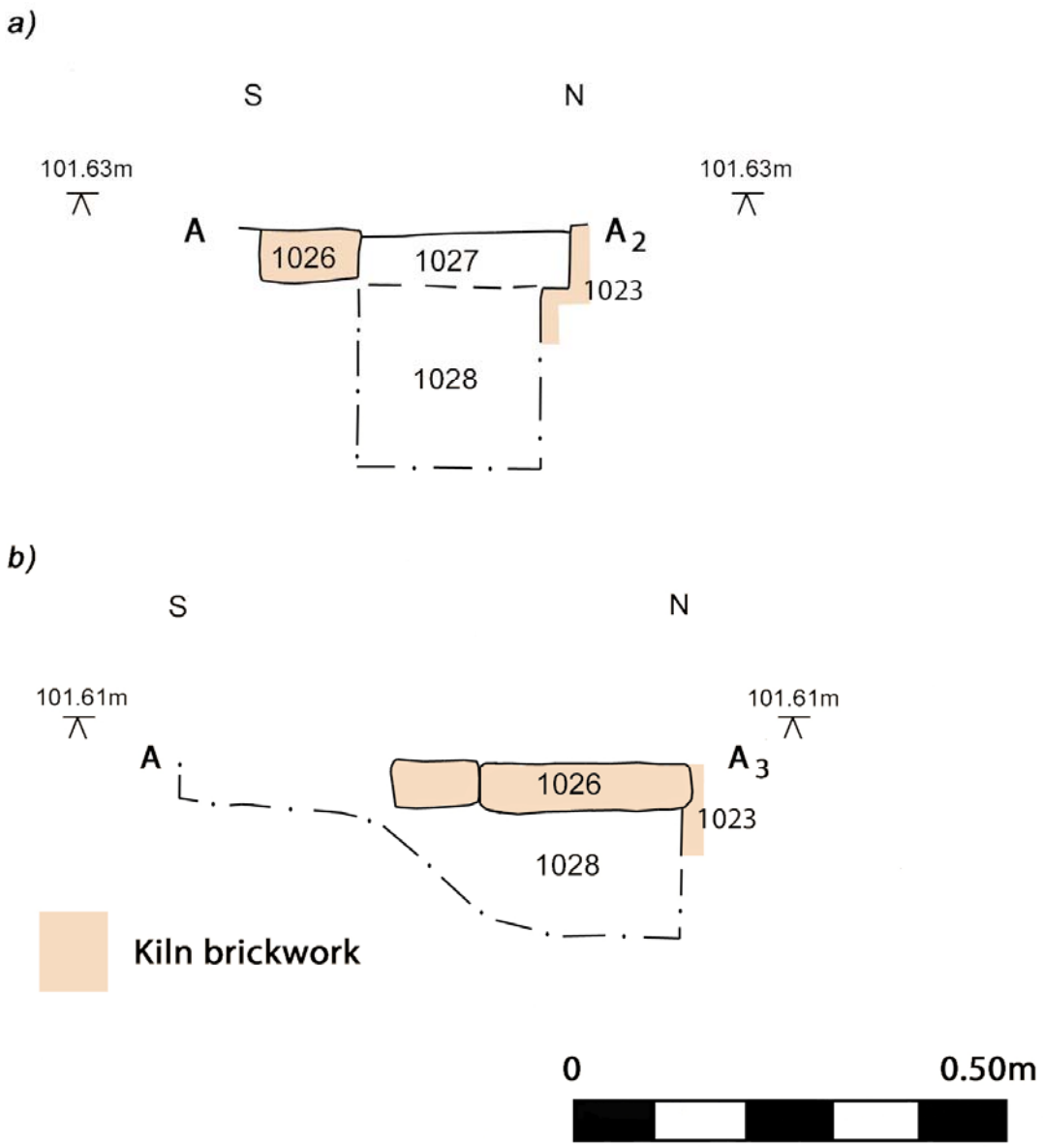

FIG. 10

a) East-facing section through (1026) (section A-A_2) *b*) East-facing section through sondage adjacent to (1026) (section A-A_3).

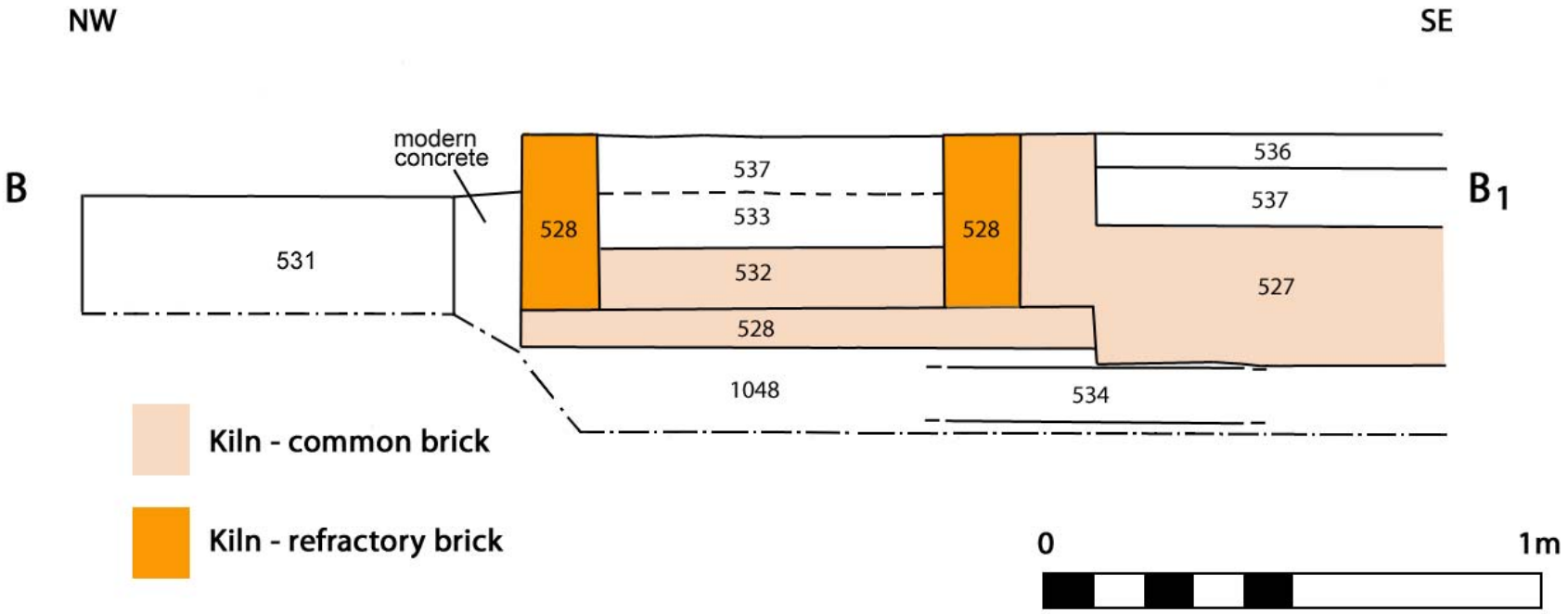

FIG. 11

South-west-facing sketch section of Kiln 2, showing ash pit (section B-B_1).

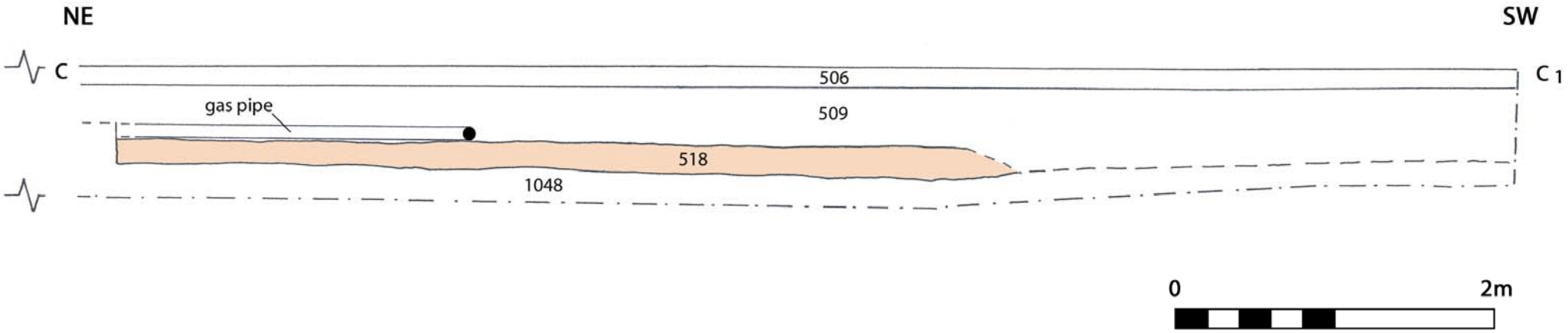

FIG. 12

Sketch of north-west-facing trench section, western end (section C-C_1), showing remains of Kiln 3.

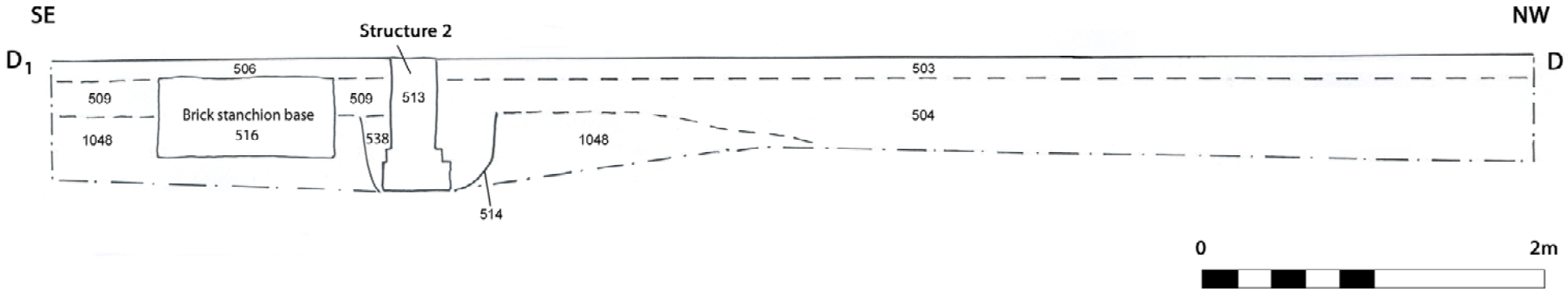

FIG. 13

Sketch of north-east-facing trench section (section D-D_1), showing remains of Structure 2 and deposit (504).

PLATE 1

View of central section of Kiln 1, looking south (scales: 1.0m).

PLATE 2

General view of Kiln 1, looking south west (scales: 1.0m, 2.0m). Hovel wall (1013) and floor fragments (1008) and (1010) are visible in the foreground.

PLATE 3

General view of Kiln 1, looking east, with hovel wall (1013) in foreground (scales: 1.0m, 2.0m).

PLATE 4

Post-excavation view of ash pit 2 (1019), looking east (scale: 0.5m). The secondary brick lining (1042) can be seen in the top right corner of the pit.

PLATE 5

Detail of *in-situ* firebrick within upper course of (1023) (scale: 0.10m).

PLATE 6

Brick feature (1026) (scale: 0.25m)

PLATE 7

Stump of hovel wall (1013) revealed on the southern edge of the development area, looking north (scale: 1.0m). A small fragment of possible ash pit (511) can be seen to the left of the hovel wall.

PLATE 8

Kiln 2, looking north (scale: 1.0m).

PLATE 9

The ash pit (528) of Kiln 2, looking south east (scale: 1.0m).

PLATE 10

Probable remains of Kiln 3 (518) in north-west-facing trench section, cut into natural clay (1048) (scales: 1.0m).

PLATE 11

Part of Structure 1, looking east. Walls (1029) and (1030) enclose brick floor surface (1031) (scales: 0.50m, 1.0m, 2.0m).

PLATE 12

Wall (507) of Structure 2 during reduction of levels, looking south east. Drain (512) can be seen on the right-hand side of the image.

PLATE 13

Relief-moulded depiction of ears of corn on the base sherd of a glazed yellow ware jug from (504).

PLATE 14

Rim sherds from (504), representing five separate glazed yellow ware bowls, decorated with slip bands in white, dark brown and blue.

PLATE 15

Rim of a glazed Rockingham ware teapot from (504) depicting the head of a Chinese gentleman.

PLATE 16

Rockingham sherd from (504) with moulded design 'Rebekah at the Well'.

PLATE 17

Spout from a Rockingham ware teapot from (504), with an eagle's head at the pouring end.

PLATE 18

Rockingham ware teapot covers, some with relief-moulded decoration from (504).

PLATE 19

Impressed marks on the bases of Rockingham ware teapots from (504).

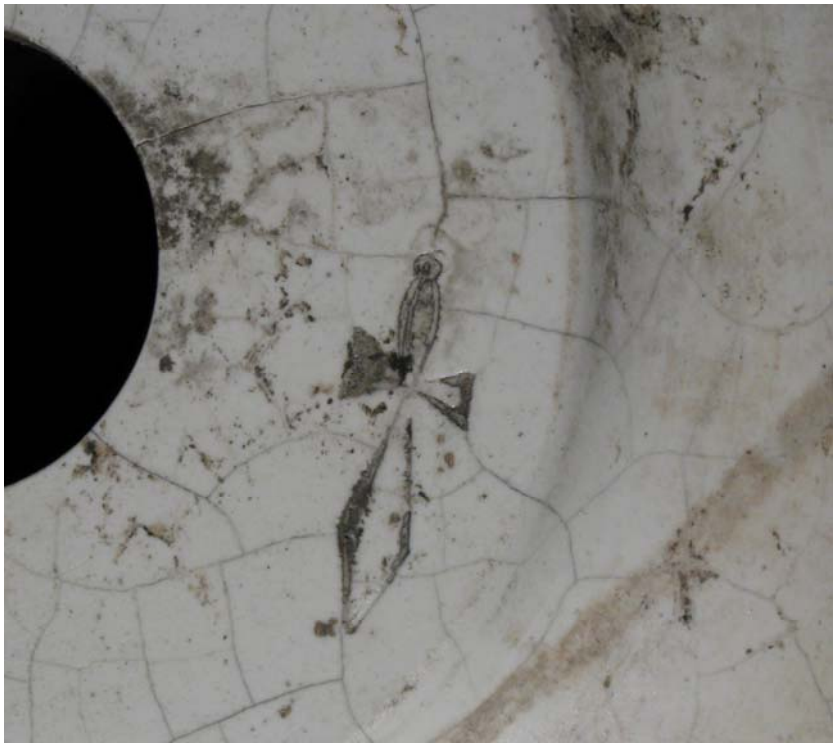

PLATE 20

Unidentified impressed sword device on a sherd of white-glazed sanitary ware from (504).

PLATE 21

Stilts from (504) manufactured by Thomas Arrowsmith & Sons of Stoke-on-Trent.

PLATE 22

Example of blistered glaze on Rockingham ware teapot sherd from (504).

Appendix 1: Context register for Sharpe's Pottery

Trench	Context	Description	Dimensions
Watching brief	500	Light grey sandy gravel surface above (501) and (502)	0.09m (min) – 0.92m (max) thick
	501	Dark sandy clay to E of wall C below (500) and above (502)	0.24m thick
	502	Natural yellowish brown clay, below (500), (501), (503) and (504)	0.30m
	503	Brick surface E and W sides of excavation, above (504), (501) and (502)	0.11m thick
	504	Layer dark gritty ash containing frequent pottery fragments, W end of trench wall A	0.39m thick
	505	Cut for drain filled with brick rubble	*c.*4.0m (min) x 0.40m wide
	506	Concrete in SW corner of trench	0.11m thick
	507	Brick walls A and B, probably a single structure	Total length 3.69m (including gap)
	508	Brick wall C aligned N-S	
	509	Layer of dark brown silty ash	0.42m thick

Trench	Context	Description	Dimensions
Watching brief	510	Red brick wall aligned NW-SE butted by (509)	1.30m x 0.46m x 0.32m high
	511	Short row of headers on same NW-SE alignment as (510)	0.37m x 0.09m
	512	Linear feature aligned NW-SE contains broken ceramic pipe and black silty fill	0.15m x 1.55m
	513	Brick wall aligned E-W, above (502)	0.63m x 0.24m
	514	Cut on N side wall (513), straight-sides, flat bottom	0.34m x 0.36m
	515	Dark brown gritty silt and ash fill of [514]	
	516	Brick stanchion base for steel I-beam, above (502), below (506), butted by (509)	0.47m x 1.03m
	517	Layer reddish brick and sand, below (509), above (502) E-W aligned gas pipe sits directly above	0.13m thick
	518	Brick structure, possible hovel wall - not (510), cut into (502), butted by (517)	0.64m x 0.13m high
	519	Gravel-filled drain aligned NE-SW cutting (502)	
	520	Layer mid-brown clay	0.05m thick

Trench	Context	Description	Dimensions
Watching brief	521	Layer grey/black sticky clay	7.65m long x 0.32m thick
	522	Brick wall surviving to 4 courses	
	523	Brick-built drain	0.20m x 0.50m
	524	Cut for drain (523)	0.50m wide
	525	Fill of [524]	
	526	Natural yellow/grey clay containing some stone	
	527	Structure, east kiln no.4, to max 6 courses brick, lower 2 courses stepped, above ceramic drain-pipe (534), bonded with (528) & (530)	0.48m high
	528	Structure, ash pit W side kiln no.4, bonded to (527)	0.48m x 0.73m x 0.25m
	529	Structure, stepped foundation for (527)	0.11m x 0.52m x 0.04 min. -0.28m max.
	530	Structure, ash pit bonded with (527) and (529)	0.85m min. x 0.49m min. x 0.33m
	531	Red brick manhole/inspection chamber cut into natural	0.66m x 0.50m x 1.09m

Trench	Context	Description	Dimensions
Watching brief	532	Bricks on edge laid in base of ash pit, possible reduction to ash pit (528) depth	0.60m x 0.12m
	533	Fill of ash pit (528), black gritty ash	0.60m x 0.11m
	534	Ceramic drainpipe aligned N-S, underlying (527)	
	535	Mixed brown clay loam and brick rubble at E end of trench	0.40m thick
	536	Red brick surfacing overlying (537) at E end of trench	0.08m thick
	537	Layer of sand within ash pit (528) underlying (536) and above (533)	0.11m thick
	538	Fill of grey ashy loam and brick and angular sandstone within [514] on S side of (513)	
Trench 1	1000	Reddish-blue brick surface butted by (1001) at E end of trench	4.56m x 0.08m thick
	1001	Layer of angular stone gravel between brick surfaces (1000) and (1002)	9.75m x 4.54m x 0.15m thick
	1002	Orange-red brick surface butted by (1001) and (1004) over W end trench	6.57m x 3.35m x 0.08m thick
	1003	Layer of concrete patching SE corner brick surface (1002)	1.10m x 0.90m x 0.10m thick

Trench	Context	Description	Dimensions
Trench 1	1004	Concrete surface W side excavation area butting (1002)	0.10m thick
	1005	Layer of compact black ash below (1002)	6.57m x 3.35m x 0.05m thick
	1006	Ceramic waste pipe aligned N-S below (1005) cuts (1004)	3.20m x 0.25m x 0.13m diameter
	1007	Layer firm yellow clay with mixed rubble below (1005) cut by [1006] E end of trench	3.70m x 2.60m
	1008	Red/grey brick structure cut by [1011] above (1009) aligned E-W possible hovel floor	0.99m x 0.98m x 0.06m thick
	1009	Layer of grey-black ashy sand below (1008)	0.04m thick
	1010	Blue brick structure below (1005) above (1009) possible part of hovel floor	1.19m x 0.57m x 0.04m thick
	1011	Linear cut for drain aligned approx. E-W cuts (1006), (1007), (1008), (1009), (1010), (1013), (1016), (1023) and (1028), filled by (1012)	5.00m x 0.95m
	1012	Gravel fill of [1011] aligned approx. E-W	5.00m x 0.95m
	1013	Red brick hovel wall below (1005), above [1006], cut by [1011]	4.98m x 0.47m x 0.35m height
	1014	Ceramic brown salt-glazed pipe aligned E-W cut by [1011] and [1034], cuts (1016)	0.46m min. x 0.12m

Trench	Context	Description	Dimensions
Trench 1	1015	Layer sand with brick fragments overlying [1014]	2.47m x 0.49m
	1016	Red brick outer wall of kiln, positioned between ash pits, truncated by [1014], [1011] and [1034]	1.00m x 0.15m (min) height
	1017	Brick built ash pit 1, constructed in yellow brick headers cut by [1014] and [1034] bonded with (1016)	0.89m x 0.59m x 0.13m deep
	1018	Light brown sand containing ash and brick rubble fill of ash pit 1 (1017)	0.26m x 0.24m x 0.12m deep
	1019	Brick built ash pit 2, constructed in yellowish bricks with sloping floor, bonded with (1041)	1.02m x 0.53m x 0.12m
	1020	Grey-brown sandy-ash containing fragments of saggar and brick, fill of ash pit 2 (1019)	0.82m x 0.53m x 0.12m (max)/0.09m (min) deep
	1021	Brick built ash pit 3, bonded with (1037) truncated by concrete stanchion base (1053)	1.32m x 0.75m x 0.14m deep
	1022	Grey-yellow gritty sand containing brick, stone and saggar, fill of ash pit 3 (1021)	0.96m x 0.32m x 0.13m deep
	1023	Brick built inner wall of kiln cut by [1014] and (1007)	0.71m x 4.34m diameter x 0.13m height
	1024	Rectangular brick structure	0.58m x 0.21m (as revealed)
	1025	Equivalent to (1028)	

Trench	Context	Description	Dimensions
Trench 1	1026	'U'-shaped brick structure	0.57m x 0.35m x 0.07m deep
	1027	Purple/red sand containing vitrified material, fill of (1026)	0.36m x 0.24m x 0.07m
	1028	Layer of red/orange sand containing occasional kiln furniture, kiln cork	2.49m diameter
	1029	Brick wall aligned E-W bonded with (1030) and (1031), butts (1013), above (1049)	1.69m x 0.37m x 0.40m height
	1030	Brick wall aligned N-S bonded with (1029) and (1031)	2.00m x 0.38m x 0.12m deep
	1031	Brick surface NW corner of trench bonded with (1013), (1029) and (1030)	3.35m x 2.00m
	1032	Layer of light grey silty ash with band of yellow clay on N-S alignment at W end of trench. Above (1048).	3.26m x 0.82m x 0.10m thick
	1033	Water pipe aligned E-W against N section of trench below (1035)	2.43m x 0.10m (as revealed)
	1034	Linear cut aligned E-W for pipe (1033) contains (1035) and cuts (1016), (1017), (1014), (1015), [1011], (1012) and (1013)	7.41m
	1035	Gravel fill of [1034]	7.41m x 0.98m
	1036	Brick layer in ash pit 3, below (1022), above (1037), butts (1021)	0.22m x 0.19m x 0.14m thick

Trench	Context	Description	Dimensions
Trench 1	1037	Brick base of ash pit 3 (1021)	0.88m x 0.54m (as revealed)
	1038	Layer of bricks below (1018) in ash pit 1, same as (1036) and (1038)	0.25m x 0.22m x 0.13m thick
	1039	Layer of yellow bricks arranged in L-shape overlying (1017), floor of ash pit 1	0.55m x 0.45m
	1040	Equivalent to (1028)	
	1041	Brick built floor of ash pit 2 (1019) sloping up to W	0.80m x 0.54m x 0.08m thick
	1042	Yellowish brick laid over E end floor (1041) of ash pit 2 (1019)	0.47m x 0.23m x 0.08m thick
	1043	Number Deleted	
	1044	Equivalent to (1027)	
	1045	Linear brick structure aligned N-S possible drainage culvert	0.69m x 0.23m x 0.12m deep
	1046	Linear cut aligned N-S, possible soakaway, cuts (1032)	2.40m x 0.30m x 0.48m deep
	1047	Grey gritty fill of [1046] contains large amounts saggar	2.40m x 0.30m x0.48m deep

Trench	Context	Description	Dimensions
Trench 1	1048	Natural clay cut by [1013], [1046], [1011] and [1034]	10.80m x 3.25m x 0.30-0.50m (min)
	1049	Layer black gritty ash underlying wall (1029)	1.69m x 0.20m x 0.40m thick
	1050	Black silty clay above (1045)	
	1051	Cut for pipe, containing (1052)	
	1052	Fill of [1051]	
	1053	Concrete stanchion base truncating ash pit 3 (1021)	0.15m thick
	1054	Equivalent to (1038)	
	1055	Patch of purplish/red gritty sand	0.38m NE-SW by 0.32m NW-SE x 0.thick
	1056	Compacted yellow clay, upper fill of [1046]	
	1057	Black ash bedding layer underlying brick surface (1031)	3.35m x 2.00m

Appendix 2: Catalogue of brick samples recovered from Sharpe's Pottery

Sample	Context	Weight (gm)	Measurements	Description	Provisional Date
Sample 1	1023	2245	?mm x 108mm x 63mm (?" x 4¼" x 2½")	Part fire brick. Displays partial stamp W. BOURNE / CHURCH GRESLEY on one surface. Probably pressed. Residual lime mortar. Coarse red clay fabric.	*c.*1829 - 1840
Sample 2	1023	1954	?mm x 108mm x 60mm (?" x 4¼" x 2⅜")	Part fire brick. Displays partial stamp W. BOURNE / CHURCH GRESLEY on one surface. Probably pressed. Heat affected. Residual lime mortar. Coarse red clay fabric.	*c.*1829 - 1840
Sample 3	1023	1866	?mm x 107mm x 63mm (?" x 4¼" x 2½")	Part brick. Displays partial stamp HUN…R(?)IN (HUNCOAT, ACCRINGTON?) on one stretcher edge surface. Probably pressed. Fine yellow-white fireclay fabric.	Early - mid 19th C
Sample 4	1013	3100	222mm x 108mm x 69mm (8¾" x 4¼" x 2¾")	Three joining fragments of brick. Slight reddish brown glaze (2.5YR/4/6) on one surface. Locking slots on two alternate stretcher edges. Pressed. Fine white fireclay fabric.	Early - mid 19th C
Sample 5	1013	3523	230mm x 108mm x 69mm (9" x 4¼" x 2¾")	Complete brick. Sharp arrisses with residual drying sand and lime mortar. Pressed? Red clay fabric.	*c.*1790-1850
Sample 6	1008	1775	?mm x 108mm x 60mm (?" x 4¼" x 2⅜")	Four joining fragments of fire brick. Upper surface abraded. Fine white fireclay fabric.	Early - mid 19th C
Sample 7	1016	3670	235mm x 114mm x 63mm (9¼" x 4½" x 2½")	Complete brick. Moulding lip. Smooth upper surface possibly part of floor or yard surface. Residual lime mortar. Hand-made. Red clay fabric.	*c.*1720-1750
Sample 8	1017	3259	222mm x 112mm x 63mm (8¾" x 4½" x 2½")	Complete brick. Pressed? Two finger indentations on surface. Dense yellow-white fabric.	*c.*1850
Sample 9	1026	3443	222mm x 108mm x 69mm (8¾" x 4¼" x 2¾")	Complete brick. Fireclay bonding mortar. Part vitrification. Kiln fabric. Pressed. Fine white fireclay fabric.	*c.*1850

Sample	Context	Weight (gm)	Measurements	Description	Provisional Date
Sample 10	1002	3523	222mm x 108mm x 69mm (8¾" x 4¼" x 2¾")	Complete brick. Hand-made with residual lime mortar. Red clay fabric.	?
Sample 11	1016	1529	?mm x 102mm x 60mm (?" x 4" x 2⅜")	Part brick. Displays part stamp WAL..ER / NOTTING..? (WALKER? / NOTTINGHAM?) on one surface. Probably pressed. Heat affected. Residual lime mortar over break-repair or filler piece. White fireclay fabric with medium – coarse granules.	*c.*1880

Appendix 3: Archive contents

Sharpe's Pottery, Swadlincote, Derbyshire

Site Codes: SPS10 & SPSX10

Museum Accession No.: DBYMU 2009-228

Component	Quantity
Index to archive	2 x A4 pages
Assessment report	40 x A4 pages (single sided) (+ pdf file on CD)
Final report	95 x A4 pages (single sided) (+ pdf file on CD)
Site data	Context register - 12 x A4 pages SPS10 Context cards - 49 x A4 sheets SPSX10 Context sheets – 58 x A4 sheets Levels record – 2 x A4 sheets SPS10 site notes – 14 x A4 sheets SPSX10 site notes – 9 x A4 pages Brick record sheets - 9 x A4 pages
Photographs	Index to black & white photographs (SPSX10) - 4 x A4 pages (SPS10) – 3 x A4 pages
	35mm black & white index prints and negatives (SPSX10) 7 x wallets (SPS10) – 6 x wallets
	Index to digital images - 6 x A4 pages
	Digital index prints – (SPSX10) – 4 x A4 pages (SPS10) – 4 x A4 pages
	Digital images – 1 CD (JPEGs)
Documentary	ULAS. 2006. Archaeological watching brief at Sharpe's Industrial Estate. ULAS Report No. 2005-045 – 18 x A4 pages

Component	Quantity
Documentary continued	Bob Meeson. 1999. Sharpes Pottery, Swadlincote: an archaeological assessment. Report No. 99/7 – 36 x A4 pages
	Sharpe's Pottery in South Derbyshire District Council Draft Conservation Plan, June 1999 – 28 A4 pages
	South Derbyshire Heritage News, Issue 23, Autumn 2010. Article: *Recent Excavation At Sharpe's* – 2 x A4 pages
	Site plans – 2 x A4 pages
Project brief	8 x A4 pages
Written Scheme of Investigation	SPS10: 8 x A4 pages
	SPSX10: 14 x A4 pages
Project health and safety record	SPS10: 5 x A4 pages
	SPSX10: 10 x A4 pages
	Agreement for Volunteer Workers – 10 x A4 pages
Miscellaneous	Correspondence – 1 A4 pages Transfer of Title Consent Form – 1 x A4 page
Ceramic finds	Catalogue of finds – 3 x A4 pages 6 x 325mm x 325mm x 150mm boxes.
Drawings (in archive tube 1 of 1)	Site drawings – 1 x A4 index page, 15 x drawings on film
	Draft drawings – 1 x A4 index page, 3 x sheets drawing film
	Final drawings – 1 x A4 index page, 9 x sheets drawing film