THE OLD WELSH BRIDGE, SHREWSBURY

EXCAVATIONS AT THE SEVERN THEATRE VENUE, FRANKWELL, SHREWSBURY, 2006–7

Bruce Watson and Christopher Phillpotts

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with contributions by

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Cover illustrations
Front: watercolour of the old Welsh Bridge including a view of the new bridge by J Fidler, *c* 1794 (Fig 40)
Back: (top) detail from the panorama of Shrewsbury in the 'Great Frost' of 1739 (Fig 35); (lower left) watercolour based on a view of the northern end of the Welsh Bridge by Paul Sandby, *c* 1765–70 (Fig 36); and (lower right) the Welsh Bridge on the Burghley map of Shrewsbury, *c* 1575 (Fig 33)

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SUMMARY

During 2006–7, in advance of the construction of the Shrewsbury Theatre Severn in Frankwell, Shrewsbury, a comprehensive programme of archaeological and geoarchaeological investigation was undertaken by MOLA (Museum of London Archaeology). The key to understanding the site is the River Severn, which has done so much to shape the town of Shrewsbury. The geomorphology of this stretch of the upper Severn has given rise to meanders. The outside curve of a meander created an inlet, providing a sheltered landing place, which was surrounded by a low-lying flood plain. This area was regularly inundated, as was most of Frankwell, until the recent installation of flood defences. Pollen from the Anglo-Saxon period confirms that the local environment consisted predominantly of river meadows, although there was also some evidence of woodland and arable cultivation.

Frankwell developed as a bridgehead suburb of the 9th-century AD burh of Shrewsbury. It is probable that the site was first occupied during the 10th century, judging by the presence of residual finds, but the earliest securely dated activity on site consisted of external dumping during the 12th century or later to raise the ground level. Initially the Severn was crossed here via a ford, but by the early 12th century the Welsh Bridge connected Frankwell to the Mardol district of Shrewsbury. It is probable that the Frankwell end of the Norman period bridge was defended by a trapezoidal masonry gatehouse. During the 12th century it appears that the first phase of bridge defences was replaced by a pair of square masonry bastions. It is possible that this rebuilding was linked with the replacement of a timber bridge by a masonry one. During the 13th or 14th century the gatehouse bastions were rebuilt on a larger scale. It is probable that this rebuilding was connected with a royal grant of 1282. These bastions were known as the Welsh Gate and they were the outermost element of the bridge's fortifications. The bridge also possessed an inner gatehouse, known as St George's Gate, and, further south, a drawbridge tower known as the Mardol Gate. Fortified medieval bridges are now very rare in England and Wales due to their demolition during the post-medieval period, but ongoing research has established that there were at least 38 other examples of this phenomenon, including the English Bridge on the opposite side of Shrewsbury. On 12 August 1485 Henry Tudor (later Henry VII) crossed the Welsh Bridge unopposed on his way eastwards to meet Richard III's army at Bosworth.

The Welsh Bridge was also known as St George's Bridge because of its proximity to a hospital named after the saint, which had been established along the eastern side of the bridge approach road by *c* 1155. Fieldwork revealed inhumation burials, one of which was radiocarbon-dated to the late 13th or 14th century; these graves are believed to be part of the hospital cemetery. It appears that during the 13th or 14th century a substantial masonry building was constructed within the street frontage of the hospital cemetery.

The construction in 1608 of a barge quay at Frankwell adjoining the Welsh Bridge was apparently connected with foreshortening the gatehouse bastions to allow the formerly concealed northernmost arch of the bridge to be opened up to provide vehicular access to the quays. This access necessitated the construction of quayside retaining walls. Various buildings and a possible animal mill were constructed along the bridge approach road during the 17th and 18th centuries.

By 1789 the Welsh Bridge was in poor structural condition, and Shrewsbury Corporation therefore decided to replace it. During 1793–5 the new Welsh Bridge was constructed some 60m downstream of the earlier bridge. Within the western part of the site the construction of a massive masonry abutment and barge quay were linked with the building of the new bridge. The construction of the new bridge was a catalyst for several major changes. Firstly, a huge area of the existing river inlet was reclaimed, moving the shoreline some 30–35m southwards. Secondly, the entire old bridge, apart from its northernmost arch (the dry arch) and the former west bastion, was demolished. The remains of the bridge and its approach road became a landlocked cul-de-sac. During the early 19th century a series of brick-built houses were constructed along the eastern side of the former bridge approach road. In 1865 a Methodist chapel and school opened along the western side of the bridge approach road. The former chapel has been incorporated into the Theatre Severn as the 'chapel bar'. All residential properties on the site were demolished in the 1960s. The backfill of the cellars of these houses and some adjoining cesspits and soakaways revealed a diverse assemblage of 19th- and early 20th-century finds, including ceramics and glassware. The remains of the northernmost arch of the former bridge were stabilised and damaged fabric was either repaired or rebuilt before being reburied under the main stage of the new theatre.

ACKNOWLEDGEMENTS

This monograph is a numbered volume in the series of the Shropshire Archaeological and Historical Society Transactions. It reports on archaeological work carried out by MOLA (Museum of London Archaeology) in 2006–7 on the old Welsh Bridge, which was sponsored by Shrewsbury and Atcham Borough Council. Thanks are due to the following members of the MOLA field team during 2006–7 for their efforts on site in all weathers: Kari Bower, Hazel Cooley, Ian Davis (supervisor 2006 and 2007), Matt Edmonds, Andy Grittons, Paul Kajewski, Roddy Mattinson, James McConville, Tony Mackinder (supervisor February 2006), Kasia Olchowska, Chris Phillpotts, Jonathon Prince, Emma Rae, Gemma Stephenson, Keir Strickland, Elena Valtorta, Nigel Ward and Louise Wood, plus staff from Archenfield Archaeology during 2007. The fieldwork was project-managed by Nick Bateman and the post-excavation work by Nicola Powell and David Bowsher of MOLA. We are also grateful to Chris Baker of Arup, and the staff of McGees for their involvement in the reburial strategy. CC Ground Investigations Ltd drilled three boreholes across the site.

Thanks to David Pannett for sharing his knowledge of the geology of Shrewsbury with us and for his comments on the draft text of Chapter 1 and Richard Strachey (Richard Strachey Conservation) for his comments on the draft text of Chapter 8. Thanks also to Alison Mussell for supplying the material concerning the Welsh Bridge recorded in the Shrewsbury bailiffs' accounts.

Beth Richardson is extremely grateful to Peter Duckers of the Shropshire Regimental Museum and Andrew Cormac of the Royal Air Force Museum for their assistance in identifying the military buttons. Ian Betts and Terence Smith wish to thank Kevin Hayward and David Pannett for their assistance with the geological identification of some stone types, and Chris Blanchett for his identification of the Victorian/Edwardian wall tile producers and for also suggesting dates for their manufacture.

Thanks to William Price, Hon Editor of these Transactions, for reading an early draft of this work and making many useful comments.

We are most grateful to Shropshire Archives for permission to publish the images reproduced in Fig 36, Fig 37, Fig 38, Fig 42, Fig 43, Fig 63 and Fig 66; to Shrewsbury Museums Service for Fig 39 and Fig 40; and to Shropshire Museum Service for Fig 35.

CHRISTOPHER PHILLPOTTS: A TRIBUTE TO HIS LIFE AND WORK

Chris was a very wonderful person, a fine archaeologist and an excellent historian. It is a great skill to combine these two disciplines and Chris possessed it. I have always felt that archaeologists and historians are like two tribes living at opposite ends of the same island – they are well aware of each other's existence, but generally work separately as they distrust each other. The historians feel that as they are the senior tribe they should be in charge and think that the archaeologists are just a bunch of badly dressed upstarts, while the archaeologists think that the historians are rather fuddy-duddy and tend to ignore everything that material culture has got to contribute to the study of the post-Roman period. Chris was one of the few people I have known who belonged to both tribes.

Chris started his archaeological career in 1972, aged 17, at Crickley Hill in Gloucestershire. It is an imposing, wind-swept site on the edge of the Cotswold escarpment, and consists of an Iron Age hillfort, around a Neolithic causewayed enclosure. Chris started off his historical career with a BA at the University of York (1972–5). He then studied for an MA in medieval history at University of London, King's College (1975–6). During 1977–84 he wrote a PhD thesis on English policy towards France during the truces of 1389–1417, at the University of Liverpool. In 1983–4 Chris worked as historical researcher on the Cwmbran History Resources Project for Cwmbran Town Council, Gwent, covering any aspect of local history, from the Neolithic to the 19th century. In 1986 he joined the Museum of London as a member of their Department of Greater London Archaeology, working on a wide variety of sites and publication projects. In 1993 Chris and his partner, Alison Mussell, left London and moved to Shrewsbury, where they became parents to Greg and Ellie. To support his family Chris became a freelance historical and archaeological consultant, contributing to a diverse range of projects and publications. During 2006–7 Chris contributed to the fieldwork at the old Welsh Bridge and he subsequently carried out the documentary research and co-authored this publication. Sadly, Chris died on 29 January 2013, while this publication was being completed. It seems fitting, therefore, that his life and work should be commemorated here.

Bruce Watson

Christopher Phillpotts on the site of the old Welsh Bridge in 2007

1

INTRODUCTION

1.1 SITE LOCATION

The Shrewsbury Theatre Severn (referred to here as Theatre Severn) is located in Frankwell, a suburb of the town of Shrewsbury, Shropshire (NGR 34854 31284; Fig 1). The site is bounded to the east by a number of standing buildings (former antiques market) belonging to Frankwell Quay, to the north by a street known as 'Frankwell Quay' and the former Methodist chapel, to the south by the River Severn and to the west by the (new) Welsh Bridge and the buildings of Frank's Bar (which are outside the development). The former chapel has been incorporated into the Theatre Severn.

1.2 THE SCOPE OF THE PROJECT

The planning and legislative background to the site was summarised in the original heritage desk study (Hughes 2005b). The need for a new theatre in Shrewsbury had been discussed since the 1960s, with several projects, designs and locations considered. The city's cultural needs had outgrown the Victorian music hall, and the success of the old market hall, which was reopened after restoration in 2004, confirmed the requirements for the new performance venue. In 2005 Shrewsbury and Atcham Borough Council (SABC) committed to building a new theatre. The council commissioned Arup (then known as Ove Arup & Partners), and their archaeological consultant Richard Hughes, to prepare preliminary planning application, and in particular to formulate a strategy for dealing with the important archaeology known to lie on the site; this included the remains of the old Welsh Bridge (also known as St George's Bridge). Construction began in 2006, on a location that was set beside the river that cuts through the centre of Shrewsbury. Theatre Severn was designed by architects Austin Smith Lord, and built by main contractor Willmott Dixon.

In May to June 2005, the Glamorgan-Gwent Archaeological Trust (GGAT) undertook an evaluation of the site of the Theatre Severn (Higgins 2005; Evans et al 2006). Twelve evaluation trenches were dug by machine to varying depths and then recorded (Higgins 2005, fig 3; Fig 2). The stratigraphic, finds and environmental archive from this fieldwork is held by GGAT (project A997, site no. 552) and will be archived separately from the later fieldwork. However, the significant contexts from the GGAT evaluation trenches were renumbered [450] to [617] to permit their incorporation within the MOLA (Museum of London Archaeology) data set. A detailed historical study of the site highlighted the importance of the remains of the old Welsh Bridge encountered during the evaluation and helped determine the scope of the subsequent fieldwork (Baker 2005).

During February to April 2006 a comprehensive programme of fieldwork was undertaken by MOLA within the area adjoining the upstanding bridge masonry. Further evaluation work was also carried out on the western part of the site within areas that were not available in 2005 (Bateman 2006; Fig 2). The 2006 fieldwork had three aims. Firstly, to record the upstanding masonry of the bridge arch and its adjoining structures to assist with the conservation and repair of the standing masonry by Richard Strachey Conservation during spring 2006 (Fig 3; Chapter 8). Secondly, to conduct a geoarchaeological investigation of the riverine sediments in connection with Professor Antony Brown of Exeter University, UK, and Dr Phillip Allen then of Exeter University now of Frostburg State University, Department of Geography, USA (Allen and Brown 2006; Chapter 2; Chapter 9.7). Thirdly, to carry out the archaeological investigation of the structural remains associated with the old Welsh Bridge and its environs to assist Arup Geotechnics with the formulation of an archaeological mitigation strategy (Hughes 2005a).

From November 2006 until April 2007 further fieldwork was undertaken during ground works at the instruction of the county archaeologist, Mike Watson. This consisted of monitoring the excavation of the new foundations of the Theatre Severn, then being dug in the vicinity of the remains of the old Welsh Bridge (Phillpotts 2007). These foundations consisted of a network of piles/ground beams, plus some

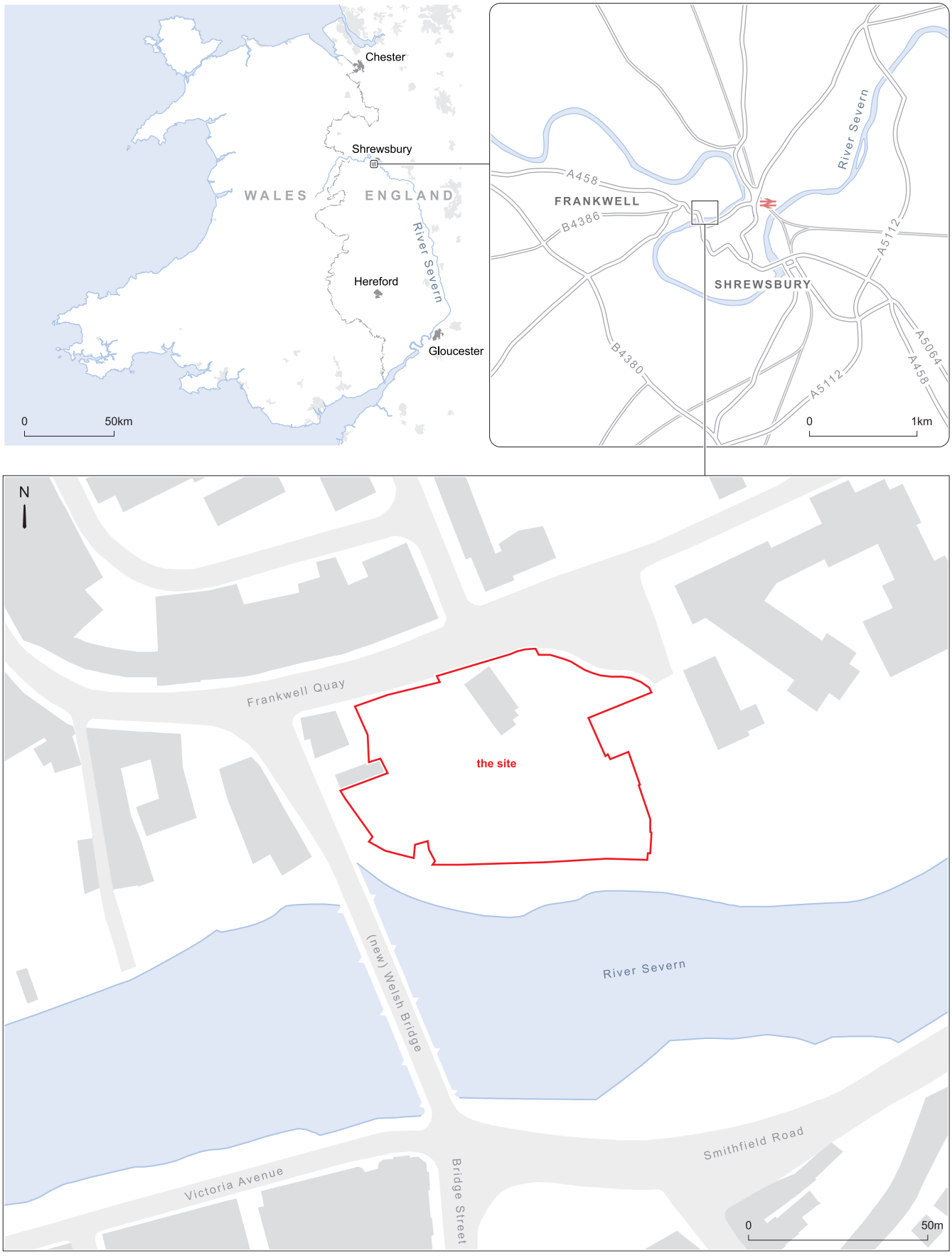

Fig 1 The full extent of the Severn and the location of Shrewsbury, Chester, Gloucester and Hereford (insets), and the site location within Shrewsbury (scale UK 1:3,000,000; Shrewsbury 1:50,000; site 1:1500)

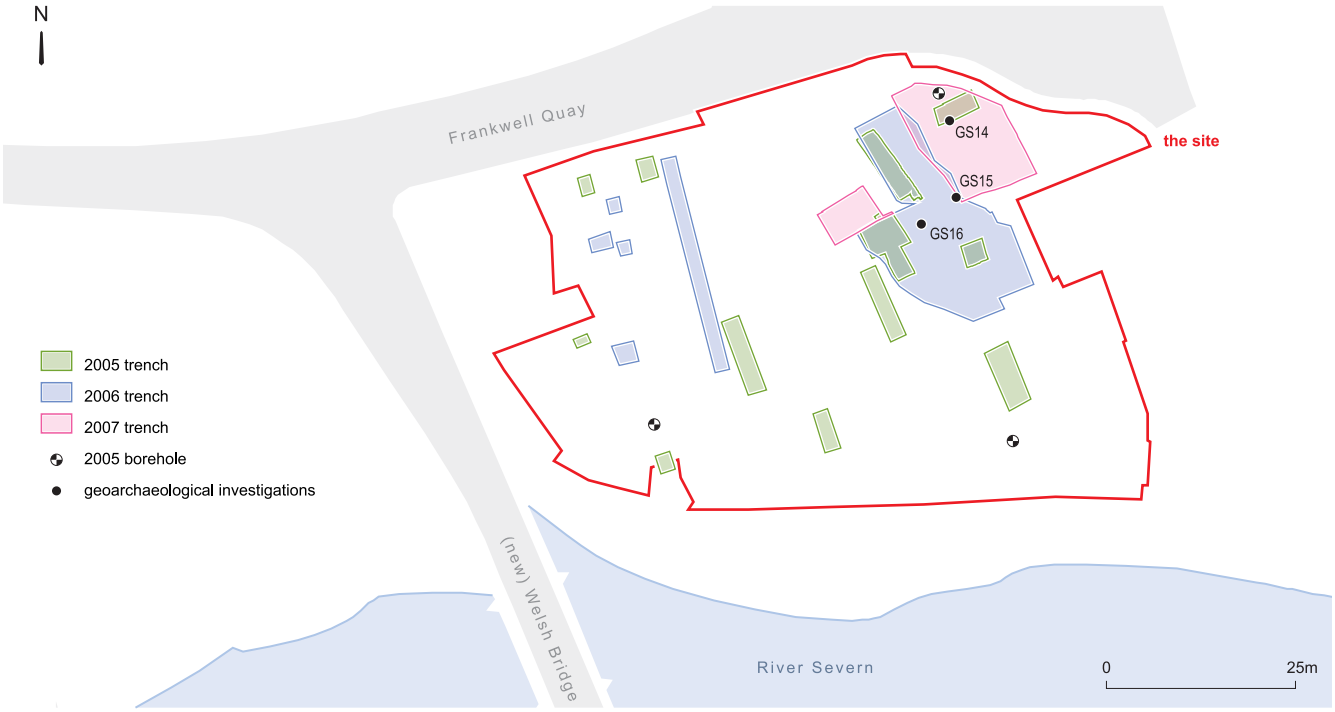

Fig 2 Trench location plan showing the numbered location of the 2005 GGAT trenches and the extent of all subsequent fieldwork (geosections (GS): GS14 – substation trench; GS15 – east cellar; GS16 – sondage trench) (scale 1:1000)

Fig 3 The masonry structures within the area to the west of the bridge arch being recorded during March 2006, looking north

deeper features such as lift pits. The portion of any significant structure that stood above new formation level was also investigated before being truncated, as well as significant archaeological deposits encountered within new foundation trenches or above formation level. Every effort was made to minimise the destruction of structural remains, so often only the full plan of the latest structural phase was determined and some of the earlier ones were partially examined in small trenches or new pile positions. One consequence of partial excavation was the recovery of only limited dating evidence from deposits earlier than 1600. The excavation of the new foundations on the western part of the site, where relatively little of archaeological interest survived close to the modern ground surface, was not monitored. In May to June 2007, the final phase of fieldwork consisted of the controlled excavation of the area to the north-east of the bridge masonry, where part of the medieval hospital cemetery (Chapter 4) and extensive multi-period structural remains were recovered (Fig 2). A licence for the removal of human remains was issued by the Department of Constitutional Affairs under Section 25 of the 1857 Burial Act (Accidental Licence no. 07-00019, granted 20 March 2007). The 2006–7 fieldwork was directed by Bruce Watson.

During 2005, three deep boreholes were drilled on site by Geotechnical Engineering Ltd, down to bedrock. These data have been used to supplement the subsequent geoarchaeological work, as the commachio and percussion boreholes could not be drilled down to bedrock due to the presence of unstable sediments and the ingress of large amounts of groundwater (Chapter 2).

The upstanding bridge masonry, which is not listed or scheduled, has now been preserved by reburial under the main stage of the new Theatre Severn, which opened in March 2009. An interim account of the fieldwork was presented at the 2009 Regensburg International Bridges Conference (Watson 2011).

1.3 TEXTUAL AND GRAPHICAL CONVENTIONS USED IN THIS REPORT

During excavation a unique context number was assigned to each archaeological feature or deposit. These numbers are referred to throughout this volume and are presented in square brackets, thus: [100]. Following analysis of the site stratigraphic record, land-use numbers were assigned to Buildings (B), Open Areas (OA), Structures (S), which are defined as features such as temporary buildings, and Roads (R) (Fig 4).

Accessioned finds numbers are shown within angled brackets, thus: <1>. Selected finds illustrated in the report are referred to by their catalogue number with a prefix denoting their category, as follows:

<CP1> clay tobacco pipe item no. 1
<G1> glass vessel no. 1
<P1> pottery vessel item no. 1
<T1> tile or ceramic building material item no. 1.

There are tabulated concordances for the illustrated finds (Table 3; Table 5; Table 7; Table 8) and a catalogue of Victorian wall tiles (<T7>–<T12>; Chapter 9.2).

This report uses a unique fabric number system (prefixed 'SS' standing for 'Shrewsbury' and 'Shropshire') to record building materials (tile and brick). The numbers relate to fabric descriptions summarised in Table 2 (Chapter 9.2). The alphanumeric code is given in the text when first mentioned. The pottery was all recorded in accordance with current MOLA procedures, with quantification by sherd count (SC), estimated number of vessels (ENV) and weight (Wt) in grams (g). The medieval and post-medieval pottery fabrics are referenced, where possible, to the fabric reference series developed from excavations at Shrewsbury Abbey (Bryant 2002a) and prefixed 'SAF'; those fabrics which do not occur on this type site are prefixed 'F'. All later (18th–20th centuries) pottery was recorded using standard MOLA codes for fabric, form and decoration, the full expansions and dating of which can be accessed at: http://www.mola.org.uk/resources/medieval-and-post-medieval-pottery-codes. In addition, all the fabrics identified at this site are listed in Table 6 (Chapter 9.4). The fabric codes are given after the first mention of the fabric in the text. Some post-medieval ceramic codes relate to London- or Essex-made fabrics (eg London tin-glazed ware with blue- or polychrome-painted decoration and external lead glaze (Orton style A) (TGW A), London-area post-medieval red ware (PMR) and Essex-type post-medieval fine red ware (PMFR)) and were retained during analysis to denote general types, such as fine red earthenware, irrespective of their origins. Hence, TGW C, for example, is used here to identify English tin-glazed earthenware with plain white glaze, rather than a fabric made in London.

In the text, sandstone refers to the red and grey Carboniferous Keele and Grinshill sandstones, which were widely used as building materials locally until the 19th century, when they were superseded by bricks.

Weights and measures quoted in the text are, where appropriate, in the units used before metrication (yards, feet and inches, the latter abbreviated to ft and in), along with conversions (1ft equals 0.305m; 12in to 1ft, 3ft to 1 yard). A mile is equivalent to 1.61km; 1 rod or perch is equivalent to 5½ yards or 5.029m. A pound (abbreviated to lb) equals 0.45kg and 1 ton equals 1.016 metric tonnes (1000kg equals 1 tonne); 1 hundredweight (abbreviated to cwt) equals 112lb or 50.8kg and 20cwt equals 1 ton. One imperial bushel equals 36.36 litres (volume), but it is also used as a measure of mass or weight particularly for grains and other staples and varies accordingly. Sums of money are quoted in the text as cited in £, s and d, where 12 pence (d) made one shilling (s), 20 shillings (or 240d) a pound (£) and 21s made 1 guinea. Dyer (1989, xv) provides the following reminder on which to base an approximation to current values: 'a skilled building worker earned 2d per day in 1250, 4d per day in 1400 and 6d in 1500'.

The site archive is held by the Shrewsbury Museum

<table>
<tr><td rowspan="8">Period 6
later post-medieval riverine and terrestrial activity
1790+</td><td colspan="3">OA13 former bridgehead area development
(1960s demolition of buildings around old bridge and later activity up to 2005)</td></tr>
<tr><td>B17, B18, B19, B20, B21, B22
later brick buildings</td><td rowspan="4">R3
cul-de-sac</td></tr>
<tr><td>B16 early brick building
B11, B12, B14 retained
OA12 garden</td></tr>
<tr><td>OA11 foreshore reclamation of area between two bridges
(finished by 1832)</td></tr>
<tr><td>old Welsh Bridge demolished 1795–7</td></tr>
<tr><td>S7 intermediate phase of river wall (c 1795)
S8 ? river wall</td><td rowspan="3">R2
bridge approach road</td></tr>
<tr><td>S9 barge quay and masonry abutment
(new Welsh Bridge, 1793–5)</td></tr>
<tr><td>B7 retained</td></tr>
<tr><td>B9 modified dry arch</td></tr>
<tr><td rowspan="5">Period 5
earlier post-medieval riverine and terrestrial activity
1500–1790</td><td>B12 masonry building
OA10 bridge approach activity</td><td rowspan="5">R2
bridge approach road</td><td rowspan="5">OA6
continued accumulation of riverine and foreshore sediments</td></tr>
<tr><td>B10, B13, B14, B15 buildings</td></tr>
<tr><td>B11 refacing of west bastion
S6 scorching
S5 ? animal mill</td></tr>
<tr><td>B9 dry arch</td></tr>
<tr><td>B5 foreshortened west bastion
S4 west quay retaining wall
B8 foreshortened east bastion
S3 east quay retaining wall
B7 modified masonry building (B4)</td></tr>
<tr><td rowspan="5">Period 4
Anglo-Saxon and medieval riverine and terrestrial activity
c AD 600–1500</td><td>B3 first west bastion
B6 second east bastion
B4 masonry building
continued use of R1</td><td colspan="2" rowspan="3">OA4
continued accumulation of riverine sediments</td></tr>
<tr><td>B2 first east bastion</td></tr>
<tr><td>B1 gatehouse
R1, S1, S2
OA8 cemetery
OA7 medieval settlement</td></tr>
<tr><td>OA5
medieval flood plain land surface on bridge approach</td></tr>
<tr><td colspan="3">OA4
accumulation of Anglo-Saxon and later riverine sediments</td></tr>
<tr><td>Period 3
Holocene
c 14,000 BC–c AD 600</td><td colspan="3">OA3
creation of Holocene river channel and build-up of sediments</td></tr>
<tr><td>Period 2
Devensian
c 40,000 BC–12,000 BC</td><td colspan="3">OA2
scouring of periglacial channel</td></tr>
<tr><td>Period 1
Carboniferous</td><td colspan="3">OA1
solid geology – Keele and Enville Beds</td></tr>
</table>

Fig 4 Diagrammatic representation of the site-wide stratigraphic sequence and relative sequence of the various land-use elements within each phase of activity (periods 1–6)

Service under the code NEV06. The non-ceramic accessioned finds, listed in the MOLA Oracle database and Assessment Catalogue, are available from MOLA, Mortimer Wheeler House, 46 Eagle Wharf Road, London N1 7ED, where they may be consulted by prior arrangement.

County names in the text refer to historic counties.

The graphical conventions used in this report are shown in Fig 5.

1.4 THE SCOPE OF THE DOCUMENTARY RESEARCH

The documentary research, which was carried out by the late Christopher Phillpotts, concentrated on printed primary and secondary sources concerned with the history of the (old) Welsh Bridge and its environs. This included manuscript sources held at Shropshire Archives (SA) in Shrewsbury. Some documents from the National Library of Wales (NLW) in Aberystwyth and The National Archives at Kew (Surrey) (TNA) have also been used. Documents relating to Frankwell were consulted at Birmingham City Archives (Warwickshire) and Staffordshire Record Office, but were found not to be relevant to the project. An important collection of deeds in private ownership relating to The Stew and Maltings properties was consulted by courtesy of Richard Walker (Walker deeds).

The Shrewsbury Borough Archive apparently contains more information about the (old) Welsh Bridge and adjacent areas than has been included in this report. The sheer size of the collection, recorded in no more than a slim late 19th-century catalogue, meant that only a targeted sample of material could be consulted within this research programme. Some items have certainly been lost over the centuries, such as the 'Welsh Bridge Book', noted as missing by Arthur Ward (Ward 1935, 157). However, Ward's book contains no references, so it has not always been possible to trace the sources he used. Although many private deeds were consulted at Shropshire Archives, they did not include the records of the Cole family, the most prominent landowners in this part of Frankwell during the medieval and early modern periods. These records were still in the hands of a descendant in 1848, and can only be accessed through 18th-century transcripts and early 20th-century calendars (SA, 6001/2794; Morris 1901, 290). All dates are expressed in new style (post-1751 calendar), with the year beginning on 1 January.

While this research was being completed Shropshire Archives started a Heritage Lottery Fund project to catalogue various parts of their collection, including the bailiffs' accounts from the Shrewsbury Borough Collection (SA, 3365). This project has already produced some new material concerning the Welsh Gate and bridge, which has been incorporated into this text; more will undoubtedly be discovered through further work.

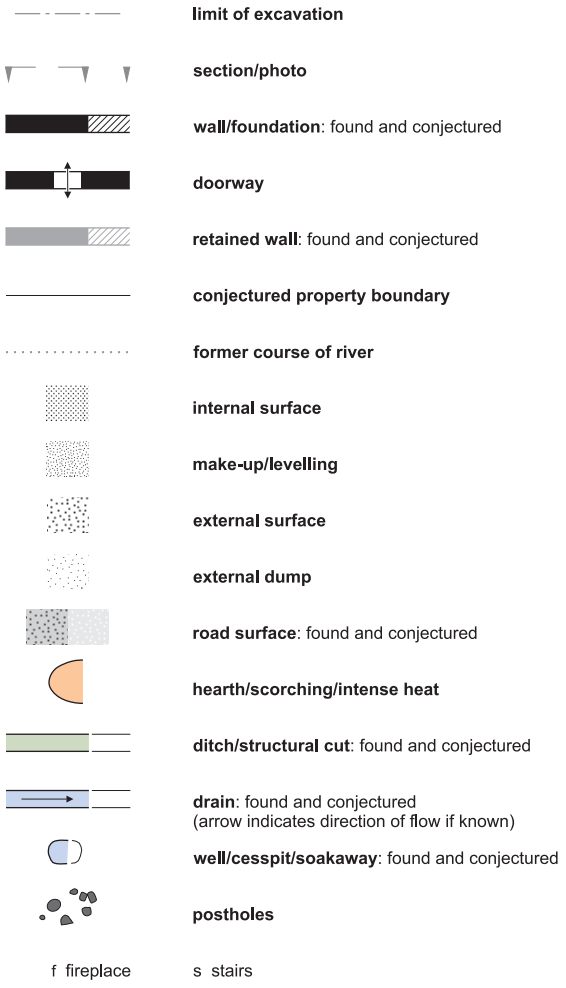

Fig 5 Graphical conventions used in this report

2

GLACIAL ENVIRONMENTS AND CLIMATIC CHANGE: THE DEVELOPMENT OF THE UPPER RIVER SEVERN VALLEY (PERIODS 1–3)

Craig Halsey

2.1 INTRODUCTION

The River Severn has for many years been the focus of a significant number of in-depth archaeological and geoarchaeological investigations. The Severn has drawn this attention, not only because it forms one of the longest river systems in the British Isles (Fig 1), but also because of the wealth of palaeoenvironmental and archaeological material preserved within its flood plain and riverine sediments. However, the majority of these studies have taken place within the lower Severn. Particularly, emphasis has been placed on the Holocene sequence of peats and intertidal muds within the Severn estuary (Bell et al 2002; Bell et al 2004; Bell 2007), the Gwent Levels (Rippon 1996, 14–38), and with geomorphological investigations of the Lower Severn Pleistocene gravel terraces (Maddy et al 1995; Maddy 2002; Schreve 2009). So the opportunity to carry out geoarchaeological investigations on part of the pre-19th-century river channel and its flood plain on the site on the Frankwell Quay was a rare chance to examine a portion of the upper Severn, which has received much less study than its estuarine counterpart. The purpose of these investigations was to examine the buried Quaternary deposits, and give a topographic context for the location of the old Welsh Bridge. This chapter provides a brief background to the glacial history and landforms of the Shropshire-Cheshire plain (Fig 6), before presenting and discussing the results of the on-site geoarchaeological investigations.

2.2 THE PRESENT-DAY GEOMORPHOLOGY OF THE UPPER SEVERN

The Severn rises in Powys, on Plynlimon, the highest point in the Cambrian Mountains of mid Wales. As the river flows off the Welsh mountains it follows the northern edge of the south Shropshire hills, cutting through Wenlock Edge at Ironbridge Gorge, *c* 19km downstream of Shrewsbury (Fig 6). Flowing

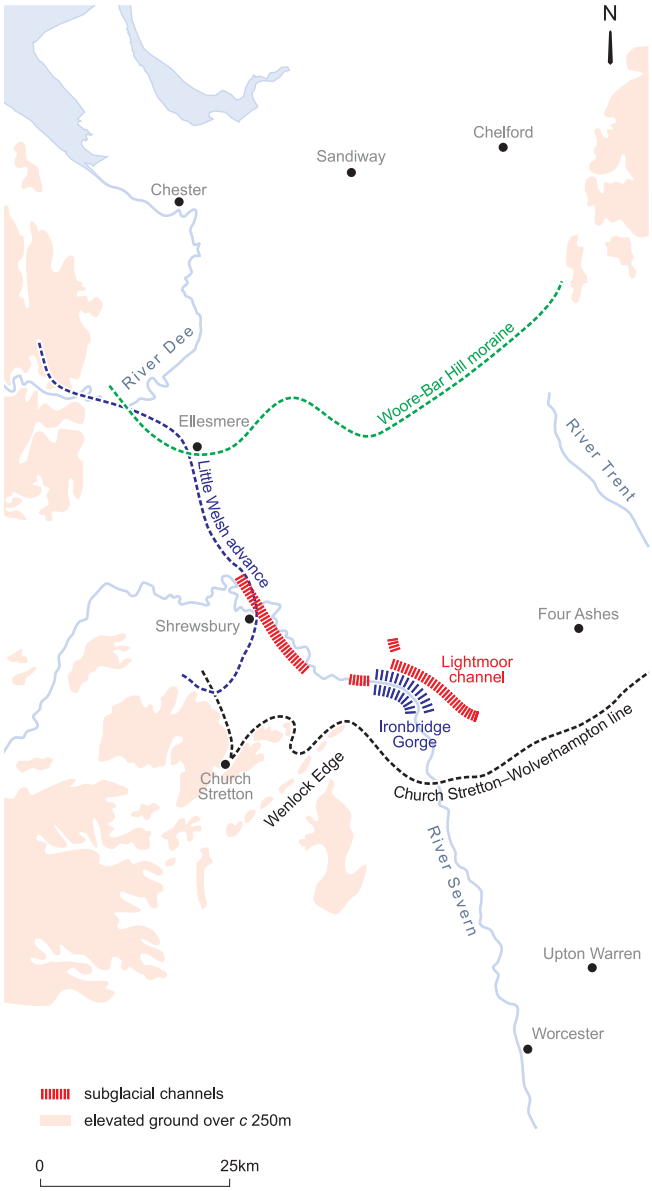

Fig 6 The major glacial landforms and modern-day geographical features of the Shropshire-Cheshire plain and sites referred to in this chapter (after Shaw 1972, 604) (scale 1:1,000,000)

across the gently undulating Shropshire-Cheshire plain, it forms a single channel consisting of a series of large and sinuous meanders. The town of Shrewsbury lies within one of these large meanders. The site at Frankwell Quay is situated on the northern bank of a tight meander bend that encloses the historic centre of Shrewsbury towards the south (cf Fig 16).

The landscape of the upper reaches of the Severn was formed as a direct result of the last major glaciation, when a large ice sheet extended across the Shropshire-Cheshire plain during the closing stages of the Pleistocene epoch (below, 2.4) and scoured out what was to become the upper Severn valley. Rivers of meltwater flowing under the ice sheets carved out deep channels in the glacial till and the underlying bedrock. It appears that the Holocene Severn within the Shrewsbury area simply followed the pre-existing glacial valley and in some places the river followed the line of these deep meltwater channels. These circumstances resulted in the present river occupying a broad, flat valley full of soft sediments, which can easily be eroded, hence the evidence for Holocene channel migration and the extensive development of meanders (Pannett 1994, 52–6). These features are much more commonly found in the lower than the upper reaches of major rivers, as the upper courses are often constricted by solid geology. This unusual combination of geological and topographical circumstances has had a major influence on the subsequent development of the river system.

2.3 PRE-QUATERNARY SOLID GEOLOGY (PERIOD 1)

Shrewsbury lies within the Carboniferous coal-bearing formations known as the Shrewsbury Coalfields. The site lies on the very edge of the area mapped as Erbistock Beds (British Geological Survey 1974, sheet no. 152; Fig 7). This forms the highest subdivision of the Carboniferous Upper Coal Measures. The Erbistock Beds comprise the Keele and Enville Beds, which consist of red marls and sandstones with pellety calcareous lenses and a breccia (clasts of different lithologies cemented together) at the top of the sequence. Outcrops of the Erbistock Beds flank both sides of the Severn a short distance downstream of Frankwell Quay (Fig 7), where they have long been exploited as a source of building stone.

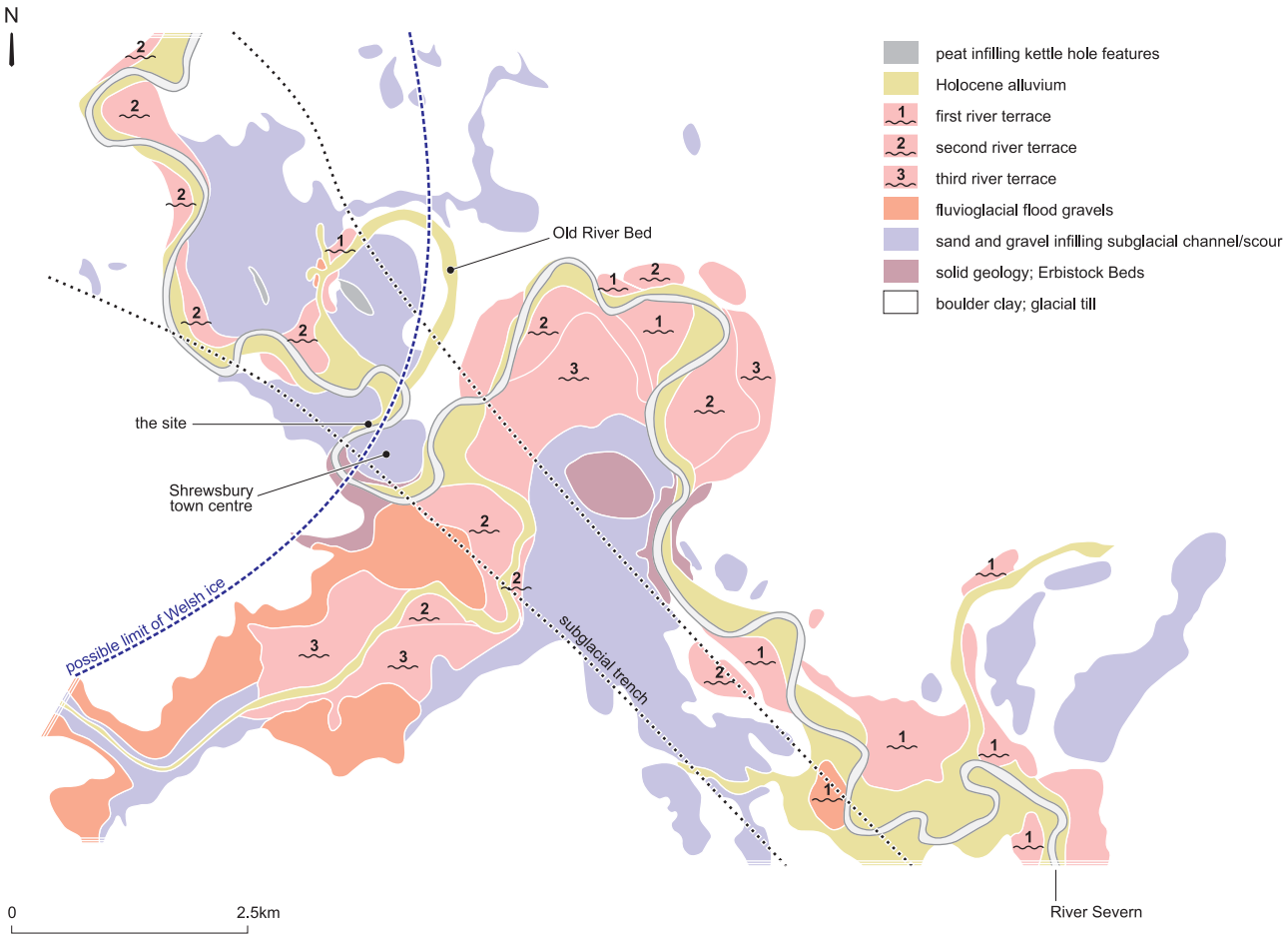

Fig 7 The solid and drift geology in the Shrewsbury area, illustrating the major features, deposits and landforms, including the river cliffs in the vicinity of the site (after British Geological Survey 1974, sheet no. 152) (scale 1:80,000)

2.4 THE QUATERNARY DEPOSITS (PERIOD 2)

DEPOSITS OF THE PLEISTOCENE GLACIAL EPOCH

The Quaternary period is synonymous with the 'Ice Ages' and the climatic fluctuations that have dominated the northern hemisphere over the last 2.6 million years (Lowe and Walker 1997, 3). Over this time period there have been at least 20 major glacial to temperate interglacial cycles, with many shorter term fluctuations called stadials and interstadials. The Pleistocene, which ended *c* 12,000 years BP defines this glacial epoch of cyclical warm to cold periods, while the Holocene represents the present temperate interglacial. During the Pleistocene the effects of these climatic fluctuations have been dramatic, with the cyclic advance and retreat of large ice sheets and valley glaciers reworking and reforming the landscape. The warm to cold oscillations appear to form a fairly regular pattern with a major transition occurring around every 100,000 years (ibid, 12–16).

The last major cold stage of the Pleistocene, the Devensian Glaciation, named after the Devenses Iron Age tribe who once inhabited the area around the Four Ashes Quarry site near Wolverhampton (Reynolds 1979, 95; Fig 6), occurred between 70,000 and 12,000 years BP (Chiverrell and Thomas 2010). Four Ashes Quarry forms the type locality for the last major glaciation, where a sequence of sediments overlying an Ipswichian interstadial deposit has provided the most detailed record of climatic and landscape change during this period (Mitchell et al 1973). During the Devensian Glaciation a large ice sheet extended across the Shropshire-Cheshire plain, terminating just to the south of Shrewsbury across a line known as the Church Stretton-Wolverhampton line (Lowe and Walker 1997, 328; Fig 6). Consequently, the area around Shrewsbury is covered by a mosaic of landforms of glacial and fluvioglacial origin related to this last cold episode (Shaw 1972; Earp and Haines 1982; Pannett 2008; Richards 2008; Cook 2010). These landforms consist of lodgement tills (an unstratified deposit consisting of very poorly sorted gravels within a stiff clay matrix (boulder clay), deposited at the base of an advancing glacier: Lowe and Walker 1997, 89), moraines (unconsolidated debris deposited at the base of the ice front – a terminal or end moraine – or along the glacier edges – lateral moraine), subglacial channels and outwashes of fluvioglacial sands and gravels. The geological mapping of the area (British Geological Survey 1974, sheet no. 152) refers to these deposits as 'superficial' or 'drift' deposits to distinguish them from the pre-Quaternary solid geology (Fig 7).

Evidence for the glacial origins of this thick mantle of Quaternary deposits was first indicated by the presence of marine shells discovered within Shropshire's gravel pits (Trimmer 1834). However, at the time these finds were thought to indicate an episode of massive marine inundation across a wide stretch of the West Midlands, rather than resulting from the action of glacial ice scraping and redepositing material from the bed of the Irish Sea (Pannett 2008, 86). Further evidence of the glacial origins of the landscape was indicated by the presence of glacial erratics (large boulders of igneous rock transported by the glacial ice from as far away as the Lake District and the Welsh mountains: Earp and Haines 1982).

BOULDER CLAY AND GLACIAL CHRONOLOGY

Past researchers have focused their attention on the till deposits in an attempt not only to map the extent of the ice sheets, but also to provide a chronostratigraphy to the Devensian Glaciation (Peak 1961; Poole and Whiteman 1961; Boulton and Worsley 1965; Shotton 1967; Gemmel and George 1972; Shaw 1972; Thomas 1989). This has resulted in a tripartite division of the boulder clay till across the Shropshire-Cheshire plain, into a 'Lower' Boulder Clay (a unit of sands and gravels commonly termed the 'Middle Sands' and an 'Upper' Boulder Clay; Yates and Moseley 1967). At Farm Wood Quarry, Chelford, the 'Middle Sands' were exposed within sand pits, and were found to consist of a thick unit of periglacial alluvial sands containing a layer of organic muds (Reynolds 1979, 96). Wood fragments from the organic muds produced a radiocarbon date of 65,000–60,000 BP (radiocarbon dates are given as uncalibrated radiocarbon years unless stated otherwise). From this evidence it appears that prior to *c* 65,000 BP ice-free, but cold climate periglacial, that is non-glaciated tundra region (Lowe and Walker 1997, 7), conditions existed across the Shropshire-Cheshire plain, followed by a period of climate amelioration. This temperate episode has been termed the Chelford Interstadial (Worsley 1977).

Another short-term interstadial pre-dating the Upper Boulder Clay has been identified from a number of investigations undertaken across several sites in the Midlands and south-west England (Shotton and Strachan 1959; Coope et al 1961; Morgan 1973). These sites have recorded gravels interstratified with organic lenses sealed by the boulder clay. Radiocarbon dating from these organic units consistently produces dates of *c* 30,000–40,000 BP. This warm episode, known as the Upton Warren interstadial, was named after the site in Worcestershire where it was first identified (Lowe and Walker 1997, 305).

Dating for the deposition of the Upper Boulder Clay has been obtained from marine shells present within the till at Sandiway (Cheshire). These shells, redeposited from the bed of the Irish Sea, have produced a date of 28,000 BP (Boulton and Worsley 1965). By drawing together these strands of evidence the majority of researchers are now confident that the Upper Boulder Clay was deposited by an advancing ice sheet of Late Devensian age (Lowe and Walker 1997, 324–5). This glaciation reached its maximum at around 20,000–18,000 years ago (ibid, 326). After 18,000 BP the ice sheets covering the Irish Sea began to retreat from the line of maximum extent across the Church Stretton-Wolverhampton line (Fig 6). However, a subsequent readvance of the ice sheets appears to have occurred from the Welsh mountains down

the Severn, Vyrnwy and Dee valleys (Shaw 1972; Earp and Haines 1982; Pannett and Sutton 2002).

SUBGLACIAL CHANNELS, FLUVIOGLACIAL DEPOSITS AND KETTLE HOLES

In addition to the extensive areas of boulder clay deposited beneath the ice sheets, the drift deposits around Shrewsbury are also characterised by extensive spreads of fluvioglacial silts, sands and gravels entrained and redeposited by meltwaters issuing from the retreating and decaying ice fronts (Reynolds 1979, 95; Fig 7). These relict landforms are a testament to the torrents of glacial meltwater that flooded across the periglacial landscape as the ice receded. The deposits created a chaotic pattern of mounds and ridges across the Shropshire-Cheshire plain (Thomas 1989). Several trenches carved deep into the bedrock present another interesting feature of this glacial landscape. The channels were initially carved out by meltwaters under high pressure beneath the Irish Sea ice sheet. A number of these features, such as the so-called Buildwas, Lightmoor and Oakengates channels, exist to the south of Shrewsbury, near to the Ironbridge Gorge and Wenlock Edge (Fig 6; Hamblin 1986). Directly beneath Shrewsbury, another trench runs north-west to south-east across the Cheshire plain towards the Ironbridge Gorge. In the vicinity of Shrewsbury Abbey geotechnical boreholes have demonstrated that this trench is at least 60m in depth (Pannett 2002, 19). It is believed from borehole data that the Frankwell area is situated along the western side of this channel, so the profile of the underlying solid geology here slopes steeply from south to north (Geotechnics Ltd 1993). The Ironbridge Gorge forms an elevated section of this subglacial channel where it cut through the higher ground of Wenlock Edge.

The lower fills of these channels are often found to consist of till and poorly sorted glacial debris. However, as the Irish Sea ice retreated, such subglacial scours formed a major part of the glacial drainage system and began to infill with sand and gravel deposits washed into the trench as the meltwaters drained towards the Ironbridge Gorge. The sediments often display a degree of sorting, stratification and cross-bedding, indicating fluvial agency of deposition under relatively ice-free conditions (Shaw 1972). In places, where the channels became choked with glacial debris and stranded blocks of glacial ice the drainage was impeded, giving rise to the development of lacustrine environments. Underneath Shrewsbury Abbey, evidence of these environments is demonstrated by a 30m-thick sequence of laminated red clays deposited from suspension in still, standing water conditions (Pannett 2002, 19). In addition to these channels, there are also local examples of glacial tunnel valleys (linear U-shaped channels eroded under the ice sheets by meltwater streams, which were later infilled with sediments; D Pannet, pers comm).

Many of the stranded blocks of stagnant ice were later buried beneath ablation and glacial outwash deposits. When the ice finally melted, causing surface collapse, open crater-like depressions were formed, known as kettle holes. They often formed lake features into the Holocene period, and subsequently infilled with fine-grained organic sediment and biogenic deposits. These 'meres and mosses' contain long deposit sequences that preserve a record of palaeoenvironmental change across the majority of the Holocene, and in some cases into the preceding Late Devensian (Reynolds 1979; Beales 1980; Barber and Twigger 1987; Chambers et al 1996). They are, therefore, of considerable importance to researchers studying Late Glacial through to Holocene vegetation successions.

Many kettle holes exist near Shrewsbury, roughly extending in a line which follows the orientation of the north-west to south-east aligned subglacial channel. A particular example of note is Crose Mere, located just to the north of Shrewsbury (Beales 1980). This open lake was found to preserve a long history of palaeoenvironmental change dating from the Late Devensian through to the later Holocene. The basal sediments gave a radiocarbon age of *c* 10,300 BP, while the upper sediments were dated to 1050 BP (ibid). The pollen assemblage retrieved through the sequence displayed a transition from the open herbaceous tundral landscape of the Late Glacial, to the birch (*Betula*) and pine (*Pinus*) colonising species of the Boreal period (*c* 10,000–8000 BP). The upper part of the profile showed evidence of the deciduous oak (*Quercus* sp) and elm (*Ulmus* sp) woodland typical of the Atlantic period (*c* 8000–6000 BP or later).

2.5 THE TERRACES OF THE UPPER SEVERN (PERIODS 2–3)

Unlike the lower Severn, which holds a long record of terrace formation stretching back to the Anglian Glaciation *c* 500,000 years ago (Maddy et al 1995), as it lay beyond the Late Devensian ice sheet, all the terraces of the upper Severn to the north of Wenlock Edge date to the Late Devensian. Any record of earlier terrace formation has been lost to the ice of the last glaciation. Towards the end of the Last Glacial Maximum *c* 18,000 years ago, the Severn partially inherited the drainage pattern created by the subglacial scour. This is illustrated by the geological mapping, which shows the flights of terraces and later Holocene alluvial deposits closely following the north-west to south-east spread of fluvioglacial deposits infilling the trench (Fig 7). The highest terraces in the Shrewsbury area show an outwash train emerging from the Rea valley (Pannett 1994, 52; Fig 7).

During the Late Glacial, the gradual retreat of the ice sheets from the area led to a reduction in the highly changeable meltwater discharges responsible for depositing the chaotic mounds and ridges of fluvioglacial deposits. Flows became relatively more stable and regular, allowing the Severn to cut a more orderly channel across the periglacial landscape. However, the river was still influenced by glaciers surviving further upstream, which fed meltwater discharge, heavily

laden with coarse sediment, into the channel system. During this period the Severn is likely to have adopted a multiple threaded braided river form, dominated by sand and gravel aggradation, which built up the lower terrace deposits. Such rivers are common in Arctic regions today, and are generally characterised by high-relief gravel bars interspersed with low-lying shallow channel threads (Miall 1996).

Towards the final stages of the Late Devensian at least four phases of flood plain degradation occurred, leaving a set of terraces at higher elevations than the valley floor. The British Geological Survey mapping of the Shrewsbury area records at least three terraces: the lower no. 1 terrace, the no. 2 Cressage Terrace and the no. 3 Uffington Terrace (Pannett 2002, 19; Fig 7). The effect of climatic forcing on terrace formation has been well reported in the past, and is taken as a leading cause for the flights of river terraces observed in the lowland rivers of southern Britain (Bull 1991; Maddy et al 2001). It is now clearly understood that flood plain incision, aggradation and terrace formation occur as a response to the complex relationship between sediment supply, discharge rates, base level and rapid environmental change (Bull 1991; Törnqvist 2007). In general, colder climates favour gravel aggradation, as large quantities of water are locked up in the frozen periglacial landscape. Cold to warm transitions see an increase in the power and frequency of meltwater discharges, which eventually cause incision through the flood plain and the creation of a terrace raised above the new flood plain. The terraces reflect a transition from the 'outwash' trains to point-bar and gravel bed deposits, which accumulated within the incised valley. The western extent of the 'outwash' train in the Rea Brook valley, to the east and south of Shrewsbury, may have been influenced by the presence of the Welsh ice sheet, which may have reached Shrewsbury (Fig 7).

Difficulty arises when attempting to assign the terraces of the upper Severn to a chronostratigraphic model. This is in part due to the turbulent nature of the landscape in which these terraces were formed, some time after the Last Glacial Maximum of *c* 18,000 BP. After this date the ice began to retreat from the region, exposing the surface of the subglacial trench over which the subsequent course of the Severn would develop. The 'outwash terraces' were formed by high discharges of meltwater emanating from this degrading ice front, cutting through the spreads of fluvioglacial deposits and leaving an elevated new terrace.

By 13,000 BP most of Britain was ice-free (Lowe and Walker 1997, 306), and the high meltwater discharges responsible for cutting the outwash terraces had long since abated. From 13,000 to 11,000 BP Britain experienced a short warm interstadial known as the Windermere/Allerød interstadial (ibid). The climate became as warm as it is today, allowing herbaceous grasslands and open pine (*Pinus* sp) and birch (*Betula* sp) woodland to colonise the landscape. Between 11,500 and 10,000 BP the Loch Lomond/Younger Dryas stadial took hold. The climate rapidly deteriorated, ice sheets developed across the highlands, and most of Britain was plunged back into periglacial conditions.

THE HOLOCENE DEVELOPMENT OF THE RIVER SEVERN

The Severn responded to the warmer climate of the Holocene by radically transforming its plan-form and flow style. At the beginning of the Holocene the Severn is likely to have maintained a multiple threaded or partially braided plan-form, filling the floor of an incised meandering channel inherited from the Late Glacial river. However, with climate amelioration, the landscape became colonised by vegetation, resulting in an overall reduction in sediment supply and surface run-off. The warmer climate also dramatically lowered precipitation levels, so reducing discharge into the river catchment. Consequently fewer channel threads were needed, as the channel capacity far exceeded the discharge. These surplus channel threads became abandoned and gradually infilled with fine-grained sediments and organic deposits. Gradually the multi-channel plan-form of the preceding Late Glacial transformed to the single-threaded meandering form visible today.

An unusual feature of the upper Severn is the large sinuous meander bends that define its distinctive character. There are also a number of incised valley meanders along this stretch of the Severn. Meandering channels usually develop tighter, smaller meanders over time due to processes of erosion and lateral migration on the meander bends (Miall 1996). This has not happened with the Severn, suggesting that the channel has remained in a fairly stable state over most of the Holocene period, although the bends in the river channel between Montford Bridge, 7.2km north-west of Shrewsbury, and Shrewsbury itself are in fact fossilised meanders, formed where the river is following the course of the subglacial channel (Pannett 1994, 55; Fig 7).

The Severn forms a rare example of an 'Osage'-type underfit channel (Dury et al 1972). This channel type has a very shallow gradient and is characterised by large meander bends, where shear stress is sufficient to deform the channel bed but not to erode the banks (ibid). Consequently these rivers develop a regular pattern of alternating in-channel gravel banks and scoured pools known as a pool and riffle sequence. However, riffles in the upper Severn are also produced by two other mechanisms. One of these occurs when the river erodes steep cliffs of glacial deposits, where it can remove finer material and leave behind the gravels that partly infill the channel. A local example of this is at Coton Hill. The other takes place when a tributary washes more gravel into the river than can be cleared away. Just upstream of the English Bridge the Rea Brook enters the Severn and the gravel banks it helped build have created a short stretch of braided channel and islands (Pannett 1994, 56; Fig 16). These in-channel features have formed an important aspect of how past populations have exploited and utilised the river, with the elevated gravel riffles providing fording points and locations for bridges and fish weirs. For example, at Coton Hill, near Shrewsbury, a riffle was utilised as a fish weir to catch eels and salmon until the post-medieval period. The nearby fish

weir at Fitz was still in existence in 1881 (Pannett 1988, 376, fig 3). It is probable that the location of the medieval fording point a short distance downstream of the new Welsh Bridge and the site of the old Welsh Bridge were both determined by the presence of riffles (Chapter 3; Pannett 1994, 56).

Although the Severn may have remained relatively stable during the Holocene it has still been subjected to changes in flow pattern and plan-form. This is especially apparent in the presence of old meander loops that have become cut off by chute channels, formed oxbow lakes and subsequently infilled with fine-grained organic deposits. One of these abandoned meander loops occurs a short distance to the north of the site and is known locally as the 'Old River Bed' (Pannett and Morey 1976). This former river bed is illustrated on the British Geological Survey mapping, which shows a large arc of Holocene alluvium just to the north of central Shrewsbury (Fig 7). As with kettle holes, oxbow lakes become depositories of useful palaeoenvironmental data. Pollen work carried out on the deposits infilling this abandoned meander highlighted a marked decline in elm (*Ulmus* sp) pollen at the base of the sequence (Beales and Birks 1973). The elm decline occurred at the start of the Sub-Boreal period (Smith 1970; Scaife 1988), suggesting that the cut-off occurred around 5000 years ago. The cause of this cut-off has been thought to relate to the nature of the soft substrate occurring in the area (Pannett and Morey 1976). The new course of the Severn to the south of the old meander loop cuts through the soft sandy silt deposits that infill the subglacial scour. A belt of kettle holes also runs north-west to south-east, suggesting that a kettle hole may once have existed where the new channel was able to cut through. Significantly, this new section of river channel has no flanking terraces surviving on its concave side (D Pannett, pers comm).

Although it is clear that in some localised areas the presence of kettle holes and glacial sandy silts allow the river to incise new channels and migrate, the Severn's low gradient across the Shropshire-Cheshire plain means the river does not have enough power to move coarser-grained sediments (Pannett and Morey 1976; Pannett 1994, 56). This may account for the Severn's apparent stability and its Osage-type underfit stream characteristics, because its mean flow velocity and discharge is unable to erode significantly former terrace or fluvioglacial gravels that flank its course, or entrain the coarse-grained sediment that makes up the bedload, which in other rivers is an important mechanism in generating actively meandering channels.

2.6 THE GEOARCHAEOLOGICAL INVESTIGATIONS

METHODOLOGY FOR THE ON-SITE INVESTIGATIONS

Three boreholes (BH) were drilled across the site by CC Ground Investigations Ltd with a Commachio MC300 drilling rig (Fig 8). The boreholes were undertaken primarily to sample and examine the extensive glacial deposits deeply buried below the site. The boreholes were drilled on a spacing of *c* 20m in a transect orientated roughly north to south in a line perpendicular to the present course of the River Severn. The drilling extracted 1.5m-long undisturbed windowless core samples. An additional seven boreholes were undertaken by Exeter University with a Geoprobe drilling rig (Allen and Brown 2006; Fig 9), to sample and record the shallow anthropogenic deposits and the underlying Holocene flood plain sequence. The boreholes were placed along the same transect as the MC300 boreholes on a spacing of 2–4m, and extracted undisturbed windowless core samples 1.22m in length (Fig 10).

All the core samples were cleaned and described, using standard sedimentary criteria, as outlined in Jones et al (1999; Fig 11). This attempts to characterise the visible properties of each deposit, in particular relating to its colour, compaction, texture, structure, bedding, inclusions, clast-size and dip. For each profile, every distinct unit was given a separate number (eg for BH4: 4.1, 4.2 etc from the top down) and the depth and nature of the contacts between adjacent distinct units was noted. All borehole locations were recorded on the Ordnance Survey grid, with the heights at the top of the boreholes recorded in metres above Ordnance Datum (m OD).

Three sections (geosections) were also examined and sampled within the excavation areas. Geosection (GS) numbers and corresponding unit numbers were allocated to the sequences, and where applicable cross-referenced with any assigned archaeological context numbers. These were located

Fig 8 Undertaking the geoarchaeological survey with the MC300 drilling rig

in the substation trench (GS14), the east cellar trench (GS15) and the sondage trench (GS16) (Fig 2). Hand augers were attempted in the base of the trenches in order to obtain as detailed a record as possible of the Holocene depositional sequence. The sections were logged in accordance with the criteria set out for recording the boreholes. The sedimentary logs for the sections and boreholes are presented in Chapter 9.1. The locations of the boreholes and archaeological sections are illustrated in Fig 10. Subsamples were taken from BH4A for particle size analysis. Two radiocarbon dates were also

Fig 9 Undertaking the geoarchaeological survey with the Geoprobe drilling rig

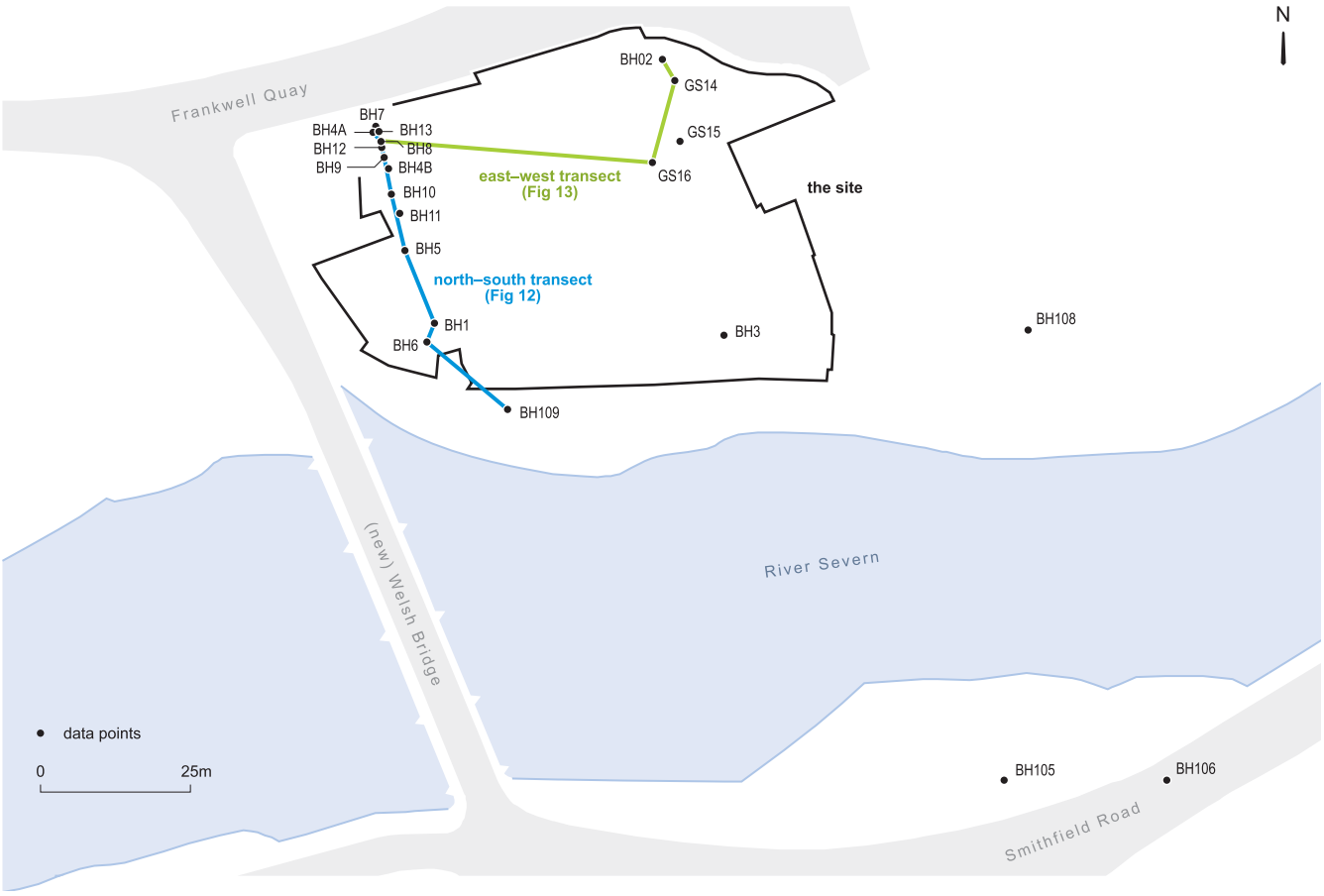

Fig 10 Distribution of the boreholes (BH), trench geosections (GS) and transects drawn through the deposit profiles (scale 1:1250)

Fig 11 Logging borehole samples on site, with one length of a windowless core sample extracted by the MC300 drilling rig

submitted from BH4A (Table 17). Samples taken from the archaeological trenches and borehole cores were examined for pollen. The results of the specialist work are presented in Chapter 9.7 and 9.10.

FACIES ANALYSIS AND DEPOSIT MODEL CONSTRUCTION

The sedimentary logs from the core samples and archaeological sections were entered into a digital database (RockWorks 2006). This data set was complemented with additional information gathered from previous geotechnical investigations. Each lithological unit in the sedimentary logs (gravel, sand, silt etc) was given a unique colour and pattern allowing cross-correlation of the different sediment and soil types across the site. By examining the relationship of the lithological units (both horizontally and vertically) correlations were made between soils and sediments, and associations grouped together to form a number of site-wide 'facies' that are indicative of certain depositional environments and/or distinct landforms. The grouping of these deposits is based on the lithological description, coupled with the data gathered from the other areas of specialist work (ie radiocarbon dating, particle size analysis and pollen analysis; Chapter 9.1, 9.7, 9.10). The vertical deposit succession is illustrated in transects drawn across the site (Fig 12; Fig 13). A key to the lithology and facies associations is given in Fig 14. The RockWorks data were also transferred to ArcGIS v 9.3 where the spatial analyst package was used to create a digital elevation model of the flood plain gravel surface using the inverse distance weighted function.

THE DEPOSIT SUCCESSION

The results of the specialist analysis (particle size, pollen and radiocarbon dating) are synthesised with the results of the on-site geoarchaeological investigations to form an interpretation and chronology for the deposit sequence. The sequence is

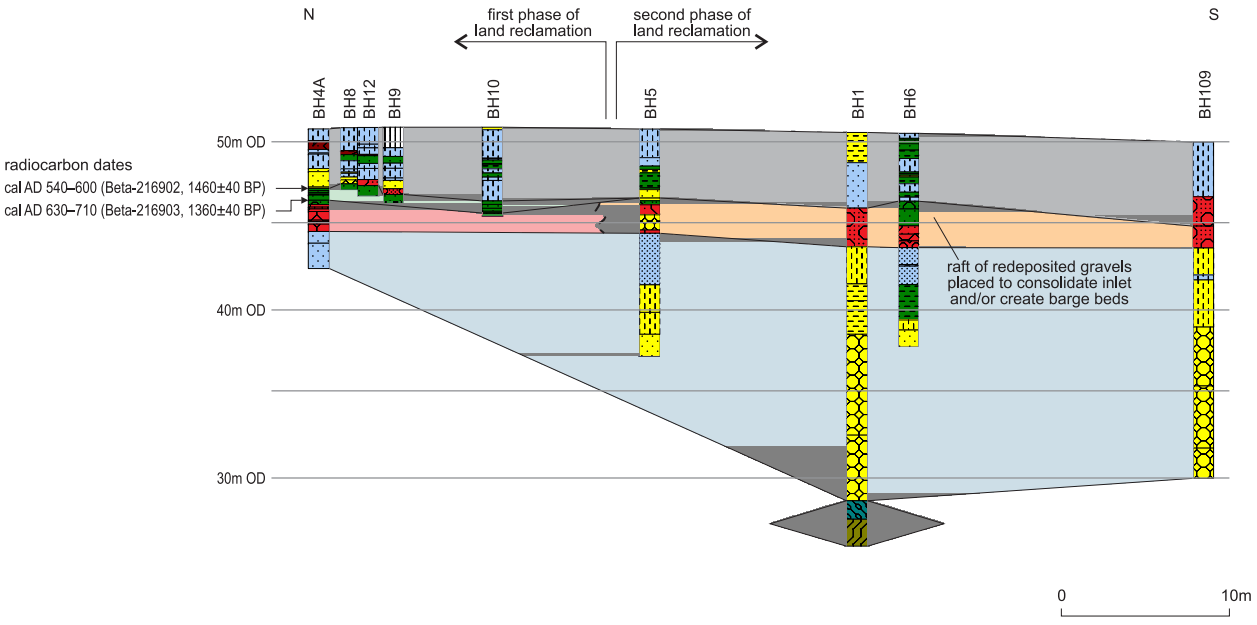

Fig 12 North–south transect across the site (for key see Fig 14; for location see Fig 10) (scale 1:450)

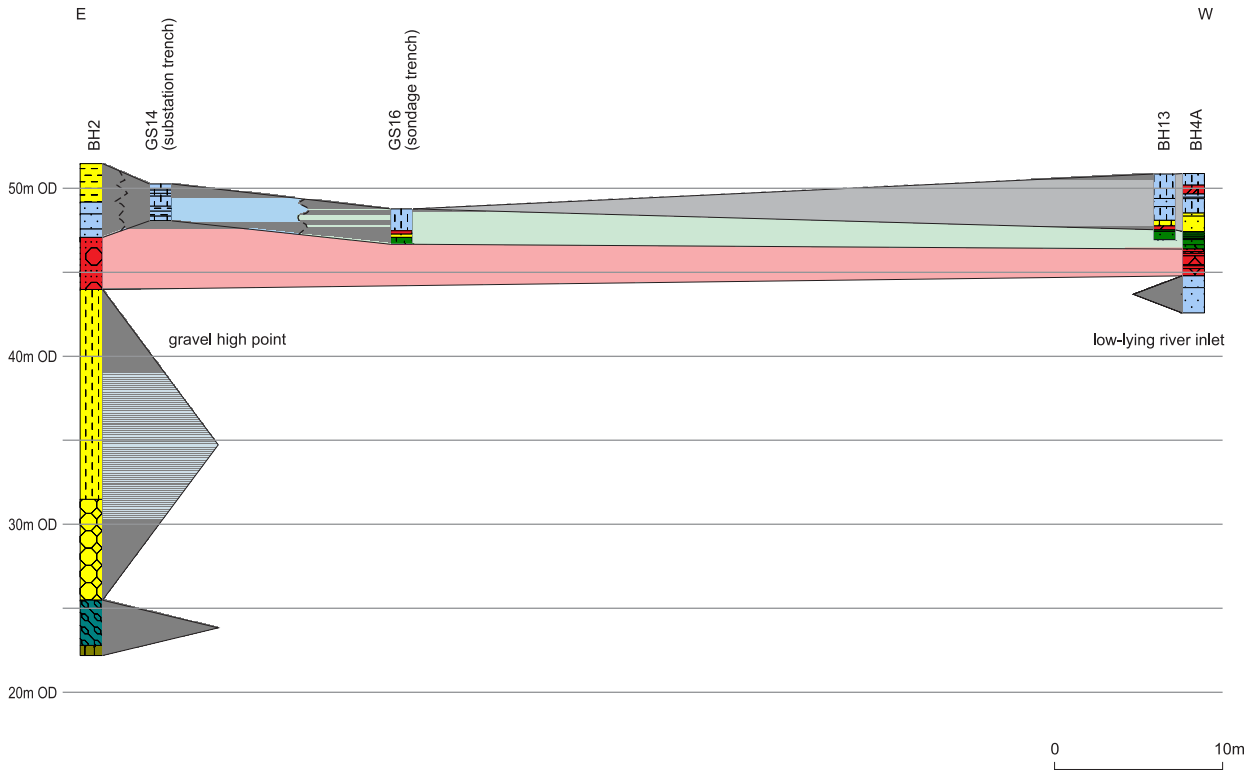

Fig 13 East–west transect across the site (for key see Fig 14; for location see Fig 10) (scale 1:450)

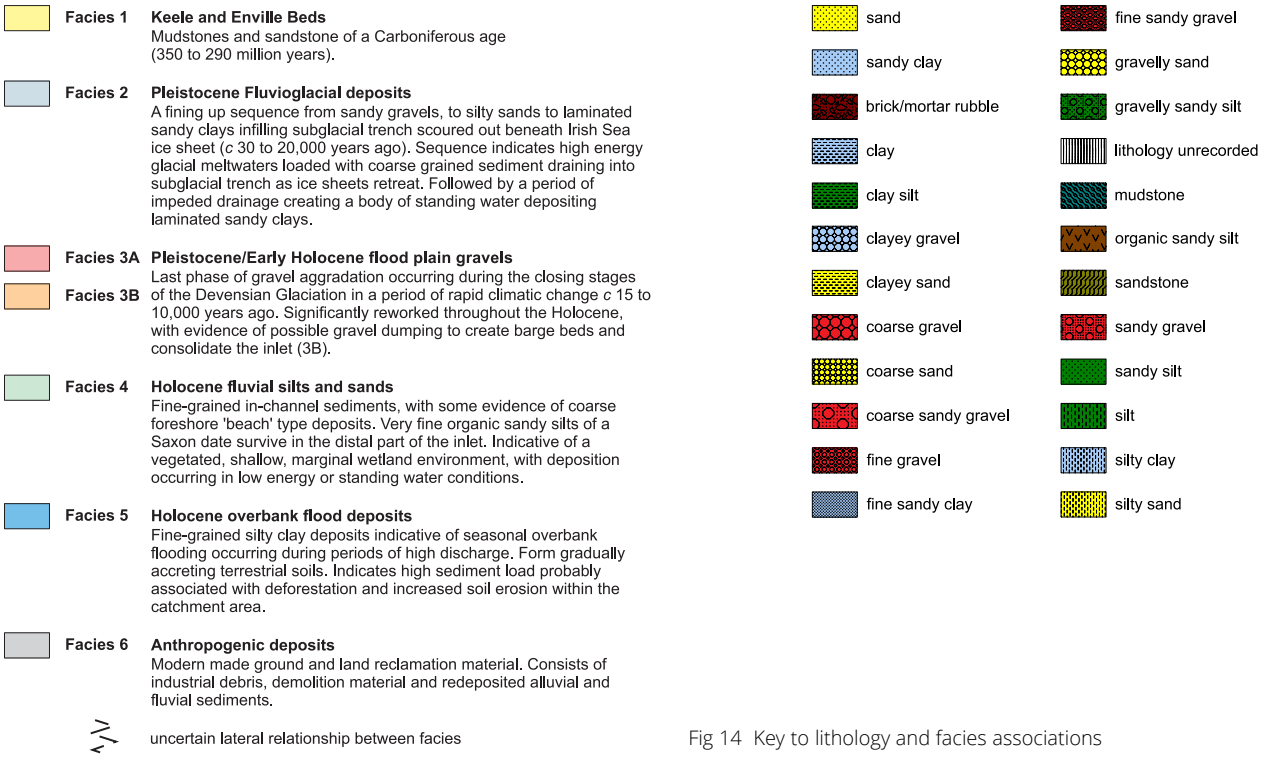

Fig 14 Key to lithology and facies associations

discussed in terms of the facies associations from the oldest to the most recent. The facies associations and lithologies observed during the geoarchaeological investigations are illustrated in the two transects drawn across the site (Fig 12; Fig 13).

FACIES 1: THE KEELE AND ENVILLE BEDS (OA1)

The lowest deposits consist of reddish-brown mudstones and sandstones, which belong to the Keele and Enville Beds. These deposits date to the Carboniferous period of the

Palaeozoic era. The deposits were not encountered in the geoarchaeological boreholes, but were recorded in previous geotechnical interventions. These logs demonstrate that the surface of the Keele and Enville Beds on the site occurs at *c* 28.65m OD (BH1, Fig 12).

FACIES 2: LATE DEVENSIAN FLUVIOGLACIAL DEPOSITS (OA2)

The Keele and Enville Beds were overlain by a 15m-thick deposit of fluvioglacial origin (BH1, Fig 12). The base of these deposits occurred at *c* 28m OD, extending to around 44m OD. These deposits infill the subglacial scour running directly north-west to south-east beneath Shrewsbury. It was not possible to obtain a full record of these deposits from the geoarchaeological boreholes, but previous geotechnical data do give an insight into the nature of the lower part of the facies.

The geotechnical boreholes indicated that the lower part consisted of reddish-brown silty sandy gravels, with occasional angular to rounded sandstone cobbles. From *c* 30m OD onwards the deposit displays a noticeable change in clast size to finer-grained texture – at this level, medium sands fine upwards to silty sands with sandy clays at the top of the unit profile. Occasional small rounded gravel clasts were also noted, reducing in frequency up through the profile. Of particular note is the presence of discrete clay lenses measuring no more than a few centimetres in thickness. These were apparent within the sand and silty sand components of the facies. The upper sandy clay also displayed very faint laminations that measured no more than a few millimetres in thickness. The reddish-brown colour of the infilling sediment suggests that it is derived from the reddish-brown sandstone Keele Beds that were eroded and degraded by glacial action.

In general the deposits appear to fine upwards through the profile indicating a gradual waning of discharge and stream power. The lower coarser sediments indicate high-energy fluvial conditions, while the presence of the clay lenses and the faint laminations in the upper finer sandy clay demonstrate a gradual transition from meltwater flow to periods of still, standing water and the development of lacustrine environments. The drainage may have been impeded by the accumulation of gravel ridges within the scour, or by stranded blocks of ice left by the retreating ice sheet. Deposits similar to this were recorded on the Shrewsbury Abbey site, extending to a depth of *c* 30m (Pannett 2002, fig 5). The comparative depth of the fluvioglacial deposits recorded at Frankwell suggests that the site lies on the shallow edge of this subglacial scour.

Although the subglacial scour and the infilling sediments were all formed in response to the glacial conditions occurring during the Devensian period, a more precise chronology for the genesis of the scour and the infilling is more difficult to determine. The initial scouring of the trench is likely to have occurred around 28,000 years ago, when the Irish Sea ice sheet covered the area. The lower sediments are probably derived from this initial scour and fill episode under fully glaciated conditions. However, the upper fills observed in the geoarchaeological boreholes were deposited within fluvial and lacustrine environments, indicating deposition after the retreat of the ice sheet. The sediment is most probably derived from till and other glacial debris washed into the scour as the meltwaters drained from the edge of the retreating ice sheet. The majority of the upper deposits are therefore likely to post-date the Last Glacial Maximum of *c* 18,000 BP.

FACIES 3: FLOOD PLAIN GRAVELS (OA3)

Facies 3 consists of a series of coarse gravel and sand units. These deposits were found to truncate the underlying fluvioglacial sediments, as illustrated by the sharp erosional interface between the two facies associations. On initial observation this facies appeared to indicate high energy fluvial deposition within the braided river regimes typical of the Late Pleistocene and Early Holocene periods. However, on closer examination it became apparent that a degree of anthropogenic agency was also responsible for the deposition, pointing to a much longer chronology than simply the Late Glacial/Early Holocene interface. Within the facies association two separate modes of deposition were identified, and hence the facies is divided into two sub-facies associations (Facies 3A and Facies 3B). Within BH4A these coarse units were submitted for particle size analysis (Chapter 9.1; Fig 103; Table 1)

On the western edge of the site the surface of these gravel and sand deposits occurred at *c* 46.5m OD in the south, dipping slightly to *c* 45.7m OD towards the north. Towards the east, in the vicinity of the (old) Welsh Bridge, a hand auger through the alluvial deposits within the substation trench (GS14, Fig 10) encountered gravel at *c* 47.9m OD, indicating an area of high topographic relief. These deposits displayed great variability up through the profile, ranging from medium sands to coarse-sized gravels, with distinct sharp boundaries between the units. The coarse-grained deposits generally consisted of fine- to cobble-sized, clast supported, rounded, sub-rounded, sub-angular and tabular gravels of a reddish-brown, black and grey patternation. Within some of the gravel units sand and silts were present between the interstices of the gravels. The finer deposits consisted of medium to coarse mid-brown sands with some silt within the matrix.

In all the boreholes there appeared to be no across-site correlation between these individual coarse- and fine-grained units, although in many of the boreholes the coarser sediment did overlie finer gravels, suggesting a very rough stratification to the deposits. The particle size analysis carried out on BH4A corroborates this, suggesting two possible phases of aggradation: a first phase consisting of fine gravels, fining upwards, and a second phase consisting of a higher frequency of coarse-/cobble-sized gravel that also displays a slight fining-up sequence.

The particle size work demonstrated that the gravels were generally very poorly sorted, with trimodal and polymodal characteristics. Such characteristics are indicative of rapid deposition and possible reworking, rather than the well sorted, bimodal gravels typical of fluvial environments. This rapid deposition and/or reworking of the gravels was likely to have occurred during the historic period, as inferred from several small abraded brick fragments found within the lower part of the facies. Of particular significance was the presence of a nail and moderate quantities of abraded brick and tile fragments within the lowermost gravel unit of BH6. This demonstrates that the total depth of the gravel deposits between BH5 and BH6 had undergone significant reworking into the post-medieval period. The organic silts overlying the gravels between BH4A and BH10 were dated to the Anglo-Saxon period (Facies 4), but reworking may have taken place up to this period (Facies 3B) (Fig 10; Fig 12).

The spread of abraded brick fragments vertically up through the sequence, the Anglo-Saxon date for the overlying deposits in the north, and the lack of any clear lateral stratification suggests that the deposits become progressively more disturbed through time in a proximal direction towards the main course of the modern river. The gravel and sand deposits may have been disturbed by high magnitude flood events which reworked the gravel bed locally by processes of rolling, sliding and saltation. However, anthropogenic activity cannot be ruled out as a contributing factor, especially given the apparent inverse grading to the particle size distribution up through the profile.

Flood plain sequences of a Late Pleistocene to Holocene age typically display a basal unit of coarse fluvial gravels that gradually fine upwards into sands and then silts. These transitions formed in response to climate amelioration at the Pleistocene/Holocene interface, which saw the progressive evolution of river systems from the braided style of the Late Glacial, through to the anastomising and then meandering system of the warmer Holocene. As a result, rivers experienced an overall reduction in peak flow discharge, sediment supply and stream power. Consequently, channels were less able to entrain and carry coarse-grained sediment, accounting for the reduction in grain size up through most sediment profiles.

Facies 2 (above), in contrast, exhibits no gradual fining up to the sequence, but instead a sharp and abrupt increase to the clast size. Given the possible historic and therefore Late Holocene date for the upper part of Facies 2, it is unlikely that stream power and discharge would have been high enough to entrain and then deposit substantially thick sheets of coarse gravel. Therefore anthropogenic agency and deliberate dumping are likely to have been key modes of deposition. Rocque's map of 1746 (Fig 41) shows that this part of the site existed as an inlet, which appears as an area used to beach river barges. In order to consolidate this inlet, gravel was probably dumped across the area to create firmer ground for loading and unloading barges.

The inlet is likely to have formed in response to the local morphology of the river. The site is situated on the outside bend of the large meander which encloses the historic centre of Shrewsbury. On such meanders, turbulent flows tend to favour deposition on the inside bend and erosion on the outside, where flow velocity and shear stress is at its highest. This erosive force may have been amplified by the construction of the bridge, as the bridge piers within the channel belt would have reduced the cross-sectional area of the river. Consequently, if the discharge rate remained the same, the flow velocity would have increased, leading to higher erosive forces on the outside bend. This may also explain the need for dumping within the inlet to replace eroded material and reconsolidate the ground.

The location of this inlet is highlighted by the plot of the ridge of higher gravel, upon which are two distinctive areas of more elevated topography (Fig 15). Although the borehole data are rather poorly spaced, the low-lying gravels, which occur at *c* 45.7m OD, are clearly visible, forming the inlet on the western part of the site. Towards the east the gravels rise to *c* 47.5m OD, creating what appears to be a peninsula of higher gravels extending outwards towards the river. No borehole data were available to plot accurately how the gravel surface develops further to the east, but it does lead to the speculation that the site of the (old) Welsh Bridge was partly dictated by the presence of this gravel ridge. The ridge may have originally formed as a macroform element of the braid plain, such as an in-channel gravel bar. Its surface morphology was likely to have been modified and accentuated by the accumulation of later Holocene flood plain sediments. By the time of the bridge construction the feature most likely appeared as a pronounced spur of land extending out into the channel belt, providing a suitable narrow crossing point over which to build a bridge.

The 46.5m OD contour of the raft of slightly higher gravel defines the extent of the inlet (Fig 15). This inlet is also visible within the north–south transect (Fig 10; Fig 12), and illustrates how the lower-lying organic silts of Anglo-Saxon date (Facies 4; Fig 14) lie protected behind the upstream side of this gravel raft. These organic silts may have been protected from later erosive events by a period of land reclamation and the construction of riverside revetments. Beyond this point the foreshore of the inlet remained open, with episodes of gravel dumping raising the surface to create consolidated barge beds.

Although these deposits were significantly disturbed and reworked throughout the Holocene, and include a degree of deposition through anthropogenic agency, they are essentially fluvial in nature and can be related to the group of deposits defined by the British Geological Survey mapping as 'river terrace'. The gravel deposits on the site represent a final phase of flood plain incision and gravel aggradation, before the river responded to the temperate climate of the Holocene with a switch to fine-grained minerogenic deposition and peat formation. These gravels are therefore likely to have been initially deposited sometime around the Late Glacial/Early Holocene interface at *c* 10,000 BP.

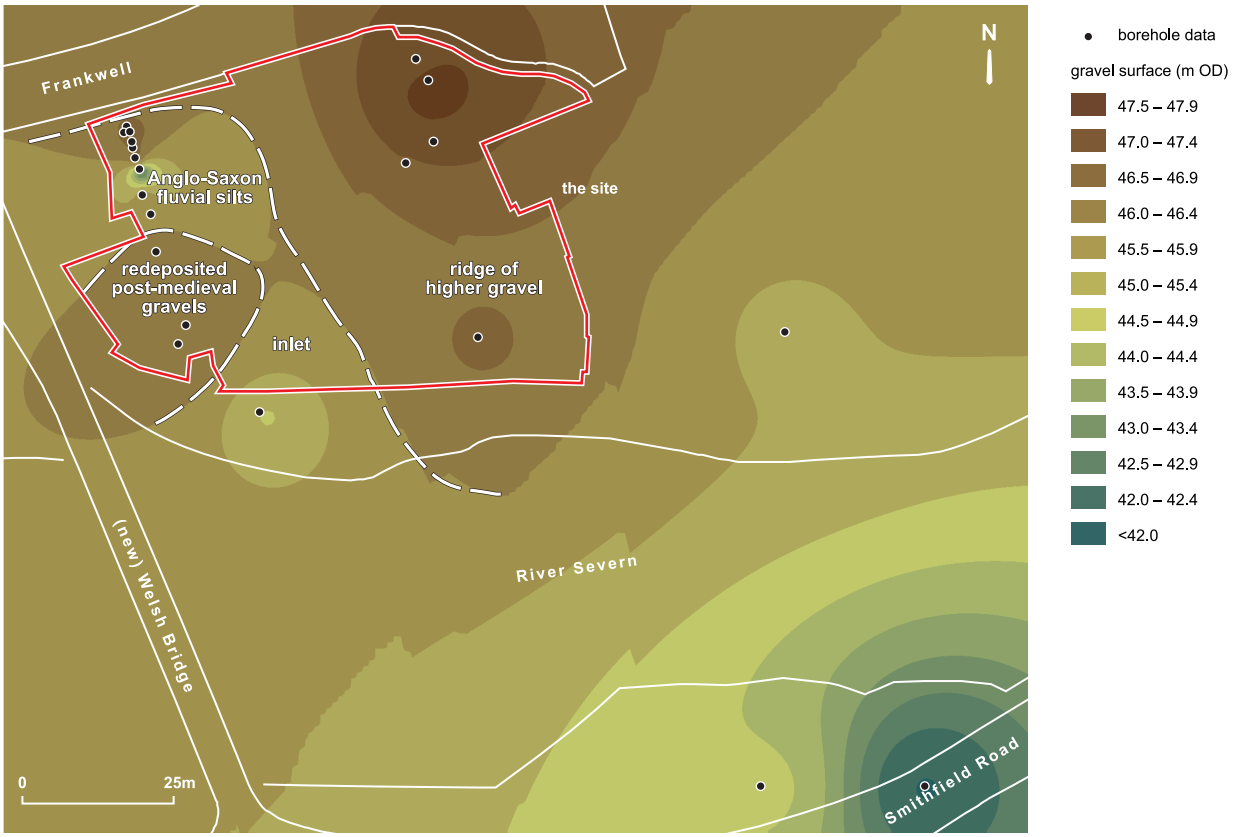

Fig 15 Digital elevation model of the gravel surface topography, highlighting features and landforms (scale 1:1250)

FACIES 4: HOLOCENE FLUVIAL AND FORESHORE DEPOSITS (OA4)

Facies 4 defines a series of fine-grained fluvial deposits that overlie the coarse-grained flood plain gravels. In the north–south transect across the site (Fig 12) these deposits formed a unit which could be traced laterally between BH4A and BH10. Within these boreholes the facies consisted of a series of greyish-brown fine sandy silts, which contained occasional rootlets and detrital plant remains. The top of the facies occurred at between 47.5m and 46.5m OD and extended to 45.7m OD at its lowest extent. At its thickest it measured *c* 0.7m.

These deposits are indicative of in-channel sediments deposited under slow-flowing to standing water conditions. The plant remains indicate vegetational development in a marginal channel environment. The deposits are likely to have been deposited as flow velocity waned in the shallow waters at the distal end of the inlet, dropping the finer sediment carried in suspension. However, given the general trend for erosion on the outside of meander bends, frequent cycles consisting of deposition during waning flow and erosion during peak flow discharges are likely to have occurred. Radiocarbon dates from BH4A (Chapter 9.10; Table 17) demonstrate that the sequence accumulated in the Early to Middle Saxon period. The lower part of the deposit produced a calibrated date of cal AD 630–710 (Beta-216903, 1360±40 BP), while the upper part produced a calibrated date of cal AD 540–660 (Beta-216902, 1460±40 BP). The tight overlap of 30 years between the lower and upper ranges of these two dates suggests that the sediments accumulated over a very short period of time.

A pollen assessment was undertaken on the sediments from within BH8, BH12 and BH13 in order to ascertain the environment of deposition and elucidate the nature of the wider flood plain landscape. The pollen assemblage was found to be diverse up through the sequence, containing an abundance of tree, shrub and herbaceous pollen (Chapter 9.7).

The arboreal pollen consisted of oak (*Quercus* sp), birch (*Betula* sp), alder (*Alnus* sp), willow (*Salix* sp) and pine (*Pinus* sp). Alder was found to be the most abundant tree pollen. Shrubs were represented by common hazel (*Corylus avellana* type), and heather (*Calluna vulgaris*). The herb assemblage was dominated by grasses (Poaceae), but also included dandelions (Lactuceae), cornflower (*Centaurea cyanus*), meadowsweet (*Filipendula*), ragged robin (*Lychnis flos-cuculi*) and sheep's sorrel (*Rumex acetosella*) amongst others. The high abundance of alder, with elements of willow, ragged robin, sheep's sorrel and meadowsweet, indicates that the on-site environment was likely to consist of wet alder carr woodland, interspersed with areas of damp pasture or grasslands. Such assemblages can be found within riparian zones where the flood plain fringes water bodies such as pools, ponds and river channels. The higher drier terraces adjacent to the flood plain probably consisted of stands of oak and hazel woodland, with the high levels of grasses indicating extensive open grasslands within this environment. Scrub

associated with poor grasslands is also indicated by heather.

Evidence of a predominately open environment that may be related to arable agriculture was indicated by the presence of barley (*Hordeum* type) and oats/wheat (*Avena/Triticum* type) pollen. Very high levels of these cereal types were recorded in BH12, reaching a level of 10%, where the norm is usually 2%. This suggests arable usage of the flood plain in close proximity to the site. The highly active and disturbed nature of the environment of deposition was also suggested by the presence of ribwort plantain (*Plantago lanceolata*), cinquefoils (*Potentilla* spp), buttercup/crowfoot (Ranunculaceae) and sorrel (*Rumex acetosa/acetosella*). This evidence for disturbed ground may be related to the dynamic and fluvially active conditions within the inlet that reworked and disturbed the fluvial silts. It may also be related to grazing activities and the use of the inlet as a watering hole for livestock.

In the vicinity of the bridge a number of riverine deposits were recorded at the base of the archaeological interventions. These deposits generally consisted of mid-brown fine to coarse sands and silts, with discrete isolated lenses, *c* 0.2m thick, of coarse rounded sandy gravels. These deposits, which occurred in the east cellar trench (GS15) and the sondage trench (GS16) (Fig 10) occurred at 50.3m to 48.6m OD, and measured up to 2m in thickness. The top of the sequence appeared to consist of reworked silty clay overbank flood deposits. Within these interventions there appeared to be no direct correlation between the units, although they all seem to be indicative of in-channel sedimentation, with the coarser component probably representing foreshore beach-type deposits. Although these are at a similar stratigraphic level to the Anglo-Saxon fluvial silts, they are unlikely to be contemporaneous. The position of the site on the outside meander and the underlying coarse gravel material all suggest that significant cycles of erosion and deposition have taken place. Given the close proximity of the deposits to the modern course of the river, they are likely to have been constantly reworked and eroded until the construction of revetments and the dumping of land reclamation material protected the strata from such erosive events.

FACIES 5: HOLOCENE OVERBANK FLOOD SEDIMENTS (OA5)

This facies was only recorded within the substation trench, and consisted of a 2.2m-thick unit of silt and clay deposits. The surface of the facies was recorded at *c* 50m OD (Fig 13; Fig 14). The lower part consisted of light grey silty clay, with light brown mottling and occasional manganese staining. The grey colouring indicates deposition under 'gleyed' ground waterlogged conditions. The upper part, in contrast, appeared light yellowish-brown in colour, indicating post-depositional weathering and oxidation. Both units appeared massive with no bedding, and evidence of rooting and bioturbation throughout.

The sedimentary characteristics are typical of overbank flood plain sedimentation (Miall 1996) and the formation of terrestrial accretionary flood plain soils. Accretionary soils are formed by episodic overbank flooding that usually occurs during the peak flow discharges of the wetter winter months. The flood waters carry the fine sediment by suspension, depositing it across the flood plain surface once the flood waters dissipate. For most of the year the deposits would have formed fully terrestrial land surfaces, only becoming inundated with short-lived ephemeral pools of standing water during these winter flood events. Any sedimentary structure or layering formed by these events has since been lost by bioturbation, giving the deposits their structureless appearance.

Although these deposits are identified as a distinct facies, they may represent a lateral sequence associated with Facies 3 (above). During high discharge flood events, sands, silts and clays would all have been carried by the flood waters on to the adjacent flood plain. As these flood waters fanned out across the flood plain, the energy gradually dissipated, causing the flood waters to drop progressively finer sediment from suspension further from the river. This would result in a sequence that fines up laterally in a distal direction from the main channel flow.

FACIES 6: ANTHROPOGENIC DEPOSITS (OA6)

Across the area of the inlet in the vicinity of the north–south transect, up to 4m of anthropogenic deposits were observed (made ground; Figs 12–14). The deposits were extremely variable, consisting of industrial clinker debris, possible demolition debris and redeposited alluvial and fluvial sediments. The presence of brick and tile within the deposits suggests a post-medieval date. The deposits are likely to represent distinct dumping episodes related to land reclamation and revetment construction. However, at least two episodes of land reclamation can be inferred from the character of the underlying sediments.

In the northern part of the inlet (Fig 12; Fig 14) the anthropogenic deposits overlie the Anglo-Saxon fluvial silts (Facies 4), while towards the south they overlie the raft of slighter higher gravels laid down to consolidate the inlet and create the barge beds (Facies 3B). This suggests at least two phases of land reclamation. The first phase, in the north, buried and preserved the underlying Anglo-Saxon fluvial silts, while further dumping and reworking of flood plain gravels occurred towards the south.

2.7 DISCUSSION: GEOMORPHOLOGY AND ENVIRONMENT (PERIODS 1–3)

At first glance the geomorphology of the upper Severn valley and its associated fluvial and alluvial sediments says far more about the environment of the Shropshire-Cheshire plain in the Late Pleistocene than about its changing nature during the

Holocene period. In particular, the soft glaciofluvial and lacustrine sediments that infill the deeply scoured subglacial channel were easily eroded by the river and account for its unusual characteristics still visible today. It appears that the Holocene channel in the Shrewsbury area largely followed this pre-existing subglacial channel, carving out a series of large meanders across a broad valley flood plain. However, in some places, such as Kingsland, on the south side of the Shrewsbury meander, the river channel has cut down into solid geology instead of the adjoining soft glacial sediments (Fig 7). One reason why the modern river did not entirely follow the course of its predecessor may have been due to the presence of localised areas of stagnant ice, which helped determine its course during the Early Holocene (D Pannett, pers comm). The existence of a broad flood plain, the meanders and related features that have developed within the Shrewsbury stretch of the Severn are much more commonly found in the lower than the upper reaches of major rivers, as their upper channels are often constricted by solid geology.

Despite the apparent stability of the Holocene river, comparatively small-scale river processes during this period created features that have had a significant influence on the historic use of the landscape and on the survival of archaeological evidence. The most important of these is the recurring pattern of pools and riffles, the latter providing shallow places suitable for constructing fish weirs, fords and bridges (Pannett 1994, 56–7). It is probable that the gravel ridge recorded on the line of the medieval bridge was originally a riffle situated at the crossover point of a meander. This ridge was undoubtedly the reason why the medieval bridge was situated at Frankwell Quay on the gravel bar (Fig 15). The relatively small-scale reworking of the Late Pleistocene glacial outwash was sufficient to create a landscape feature that helped shape the configuration of the medieval town.

Seasonal flooding continues to be a dramatic feature of the river, even today. Such floods have caused considerable erosion especially on the outside of sharp meander bends, as at Mountfields, to the east, in Shrewsbury. Erosion more often leads to the removal rather than the preservation of relict flood plain sequences. However, an inlet scoured out by the river during or prior to the Anglo-Saxon period was later utilised as a post-medieval barge bed or quay (Chapter 5). The dumping of gravel to consolidate this area of barge bed (where boats were beached for loading or unloading on the foreshore), inadvertently preserved the Anglo-Saxon backwater deposits that had accumulated within the inlet. Pollen of either 7th- or 8th-century AD date from these sediments provides a snapshot of the pre-urban landscape, as the Shrewsbury burh was not founded until the 10th century (Chapter 3). This shows that there was an environment of predominately open, damp grassland or river meadow, which was presumably being grazed to prevent woodland regeneration (Chapter 9.7). While the presence of alder (*Alnus* sp) pollen can be explained by trees growing along the river margins, the existence of hazel (*Corylus avellana* sp) and oak (*Quercus* sp) pollen confirms that there was some woodland in the locality. The presence of cereal pollen also shows that arable farming was taking place nearby, probably on the higher ground beyond the river flood plain.

3

THE ESTABLISHMENT OF FRANKWELL AND THE OLD WELSH BRIDGE, 11TH TO EARLY 13TH CENTURY (PERIOD 4)

The Welsh Marches
High the vanes of Shrewsbury gleam
Islanded in Severn stream;
The bridges from the steepled crest
Cross the water east and west.

The flag of morn in conqueror's state
Enters at the English gate:
The vanquished eve, as night prevails,
Bleeds upon the road to Wales. (Housman 1963, XXVIII)

3.1 THE MEDIEVAL ORIGINS OF FRANKWELL AND SHREWSBURY

Shrewsbury is believed to have been founded as part of a Mercian network of fortified towns or burhs established during the 9th century AD (Gelling 1992, 164–6) to control the Severn river crossing or ford on the road between the burhs of Chester (Cheshire) and Hereford (Herefordshire) (Fig 1). There was no Roman presence here, but downstream to the south-east was the walled Roman town of Viroconium Cornoviorum, now known as Wroxeter (Shropshire). The choice of the site of Shrewsbury was presumably determined by the presence of a short stretch of river that was shallow enough to be fordable most of the time, and by a meander which could have served as a defensive moat on three sides of the burh. The fourth or landward side of the burh was probably defended by a rampart and ditch, where a Norman castle was constructed before 1086. The presence of meanders along the course of this upstream stretch of the Severn is a result of its unique geological history (Chapter 2).

The existence of Shrewsbury is first documented in AD 901, when Ealdorman Æthelred of Mercia and his wife, Æthelflaed, issued a charter while staying at *civitate Scrobbensis* (Sawyer 1968, no. 221). This charter implies the existence of a settlement, which perhaps included a royal hall situated within the loop of the river. During the reign of King Æthelstan (AD 927–39) coins were minted in Shrewsbury by as many as eight moneyers, suggesting that it was already a burh (Baker 2010, 89). In 1006, according to the *Anglo-Saxon chronicle*, King Æthelred 'passed over the Thames into *Scrobbesbyrigscire* [Shropshire] and spent midwinter there' (Swanton 1996, 137). Exactly where the king stayed is not recorded, but it is generally assumed that he resided mainly at Shrewsbury, the principal borough or burh within the county. In 1016 the Aetheling Edmund visited Shrewsbury (ibid, 147). The nature of the burh defences are uncertain, but it is likely that two river crossings and the landward access to the meander were fortified (Fig 16). Archaeological work in Castle Street during 1999–2000, occasioned by water main renewal, revealed squared timber posts and a horizontal beam, which were radiocarbon-dated to the early 11th century (Hannaford 2001, 98). It is considered likely that these timbers formed part of the burh defences. The pre-Conquest town apparently contained at least one market, around which were laid out the central royal and ecclesiastical buildings. There is little clear evidence of rectilinear street patterns or planned settlement, but this may have been masked by the irregular topography of the site (Baker 2010, 96–8, 106, 213–14). In 1065 Shrewsbury had 252 houses and three moneyers; by the time of the Domesday survey of 1086 the town possessed a castle, an abbey, six churches and about 150 occupied houses, after 51 house plots had been subsumed by the construction of the castle and another 50 had become waste (Williams and Martin 2002, 688).

Frankwell developed as a bridgehead suburb situated on the opposite side of the Severn from Shrewsbury. Another medieval suburb, known as the Abbey Foregate, grew up on the eastern side of Shrewsbury's other medieval bridge (the English Bridge: Baker 2002, 206–17; 2010, 90, 123–4) (Fig 16). A similar pattern of suburban bridgehead development can be seen in a number of medieval English urban centres, such as Southwark (Surrey) and the City of London (Middlesex), on the opposite banks of the River Thames (Sharp and Watson 2011, 273–9), and Lincoln and Wigford

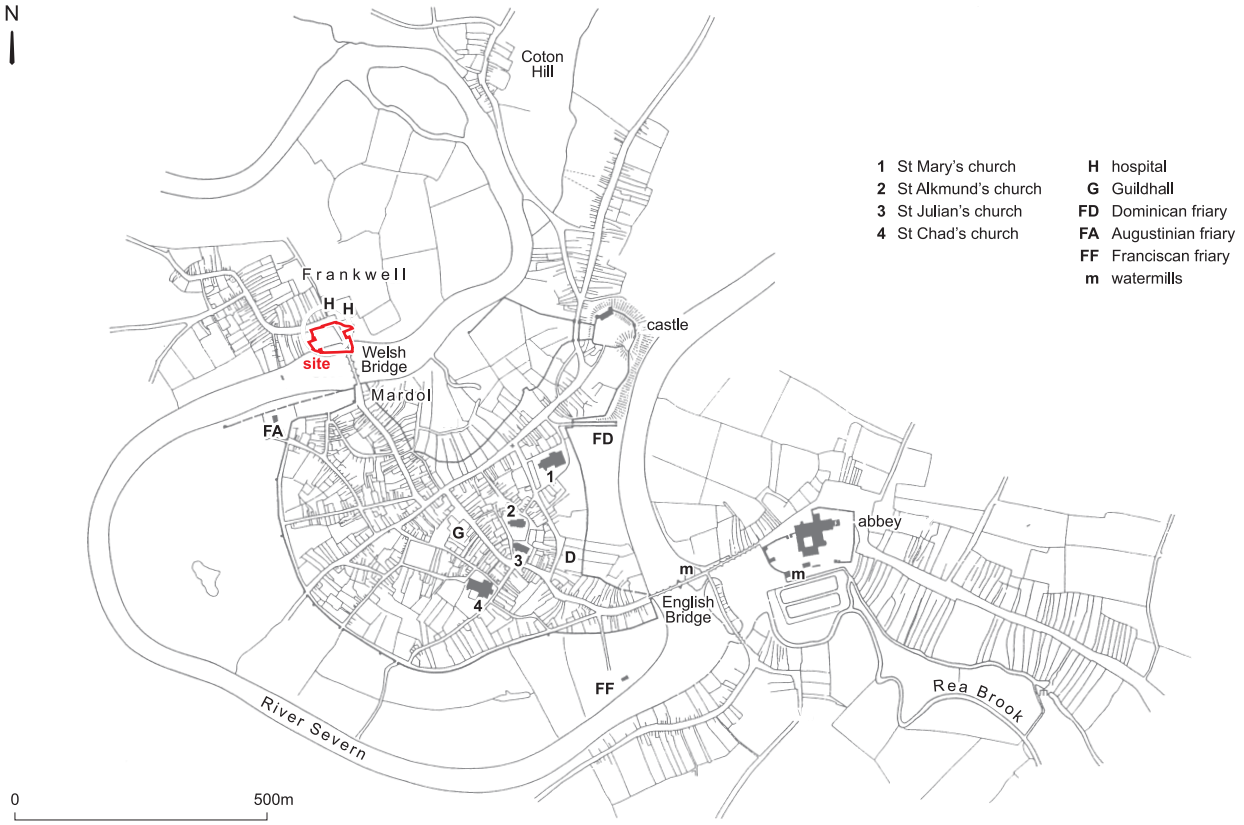

Fig 16 Map of Frankwell and Shrewsbury in the medieval period, showing the location of the site, the English and Welsh Bridges, watermills, the town's parish churches and ecclesiastical and administrative institutions (based on Baker 2002, fig 4) (scale 1:15,000)

(in Lincolnshire) on either side of the Witham (Vince 2003, fig 9.45). The main reason why many English urban centres, including Bristol (Gloucestershire), Chester, Durham (Durham), Exeter (Devon), Gloucester (Gloucestershire), Hereford, Lincoln, London, Newcastle upon Tyne (Northumberland), Oxford (Oxfordshire), Shrewsbury, Stamford (Lincolnshire), Winchester (Hampshire), Worcester (Worcestershire) and York (Yorkshire), are all situated on navigable rivers is that they formerly served as ports as well as regional markets and administrative centres. They were also important river crossings, and were often fortified because of their strategic importance (Harrison et al 2010, 47–8). Until the development of the railways the Severn was the principal link between Shropshire and the outside world, and Shrewsbury was one of its most important ports (Stamper 1994, 68–70). For centuries Gloucester was also an important port and the lowest bridging point over the Severn. The city's medieval West Gate, on one side of Westgate Bridge, was demolished in 1805–6 in preparation for the rebuilding of the bridge (Herbert 1988, 244).

During the medieval period the frontier between England and Wales in the Shropshire area shifted frequently, but always lay to the west of the Severn. However, the river was clearly seen as a strategic line of defence by the English, and both Shrewsbury's bridges were therefore fortified (Chapter 4.5). This frontier was the scene of frequent conflict and in 1215 the town was captured by Prince Llewellyn the Great (Baker 2010, 130); its fortifications were not merely an expression of civic power and prestige, they were also functional.

Before the 10th century it appears that the Frankwell area was an uninhabited part of the Severn flood plain (OA5; Fig 4; Fig 17). Pollen of Anglo-Saxon date shows a river meadow landscape of grass and wetland trees, but the presence of mixed woodland and cereal cultivation is also indicated, giving some idea of the range of contemporaneous land use in the locality (Chapter 2.6). Geoarchaeological work indicates that the site was regularly flooded for prolonged periods, resulting in a build-up of mottled light grey or brown, stone-free, silty clays. These overbank flood deposits show evidence of oxidation and waterlogging, indicating a seasonal pattern of flooding and drying out. Their top surface stood at 49.51m to 49.78m OD. A soil horizon developed on top of the flood deposits, and the presence of one residual sherd of 10th-century Stafford-type ware (SAF27) pottery implies that there was some Late Saxon activity in the vicinity of the site (Chapter 9.4). The deposits appear to have been reworked or disturbed at some point as they yielded a few sherds of 12th- or 13th-century pottery. They also contained iron-smithing slag, cinders, one or possibly two lumps of smithing hearth bottom and fragments of vitrified hearth lining (Chapter 9.6; Table 10; Keys 2011).

It is assumed (Baker 2010, 122) that the medieval suburb of Frankwell developed along the approach road to the

northern end of the old Welsh Bridge as a result of the trade and traffic that the river crossing would have attracted. The main street of Frankwell winds down the hill from the gravel terrace to the river crossings. The tenement plots appear to be laid out within a pre-existing rectilinear pattern of fields running parallel to the river shore on the south side, extending westwards from the line of White Horse Passage. Frankwell therefore appears to have been founded within an agrarian landscape (ibid, n 3, fig 1.4).

The first known mention of the suburb of Frankwell, as *Frankevilla*, occurs in two charters of *c* 1200–22 (*Cart Haughmond*, 195, nos 1025 and 1028). This place-name has been interpreted as meaning 'free town', that is, free from the trade restrictions of the town or from the customs of the surrounding manors. Such franchises would have been offered to attract settlers. It has been suggested (Gelling 2004, 66) that this place-name is probably of French origin, since similar forms, such as Francheville and Villefranche, occur frequently in France. This interpretation implies that it was a Norman-French settlement, established after the Norman Conquest. Some historians have interpreted the place-name as 'French town'. In the Shrewsbury Domesday Book entry it was recorded that there were 43 French burgesses holding messuages (house plots) (Williams and Martin 2002, 688). It is assumed that all these French men and their families resided within the town of Shrewsbury and that none dwelt in its suburbs (Hobbs 1982, 49, 112; Gelling 2004, 66; Baker 2010, 112). In conclusion, 'nothing is known of the origins of [Frankwell] … but it could have been a trading settlement of earlier foundation which enjoyed tax immunities' (Gelling 2004, 66).

The area that was to form the suburb of Frankwell lay in the parish of St Chad, the core of which comprised the south-west half of the medieval town of Shrewsbury (Fig 16). It has been suggested that the lands which later formed St Chad's parish were part of a grant by the kings of Mercia to the See of Lichfield during the Middle Saxon period. The position of St Chad's church on the southern hillock within the loop of the River Severn is thought to be characteristic of an Early Saxon minster, and it may even have been the seat of a bishop of the *Wreconsæte* at one time (Bassett 1991, 3, 6, 16).

The suburb of Frankwell was an example of ribbon development, extending along both sides of the street leading westwards from the bridge. Many of these roadside buildings would have been shops and inns. By 1500, it is likely that almost all the prominent buildings along this street were of timber-framed construction, although there is evidence on site for a substantial late medieval masonry building (B4, period 4; Chapter 4.7). The burgage plots occupied by these roadside buildings were approximately 2 perches (10.06m) in width and approached by side passages from the street (Trinder 2006, 113, 115). In 1325–6 Haughmond Abbey (*c* 5km north-east of Shrewsbury) granted the tanner Hugh of Lichfield a plot of land for building in Frankwell, 1¾ perches (8.80m) wide, stretching from the street to the River Severn (*Cart Haughmond*, 195 no. 1029). In September 1451 John Cole senior leased to Hugh Egge a garden in Frankwell, between land of St John's hospital and Colleorchard, on which he was permitted to build a two-bay house at his own expense within two years (SA, 3365/67 fos 87v–8). Several of the tenements of medieval Frankwell belonged to Haughmond Abbey and others to the hospital of St John the Baptist (*Cart Haughmond*, 196 nos 1030–2; *Cal Pat R*, 1549–51, 93; TNA, C 78/102 no. 7; E 303/14/104; E 318/39/2095 m 2; SA, 3890/2/139). There was a house adjacent to the west side of the bridge, conveyed in August 1343 by Lucy, widow of William Nesse, to her daughter Agnes and her son-in-law, Alan de Shareshull of Shifnal. It lay at *le Walshebrugge* between the gate of the town and the tenement of Thomas de Bikedon (SA, 6000/6298; Fig 29). In 1571–2 Master Humphrey Onslow repaved the street of Frankwell (Leighton 1880, 270).

Portions of some late medieval and Tudor timber-framed buildings survive in Frankwell. These include the rear part of 91 Frankwell, dated by tree-ring analysis to 1447; a 15th-century two-bay, ground-floor, cruck-built hall positioned long-side on to the street, of which part remains at 92 Frankwell; two semi-detached early 15th-century houses at 111 and 112 Frankwell, each with a two-bay frontage and a side passage; and Fellmongers' Hall of *c* 1570, to the west of the new Welsh Bridge, where wool-processing and tanning were carried out until the 1970s. Four 15th-century buildings survive on the north side of the main street of Frankwell, and 13 of 16th- and 17th-century date on both sides of the street. Buildings which have been lost include a block of three 15th-century timber-framed jettied shops at 22–25 Frankwell, demolished in 1982 (Champion 1994, 73; Mercer 2003, 128; Moran 2003, 83, 227, 231, 247–8, 353; Baker 2010, 74–5, 177, figs 5.6, 5.7). Frankwell was probably the suburb of Shrewsbury burned during the revolt of Owain Glyn Dŵr *c* 1405. In February 1408 the town was excused the payment of a tax granted in Parliament, because of the damage caused by the recent Welsh incursion; the destruction was still apparent in 1427 (*Cal Pat R*, 1405–8, 414; Davies 1995, 281; Baker 2010, 161–2). Interestingly, none of the surviving timber-framed buildings in Frankwell pre-date this raid.

The Frankwell bars straddled the main street at some unspecified point, which might have been close to the bridge or further along the road. The bars probably served as toll collection points, but if they were located on the edge of the settlement they may also have served as civic boundaries and possibly even a preliminary line of defence. In 1458–9 the bars were repaired with sawn timber, nails and *pegyns* (pegs) made from Spanish iron, and a lock (SA, 3365/387). The timber was renewed again in 1463–4 and 1473–4, when the lock was also replaced (SA, 3365/392, 407).

Frankwell would have been a logical place to tax goods passing over or under the Welsh Bridge. Edward I's charter of 1282 concerning the repair of the Welsh Bridge mentions a long list of goods, including grain and fish; livestock, hides and meat; fleeces, woolsacks, cloth, linen and canvas; wine, ale and honey; iron, ironwork, lead, tin, bronze, copper and

steel; salt, cheese, butter, oil and onions; timber boards, firewood and charcoal; plus woad and bark, presumably for tanning (SA, 3365/13). The portion of Frankwell Street nearest the bridge served as a market place. It was also known as the Horsefair, since an annual horse fair was held on St Matthew's day (21 September), as well as twice-weekly sales of other livestock (Baker 2005). During the 15th century seven men were generally paid to guard the lanes, the Welsh Gate and the fair site during the horse fair (SA, 3365/379, 407). In June 1445 the borough had work carried out on the *Horsfeyre*, including mending the chain, and in 1458–9 stone and sand were bought to resurface its pavement (SA, 3365/379, 387; Walker 1982, 47, 266). In 1584–5 the upper part of the Horsefair was paved, adjoining a cross stone wall where the saw pit was usually made; this was in order to keep it clear of dung, offal and also of the timber that was usually laid there (Leighton 1880, 303–4). In August 1572 a sickle-seller lost two of his horses in the river at the Horsefair – the drowned beasts were laden with sickles and scythes. In 1580 and 1584 the fair had to be moved up the hill to the fields behind the houses of Frankwell because the river was in flood (ibid, 270, 284, 300).

During the 13th and 14th centuries, it is recorded that a number of industries were based in Frankwell, including some of the more obnoxious trades such as tanning and dyeing, which tended to be kept away from the town centre. In the 16th century, glovers were prominent amongst its inhabitants. The dyers', glovers' and tanners' workshops and warehouses were concentrated along the riverside and their furnaces were fuelled by floats of wood brought down the Severn. The tanners' hides were exported by Shrewsbury merchants through London to the Continent, and many became wealthy (Cromarty 1991, 52; Champion 1994, 85; Baker 2010, 219). In the late 13th century, the tanner Nicholas Bonell sold a garden behind the chapel of St George to Thomas Cole (Morris 1901, 294). In 1325–6 Haughmond Abbey leased a riverside building plot to the tanner, Hugh of Lichfield (*Cart Haughmond*, 195 no. 1029). A field in Frankwell was conveyed by parties of leather tawyers in January 1529 and October 1530 (SA, 6000/3810). Frankwell deeds were witnessed by dyers in the late 13th century (SA, 6000/3775, 3776). In the 15th century The Stew was tenanted by dyers (SA, 1831/2/5/1, 9, 10). In September 1477 Haughmond Abbey leased a riverside tenement to the dyer John Picke (*Cart Haughmond*, 195–6 no. 1030; TNA, E 303/14/104). The Gardener family of dyers acquired a riverside tenement in Frankwell as early as April 1518. This contained the furnaces necessary to the trade (SA, 840/box 9/10, 16). Fellmongers' Hall of *c* 1570 is probably to be identified as the Gardeners' dye-house (Baker 2010, 196). The glover John Wiche held a riverside tenement in Frankwell in 1477 (Fletcher 1906, 30). In October 1548 Edmund Cole leased out a grange between the chapel of St John the Baptist and the house of the glover, John Huse (Morris 1901, 305). A glover called Roger Netelles lived near the outer Welsh Gate shortly before 1580 (Hobbs 1949–50, 222).

3.2 CROSSING THE SEVERN AT FRANKWELL: DOCUMENTARY EVIDENCE FOR FORDS AND BRIDGES

The original crossing point between Shrewsbury and Frankwell was probably a ford between Water Lane and the line of Romaldesham and Barker Street, some 150m downstream of the Welsh Bridge (located on Fig 17). An excavation near Water Lane found that the medieval river bank was revetted with stakes (Baker 2010, 63, 101). There is no evidence to support the Revd H Owen's assertion that an early bridge crossed between the bottom of Roushill Lane and The Stew (Owen 1808, 79).

It is not clear when the ford was replaced by a bridge crossing between Mardol and the site. It has been suggested that this may have been in place before the Norman Conquest, as Mardol exhibits characteristics of pre-Conquest development (Baker 2010, 101, 109). A charter of Henry I of June or July 1121 granted the multure (the system of charging local people a fee for grinding their grain at the abbey's mills, which were the only ones permitted within the town) of the town to Shrewsbury Abbey; it also forbade anyone to make a mill or a fishery on either of the town bridges (*Cart Shrewsbury*, i, 49 no. 42; i, 52 no. 47b). The wording of this charter implies that the Welsh Bridge was already in existence, although it is possible that it refers to the two components of the English Bridge (the Stone Bridge over the Severn and Coleham Bridge over the Rea Brook) (Baker 2010, 109–10). The bridge was certainly in existence by July 1155, when Henry II confirmed grants to Shrewsbury Abbey, which included the gift of a house near the bridge of St George by Wulfwin the fuller (*Cart Shrewsbury*, i, 42 no. 36). Presumably, when the bridge was built the street of Frankwell was extended eastward to connect with it. During the medieval period this bridge was generally known as St George's Bridge, as it took its name from the hospital situated near its north end. This usage occurred repeatedly during the late 12th and early 13th centuries (*Cart Shrewsbury*, i, 42 no. 36; *Cart Haughmond*, 195 no. 1025; Owen and Blakeway 1825, ii, 468). The first usage of the name *le Whalshebrugge* occurred in 1282 (SA, 3365/13; 6000/6298; when the present Welsh Bridge was closed for repairs during February 2013, a road sign declared: 'Whelsh Bridge closed' (*The Times* 2013, 9) and few people probably realised that they were seeing the medieval spelling being accidentally reused for the first time in centuries).

The town's two historic bridges are often referred to as the English and the Welsh Bridges to denote the geographical areas to which they provided access (Fig 16). The geographical setting of both bridges is believed to have been determined by the presence of areas of shallow water caused by banks of gravel known as riffles, which are present in meandering rivers with a shallow gradient (Chapter 2). Within the vicinity of the historic Welsh Bridge undulating

Fig 17 Plan of the Frankwell area in the medieval period, showing the main street, the location of Water Lane, the ford and the hospitals of St George and St John the Baptist, with the outline of the site superimposed (scale 1:1500)

gravel banks have been exposed by erosion of sediments in the present river bed. This phenomenon often occurs on a cross-over point in a meander. (Erosion takes place on the outside of a meander bend, whereas deposition is most marked on the inside of the bend. The site is situated on the point in the meander where the main force of current changes direction.) The presence of stretches of relatively shallow water would have made bridge construction much easier. Just upstream of the English Bridge the Rea Brook enters the Severn (Fig 16), and the gravel banks it helped cause in the main channel have created a braided pattern of channels and islands (Pannett 1994, 56).

During the medieval period the English Bridge was always called the Stone Bridge. This could be a reminder that the Welsh Bridge might originally have been constructed of timber (Baker 2005). Repairs to the St George's Bridge have been traced as early as 1262 and 1263. In these years planks, beams and timber were bought for the bridge, Symon the carpenter and two other carpenters were paid for working on it, and smiths made binding straps (*ligatoria*) for it (SA, 3365/309). John Gamel worked for two weeks on the stone foundations of the bridge (Cromarty 1991, 13). This might suggest that the 13th-century bridge was a composite structure with stone piers and a wooden superstructure. Until it was destroyed by ice floes in 1381, Rochester Bridge in Kent was apparently of similar composite construction (Brooks 1994, 22–5).

In 1265 Master Philip the Engineer set up a stone-throwing engine near the Welsh Bridge. In June 1266 a baker was drowned whilst bathing in the river near St George's Bridge (Cromarty 1991, 15, 66). Repairs were carried out on St George's Bridge in July 1275, involving the surveyor of the town works for two weeks, and a mason and his two labourers for four days (Phillips 1779, 114, from 18th-century notes from SA, 177/1/15; the original entry could not be traced in SA, 3365/316). Repairs to the bridge in 1276–7 involved a carpenter and several paviours (pavers) (Drinkwater 1891, 81).

3.3 CROSSING THE SEVERN AT FRANKWELL: ARCHAEOLOGICAL EVIDENCE (PERIOD 4)

THE FIRST BRIDGE APPROACH ROAD (R1)

Initial activity consisted of dumping sterile, sandy silts and gravels to raise the ground level on the line of the bridge approach road (R1; Fig 18). It is assumed that these deposits

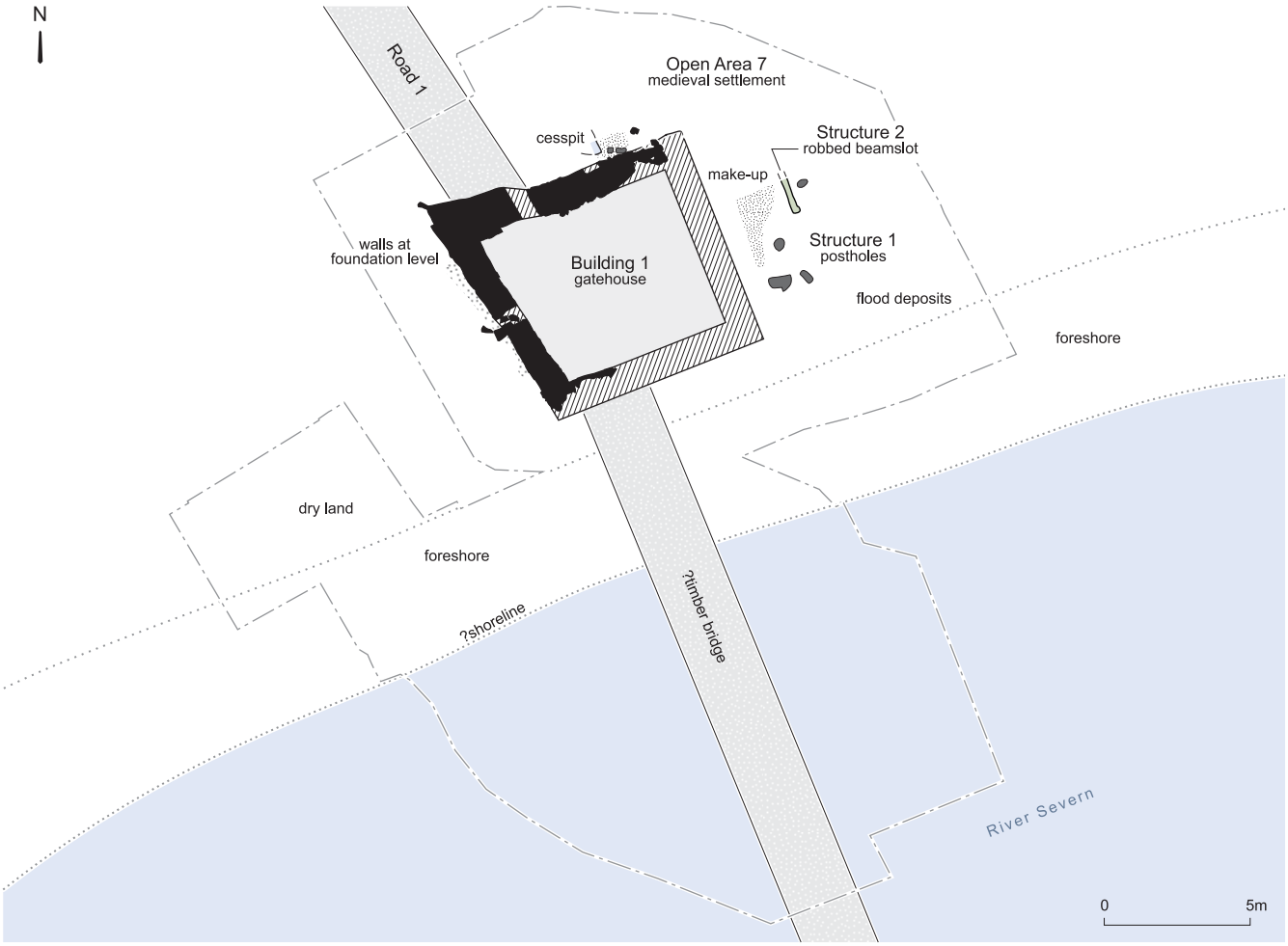

Fig 18 Plan of the medieval settlement (OA7) features, the gatehouse (B1), the road (R1) and timber structures (S1 and S2), period 4 (scale 1:250)

were quarried locally along the river margin. Finds include sheep/goat (*Ovis aries/Capra hircus*) bones, with one metatarsal (hindfoot) showing probable evidence of skinning and one cattle femur (hindleg) had evidence of canine gnawing (Chapter 9.8; Table 15). The dump deposits were sealed by a mass of crushed sandstone fragments set in a sandy clay matrix, which appears to have functioned as a road surface (R1).

This surface was later sealed by further levelling dumps, probably successive resurfacings of the road. The subsequent build-up of metalled surfaces was largely removed or truncated by the construction and maintenance of later phases of the road (R2: Chapter 5.2; R3: Chapter 6.3, 6.4) and the numerous service trenches dug along the line of Road 3.

THE FIRST PHASE OF BRIDGE DEFENCES: THE GATEHOUSE (B1)

It is likely that the road (R1) was contemporary with the first phase of the bridge defences, although both the date and interpretation of Building 1 are uncertain since its plan is incomplete and there are no associated finds to date either its construction or destruction. Dating can only be inferred from the later sequence of deposits and structures. However, the building appears to have been a free-standing, trapezoidal masonry gatehouse, which straddled the approach road (Fig 18). It consisted of a series of lengths of truncated trench-built wall foundations, constructed of random sandstone rubble blocks set in a clayey soil mortar. There was one patch of light brown lime mortar on top of the masonry, which may have marked the transition to superstructure. Unfortunately, the full extent of the building is uncertain, but its size was certainly considerable: its internal north–south length was 5.54m, with an external length estimated at 7.6m, and the surviving sections which made up the east–west external width measured from the north-west corner over 7m. When it was demolished its remains were truncated to a very low level, below that of any internal surfaces, and the superstructure was apparently completely removed during this process (Fig 19). This degree of truncation and the impact of modern walls and service trenches mean that the building's remains were very fragmentary. The backfill of the robbed-out northern stretch of wall contained iron slag, consisting of a fragment of vitrified hearth lining and part of a smithing hearth base (Chapter 9.6). The levelling dumps, which sealed the remains of the demolished building, contained a small amount of animal bone, mainly derived from sheep/goat

Fig 19 The western portion of the truncated foundations of the gatehouse (B1), looking east (0.5m (foreground) and 1.0m (background) scales)

(*Ovis aries/Capra hircus*) and cattle (*Bos taurus*) (Chapter 9.8; Table 13).

If Building 1 is interpreted as a gatehouse controlling access to the northern end of the bridge, then it is probably of 12th-century date, when the existence of the bridge is first documented (above, 3.2). The gatehouse was possibly associated with a timber bridge (preceding the masonry one) (above, 3.2). It is also possible that this phase of bridge defences went out of use when the bridge was rebuilt, and it was decided to defend the northern end of the new bridge with a gatehouse structure consisting of a pair of square bastions.

3.4 FRANKWELL: ARCHAEOLOGICAL EVIDENCE (PERIOD 4)

MEDIEVAL SETTLEMENT (OA7)

It is assumed that Open Area 7, flanking the bridge approach road (R1), was only settled after construction of the bridge, as there is no evidence for previous settlement (Fig 18). The earliest activity along the eastern side of the bridge approach road consisted of the dumping of alluvium during the 12th century or later, presumably to raise the ground level to reduce the risk of flooding. Finds recovered from this dumped alluvium include a copper-alloy hooked tag made from thin sheet, with a circular plate incised with ring-and-dot decoration motifs (Fig 20, <104>). These items were commonly used as clothing fasteners throughout the Middle to Late Saxon period, *c* AD 650–1066 (Pritchard 1991, 149–50; Chapter 9.5).

A later phase of external levelling dumps [905] was dated by two small sherds of associated pottery to the 15th century (Table 9). There were a number of scattered features, consisting of two stakeholes, one cesspit and a rubbish pit (Fig 18); finds from these features included a possible fragment of medieval roofing tile (Chapter 9.2). A sub-rectangular clay-filled pit [907] is of uncertain date and function (Fig 18). None of these features produced closely datable finds, but the latest pottery from the underlying alluvium is of 12th- or 13th-century date, suggesting that this later activity was of a similar date. Broadly contemporaneous with these scattered features were two timber structures (S1 and S2, Fig 18) dated by associated pottery to 1100–1300 (Chapter 9.4). Structure 1 consisted of a cluster of robbed-out postholes. Three fragments of iron smithing hearth bottom slag and one fragment of vitrified hearth lining were recovered from one posthole. It is assumed that they were reused as packing material (Chapter 9.6; Table 10). The postholes probably represent the remains of several superimposed timber structures. The other structure (S2) consisted of a short length of north–south aligned beam slot, its backfill containing a

Fig 20 Middle to Late Saxon hooked tag <104> from dumping context [933], Open Area 7 (scale *c* 2:1)

small quantity of undiagnostic slag, which is unlikely to have formed padding (Chapter 9.6; Table 10). The impression is that there were several timber buildings along the eastern side of the bridge approach road, with external areas or yards to the rear where waste disposal pits were dug. The function of the buildings is uncertain, but the presence of associated cess and rubbish pits suggests that they were inhabited, while the presence of iron slag indicates that smithing activity was taking place nearby, possibly after the structural features had been robbed out. During the 19th century a range of metalworking industries was based in Frankwell, including nail-making (Trinder 2006, 118), but the findings of the excavation confirm that the area had a much longer history of metalworking than was previously realised. More iron slag was recovered from the disturbed alluvium [933], which represented the truncated remains of the contemporary land surface. Smithing slag was recovered in the form of concreted flake hammerscale, vitrified hearth lining and cinders (Chapter 9.6; Table 10). Further evidence for metalworking comes from part of a ceramic crucible in the same context. It is probable that during this period the underlying deposits (OA5; Fig 4) were biologically reworked or disturbed, hence the presence of pottery and iron slag within them.

3.5 DISCUSSION: 11TH TO EARLY 13TH CENTURY (PERIOD 4)

By the early 13th century Frankwell was already a bridgehead suburb of Shrewsbury. However, when this settlement was established is uncertain, although it appears probable that the site was first occupied during the 10th century, judging by the presence of residual pottery and a Middle to Late Saxon copper-alloy hooked tag. Pollen from samples dated to the Anglo-Saxon period confirms that the local environment consisted of river meadow and wetland trees, but nearby, presumably on the higher ground, there was evidence of cereal cultivation and mixed woodland (Facies 4 (OA4): Chapter 2.6, 'The deposit succession'; Chapter 9.7). Frankwell's river frontage is low-lying and has a long history of flooding, which is reflected in the accumulation of overbank flood deposits on site (OA5; Chapter 2). Following serious flooding of Frankwell during the autumn of 2000, a flood alleviation scheme was undertaken in 2002 by the Environment Agency, which means that the environs of the site are now protected by demountable defences (Environment Agency 2004).

4

THE MEDIEVAL FORTIFIED BRIDGE, THE HOSPITAL OF ST GEORGE AND ASSOCIATED BRIDGEHEAD ACTIVITY, 13TH TO 16TH CENTURY (PERIODS 4–5)

4.1 THE OLD WELSH BRIDGE: DOCUMENTARY EVIDENCE (1254–1577)

In September 1257 Henry III granted the bailiffs of Shrewsbury the right to collect murage (tax levied for the construction or maintenance of town walls) or customs on articles brought to the town for sale for a further seven years. This murage grant was an extension of earlier ones he had made in October 1254 and March 1256 (*Cal Pat R*, 1247–58, 391, 464, 579). In March 1282 Edward I granted the town the right to collect tolls for three years on a wide range of specified trade goods arriving by road and water in order to finance the repair of *le Whalshebrugge*, which was broken to the peril of those crossing it and those passing beneath it on the river. In February 1284 he authorised an extension of the toll for a further five years to continue with the bridge repairs and provide paving of the streets within the town (SA, 3365/13). This extension suggests a major period of reconstruction was taking place, which is likely to be connected with the third phase of bridge defences (B3 and B6, period 4; below, 4.3; Fig 4). Richard II's charter of November 1389, notable for its illuminated portrait of the king and queen in its initial letter, confirmed a number of grants of rights and privileges to the town by his predecessors Henry III, Edward II and Edward III. Among other things these charters allowed the burgesses to take tolls from the Welsh coming to Shrewsbury to trade, but the town bridges are not mentioned in any of them (SA, 3365/24). However, medieval bridges and town gates were frequently used as places to collect tolls as they naturally channelled all approaching traffic towards a single location, which made evasion difficult.

In June 1392 Richard II granted the bailiffs and burgesses of Shrewsbury the right to collect murage for a period of four years because the town was near Wales and in need of better fortification (*Cal Pat R*, 1392–6, 74). Part of the proceeds may well have been spent on the strengthening of the Welsh Bridge. Further grants of murage were made by Henry IV in January 1400 for three years, in February 1406 for five years and March 1410 for a further five years; by Henry V in November 1420 for one year; and by Henry VI in November 1431 for three years and in November 1434 for a further four years. However, on the last occasion it was reported by the abbot of Shrewsbury that the bailiffs and collectors had been using the proceeds of the previous grant for their own purposes (*Cal Pat R*, 1399–1401, 187; 1405–8, 118; 1408–13, 165, 308; 1429–36, 180, 470). Henry VI's charter to Shrewsbury in June 1445 granted judicial privileges to the town, but did not mention the bridges (*Cal Chart R*, 1427–1516, 45–6; SA, 3365/33). In 1576 and 1577 the admittance fines of new burgesses were spent upon the repair of the bridges, walls and towers of the town (SA, 3365/76 fos 207, 213v).

During the 15th century repairs to the fabric of the bridge were supervised by the town coroners, who purchased materials as well as hiring craftsmen and labourers. In the Shrewsbury bailiffs' accounts for 1402–3, 1436–7 and 1462–3, amongst the various items of expenditure recorded were repairs to the Welsh Gate. The 1462–3 accounts included the repair of the bars (civic boundaries) and paving in Frankwell (SA, 3365/354, 373 and 391). In July 1445, 500 ashlar blocks of Grinshill stone were brought to the Welsh Gate to mend the bridge, along with lime and timber, followed by more ashlar blocks from the quarry at (Lee) Brockhurst (Shropshire). Two cartloads of *ollerpoles* (alder poles) were bought to make piles for the bridge, and two *scoupes* (scoops) were bought for the works. A mason and his labourers worked for several days on the bridge (SA, 3365/379). In 1458–9 masons were again working on the bridge, using four packloads of burned lime, three wagonloads of stone and four wagonloads of sand. The bridge was also regularly cleaned at this time and its pavement was mended (SA, 3365/387). In 1463–4 masons were again at work on the bridge, using stones from the quarry outside the town walls, timber piles and a hired boat (SA, 3365/392). In 1473–4 stone, lime, boards and timber were bought for work on the Welsh Bridge, which was carried out by Matthew Mason and his labourers plus three carpenters. In addition, during 1473–4, 20 rods (100.6m) of

the bridge was repaved (probably its whole length), and its gutters were cleaned out (SA, 3365/407). However, in 1477–8 masonry repairs were again required on the Welsh Bridge and its roadway (SA, 3365/413). The expenditure of these years was probably not exceptional, but it shows that the need for maintenance work on the town gates and bridges was fairly constant (Walker 1982, 47).

It is believed that the riverine portion of the medieval Welsh Bridge was spanned by six arches, which by the post-medieval period were all of ribbed construction (Fig 21). At the northern end during the post-medieval period there was also a seventh arch, known as the dry arch (B9; Chapter 5.2), which may have been concealed by the bastions of the Welsh Gate until the 17th century and was perhaps spanned by a drawbridge. In the absence of any starlings the piers were presumably all founded on dense clusters of timber piles driven into the river bed when the river level was low (Baker 2010, 110). The overall length of the bridge was about 100m.

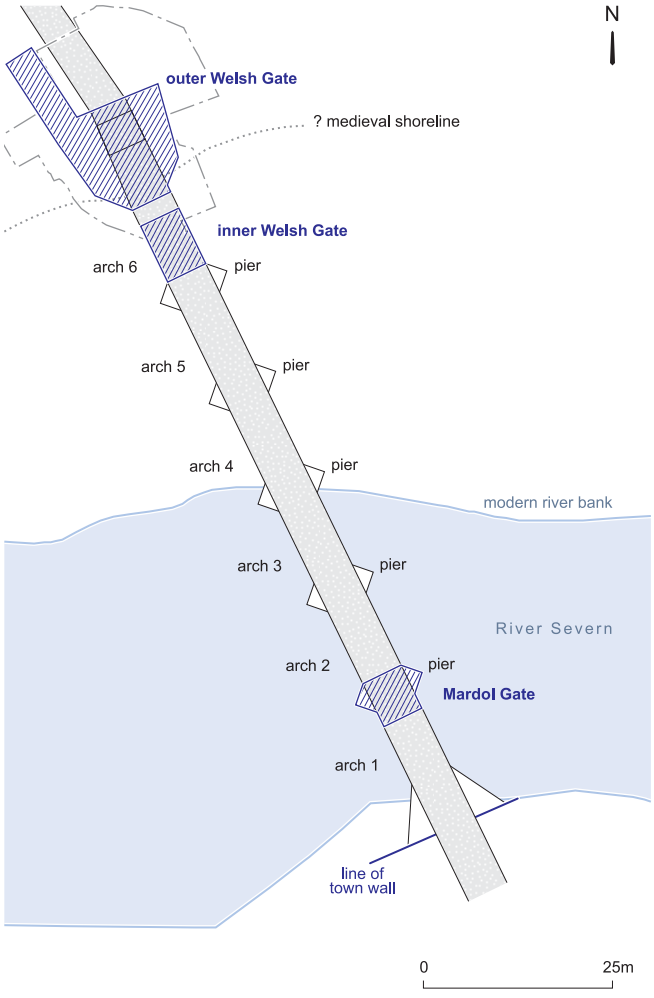

Fig 21 Diagrammatic plan of the medieval bridge showing the relationship between the excavated portion (within site outline at north end) and the rest of the bridge (demolished 1795–7), and three elements of the fortifications on the bridge; part of the Frankwell foreshore was reclaimed after the demolition of the medieval bridge (scale 1:1000)

Its width (including the parapet walls) is thought to have been 12ft (3.66m), with the roadway measuring 10½ft (3.20m) wide between the parapets (Ward 1935, 142). However, a plan of 1795 suggests that the overall width of the bridge was 14ft 9in (4.50m) (SA, 7112).

In 1496–7 a wooden cage or lock-up was erected on the bridge, and also privies for both men and women 'for their easements' were constructed. By 1576–7 the cage had fallen into disrepair, and both it and the privies were removed (Leighton 1880, 251, 279).

4.2 THE SECOND PHASE OF BRIDGE DEFENCES: ARCHAEOLOGICAL EVIDENCE (PERIOD 4)

THE FIRST EAST BASTION (B2)

It appears that the first phase of bridge defences, the gatehouse (B1, period 4; Chapter 3.3), was replaced during the 12th century by a pair of square masonry bastions (B2), built on each side of the pier between the first and second arches of the bridge (Fig 22; cf Fig 21, arches 5 and 6). The existence of the west bastion is conjectural. However, in view of the partial excavation of the structures associated with the medieval bridge (Chapter 1.2), the apparent absence of a west bastion from this phase of defences is not surprising. These bastions were presumably joined by a gatehouse or at least a pair of wooden gates, which would have spanned the bridge roadway and controlled access to the northern end of the bridge. The presence of a masonry bastion in a different position to the earlier phase of bridge defences (Chapter 3.3) suggests that the Welsh Bridge had been rebuilt by this date. It is possible that a timber bridge associated with the first phase of defences had now been replaced by a masonry one.

Activity started with the excavation of a trench on the foreshore in which an L-shaped sandstone rubble foundation 0.74m wide was built (B2, Fig 22). The masonry was bonded by a sandy mortar, which was too badly degraded for its original composition to be established. The full extent of this foundation is uncertain, but it is interpreted as part of the southern and eastern walls of a square or rectangular bastion built up against the eastern side of the bridge. It was constructed of coursed sandstone rubble with irregular face edges (Fig 23). There was no evidence of facing courses, giving the impression that they had been robbed out at this level, leaving the wall core. There were no associated finds from either the construction or destruction of the bastion to date this phase of activity. However, it can be inferred from the dating evidence for the next phase of the (second) east bastion (B6) that this activity pre-dated the late 12th or 13th century (below, 4.3), so probably took place during the early to mid 12th century. When the bastion was demolished, its truncated remains were sealed by a series of layers of sterile crushed and degraded sandstone fragments, presumably the

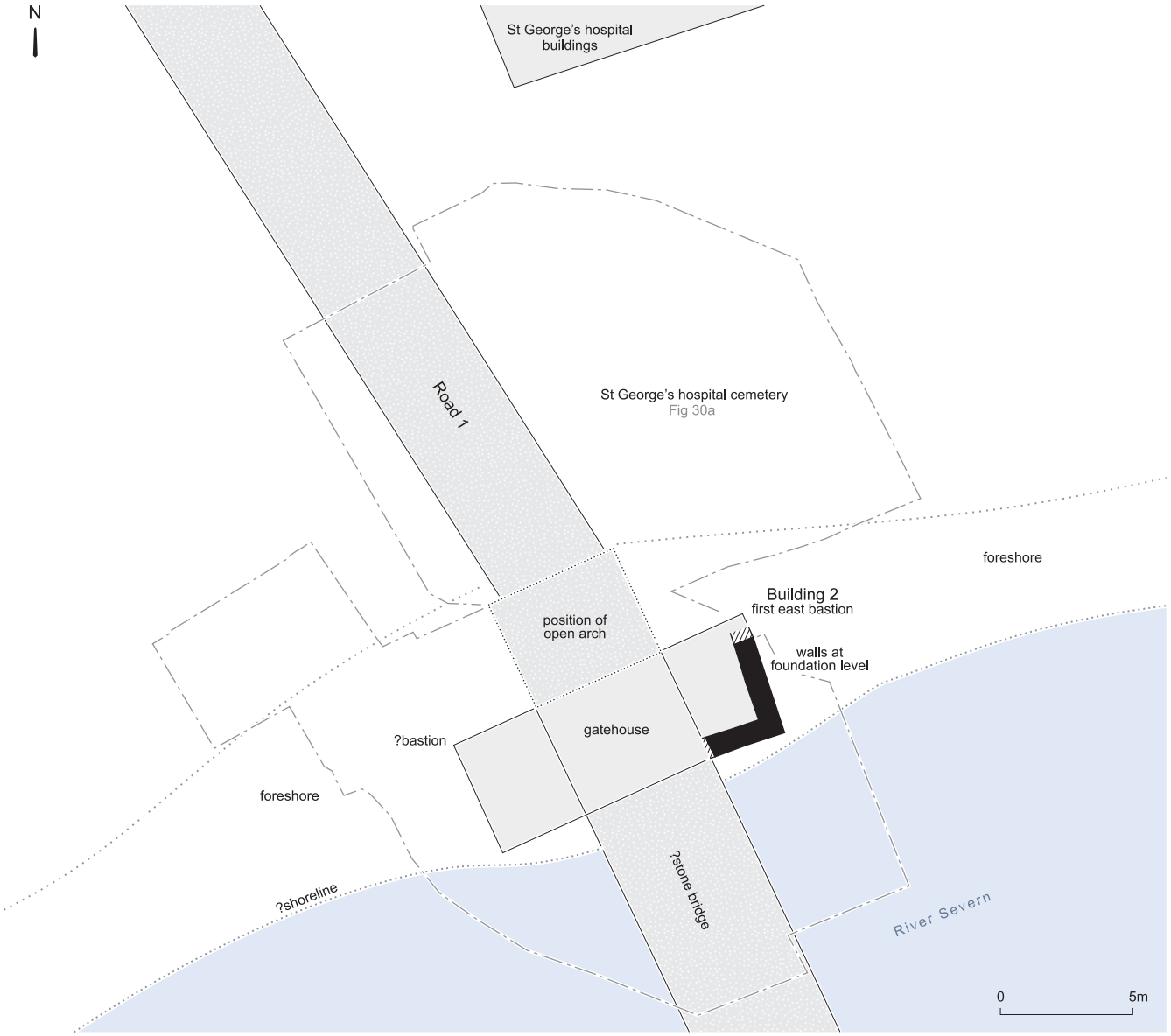

Fig 22 Plan of the first east bastion (B2) and road (R1), showing the matching west bastion and whole bridge as conjecture, period 4 (scale 1:250)

debris left over from the salvaging of the reusable masonry blocks during the demolition of the structure.

4.3 THE THIRD PHASE OF BRIDGE DEFENCES: ARCHAEOLOGICAL EVIDENCE (PERIOD 4)

During the 13th or 14th century the gatehouse bastions were rebuilt on a larger scale (Fig 24). It is probable that this rebuilding was connected with the royal grant of 1282 authorising the collection of tolls to finance the repair of the bridge (above, 4.1). The plans of both bastions are fragmentary and therefore difficult to reconstruct fully, although it is clear that they were not quite symmetrical. However, the crucial point is that the bastions extended across the line of the northernmost bridge arch, so that if it was in existence it would not have been visible. It is probable that the arch was spanned by a drawbridge during this period (above, 4.1). This phase of the gatehouse was shown on the Burghley map of Shrewsbury *c* 1575 (BL, Royal MS 18 D iii fos 89–90), in which it is labelled 'ye Welsh Gate' (Chapter 5.1; Fig 33).

THE SECOND EAST BASTION (B6)

After the demolition of the superstructure of Building 2, the ground level of this area of foreshore was raised by dumping sandy riverine sediments, almost certainly quarried on the nearby foreshore. These deposits contained three sherds of unabraded pottery of late 12th- to 14th-century date, which represent the earliest ceramic dating evidence for the sequence of bridge defences (Chapter 9.4). On top of this dumping a substantial, shaped, trench-built masonry wall (width 0.90m) was constructed. Although its full extent was

Fig 23 The southern portion of the first east bastion (B2), looking east (0.5m scale)

not uncovered, two small trenches dug though the cellar floors of a later post-medieval building (B18, period 6; Chapter 6.4) revealed that it was at least 5.66m long. The southern end of the wall was triangular in plan, while its central and northern portions appear to have been rectangular, giving the bastion (which clearly butted up against the eastern side of the bridge) an irregular shape (B6; Fig 24; Fig 25).

The northern extent of the second east bastion (B6) was established by the discovery of a short length of rubble masonry, founded on a mortared rubble plinth. The exposed portion of the superstructure consisted of two external facing courses of close-jointed, ashlar sandstone blocks bearing elongated, gouged tooling marks. The wall core and internal face edge was constructed of irregularly shaped mortared rubble containing a single red brick, 120mm (*c* 5in) wide and 48mm (*c* 2in) thick. This brick is almost certainly later than 1500, and must be part of a later repair or rebuilding. Two different types of lime mortar, grey and pink, were recorded; the colour difference may simply reflect use of different sand sources, rather than different phases of construction.

THE FIRST WEST BASTION (B3)

It is assumed that the earliest evidence for the existence of a west bastion (B3) is contemporary with Building 6, the second east bastion (above), but as the construction of the former is undated this cannot be proven. Adjoining the western side of the bridge were three separate lengths of mortared red sandstone rubble, which are believed to have formed a trapezoidal bastion (B3; Fig 24). The southern end of this bastion possessed the same triangular plan as its eastern counterpart. The western or external face edge of the masonry of Building 3 was marked by a single line of squared sandstone blocks, which are larger than those used in the rubble wall core. It appears from the partial plan that in this phase the west bastion would have measured over 11.3m in length north–south (Fig 26). The bastion was later modified (B5, period 5) and was also superseded by the post-medieval west quay retaining wall (S4, period 5; Chapter 5.2). Due to later activity, particularly the excavation of 19th-century cellars (B18, period 6), no contemporary internal deposits or floors survived within either bastion (B3, B6).

Assuming that Buildings 3 and 6 formed a contemporary pair of bastions, they would have been asymmetrical (Fig 24). This would have been unusual, as medieval barbican or gatehouse bastions were generally symmetrical (judging by excavated and surviving examples: Kenyon 1990, 194). One possibility is that the west bastion was later lengthened or extended northwards to create this imbalance, but in the absence of an original northern wall there is no evidence to confirm this suggestion.

4.4 THE FORTIFICATIONS OF THE MEDIEVAL WELSH BRIDGE: DOCUMENTARY EVIDENCE

In 1277 Edward I embarked on the first of several campaigns to conquer Wales. His conquest was complete by 1283, but there were many subsequent rebellions so the need for frontier fortifications remained. It has been claimed that Frankwell and perhaps part of Shrewsbury were destroyed during the Welsh revolt (1400–9) led by Owain Glyn Dŵr (Davies 1995, 281), and that during this attack some damage was inflicted on the town's two bridges (Ward 1935, 128).

The Welsh Bridge and its fortifications were an integral part of the defences of medieval Shrewsbury. These complex

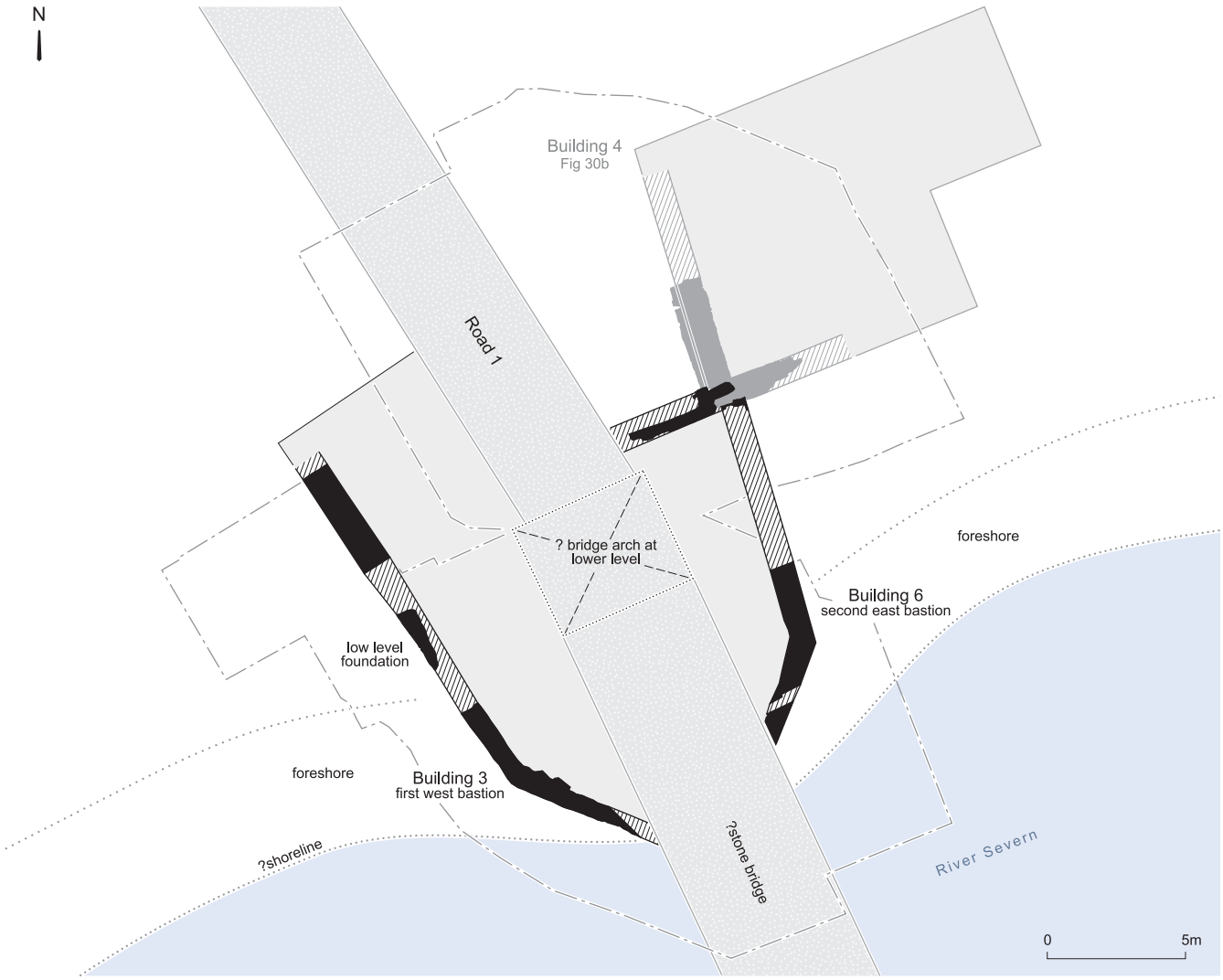

Fig 24 Plan of the first west bastion (B3), retained masonry building (B4) and the second east bastion (B6), period 4 (scale 1:250)

Fig 25 Truncated masonry of the second east bastion (B6) exposed under the floor of the 19th-century cellars, looking south (1.0m scale)

Fig 26 Upstanding fabric of the first west bastion (B3) incorporated into the post-medieval foreshortened west bastion (B5), looking east; the dry arch (arch 7) is visible top left of the image

defences consisted of three separate structures. First, there was the three-storey Mardol Gate, which stood on the first pier of the bridge from the south end (Fig 21). The gate was flanked by a pair of round turrets with octagonal crenellations. Between the turrets was a statue of a 'prince'. This has been variously identified as Llywelyn of Wales and Richard, Duke of York (d 1460) (Defoe 1989, 143), but was almost certainly Edward the Black Prince (d 1376). The gatehouse appears in various etchings and paintings (Chapter 5.1). The statue was painted in 1435–6 by David Staynour, and again in 1463–4 by John Peyntour, with vermilion, red, verdigris, yellow, green, gold and silver. On the former occasion 2lb (0.90kg) of 'riche plowme' (rich plumes) was bought for it, probably to represent the three feathers of the Black Prince's badge (SA, 3365/369; 3365/392). The gate also housed one of the town's prisons. A staple was bought for it in June 1445 (SA, 3365/379); instruments for keeping prisoners in the gate were mended in 1473–4 (SA, 3365/407); and fetters and manacles were mended in 1474–5 (SA, 3365/409).

The second and third elements of the bridge defences were both situated at the northern or Frankwell end of the Welsh Bridge. The most northerly structure was the barbican or outer Welsh Gate, which can be equated with the excavated D-shaped bastions (B3 and B6; Fig 21; above, 4.3). The other structure was a gatehouse known as St George's Gate, which sat above the first river arch from the northern end. It was a square, two-storey, crenellated structure, and during the 18th century contained a guard chamber over the roadway (Owen 1808, 80; Ward 1935, 131). The tower was called St George's Gate from at least 1262 onwards (SA, 3365/309).

Unfortunately, in medieval deeds and accounts sometimes both the Mardol Gate and St George's Gate were referred to as the Welsh Gate, so it is not always possible to determine which structure was intended. The name appears as *le Walssheyate* and variants in 1391, 1405, 1433, 1444, 1448, 1449 and 1495 (*Cart Haughmond*, 195 no. 1027; *Cal Pat R*, 1388–92, 489; 1446–52, 256; 1494–1509, 24; SA, 1831/2/8/9, 10, 14; Peele 1948, 226); as *Porta Wallensis* in 1398 (*Cal Pat R*, 1396–9, 285); as *Porta Wallie* in 1428, 1437–8, 1456 and 1573 (SA, 177/1/15; 1831/2/31/52; 6000/3803, 3805); as *Portam Walliam* in 1476 (SA, 6001/2794); as *Porta versus Walliam* in 1519 and 1530 (SA, 1831/2/8/16; 6000/3810; Peele 1948, 227; Hobbs 1982, 120); and as the West Gate of Shrewsbury in 1532, possibly an error by a royal clerk (*L and P Hen VIII*, v, 365 no. 766(14)). Occasionally the two towers are distinguished in the terminology. The Frankwell tower was called 'Porta Wall exterior' in 1458–9 and 1474–5 (SA, 3365/387, 409); 'the Utter Gate on the Bridge' in 1580 and 1610 (Hobbs 1949–50, 222, 233; 1982, 120); 'the furthest gate on the Welsh Bridge towards Frankwell' in 1608 (SA, 3365/ 550/6.10); the 'Gate leading into Frankwell' in 1752 (SA, 3365/ 2536, formerly 6000/2756). The Mardol Tower was correspondingly called the inner Welsh Gate in 1474–5 (SA, 3365/409). The Welsh Gate was later described as having been 'secured by a strong out-work', probably referring to the barbican (Owen 1808, 79).

New locks were bought for St George's Gate in May and December 1262, and again in February 1263; on the last occasion a horn was bought for the gate. In July the chain of the gate was made longer, and its timber and ironwork were renewed (SA, 3365/309). While he was at Shrewsbury in February 1398, Richard II appointed Richard Millington of Cheshire to the office of bailiff of the Welsh Gate in Shrewsbury, an office that is otherwise unknown (*Cal Pat R*, 1396–9, 285). In 1580 Roger Luther paid the borough a rent of 2s 4d for the Utter Gate on the bridge, and the heirs of William Gittins paid 2d rent for a tenement adjoining it. By 1610 Thomas Gardener was paying both rents (Hobbs 1949–50, 222, 233).

Frequent repairs were made to the Welsh Gate, although, as noted earlier, it is often not possible to distinguish which of the fortifications was being referred to in the accounts. However, it seems likely that the Mardol Gate received more attention since it was the more elaborate structure. In March 1257 Herebert the Smith was paid for making iron and brass nails for studding the gate at the Welsh Bridge (Cromarty 1991, 55). Considerable work was carried out at the Welsh Gate in 1435–6, by masons and carpenters using ashlars, lime, sand and timber; Adam Smyth made three iron bars and mended the locks (SA, 3365/369). Similar works were undertaken in July 1445 (SA, 3365/379). In 1458–9 the emphasis was on carpentry and ironwork at the Welsh Gate, including the mending of its post, locks and bolts. The shingles of the roof were also renewed (SA, 3365/387). Work in 1463–4 included masonry, carpentry, shingling and plumbing, and mending the pavement or roadway of the bridge (SA, 3365/392). More works of these kinds in 1473–4 involved the use of a windlass (*le Wyndeles*) (SA, 3365/407). In 1474–5 doors, locks and shingles were renewed (SA, 3365/409). In 1458–9 carpentry work was carried out on the barbican (*le Barbycan*) at the outer Welsh Gate; timber, boards, nails and iron rods were bought for this work (SA, 3365/387).

The barbican may have been entered from Frankwell via a drawbridge. In February 1573 the town assembly agreed that the arch of the Welsh Bridge commonly called the 'Drawe Bridge' should be made up with freestone; if no agreement could be made with the mason, it should be made up with timber (SA, 3365/76 fos 165v–6; HMC 1899, 17). It is not clear exactly where on the bridge this drawbridge was situated. The wooden drawbridge was renewed in 1574–5, and there are later references to repairing the drawbridge on the Welsh Bridge or at the Welsh Gate with planks in 1670, and the Frankwell drawbridge in 1674 (SA, 3365/615/74 and 76; 3365/618/110 and 130; Leighton 1880, 275). These references suggest that the drawbridge spanned the northernmost arch of the bridge, later known as the dry arch (Fig 21; B9; Chapter 5). By the late medieval period the barbican probably also housed the tollbooth. Tolls were collected at St George's Gate as early as 1262–70 (SA, 177/1/15; 3365/309; Phillips 1779, 113; Drinkwater 1907, 194–7). In 1458–9, the same year as work was carried out on the barbican, three masons worked on *la Logge* at the Welsh Gate and carpenters renewed its door with its hinges, staples, hasps and padlock (SA, 3365/387). This probably refers to the tollbooth on one of the D-shaped bastions (B3, B6; above, 4.3). After 1460 tolls received at the Welsh Gate declined sharply (Baker 2010, 161). The tollbooth was rented out by the borough to William Halywell in 1580 and John Hawkeshed in 1610, for 6s 8d per annum (Hobbs 1949–50, 222, 232).

On 12 August 1485, Henry Richmond (Henry is often referred to as the Earl of Richmond, but he was deprived of the earldom by Edward IV in 1462) or Henry Tudor (later Henry VII) was on his way to meet Richard III's army at Bosworth. His forces attempted to enter Shrewsbury from Wales via the Welsh Bridge. However, the town's senior bailiff, Thomas Mytton, had ordered that the gates be closed and the bridge defended against Henry's forces, signalling to other urban centres that he was considered to be an enemy. Henry was doubtless very relieved when messengers arrived from his stepfather, Lord Stanley, and persuaded the bailiff to open the gates on the Welsh Bridge and let Henry's army cross (De Lisle 2013, 67). In fact events on the Welsh Bridge turned into a scene worthy of one of Shakespeare's comedies. Mytton had vowed that Henry would not pass over the bridge unless he went over his body, showing that he was prepared to die defending the town against Henry, who was then technically a rebel. Clearly, after receiving Lord Stanley's messengers, Mytton had a change of heart concerning his dramatic oath, but he still needed to save face publicly as he changed his allegiance. This potentially awkward situation was resolved by Henry stepping over Mytton while he lay down on the bridge approach road 'belly upward'. Henry then crossed the bridge and entered the town. This gesture was presumably intended to allow the bailiff's honour to be vindicated when he shrewdly switched his alliance from the present to the future king. This well-known story was first recorded in the manuscript chronicle of the town now held at Shrewsbury school (Owen 1808, 37–8; Leighton 1880, 249–50).

4.5 DISCUSSION OF THE MEDIEVAL BRIDGE DEFENCES

It is suggested that the reorganisation of the bridge defences (the replacement of B1 by B2; above 4.2) may have been linked with the replacement of a timber bridge with a much more durable masonry one. A similar pattern of replacement apparently took place in York following the collapse of the timber Ouse Bridge in 1154 (Wilson and Mee 2002, 29). It has also been demonstrated from archaeological evidence at London Bridge, rebuilt *c* 1176–1209 (Watson et al 2001, 82–3); Hemington Bridge (Bridge 3) in Leicestershire, rebuilt *c* 1241–76 (Ripper and Cooper 2009, 53); and Monnow Bridge, in Monmouth (Monmouthshire), rebuilt during the late 13th or 14th century (Rowlands 1994, 78–81).

A number of English medieval bridges possessed fortifications that were an integral part of their original design. Most of these had a single gatehouse, usually situated at one end of the bridge and often consisting of twin bastions positioned on either side of the roadway, joined by an upper level walkway and a pair of lockage gates. Less frequently the gatehouse was situated in the middle of the bridge, or sometimes a short distance beyond it. Occasionally bridges possessed two gatehouses, one at each end, and a small number had both gatehouses or barbicans and a drawbridge tower, which provided defence in depth against surprise attack (Harrison et al 2010, 47–8). Until 1770 the Tyne Bridge at Newcastle upon Tyne, had a gatehouse at each end and a third one in the centre of the bridge. Up to this time one of the bridge's arches (location uncertain) was spanned by beams

not masonry, implying that it had originally been a drawbridge associated with one of the three gatehouses. In November 1771 much of the fabric of the Tyne Bridge was destroyed by floods and the remainder subsequently demolished (Mackenzie 1827, 204–15). Other examples of English bridges with double defences include London Bridge (Fig 27; Watson et al 2001, 83, 105–7) and both the Shrewsbury bridges. All three examples originally possessed one arch spanned by a drawbridge. In the case of the English Bridge in Shrewsbury, the arch to the east of the East or Stone Gate had originally been spanned by a drawbridge, which was apparently replaced by a masonry arch in 1732 (Ward 1950). This double arrangement of defences was also present in a number of medieval urban fortifications and can be seen today at Walmgate Bar, York, which is the only one of the city's medieval bars or gatehouses to retain its barbican (Pevsner and Neave 1995, 193).

Until recently it was believed that medieval fortified bridges were relatively rare in England (Watson et al 2001, 105). The only two surviving examples of medieval bridge gatehouses in England and Wales are the Monnow Bridge in Monmouth (Fig 28; Rowlands 1994, 100), and the Warkworth Bridge in Northumberland (Pevsner and Richmond 1992, 613). The scarcity of surviving examples of English fortified bridges is certainly not a reflection of their rarity, as ongoing

Fig 27 A reconstruction of the drawbridge gate on medieval London Bridge, view looking north (Home 1931, frontispiece)

Fig 28 Monnow Bridge gatehouse, Monmouth, looking south-east (photograph, Bruce Watson)

research has revealed 39 examples in England and Wales (Harrison et al 2010, 48). Many English bridge gatehouses were destroyed when their associated bridges were replaced by more modern structures during the 18th or 19th century.

4.6 THE HOSPITALS OF ST GEORGE AND ST JOHN THE BAPTIST: DOCUMENTARY EVIDENCE

The old Welsh Bridge was also known as St George's Bridge because of its proximity to the hospital of St George (Fig 17; Fig 29). A number of medieval English bridges are known to have possessed chapels, and in some instances nearby hospitals even had bridge chapels since bridge building and maintenance was pious charitable work (Jusserand 1961, 36; Harrison et al 2010, 45–6). However, there is no evidence that the Welsh Bridge had a chapel, although the hospital of St George, which was established close to the north end of the bridge by *c* 1155, would probably have fulfilled this function (Gaydon 1973, 105).

In a borough rental of 1245–6 the hospital was paying annual rents for property in the town, including 2d for the site of the hospital itself, probably equivalent to a burgage rent (SA, 177/1/15). Like other small medieval hospitals, its chapel probably consisted of a nave, where the sick lay, a small chancel and some outbuildings. Its position at the head of a bridge at the entry of a town was typical of 12th-century hospital foundations; alms for the sick would have been collected at the west door of the nave from travellers entering the town or setting out on a journey. The Cole family established a family chantry in the hospital in 1278 (Owen and Blakeway 1825, ii, 467). Cranage reports that in the garden of the court house adjoining St George's vicarage in Frankwell there had been placed a fragment of worked stone with rolls, fillets and dog-tooth ornament, found on the supposed site of St George's chapel; he ascribed it to the early 13th century, although it could have been part of a moulding from a Romanesque door arch (Cranage 1912, 1008).

In an early 13th-century indulgence St George was referred to as a hospital, but thereafter it was generally referred to as a chapel, which may indicate that its role changed during the late 13th century (Gaydon 1973, 105). Gaydon has suggested that Richard Pigot (d 1369), who was warden of the neighbouring hospital of St John the Baptist, may have annexed St George's chapel and incorporated it into his own institution. Pigot's will stipulated that he was to be buried in the chapel of St John and St George, which he had rebuilt. His actions certainly imply that an ecclesiastical merger had taken place. However, because of their close proximity the history of these two hospitals is difficult to untangle (Fig 29; ibid).

St John's hospital, for which there is no record until the

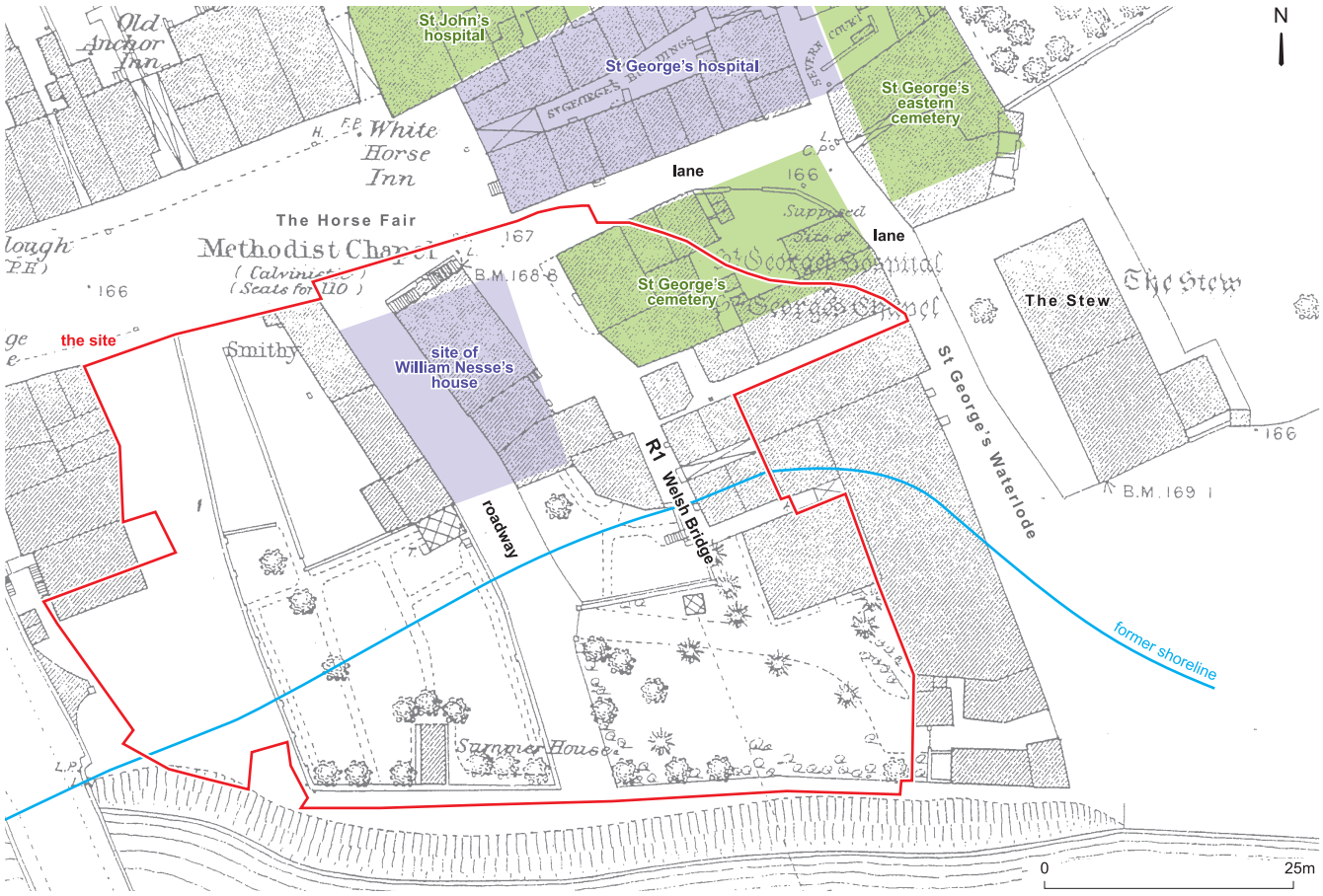

Fig 29 Conjectural plan of the hospitals of St George and St John the Baptist, the cemeteries of St George, the site of William Nesse's house and the former shoreline superimposed on the Ordnance Survey map of 1882 (scale 1:750)

1220s, was clearly the later of the two institutions. In the Shrewsbury bailiffs' accounts for 1264–5, one of the items of expenditure recorded was the transport of lime (presumably for making mortar, plaster or limewash) to St John's hospital (SA, 3365/310). In June 1449 John Hampton, esquire of the king's body, received a royal grant of the collation of the next vacancy in the mastership or wardenship of the hospital of St George (*Cal Pat R*, 1446–52, 256). This was probably no more than a sinecure by this time. By October 1463 the 'free chapel of St George' was annexed to the neighbouring hospital of St John the Baptist (*Cal Pat R*, 1461–7, 295).

Although there are a few deeds relating to the hospital of St George and its post-medieval successors which contain abutments and measurements, they are all rather ambiguous or available only in late copies, and therefore possibly corrupt. It appears that St George's chapel was probably situated close to the street frontage and was flanked by commercial or residential properties. The hospital chapel is known to have lain at the east end of the street of Frankwell, and its western facade presumably stood further north than the first phase of bridge fortifications which straddled the bridge approach road (Chapter 3.3). It is therefore suggested that it stood within the plot represented in the 19th century by the cottages of St George's buildings. Of the available possibilities, this most nearly represents the measurements contained in a deed of 1564, of 18 yards (16.47m) north–south and 40 yards (36.60m) east–west (Leighton 1879, 285–6; Fig 29). The chapel of the hospital is mentioned as an abutment in deeds relating to The Stew property to the east in 1405, 1444 and 1448 (Peele 1948, 226–7; SA, 1831/2/8/9, 10, 14) and the Cole family property to the north in the late 13th and early 14th centuries (Morris 1901, 294–5). The description *St George's Chapell* was still being used of a property representing the site of the old hospital in the Cole family deeds of the 17th and 18th centuries (SA, 20/14/90; another copy at 1832/30; 6000/178).

The cemetery of St George's hospital lay further to the south, on the east side of the bridge approach and bordering the Severn shore. On its northern and eastern sides was a lane leading down to the river at St George's Waterlode (Fig 29), a place for landing goods and watering horses. It probably measured 9 cloth yards (where 1 cloth yard equals 37in or 0.94m) (8.46m) north–south and 18 cloth yards (16.92m) east–west, according to a deed of February 1476, known only in an 18th-century copy, by which John Colle conveyed a plot of land in this position to Thomas Whittefeld (SA, 6001/2794 p 20 no. 73). The site was not operating as a cemetery in the early 13th century, when it was a garden belonging to either Gilbert Puttoc or Henry the Weaver, but it had been established as a cemetery before 1354 (*Cart Haughmond*, 195 nos 1025–6). It also appears as St George's cemetery in abutments of deeds relating to 'The Stew' on its eastern side in the 15th and 16th centuries (*Cart Haughmond*, 195 no. 1037; SA, 1831/2/31/52). There appears to have been another area of cemetery to the east of the chapel. This was probably the plot of land 11 yards square (10.07 × 10.07m) between St George's chapel and 'The Stew' leased by the borough to the baker John Higgons in 1576 ('W P' 1898, 41; Fig 29). He was still paying a rent to the borough for this plot in 1610 (Hobbs 1949–50, 238). In 1584–5 a saw-pit was dug at the Horsefair in Frankwell to saw timber for the use of Higgons, and its excavation revealed the skull and remains of a man who had been buried there for a long time. There was a round hole in the skull, thought to have been made with a pole-axe or bill, and it was assumed that the man was a murder victim (Leighton 1880, 304). It is likely that this individual was buried within the hospital cemetery, found on Higgons's plot to the east of St George's chapel. Parts of the hospital buildings and lands of St John were leased to the draper Richard Scriven for 99 years in July 1522, including the 'capital messuage' (Drinkwater 1920–1, 67–74, from SA, 6000/464; and another copy at 6000/15722).

In the early 1530s there was a long property dispute between the warden, David Owen, and the neighbouring landowner, Edmund Cole, fought out across the courts of Star Chamber and Chancery, the Council in the Marches and the County Assizes. Among the disputed property was the 'Old Hall', presumably part of the hospital buildings; the houses and barns of the hospital are also mentioned. Ultimately Cole appears to have been successful (TNA, C 1/864/76; C 1/901/7 [heavily faded and damaged]; C 78/102 no. 7; STAC 2/19/178). When the hospital was dissolved in 1549 as part of the suppression of the chantries, it paid only 5s annually to the poor. The last warden was granted a life pension of £6 per annum. It is assumed that St George's chapel had already been closed before the Dissolution, as it is not mentioned in the St John's hospital estate during this period (Gaydon 1973, 107). Its property was sold by the Crown to Robert Wood of the Inner Temple in July, with the exception of three adjoining cottages in which poor people were living, later known as St John's almshouses. The hospital chapel was also reserved for use during times of plague, when the people of Frankwell were prevented from access to the parish church of St Chad (*Cal Pat R*, 1549–51, 93; TNA, E 101/75/28 m 4; E 318/39/2095; Hamilton Thompson 1910, 309–10, 344–5). These almshouses were damaged by a fire in October 1593, which was put out with water from the Severn, but they survived as Cole's almshouses into the 17th century (Leighton 1880, 327). The property was subsequently purchased by Edward Mynton. The chapel and the almshouses were bought from Mynton by the Cole family in 1590 (Owen and Blakeway 1825, ii, 471–3; Leighton 1879, 286; Hobbs 1949–50, 222, 232; Gaydon 1973, 107). They are depicted on the Burghley map of *c* 1575 (BL, Royal MS 18 D iii fos 89–90; Fig 33; Chapter 5.1) and John Speed's map of 1610, in the area to the north of the Welsh Bridge.

On the north side of St George's hospital was another hospital, dedicated to St John the Baptist (Fig 29). It too was probably founded in the 12th century, but was not recorded until the 1220s and was subordinate to the parish church of St Chad. However, late medieval appointments of its wardens by the Crown and references to a free chapel indicate that it had been a royal foundation. In 1342 the bailiffs of Shrewsbury

endowed a chantry in the hospital for the executed Edmund, Earl of Arundel, as part of their settlement with his successor, Earl Richard, concerning the seizure of the late earl's goods by the townspeople. The will of warden Richard Pigot (above) implies that St John's hospital had already absorbed the neighbouring hospital by 1369. The three messuages (houses, outbuildings and gardens) of St John's almshouses lay directly to the north of the plot containing St George's chapel, and were adjacent to St John's chapel. By the 14th century St John's chapel lay next to a lane which led to the hospital property in the fields to the rear of the Frankwell houses, to be identified with White Horse Passage (SA, 6000/3785, 3800). There is no evidence that St John's hospital possessed a cemetery. It was the subject of a Crown visitation in 1376, when it was allegedly in a dilapidated condition. In 1523 parts of the hospital of St John were leased out, including its chapel and the 'Old Hall'. In 1549 the hospital estate was disposed of by the Crown, apart from three cottages which were known during the late 16th century as 'St John's Almshouses' (*Cal Pat R*, 1340–3, 389; 1367–70, 395; 1374–7, 312; 1388–92, 489; 1436–41, 254; 1461–7, 210, 295, 492; 1494–1509, 24; Phillips 1779, 114; Owen 1808, 321–2; Owen and Blakeway 1825, ii, 469–71; Gaydon 1973, 106–8; Burtscher 2008, 27). In June 1523 'the custody or mastership' of the hospital was granted by the king to William Edwardis. In January 1532 'the free chapel of the hospital of St John the Baptist' was the subject of another royal grant to Christopher Draper (*L and P Hen VIII*, iii(2) 1519–23, 1315 no. 3146(12); v, 1531–2, 365 no. 766(14)).

To the east and south-east of St George's hospital was a riverside property known by the late medieval period as 'The Stew', the name indicating the presence of fishponds (Fig 29). In 1433 this property consisted of three acres of land and two fishponds. It was granted to Haughmond Abbey in the early 13th century, and thereafter leased out to a series of tenants, initially as an orchard enclosed with banks and hedges, and later as a stewcroft and pond. It had been acquired by the Drapers' Company of Shrewsbury by the early 16th century (*Cart Haughmond*, 195 nos 1025–7, 1185; TNA: PRO C 1/12/235; SA, 1831/2/8/9, 10, 13, 14, 16, 52; Peele 1948, 226–7). Repairs by the Drapers' Company in 1488–9 included making a chimney 'at the Walshyate', suggesting that there was a house on the property by this time (Rope 1913, 186). Remains of the ponds were still visible in the early 19th century (Owen 1808, 321n).

4.7 THE HOSPITAL OF ST GEORGE: ARCHAEOLOGICAL EVIDENCE (PERIOD 4)

THE CEMETERY (OA8)

During the 2005 evaluation the femur (thigh bone) from an *in situ* supine burial was recovered from trench 7 (Higgins 2006, 10; not discussed further in the current report). Further work in the vicinity of this trench in Open Area 8 revealed elements of four further supine burials, aligned east–west according to the standard Christian rite (Gilchrist and Sloane 2005, 152). There was also one feature interpreted as a probable empty grave ([872], Fig 30a). These four adult burials were all poorly preserved and incomplete, so only the age and gender of the best-preserved individual could be determined. This was adult male [925] aged 36–45 years. A radiocarbon date of cal AD 1350–90 (Beta 241622, 690±40 BP) confirms that the burial was of late 13th- or 14th-century date (Fig 30a; Fig 31; Chapter 9.9, 9.10). The burials are interpreted as lying in the western part of an external cemetery attached to St George's chapel. None of the burials showed any trace of a coffin, so the individuals were presumably buried in shrouds. During the medieval period the most common form of burial wrapping within monastic cemeteries was the shroud or winding sheet (ibid, 106).

A LATE MEDIEVAL MASONRY BUILDING (B4) ALONG THE EASTERN BRIDGE APPROACH ROAD

Before Building 4 was constructed, Structures 1 and 2 had been dismantled (Chapter 3.4; Fig 18) and the site levelled by soil dumping [867] and [907], which contained a small amount of animal bone mainly derived from sheep/goat (*Ovis aries/Capra hircus*), cattle (*Bos taurus*) and pig (*Sus scrofa*) (Chapter 9.8). The new building (B4; Fig 24; Fig 30b) was represented by its western and part of its southern wall, and it had a trench-built wall foundation consisting of a mass of river cobbles set in a sand matrix. The superstructure consisted of two facing courses of sandstone ashlar blocks with a mortared rubble wall core. The blocks of the basal course of the external or western face of the wall had a chamfered profile (Fig 32). This course was 0.93m wide, and the higher courses or superstructure only 0.84m wide.

Judging by its width, the wall foundation represents the ground storey of a masonry building, as it is too substantial for the plinth on which a timber-framed building might have been founded. It is possible that only the ground storey of this building was of masonry construction and that any upper storeys might have been timber-framed. There are several surviving examples in Frankwell of early 15th-century two-storey timber-framed buildings with ground-floor shops and living accommodation above, and these provide possible parallels for both the function and height of this building (Trinder 2006, 114). There are no associated finds to date the building's construction, but it can be inferred from earlier activity that it was built after the 12th century. The foundations of Building 4 were also clipped by the second phase of the east bastion (dating to the 13th or 14th century), confirming that it pre-dated the bastion (B6; above, 4.3). It therefore seems probable that Building 4 was constructed during either the 13th or 14th century.

The earliest structural addition to the building consisted of an internal foundation, perhaps a lining wall added to the eastern side of the existing wall, [903] (not illustrated). There was evidence of an internal gravel make-up, [888], for a

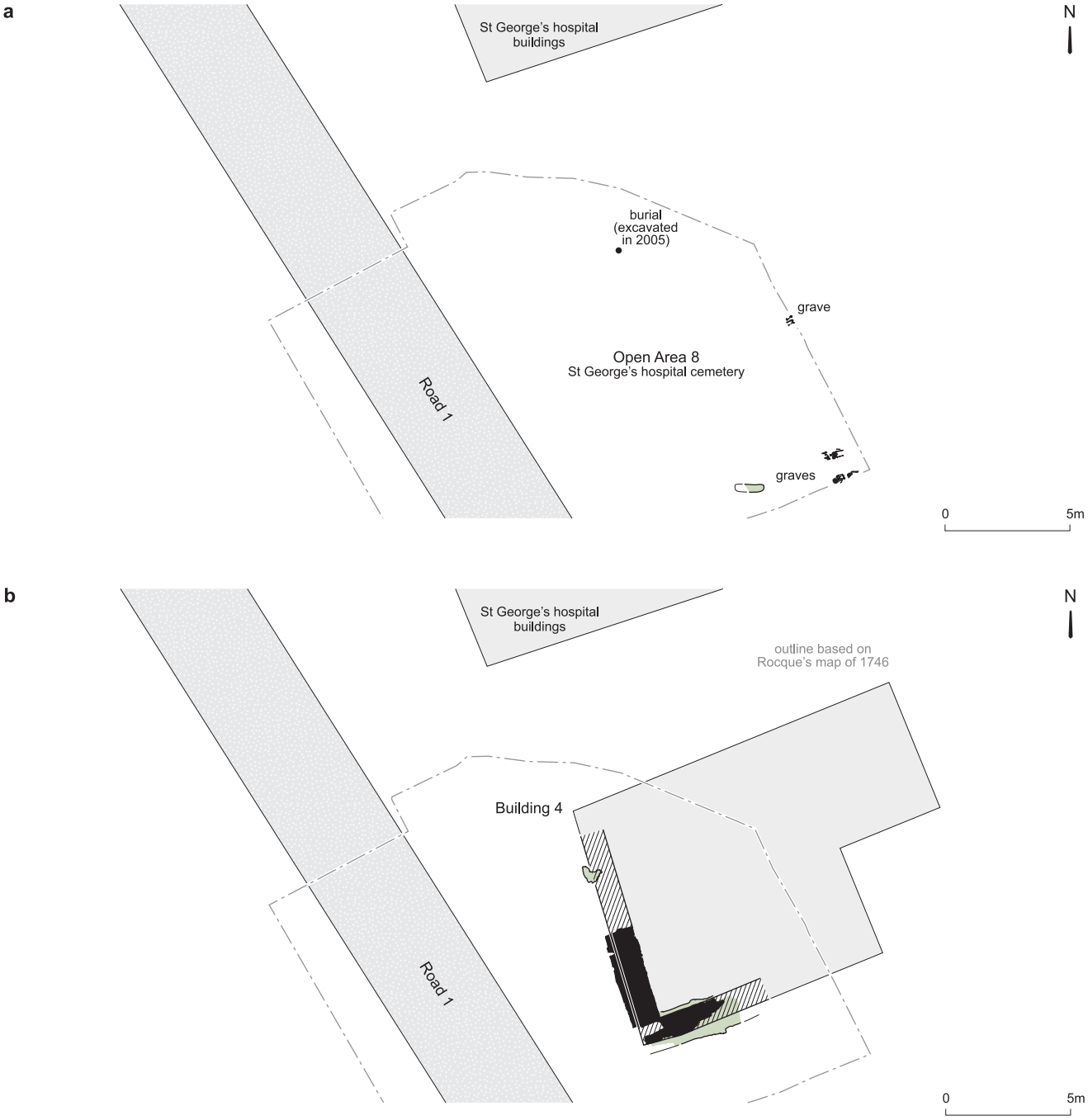

Fig 30 Plans showing bridgehead activity to the east of the approach road (R1), period 4: a, St George's hospital cemetery (OA8); and b, masonry building (B4) (scale 1:250)

mortar floor, [886] (not illustrated), which was later either repaired or replaced twice. There was also an internal post pit or small pit, [891] (not illustrated). Dating evidence for these additions is limited, with one sherd from an early glazed sandy ware (SAF3) jug dating to *c* 1180–*c* 1300, recovered from the backfill, [904], of the internal foundation and probably residual. There was also one sherd from a local unglazed ware (SAF80) jar (*c* 1100–*c* 1300) (Chapter 9.4; Table 9).

During the medieval period Road 1 must have remained in use, although there are no surfaces that can be dated to this period. Residual medieval pottery was recovered from some of the post-medieval road surfaces (Chapter 5; Table 9).

4.8 DISCUSSION: 13TH TO 16TH CENTURY (PERIODS 4–5)

Urban medieval hospitals and monastic houses were often located in suburbs, partly because space was more plentiful here than inside the rather congested walled towns and cities. So it is no coincidence that Shrewsbury's abbey and two of its three hospitals (St George and St John) were all situated just outside the walled town along the approach roads to its two bridges (Fig 16), where their presence would have been very noticeable to travellers, from whom donations would have

Fig 31 Skeleton [925], which was partly destroyed by a 19th-century wall, looking west (0.5m scale)

been sought. Shrewsbury's three friaries (Augustinian, Dominican and Franciscan) were all situated on the edge of the flood plain outside the walled town, where they were prone to flooding (Fig 16).

Medieval Shrewsbury possessed three hospitals. St Giles leper hospital, which was first recorded in 1155, was situated some distance to the south-east of the town, along the London Road (Gaydon 1973, 105–6; not located on Fig 16), while the other two hospitals were situated on adjoining properties along the eastern side of the approach road to the Welsh Bridge. St George's hospital chapel was located to the north of the excavated area, under a group of cottages latterly known as St George's buildings. St John's hospital was located directly to the north of this (Fig 29). Later, the site of St John's hospital was partly occupied by a row of almshouses, which has helped determine its precise location. The close proximity of the two, perhaps rival, hospitals explains how they later became a single institution. To the south of St George's chapel and also to the east were two small cemeteries. Five burials were excavated on the site (four are reported further below; Chapter 9.9; also, Higgins 2006, 10), and are interpreted as interments in the southern cemetery, which occupied the eastern side of the bridge approach road (R1). Unusually, this cemetery appears originally to have extended up to the roadside; usually this area would have been occupied by secular buildings to provide a rental income for the institution concerned, as happened at the parish church of Holy Trinity, York, in 1316. (Here, in 1316, the parishioners of Holy Trinity, Goodramgate, York, were granted permission to develop the street frontage of their churchyard to support a new chantry chapel dedicated to 'our Lady' or the Blessed Virgin Mary; these properties are still known as Lady Row (Pevsner and Neave 1995, 220).) It appears that during the 13th or 14th century the roadside portion of this cemetery was partly developed, when a substantial property was constructed (B4). Perhaps this undocumented building was a shop with residential accommodation above (Fig 30b). It appears that the northernmost burial was inside this building, implying that its construction post-dated the interment. Perhaps when this area was developed any marked burials were exhumed; hence the presence of what appears to be an empty grave.

Fig 32 Chamfered plinth of wall [823], Building 4, looking south-east (0.5m scale)

Hospitals such as St George and St John would have provided residential accommodation for local people who were either sick or destitute. Some hospitals possessed a more specialised function, as at St Giles which cared for lepers. Exactly what buildings both these Frankwell institutions possessed is uncertain, but their premises probably consisted of a chapel, the nave of which may have provided accommodation for their residents; assuming that both men and women were accommodated, there would have been segregation of the sexes. Alternatively, the residents would have been housed in one or more buildings serving as dormitories, with separate rooms or facilities for men and women. There would have been kitchens and some outbuildings, such as storehouses. It is documented that St John's hospital possessed a hall, which probably served as a communal dining room (Gaydon 1973, 106–8). As these hospitals were not monastic, staff would have been employed and could have lived either locally or on the premises.

5

THE POST-MEDIEVAL BRIDGE AND ITS ENVIRONS, 16TH TO 18TH CENTURY (PERIODS 5–6)

5.1 THE POST-MEDIEVAL BRIDGE STRUCTURES: DOCUMENTARY AND PICTORIAL EVIDENCE

WELSH BRIDGE AND ENGLISH BRIDGE

In *c* 1543 John Leland wrote:

> There be 2 great mayne bridges of stone on the hole river of Severne at Shrobbesbyri. The greatyste and fairest and highest apon the streame is the Walche bridge having 6 great arches of stone, so cawlyd bycause it is the way out of town into Wales. This bridge stondithe on the west syde of the towne, and hathe at the one ende of it a great gate to enter by into the towne, and at the othar end toward Wales a mighty stronge tower to prohibit enemies to entre on to the bridge. (Hearne 1769, 99; Smith 1964, ii, 81, first part book iv fo 180b)

By the 18th century the Welsh Bridge had seven arches. Six of these spanned the river, as various paintings and engravings show, with the seventh or northernmost known as the dry arch (B9; below, 5.2). The discrepancy between the number of arches recorded by Leland and later sources can be explained by the shortening of the bastions of the Welsh Gate during the post-medieval period, which reopened the dry arch. It is also possible that this arch was originally spanned by a drawbridge (Chapter 4).

The two parts of the English Bridge were also described by Leland. The eastern part, which spanned the Meole Brook, consisted of three arches. The western part, over the Severn, had 'four great arches' and a fifth that was spanned by a drawbridge (Hearne 1769, 99). In 1756 the western portion of the English Bridge had six arches across the Severn, one of them formerly spanned by a drawbridge. The sixth arch was only added to the east end of the bridge in 1732, and Coleham Island (which then separated the Meole Brook and the Severn) was spanned by the seventh arch (Ward 1950).

When Defoe visited Shrewsbury *c* 1724, he noted that the 'Severn surrounds this town … so it makes the form of a horseshoe, over which there are two fine stone bridges, upon one of which [the Welsh Bridge] is built a very noble gate, and over the arch of the gate the statue of the great Lewellin, the idol of the Welsh, and their last great prince' (Defoe 1989, 143).

During the 16th century the Welsh Bridge was the scene of some tragic incidents. In 1538–9 a brewer's son was killed whilst passing through the gates of the bridge, when a sudden gust of wind blew them shut on his head: 'hys head beinge betwexet them re^{d} sutche a blowe that the braynes fell out, and so p'sently died and never spack woorde'. In 1540–1 a journeyman shoemaker was murdered on the bridge; the murderer fled to Calais (Pas-de-Calais, France) and was subsequently pardoned. In July 1590 a Welsh boy was drowned whilst bathing under one of the arches of the bridge (Leighton 1880, 256–7, 318).

Between 1546 and 1577 various receipts and payments in the bailiffs' accounts mention repairs to St George's Bridge (SA, 3365/486). In 1571–2 the accounts included paving the roadway of the Welsh Bridge, mending the Welsh Gate and repairing the town walls and 'bridges' (SA, 3365/503). In 1585–7 the accounts mention more repairs to the Welsh Bridge; work included laying paving stones on the bridge and the transport of scaffolding, which was erected under the bridge (SA, 3365/527). The impression is that there was a regular programme of maintenance intended to keep the Welsh Bridge in good structural condition. The same pattern of regular maintenance is recorded in the few surviving English bridge accounts for this period, from Exeter (Juddery 1990a; 1990b), London (Harding and Wright 1995) and Rochester (Becker 1930).

Various instances of repairs made to the Welsh Bridge during the 17th century are recorded in the bailiffs' accounts. In 1603–4 and 1610–11 the accounts included bills for work on the Welsh Bridge (SA, 3365/545/546/556), with more work recorded in 1633–4 (listing the names of the various workmen involved) and quarrying at Grinshill (Shropshire) to

obtain stone for the bridge (SA, 3365/578). In October 1638 the accounts included the bill for paving the Welsh Bridge and the approach to the 'horse slipe' (an animal watering point along the river bank) in Frankwell (SA, 3365/582/11). The accounts for 1641–2 included numerous bills for the quarrying and transport of stone, as well as payments to masons and labourers. Some of these items state that this was 'for work on the bridge' (SA, 3365/585), but do not specify which one. Both the Welsh and Stone (English) Bridges are mentioned in the accounts during this period. However, two items in September 1641 do record that the work was carried out on the Welsh Bridge. Firstly, there was a bill of £10 10s 10d for work on the 'center' of the Welsh Bridge (SA, 3365/48/25). There was also a bill for work on a gutter at the Welsh Gate, which involved masons working for 25 days and a plumber, as well as Thomas Besford, who was paid for 'taking up ye bridge and laying planckes' (planks) (SA, 3365/52/28).

In November 1670, work carried out on the drawbridge of the bridge's Welsh Gate involved the removal of the old timber, installing 185ft (56.43m) of new planking, and renewing the ironwork (SA, 3365/615/74, 76). In 1672, flood waters brought down part of the tower of the Welsh Gate and part of one of the arches (Ward 1935, 133). The fall occurred at night, and the coroners and chamberlains of the town inspected the damage by candlelight (SA, 6000/15529). Following this damage, timber was removed from the bridge in January 1673. In February carpenters propped the second pier of the Welsh Bridge (presumably counting from the Mardol end), work that involved the use of a boat and a ladder, and shifting timber out of the coal house in the dungeon. Nails were also bought for the work, 6 cwt (304.8kg) of various large sizes, and in March a 'stillward horse lock' was bought for the dungeon of the Welsh Bridge. In April a day was spent 'drawing the Arch out', the bridge was propped and stone was bought for it at the quarries at Grinshill and 'Whiston' (Shropshire). Work was then undertaken at the Welsh and Stone Bridges from May to September. In May, 500 'floats' of boards were bought for 'stanking' (coffer dams) at the Welsh Bridge. In July bread and ale were bought 'for the encouragement of the workmen' laying the foundation of the second pier. In August work continued and a 20lb (9kg) iron bar was bought to lay in the new foundation (SA, 6000/15529; 19th- or 20th-century notes from 3365/616, which is now unfit for reproduction). Six loads of Grinshill stone were bought for the Welsh Bridge in October, as well as 22 prime stones specifically for the *frontispiece* (SA, 3365/617/252, 258, 267), and nails were purchased in December (SA, 3365/617/104). In January 1674 five iron stays and 13 *gadds* (large iron spikes) were bought to fasten up props under the Welsh Bridge (SA, 6000/15529). In June timber was sawn for the *stanke* (coffer dam) (SA, 3365/617/136). In September John Bromley sold timber to the corporation for use at the Welsh Bridge, comprising three forked poles and a piece of 'crucked timber' measuring 36ft (10.98m) for 'the centre of the Bridge', presumably an arch centre (SA, 3365/617/96). At the end of the month planks were replaced on the Frankwell drawbridge and a piece of timber 9ft (2.75m) long was provided for the wall at the end of the bridge (SA, 3365/618/110). In December a smith provided 20 staples for the drawbridge, a 9lb (4.05kg) piece of iron for a bar of the bridge, a chain and hook, and three bars for a grate for one of the new chimneys there (SA, 3365/618/130). In September 1675 work at the bridge involved the provision of 4 tons (4.06 tonnes) of timber for 'bearers' (perhaps arch centres) and two wooden rails 17ft (5.19m) long, placed in the street and the gate (SA, 3365/618/77).

An 18th-century note states that in 1707 an arch was made with stones at the further end of the Welsh Bridge (SA, 6001/299 fo 52). This may record the rebuilding of the dry arch (B9) at the northern end of the bridge, which until then might have been spanned by a fixed wooden drawbridge (above). Repairs were also frequently carried out on the two gatehouses on the Welsh Bridge. In September 1606 the lock on the lead door of the Welsh Gate was mended, and two keys and a padlock were bought for it (SA, 3365/549/53). In March 1607 a timber partition was made 'at the lower door of [the Welsh] Gate towards the Street', with a double door of boards, the capping reinforced with ironwork. A mason made up the walls over the head of the gate with brick (SA, 3365/550/6.12). In April 1608 the coroner of the town ordered work to be done on the lead gutters of the Welsh Gate and 'the furthest gate on the Welsh Bridge towards Franckvill' (SA, 3365/550/6.10). The prince's statue was put back in place at the Mardol Gate on the bridge in 1675 (Ward 1935, 133).

In 1576–7 timber-framed shops and a house were built by the town bailiffs on the east side of the bridge against the Frankwell gate tower, where the cage and privy had formerly stood (Chapter 4.1), cantilevered on timbers between the cutwaters of the second and third piers from the Frankwell end. One of the shops, which was tenanted by the shoemaker Thomas Jones, was damaged by fire in October 1601, and he lost most of his stock. More latrines were built on the bridge in 1581 (Leighton 1880, 279, 347; Champion 1994, 53, 63). In the borough rental of 1610 tenants paid rents for shops on the bridge leased to them by the bailiffs and 'sixmen' of the town: Edward Lloid and Thomas Gittins 8s 6d for a shop and chamber; the dyer Thomas Gardener 13s 4d for two shops; the corviser (shoemaker) Thomas Jones 5s for two shops, and 10s for another shop, formerly in the tenure of Elizabeth Morrise (Hobbs 1949–50, 239–40). The houses on the bridge, described as 'adjoining the Gate leading into Frankwell', were leased to the carpenter Owen Edwards in October 1752 for a term of 99 years. The houses had formerly been in the tenure of William Brayne and Richard Wheeler. The terms of Edwards's lease required him to rebuild the houses as three timber-framed dwellings within a year (SA, 3365/2536, formerly 6000/2756). Edwards's houses were later mortgaged to Robert Pemberton, and by 1795 the mortgage was in the hands of Mrs Pemberton (SA, 3365/673). At this time they were occupied by John Everall, William Cullis and John Roberts (Ward 1935, 150). A house at the end of the bridge was washed downstream in the flood of February 1795 (SA, *Shrewsbury Chronicle*, 13 February 1795). These houses are

depicted in various views of the bridge discussed below. The main roads beyond the end of the Welsh Bridge were administered by a turnpike trust between 1758 and 1877 (Trinder 2006, 113).

In 1631 there was an outbreak of plague in Shrewsbury and the whole of Frankwell was placed in quarantine. This provoked a riot when some of the inhabitants tried to smash their way across the Welsh Bridge, without success (Champion 1994, 27). In March 1642 the mason Thomas Wright installed a stone near the new arch at the Welsh Bridge and engraved letters upon it (SA, 3365/586/90). During the English Civil War the mayor's accounts for Shrewsbury record that in 1642 guns and gunpowder were purchased; payments were also made to an 'engineer' and numerous repairs were carried out on the town's gates and walls. Two cannon were placed at each of the town's three gates (the Welsh, Stone and Castle Gates). In 1644 the governor of the town ordered the corporation to install new doors to the 'hither gate' (presumably the Mardol Gate as hither or hithermost means nearer or nearest to the town) on the Welsh Bridge, but the funds were not available to carry out this work (HMC 1899, 39).

On 13 February 1795 a sudden thaw after a long frost led to the Severn overflowing its banks, almost turning the town into an island. Both the bridges were under water and the inhabitants of Frankwell could only leave their houses in boats (SA, *Shrewsbury Chronicle*, 13 February 1795; DA5/135/1/1). Flood water repeatedly rushing through the arches of the Welsh Bridge created a gravel bank downstream (SA, 6001/371 art 16).

The earliest depiction of both the English and Welsh Bridges is on the Burghley map of Shrewsbury *c* 1575 (BL, Royal MS 18 D iii fos 89–90; Fig 33). This shows the English Bridge with a central gatehouse structure that has twin bastions and a portcullis, its southern end lined with buildings, while the northern end was defended by another rectangular gatehouse. Sadly, the view of the Welsh Bridge is foreshortened and inaccurate as only four arches of the bridge are shown, flanked by beached timber 'flottes' or rafts. At the southern end of the bridge are the crenellated twin bastions of a gatehouse complete with portcullis and known as the Mardol Gate. On the northern arch of the bridge was another gatehouse structure consisting of crenellated twin bastions, also with a portcullis, and labelled 'ye Welsh Gate'. Along the north-east side of the Welsh Bridge several buildings are depicted, including one small free-standing building sited on the eastern cutwater arch. The English and Welsh Bridges are also shown on John Speed's map of Shrewsbury (Speed 1610), which depicts the Welsh Bridge with gatehouse structures at either end.

On the *South west prospect of Shrewsbury, Shropshire* by

Fig 33 The Welsh Bridge on the Burghley map of Shrewsbury, *c* 1575, north is to the top of the map (SA, 680/4; with permission of Shropshire Archives)

Samuel and Nathaniel Buck (1732) the Welsh Bridge is shown in some detail (Fig 34), with a square tower visible at the northern end (Hyde 1994, p1 93). Unfortunately, the area to the north of the bastions is obscured by buildings and trees. However, on the 1739 panorama of Shrewsbury, depicting the frozen Severn during the 'Great Frost', the northern end of the bridge is shown in more detail (Fig 35). This shows a large square, two-storey, crenellated tower over the sixth arch (counting from the southern end) and beyond that a wider-than-average pier (presumably the west bastion) with the seventh or dry arch beyond, which clearly provided vehicular access to the barge quay.

Fig 34 The Welsh Bridge on Bucks' *South west prospect of Shrewsbury, Shropshire, 1732*, view looking east (SA, 680/4; with permission of Shropshire Archives)

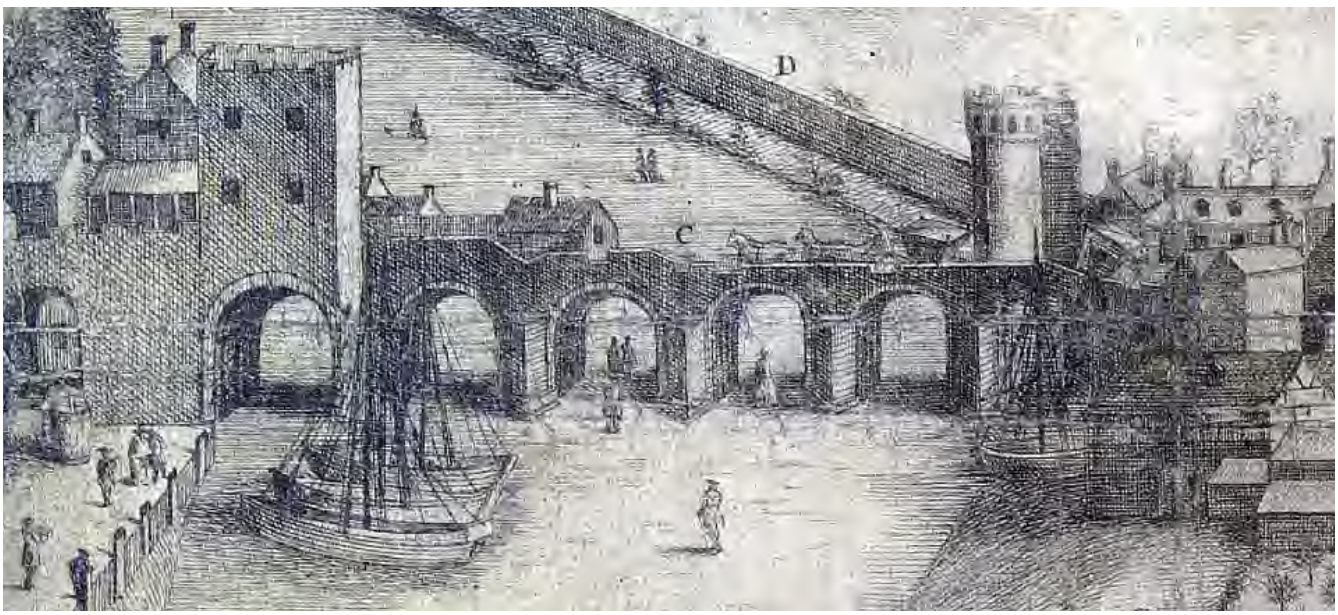

Fig 35 Detail from the panorama of Shrewsbury in the 'Great Frost' of 1739, showing the whole of the Welsh Bridge, view looking east (SHYMS FA/1995/001; with permission of Shropshire Council, Shropshire Museums)

An engraving of the northern end of the bridge, based on one of several views of the bridge produced by Paul Sandby, RA (1731–1809), also shows a gatehouse situated over the bridge arch adjoining the crenellated bastions (Fig 36). By 1769 it appears that this gatehouse had been partially demolished (Fig 37), and it is documented that more was taken down in April 1773, because it was obstructing carriage traffic (SA, 6001/299 fo 118v; Ward 1935, 133). A watercolour of the bridge painted by the Revd E Williams in 1788 depicts the entire riverine portion of the structure in considerable detail (Fig 38). This view shows that the gatehouse on the bridge had not been completely demolished in 1773, as its eastern wall had been retained. The masonry was presumably retained as it was supporting one end of the block of buildings on the eastern side of the bridge. By this date the building on the site of the west bastion may have served as both the tollbooth and the home of the toll-taker. In July 1657 Richard Whittingham, the toll-taker in Frankwell, was presented before the Grand Jury of the Town Sessions for abusing his office by exacting more than his due fees, and sometimes in taking a fee when he had no right to take anything at all (SA, 3365/2247/94). However, there appears to be no building on the west bastion on the 'Great Frost' panorama of 1739, where only a wooden pentice structure is visible, built up against the malthouse to the east and perhaps standing on the east bastion (Fig 35). A brick house is shown on illustrations from 1769 onwards. It occupied the footprint of the bastion and had a steep-pitched roof and a tall chimney (SA, 6001/372/1 fo 52; 6001/5326 fo 42; Fig 37; Fig 38).

Fig 36 Watercolour based on a view of the northern end of the Welsh Bridge by Paul Sandby, *c* 1765–70, showing the dry arch and the gatehouse above, view looking east (SA, 6001/5326 fo 80; with permission of Shropshire Archives)

Fig 37 Watercolour of the northern end of the Welsh Bridge by an unknown artist, 1769, showing the west bastion, the open dry arch, the partly demolished gatehouse on the bridge and Frankwell Quay in the foreground, view looking east (SA, 6001/5326 fo 42; with permission of Shropshire Archives)

Fig 38 Watercolour of the Welsh Bridge by the Revd E Williams, 1788, view looking east; by this date the gatehouse on the bridge had been largely demolished (SA, 6001/372/1 fo 52; with permission of Shropshire Archives)

Fig 39 Watercolour of the old Welsh Bridge by Paul Sandby, showing the Mardol Gate, *c* 1770–80, view looking north (SHYMS FA/1991/054/4; with permission of Shropshire Council, Shropshire Museums)

The building appears on a view of *c* 1770, with a circular stair turret attached to its riverside corner, but this is probably fanciful as it is not shown on any other views (Fig 36). On the Revd E Williams's watercolour of 1788 (Fig 38) the building on the site of the west bastion is depicted in considerable detail. It was two storeys high with a pitched tile roof and a chimney. From this it appears that the upper portion of the building was of a different style of construction, probably brick, while the lower portion was constructed of ashlar masonry.

At the end of the bridge's life, in October 1791, a committee was formed for the abolition of all tolls in the town, which drew attention to the frauds and mistakes of the toll collectors, their ill-tempered disputes with farmers and cattle drovers, and the problems concerned with the crowding of cattle at the narrow toll collection points (SA, *Shrewsbury Chronicle*, 21 October 1791). In 1795 the house on the west bastion (B11) was owned by Mr Cullis, along with the part of the wharf to its north, and west of the dry arch (B9; below, 5.2; SA, 7112). The bastion house (B11) survived the demolition of the bridge and was still standing in the early 20th century (B11; below, 5.2; Chapter 6; Chapter 7.1).

By 1788 the site of the east bastion (B8; below, 5.2) was occupied by a large building, which was depicted in some detail in Paul Sandby's view of the Mardol Gate (Fig 39) and J Fidler's view of the two bridges (Fig 40). From these views it can be established that it was a large three-storey brick structure with attics, partly rendered, built over a stone riverside basement. Two gables of differing size faced the river and the house had tall, elaborate, crenellated chimneys, perhaps suggesting a late 17th-century construction date. The

Fig 40 Watercolour of the old Welsh Bridge showing the northern end of the bridge, by J Fidler, *c* 1794, view looking west towards the new bridge (SHYMS F/1990/62/2; with permission of Shropshire Council, Shropshire Museums)

roof and chimney of this building were also depicted by the Revd Williams (Fig 38), and documentary evidence confirms that its site was already occupied by buildings during the 17th century. In November 1668, the corporation leased out a piece of empty ground near St George's hospital, adjoining to the south the malthouse of Elizabeth Scott, widow, and to the north and west the property of John Cole. It had formerly been occupied by the brewers Thomas Meredith and Jonathon Scott (SA, 6000/64). In the town rental of 1686 John Scott was charged an annual rent of 5½d for the hospital, presumably the site of St George's hospital (SA, 177/1/15; Phillips 1779, 115).

In April 1697 Lazarus Thomas made a settlement on the marriage of his son Nathaniel, with Elizabeth Gosnell, conveying to the couple three houses near the Welsh Bridge, with adjoining malthouse, stable and cow-houses, and a wharf on the River Severn, probably the same premises as above. Elizabeth subsequently married Samuel Yardley the elder, and the property descended in the Yardley family; it is identified with the site of 154–157 Frankwell and the late 18th-century north wing of the Glen Malthouse on their eastern side (Walker, deed 2). The possible animal mill excavated as Structure 5 (below, 5.2) may be associated with these premises. On Rocque's map of 1746 and a plan of 1795 the Yardley house appears as a square block built partly over the site of the east bastion (Fig 41; Fig 43; SA, 7112; Rocque 1746). The north wing of the Glen Malthouse adjoined it to the east (SA, 6001/372/1 fo 52). The projected work relating to the demolition of the Welsh Bridge in 1795 involved the underpinning of Mr Yardley's house. Following negotiations with Mr Yardley over the boundaries of his property, work was carried out in November and December at his stable, consisting of taking down the old stable, 'nogging' the walls (probably the brick infilling of timber framing) and building a new tiled roof; in

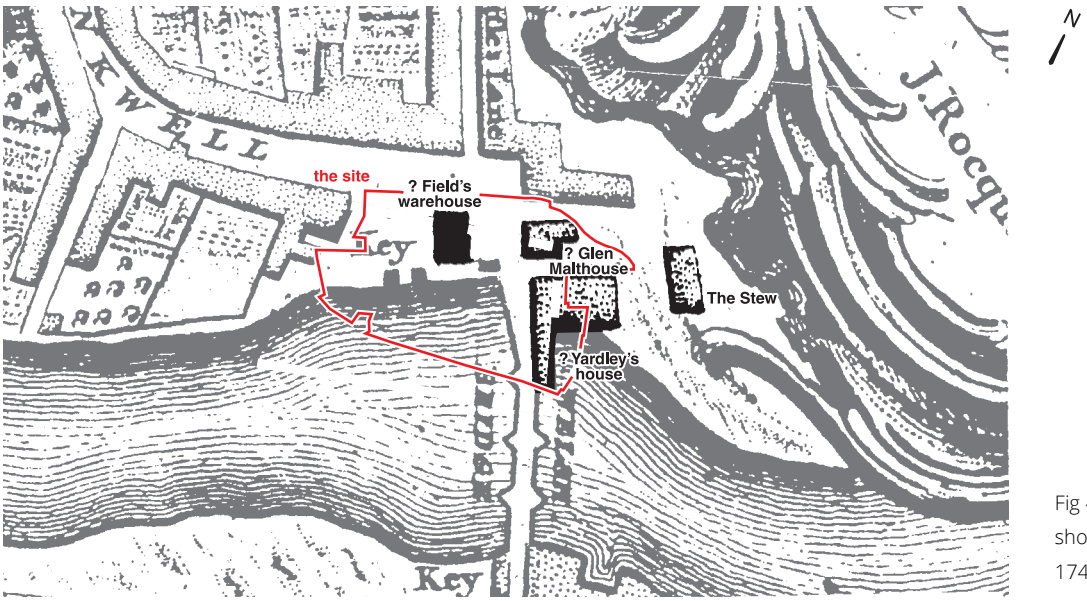

Fig 41 The area of the site as shown on Rocque's map of 1746 (Rocque 1746)

the 'old house' itself, paving, steps and floors were made good and rubbish was moved; a boundary wall was built of brick between the stable and the house; and the walls of Yardley's buildings were underpinned. The materials used included bricks, lime, sand, flagstones and freestone for coping-stones and steps. Work still remained to be done at the house in August 1797 (SA, 3365/73; 3365/673; Ward 1935, 150–1). In 1786 there were 12 malthouses in Frankwell (Trinder 2006, 117).

The Stew was situated further to the east of the Yardley house, appearing as a rectangular block on Rocque's map of 1746 (Fig 41). This corresponds to the early 18th-century part of the surviving building, with its rubbed brick window and door heads. In the early 18th century The Stew property consisted of a house, a malthouse, outhouses, yards, stables, gardens and orchards. It was held by the Astley family and occupied by John Burley, corvisor, followed by the mercer Thomas Talbot, to whom it was mortgaged in February 1712. It was the subject of a marriage settlement amongst the Astleys in March 1718, and sold by them to the leather merchant John Sexton in December 1728. By this time John Astley was described as a maltster and the premises had acquired a summer house (SA, 6000/1466, 1909). In 1773 'old stone' at The Stew was sold by the corporation to a Mr Lomax (SA, 3365/668/384). In April 1806 gravel was dug from The Stew to use as paving in front of the Shire Hall (SA, 3365/ 2670 p 108).

The picturesque Mardol Gate was depicted in many views of the Welsh Bridge produced during the late 18th century (Fig 38; Fig 39). These confirm that the southern side of the gate was flanked by a pair of crenellated round turrets. A neoclassical facade was added to the rear or south side of the gatehouse in 1539, or perhaps in 1576–7, when the town bailiffs were said to have repaired and beautified the Welsh Gate (Owen 1808, 80–3; Ward 1935, 130–1, 133; Walker 1982, 412–16; Champion 1994, 63). One view of the Mardol Gate clearly shows the appearance of the 16th-century addition to the north side of the gatehouse which straddled the adjoining arch (Fig 42). The Mardol Gate was demolished between February and April 1789 (not in 1791, as stated in Owen 1808 and Ward 1935) by order of the corporation, as the structure was becoming dangerous, much to the regret of local antiquarians. The account survives for the demolition of the structure by the masons' firm of Carline and Tilley. On one occasion a team of six horses was employed to pull down part of the masonry. A total of 77 cartloads of rubbish were removed from the bridge and four masons removed stones to County Hall. The statue of the Black Prince and the accompanying armorial shields were rescued and placed at the end of the Market Hall in the square in March 1791 (SA, 3365/672; Owen 1808, 83; Ward 1935, 133–4). The demolition of medieval city gates and bridge fortifications was widespread during the late 18th and early 19th centuries as they were perceived as hindrances to traffic flow (Jusserand 1961, 36). For example, the City of London's seven medieval gatehouses were all demolished during 1760–7 (Weinreb et al 2008).

FRANKWELL QUAY

On the Burghley map of *c* 1575 two sailing barges are depicted on the Severn, close to the English Bridge, one of them being bow-hauled (Fig 33; Stamper 1994, 70). It is also clear from the map that the foreshore at Frankwell was already being used to land timber 'flottes' and presumably barges. These 'flottes' were cargoes of timber, which were lashed together to form rafts. The rafts were floated downstream when the river level was deemed high enough to carry them (ibid, 68). A beach facility of this kind would only have required the dumping of gravel to consolidate the foreshore, allowing easy movement of vehicles and preventing

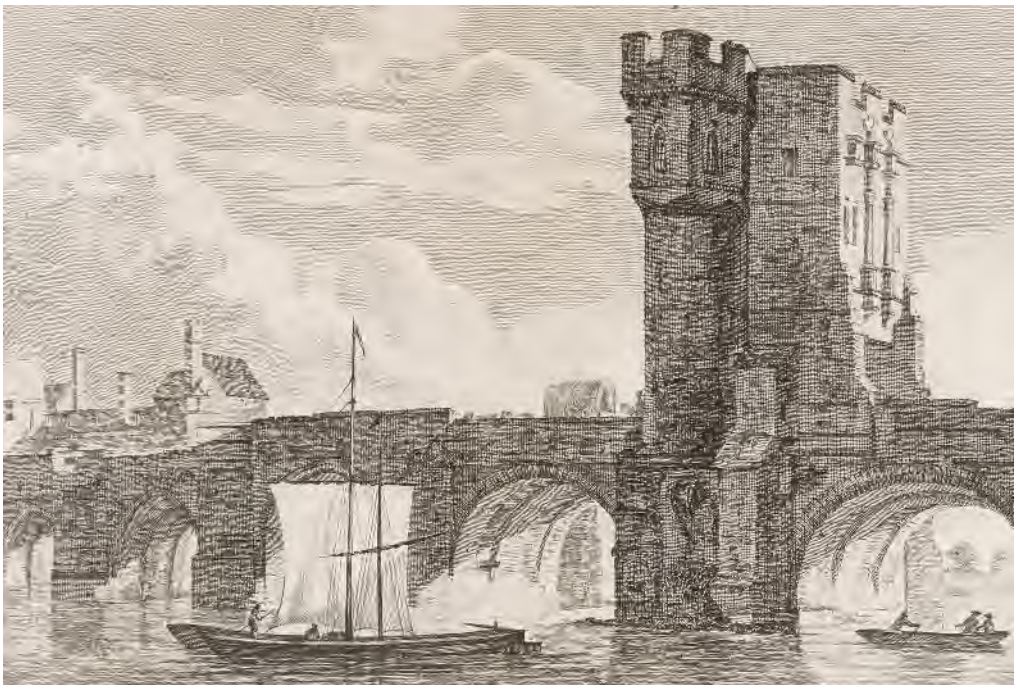

Fig 42 Print of the central portion of the Welsh Bridge in 1776, showing the two phases of the Mardol Gate and the buildings on the eastern side of the bridge, view looking east (SA, 1220/3; with permission of Shropshire Archives)

vessels from tipping over. In 1607 Mardol Quay was built on the eastern side of the southern end of the Welsh Bridge by the mercer, Roland Jenks. It had a waterfront 44 yards (40.26m) long, and was rented from the corporation by Jenks, who took the tolls in return, including 12d from each barge-load of wood or coal (Ward 1935, 132; Champion 1994, 85). Jenks is also thought to have built Frankwell Quay, which was situated to the west of the northern end of the Welsh Bridge, in 1608. The bailiffs' accounts for 1609 included expenditure concerning the construction of a quay at Frankwell and paving Spicers Lane, Frankwell (SA, 3365/551). It is probable that Frankwell Quay was also leased from the corporation (Baker 2005; SA, 6001/299 fo 46). In May 1642 the watering-place near Frankwell Quay was mended with 'pebble stone', and 5 square yards (4.18m^2) of it were paved with sand and paving stones (SA, 3365/586/85). In July 1657 the quay was represented at the Town Sessions as 'very ruinous and dangerous at high water' (SA, 3365/2247/94). It appears in the 'Great Frost' panorama of 1739 as a timber-revetted structure, its frontage in line with the north side of the Welsh Gate arch (Fig 35). However, watercolours of 1769 (Fig 37) and 1788 (Fig 38), and a map of 1795 (Fig 43) all indicate that the frontage of the quay was in line with the southern side of the dry arch (B9). On the 1795 map the Corporation Quay measures 103ft (31.42m) along this frontage to the west of the arch, 84ft (25.62m) along the inlet on its west side, and 84ft (25.62m) along the street of Frankwell on its north side. This corresponds approximately with the sites of the Methodist chapel (B23), the cottage to its rear, the excavated building (B14) to the west of the dry arch (B9), and the smithy yard (B22) at 162–163 Frankwell as shown on the Ordnance Survey map, first edition, of 1882 (cf Fig 54; Fig 69; below, 5.2; Chapter 6). In March 1773 John Sandland was paid for paving 27 square yards (22.57m^2) of Frankwell Quay, using 2 tons (2.03 tonnes) of stone (SA, 3365/668/272); and in March 1790 William Coppack paved another 74 square yards (61.87m^2), using 4½ tons (4.57 tonnes) of stone and gravel brought from the River Severn in wheelbarrows (SA, 3365/672). In January 1789 the corporation granted a piece of land near Frankwell Quay to John Gellion and John France, along with a rent of 6s per annum arising from waste adjoining the quay (SA, 3365/73). During the demolition of the Welsh Bridge in 1795, Frankwell Quay was described as extending over about 1000 square yards (836.10m^2) with a road 20ft (6.10m) wide running in front of Mr Field's warehouse (on the west and south sides; Fig 41) and extending to the dry arch of the bridge (Ward 1935, 151).

Field's warehouse was on the site of William Nesse's house of 1343 (Fig 29), on the west side of the bridge approach. In January 1724 Lazarus Jones of Frankwell left a warehouse and building on *Frankwell Key*, which may be identifiable with this structure, to his nephew John Davies, maltster (SA, 484/137). On the 'Great Frost' panorama of 1739 the south gable end of a warehouse can be seen on the quay, on the site of the later chapel (Fig 35). It appears on John Rocque's town map of 1746 as a black rectangle, the only warehouse on the quay (Fig 41). In addition, by 1769 there was a wooden boarded structure with a roof, open at the base and supported on two posts, projecting on to the wharf (Fig 37). This may have been built in 1642, when the carpenter John Hencok was paid for the framing of posts sunk into the ground for the weighing of coals at the two quays, and for repairing the pinfold in Frankwell (SA, 3365/586/99); or it may have been a later structure associated with the warehouse. By 1795 the warehouse belonged to Mr Field (SA, 7112), when it was included in the valuation of the quay (SA, 3365/673). It survived into the 19th century, the site described in 1865 as 'where an old and dangerous building had for a long period stood' (*ESJ* 1865, 5). In April 1778 two dwelling houses and a malthouse in Frankwell were leased by

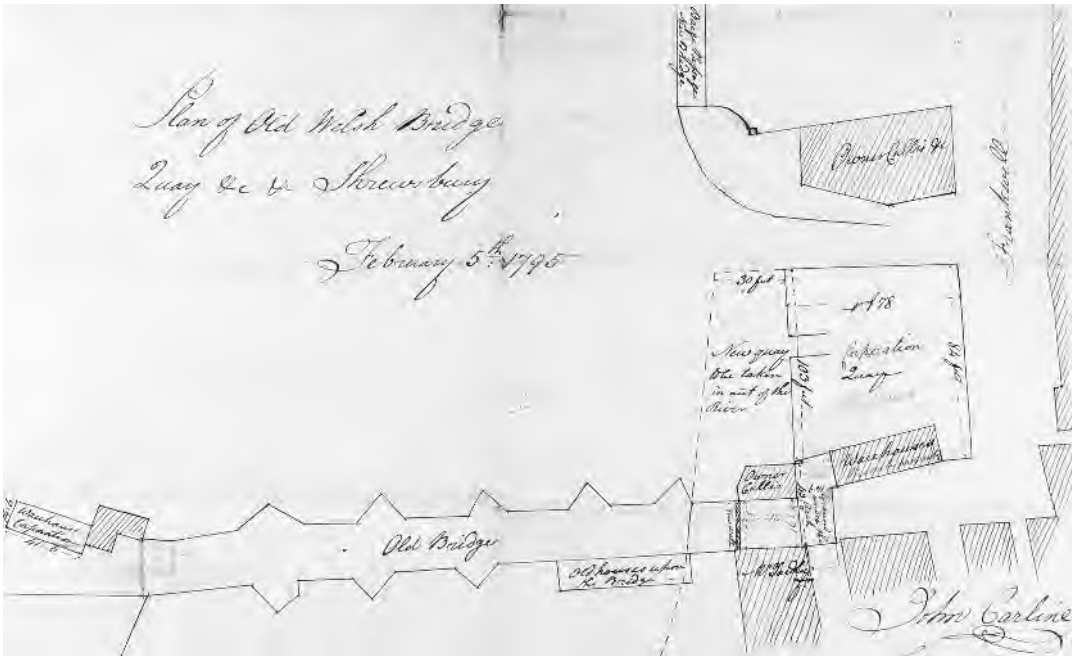

Fig 43 Carline and Simpson plan, 1795, of the northern end of the old Welsh Bridge, showing the intended position of the new blocking wall on the bridge roadway and the proposed area of the new quay on the western side of the bridge; north is to the right (SA, 7112; with permission of Shropshire Archives)

George Scott of Betton to the builder Richard Lee for 70 years; one of the houses was occupied by Joseph Field, followed later by Edward Cullis. These premises stood at the north-west corner of the site and included 165 Frankwell (SA, 6000/14596).

During the 17th century malting became an important industry along the Frankwell waterfront and one of the buildings adjoining the eastern side of the bridge was a malthouse (above). The waterfront at this period was still populated by tanners and dyers, and also by watermen and 'floatmen', who poled the 'flottes' of timber down the Severn (Fig 33). Many of these river-workers were of Welsh origin. The Gardener property with its dyeing furnaces to the rear was the subject of family conveyances in 1628, 1632 and 1633, and sold to another dyer in 1638, when it was still occupied by the trade (SA, 840/box 9/19, 20, 21, 22). The history of prostitution in Frankwell stretches back to at least 1527, when Howell ap Edenevet was presented for keeping a brothel there (Champion 1994, 53, 86).

A number of timber-framed buildings of 17th-century date are still standing in Frankwell, including 165 Frankwell, at the north-west corner of the site, dated by tree-ring analysis to 1603 (Trinder 2006, 115). It is timber-framed and jettied on the original Frankwell frontage, with its western gable end modified in the 20th century to give it a new frontage on to the new Welsh Bridge approach (Moran 2003, 265, 355; Baker 2005). A pair of houses at 126–127 Frankwell, dated by tree-ring analysis to 1609–10 (Trinder 2006, 115), is of three storeys at the front and two to the rear. The front of 127 consists of ground-floor shops with a great chamber over them. The framing is plainer than in the houses in the centre of Shrewsbury and this set the pattern for Frankwell (Moran 2003, 266, 356; Baker 2010, 193).

In July 1609 a tenement near *le Horsefayre* in Frankwell, in the tenure of Richard Scott, was conveyed as part of a marriage settlement (NLW, 621). It had been leased to Scott in January 1605 for a term of three lives, the rent including two capons at Easter and two hens at Christmas, and a heriot of the best beast at each death or 20 shillings in lieu, dues more frequently associated with manorial tenure (SA, 49/151). This may have been the house in Frankwell which was the subject of a conveyance in the Scott family in September 1656. It was occupied by the tanner Thomas Gough, and was flanked by the houses of glover Edward Phillips and maltster John Rogers (SA, 484/230).

The Cole family inheritance in Frankwell included the White Horse Inn, with its gardens, stables and malthouse and an adjoining house, and a messuage called 'St George's Chapel', which also had a malthouse and stable, both at the east end of the Horsefair (Fig 54). These were included in a valuation of the property of John Cole on his death in 1611, divided amongst co-heiresses and their representatives in June 1744, in part devised in the will of one of the co-heiresses, Susannah Cherrington, in April 1760, and included in subsequent marriage settlements (SA, 20/14/90; other copies at 1832/30; 1832/34; 4215/23 and 1005/5; 6000/178).

5.2 EARLY POST-MEDIEVAL ACTIVITY ALONG THE QUAYSIDE AND THE BRIDGE APPROACH ROAD: ARCHAEOLOGICAL EVIDENCE (PERIOD 5)

THE FORESHORTENED WEST BASTION (B5)

Rebuilding of the first phase of the west bastion (B3) involved demolishing the northern part of the structure and replacing it with a much smaller one (Fig 44). Activity started with the dumping of sterile sandy gravel and a mass of horizontally bedded sandstone rubble fragments, probably raising the ground level. The northern wall of the bastion was demolished and then rebuilt on a new alignment. It is probable that this rebuild was constructed of masonry salvaged from the earlier structure, as the external faces of some of the sandstone blocks employed in the new northern wall exhibited the same diagonal tooling marks as those used in the earlier phase. The external facing course of the new northern wall consisted of squared, close-jointed, red sandstone rubble blocks with diagonal-slashed dressing or tool marks on their external faces. The internal face of the new wall was constructed of less regularly coursed rubble, founded on a slightly wider plinth. The wall core was a mass of irregularly shaped rubble, all bonded by hard, light grey sand/lime mortar. From the rubbing marks left by mooring ropes on the north-west corner of the later rebuild of the west bastion (B11, period 5; below), it can be inferred that the contemporaneous quay surface stood at *c* 50m OD.

A clayey, pebbly, gravel deposit accumulated on the foreshore around the west bastion during this phase of its use, probably representing material dumped on the foreshore to construct barge beds, intermixed with fluvial sediments. The only finds evidence was a single sherd of English brown salt-glazed stoneware (ENGS) from a jar or jug, broadly dating to *c* 1700–*c* 1900, and floor tile post-dating *c* 1800 (SS8; Chapter 9.2). The chronologically mixed nature of the dumped material reduces its value in dating this phase of activity.

The most likely reason for the foreshortening of the bastion was to permit the reopening of the seventh or northernmost arch of the Welsh Bridge, which would have allowed the movement of vehicular traffic along the new quayside after its 1608–9 development (above, 5.1).

THE FORESHORTENED EAST BASTION (B8)

The foreshortening of the east bastion (B8) is undated, but is assumed to have been contemporary with the remodelling of the west bastion (B5, above). The new northern wall was trench-built and L-shaped in plan, with a slightly tapered cross section (Fig 44). Each face edge was marked by courses of blocks of squared and dressed sandstone rubble, while the wall core was a mass of irregularly shaped rubble containing several red bricks (2in thick or 51mm, therefore later than

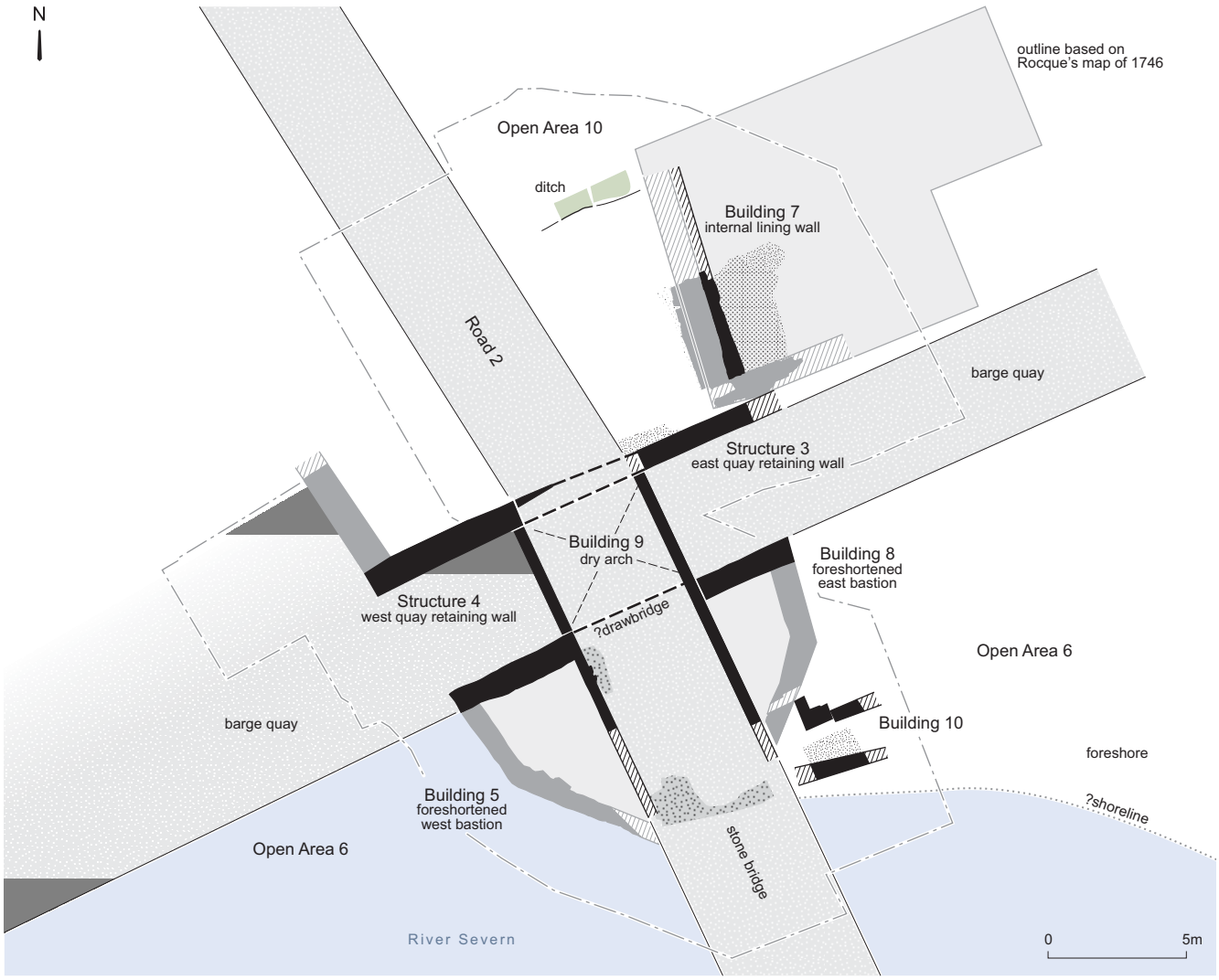

Fig 44 Plan showing the east and west quay retaining walls (S3, S4) along the barge quay, the dry arch (B9) and east and west bastions (B5, B8), buildings (B7, B10) to the east of the bridge and bridge approach activity (OA10) east of the road (R2), period 5 (scale 1:250)

1500), all bonded with pale grey lime mortar. According to cartographic evidence (Fig 41), at some time before 1746 the east bastion (B8) had been replaced by a range of buildings constructed along the eastern side of the bridge, the partial remains of which were represented on site by Buildings 10 and 12 (Fig 44; Fig 52). Documentary evidence (above, 5.1) suggests that this replacement took place during the 17th century; there is no supporting finds evidence.

ROAD (R2) SURFACES AND MAKE-UP

The dating evidence for the road surfaces is limited, since many areas were disturbed by later activity. They could not be identified as discrete, datable entities as the road remained in use until the 1960s (R3, period 6). The alignment of Road 2 is uncertain because of the absence of edges (Fig 44), although the Burghley map of *c* 1575 seems to show that it may have curved round to the west rather than continuing in a straight line (Fig 33; BL, Royal MS 18 D iii fos 89–90).

Along the eastern side of the bridge approach road there were several small areas of superimposed flint-cobble surfaces and levelling dumps (Fig 44; Fig 52). Associated finds include post-medieval pottery broadly dating to *c* 1660–*c* 1870. This consists mainly of sherds from local red wares and buff wares (MY, PMFR, PMR), with the closest dating coming from Staffordshire-type combed slipware (STSL) current from the mid 17th to early 18th century. An incomplete brick in the road surface has rather irregular sides and is slightly smaller in breadth and thickness than the other post-medieval bricks recorded on the site, suggesting a pre-19th-century date (Chapter 9.2). A single clay tobacco pipe stem fragment post-dates *c* 1630 but is otherwise undatable. There is also a fragment from a late 17th- or early 18th-century green glass wine bottle of shaft and globe or early onion form, with a circular seal, <31>, bearing the owner's initials 'IB'. A moderate-sized group of animal bone was derived mostly from sheep/goat (*Ovis aries/Capra hircus*), as well as cattle (*Bos taurus*) and pig (*Sus scrofa*), including one foetal or neonate piglet (Chapter 9.8; Table 13). One human tibia (shin bone) was also recovered (Chapter 9.9).

EAST QUAY RETAINING WALL (S3)

Soon after the modification of the second east bastion (B6, period 4; Chapter 4.3; Fig 24), the level of the adjoining area was raised by the dumping of clayey alluvium, which included four sherds of pottery dating to *c* 1580–*c* 1650. A trench-built retaining wall (S3), aligned east–west, was constructed on top of this dumping (Fig 44). The function of the wall was to retain the deposits along the break of slope between the new quayside and the higher area of land further north. The external or south-facing course of the wall was constructed of rectangular ashlar blocks of sandstone, bonded by lime-rich, sandy mortar.

The northern, internal face of the wall consisted of a facing course of less regularly shaped sandstone blocks, and the gap between the two facing courses was infilled with a mass of smaller irregular stones. This wall was over 2.14m high, but the extent of the masonry that originally stood above ground level is uncertain. The contemporaneous quay surface cannot now be established, although it probably stood at about 50m OD (B11, below), implying that at least 2m of the retaining wall masonry stood above ground level.

WEST QUAY RETAINING WALL (S4)

To the west of the bridge was another east–west aligned quayside retaining wall (S4), 1.50m wide and over 6.64m long (Fig 44). This stretch of wall was constructed by digging a deep linear foundation trench through the existing landward deposits. The southern or external face of the wall consisted of nine courses of dressed, wide-jointed, rectangular ashlar sandstone blocks. The northern or internal face was constructed of roughly coursed, irregular sandstone rubble blocks, bonded by a mid-brown sand/lime mortar. The western end of the wall was neatly finished, implying that this was its original terminal. The wall was clearly associated with a quayside surface lower than the later cellar floors (period 6). It can be inferred from the rubbing marks left by mooring ropes on the west bastion (B11, below) that the quay surface stood at *c* 50m OD. Three clay pipe stem fragments could date to any time between *c* 1630 and the 1950s; no other dating evidence was recorded.

POST-MEDIEVAL RIVERINE SEDIMENTS (OA6)

Foreshore or fluvial sediments ranged from clayey silts and clays to a variety of sands, which varied in texture from fine to coarse (Fig 4; Fig 44). Some of these sediments could be described as river beach deposits or sand bars. The impression is that the deposits accumulated during frequently changing conditions of deposition, possibly punctuated by erosion events and the periodic dumping of waste material from the adjoining quay. Ceramics and glassware obtained from these deposits during the first phase of evaluation ranged in date from the 15th to the 18th century, and were found with residual medieval pottery, bricks and peg tiles (Rátkai 2006, tables b and c).

POST-MEDIEVAL (PRE-1790s) BRIDGE APPROACH ACTIVITY (OA10) EAST OF THE ROAD (R2)

Non-structural activity during this period consisted of the excavation of the eastern part/end of a linear ditch, perhaps part of a property boundary (Fig 44). Thirty-six sherds of pottery recovered from the feature date broadly to the 15th to 16th centuries. The pottery includes residual medieval local red and buff earthenwares (F49, SAF79), as well as Midlands purple ware (SAF16) and Cistercian-type ware (SAF30), which span the late medieval/early post-medieval period (*c* 1400–80 to *c* 1600). Fragments of possible stone paving and stone roofing, as well as probable 19th-century floor tile were also recorded (Chapter 9.2). A more unusual find is a plain brown-glazed floor tile of medieval date, 114–116mm square by 24–26mm in thickness. Two large (*c* 4mm diameter) nail holes near the corners of one edge may have resulted from the method of manufacture (Fig 45, <T3>; Chapter 9.2).

There were few other artefacts in the ditch fill. A 'Lombardic' letter E with a curved back and closed side, made from cast copper alloy (Fig 46) probably dates between the

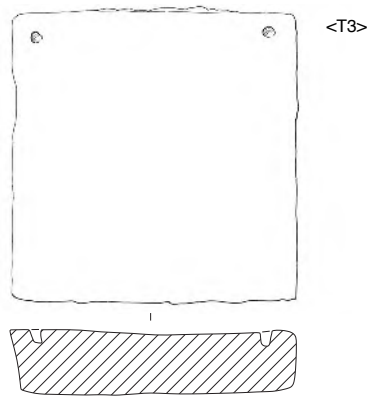

Fig 45 Plain brown-glazed medieval floor tile <T3> from Open Area 10 (scale 1:3)

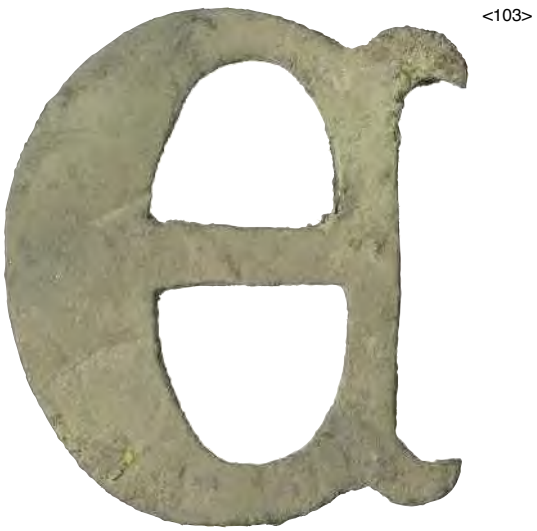

Fig 46 Copper-alloy letter E, <103>, 13th to 15th century (residual), from context [880], Open Area 10 (scale 2:1)

13th and 15th centuries, and would have originally been mounted on a monumental memorial brass or a casket. The only other item recovered was a clay pipe bowl of Broseley type 8A, dating to *c* 1780–*c* 1800 and one of the latest items in the ditch fill, probably intrusive (Chapter 9.3).

Small quantities of animal bone were also found in the ditch fill, derived mainly from sheep/goat (*Ovis aries/Capra hircus*), with smaller counts of cattle (*Bos taurus*), chicken (*Gallus gallus*) and pig (*Sus scrofa*). There is evidence for butchery and the division of cattle carcasses into 'sides', as well as slight canine gnawing of one bone; there is also a polled sheep horn core (Table 15). Fish were represented by a dermal spine or 'buckler' of a ray, probably a roker or thornback ray (*Raja clavata*) (Chapter 9.8).

LATER ADDITIONS TO MEDIEVAL MASONRY BUILDING (B7)

Building 4 (period 4; Chapter 4.7; Fig 30b) was constructed during the 13th or 14th century and remained in use until the early 19th century. Its demolition was only undertaken when this whole area of the bridge approach road was redeveloped after the construction of the new Welsh Bridge (Chapter 6). The earliest post-medieval structural addition to the building (B7) consisted of a north–south aligned wall foundation [860], interpreted as an internal lining wall (Fig 44). It was constructed of roughly squared local sandstone blocks bonded by sandy lime mortar, and was superseded by a levelling dump of redeposited alluvium. Finds from the dump included two sherds of pottery dating to the mid 17th to 18th century, along with a single residual medieval sherd in early glazed sandy ware (Chapter 9.4; Table 9). A clay pipe bowl of Broseley type 5b dates to *c* 1680–*c* 1720 and is stamped in relief on the heel with the initials 'RL', standing for the pipe-maker Richard Legg (1651–1714) (<CP5>, Fig 106; Chapter 9.3).

One complete square brick measuring 196 × 191 × 39–48mm recovered from a worn mortar floor in the post-medieval phase of Building 7 is almost exactly the standard size of a Roman *bessalis* brick (Brodribb 1987, 3). However, it is also similar in size and colour to a number of post-medieval paving tiles, although these are in a different fabric (Chapter 9.2).

THE EARLIEST FABRIC OF OLD WELSH BRIDGE, THE DRY ARCH (B9)

As the upstanding bridge masonry was conserved and then reburied (Chapter 8) only its exposed portions were available for examination, so any early fabric that was concealed by later alterations or refacing was not seen. Along the eastern side of the bridge a north–south aligned portion of the core of the pier between the sixth and seventh arches was exposed. It was constructed of large, coursed, squared blocks of sandstone, bonded by a sand/lime mortar. Part of this masonry, [291], had been cut back by later activity. The central portion of the pier was infilled with dumps of sterile, sandy gravel with evidence of tip lines.

The barrel vault of the seventh or northernmost arch of the bridge, latterly known as the dry arch (B9; Fig 44), was well preserved and, once emptied of demolition rubble, was available for survey (Fig 47). The internal face of the vault was constructed of close-jointed, rectangular ashlar sandstone blocks, with a few peg tile fragments used as levelling courses. The external faces of the eastern and western sides of the arch were both constructed of ashlar blocks very similar to those used in the vaulting (Fig 47). In the external faces of the arch masonry, traces of a reddish-brown sandy mortar were visible. The basal portion of the parapet wall along the eastern side of the roadway was 0.50m wide.

The stratigraphic relationship between the blocks of the western face of the dry arch (B9) and the north wall of the foreshortened west bastion (B5, above) could be established by the presence of a slot chiselled into the north wall of the bastion, [74], to allow the insertion of blocks, which presumably had been pre-cut. There was also evidence of a mortar spillage, [392], from this insertion.

FRAGMENT OF POST-MEDIEVAL BUILDING (B10), EAST OF THE BRIDGE APPROACH

The evidence for Building 10 was very fragmentary, as it was only recorded in one of the small trenches excavated within the 19th-century cellars east of the bridge. It is interpreted as part of the 17th- or early 18th-century redevelopment of the area around the foreshortened east bastion (B8). Its first phase consisted of an area of sandstone rubble masonry of uncertain plan and function (Fig 44). It was constructed of large, squared, close-jointed blocks of sandstone, bonded by sand/lime mortar. A shallow hollow in the top of this masonry was infilled with crushed mortar. The masonry was later sealed by a thin layer of sand containing wood ash, charcoal and coal fragments, on which the second phase of the building was constructed on a shallow masonry foundation of rectangular, squared-facing sandstone blocks with a wall core composed of clay and gravel. This was aligned east–west and included one broken red brick (2in thick or 51mm). The function of the new masonry is uncertain, but it might have supported the joists for a wooden floor.

A block of mortared sandstone rubble masonry constructed inside the building appears to represent two overlapping phases of foundations for a staircase or chimney stack (Fig 44). An internal hearth lining was constructed of a single course of red unfrogged bricks, 4in (102mm) wide and 2in (51mm) thick, probably of 19th-century date (Chapter 9.2); it contained ash and cinders. The building was superseded by Building 12 (below).

REFACING OF THE WEST BASTION (B11)

The northern wall of the previous phase of the bastion (B5, period 5; Fig 44; above) was retained, but its western and

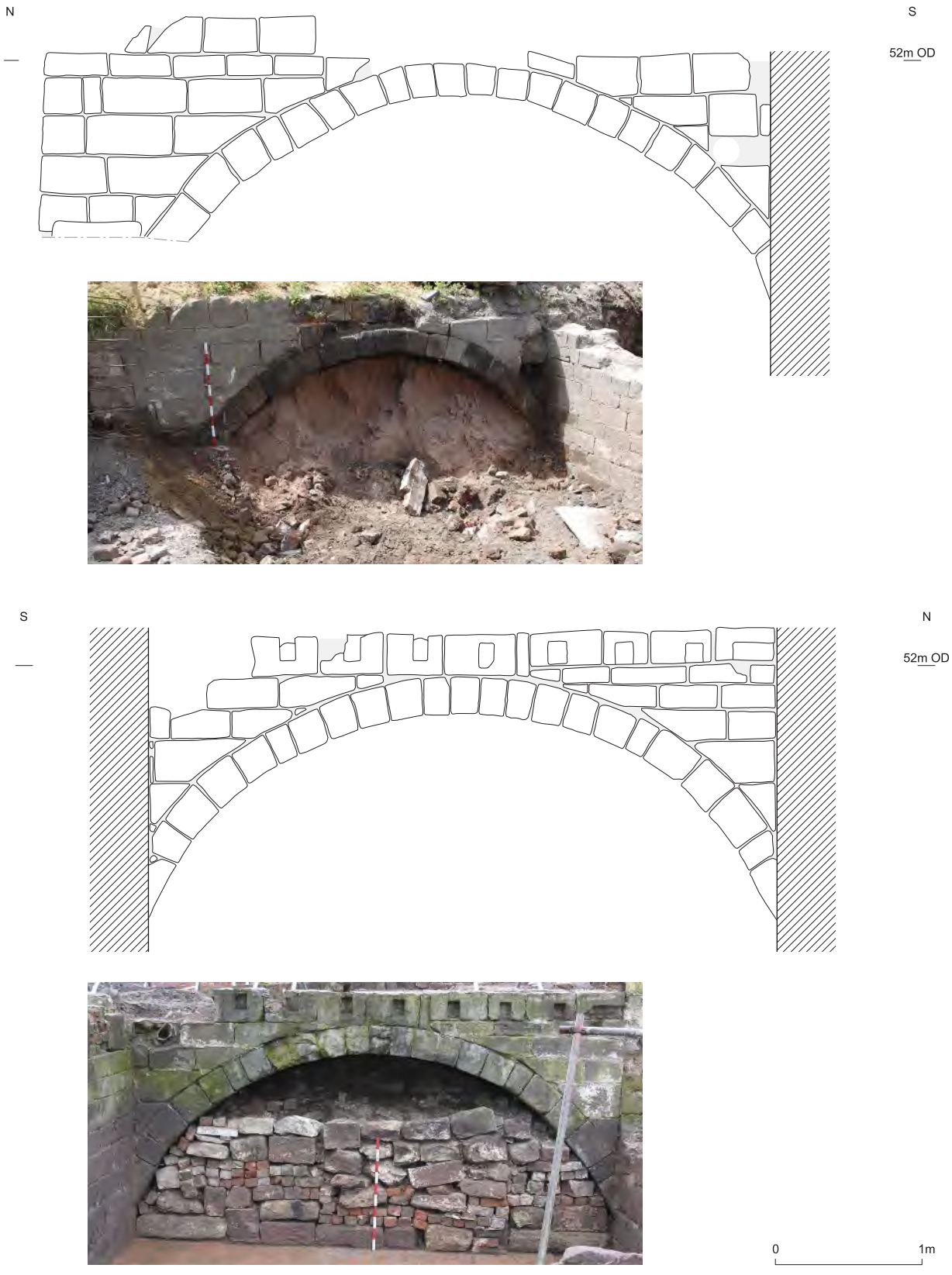

Fig 47 Drawn elevations of the east (upper) and west (lower) faces of the dry arch (B9) and adjoining masonry (scale, elevations 1:40; photos 1.0m scales)

southern walls were extensively rebuilt and refaced. The external facing consisted of rectangular sandstone ashlar blocks (Fig 48). Only the upper six courses of this masonry were exposed, all of which possessed a 'pocked'-type dressing. Every course had wide joints, and peg tile fragments were used as levelling courses. The masonry was bonded by a lime-rich, grey lime/sand mortar. The southern end of the western wall had been partly rebuilt using smaller, less regular

Fig 48 The external face of the western wall of the west bastion (B11), looking north (0.5m and 1.0m scales)

sandstone blocks bonded by pale greyish-yellow lime/sand mortar containing coarse grit and charcoal, [123].

A series of deep linear grooves on the north-west corner of the masonry was interpreted as rubbing marks left by mooring ropes (Fig 49). These marks ranged in level from 49.99m to 50.32m OD, implying that the contemporary quay surface stood at *c* 50m OD. A circular forged iron ring (240mm in diameter), [163], on the south-west corner of the bastion was secured by a short, horizontal iron bar with a circular fitting at one end (holding the ring). The other end was set in a small hot-lead-filled hole chiselled into the facing of the bastion, [117], at 49.75m OD (Fig 48; Fig 50; Fig 51).

Fig 49 Rubbing marks on the north-west corner of the west bastion (B11), looking south (0.5m scale)

This fitting was left *in situ*. The internal face of the bastion consisted of more irregularly coursed sandstone rubble with a slightly offset profile. Much of the internal masonry was obscured by render.

The rebuilt west bastion (B11) underwent a number of structural modifications related to its use as a dwelling until the 1960s. In the absence of any brickwork, a pre-1790s date is suggested for these earlier alterations. The southern portion of the bastion was infilled with a solid mass of horizontally bedded red and grey sandstone rubble, bonded by a pale brown sand/lime mortar. This infilling was linked with the construction of an internal arrangement of L-shaped walls. The north–south aligned section of this masonry was founded on an earth-mortared sandstone foundation, [71], the top of which measured 50.45m OD. The superstructure consisted of coursed sandstone rubble blocks, bonded by a light greyish-brown sand/lime mortar. The function of the masonry is uncertain, but the southern portion might have served as the base of a flight of stairs (Fig 52). The internal masonry was later partially rebuilt or repaired. This phase of activity was differentiated by the usage of a pinkish-brown lime mortar. The various 19th- and 20th-century additions to this phase of Building 11 are described in Chapter 6.

FRAGMENTS OF POST-MEDIEVAL MASONRY BUILDING (B12), CONSTRUCTED TO THE EAST OF THE BRIDGE

As the remains of this particular masonry building (B12) were only encountered in fragmentary and truncated form under the 19th-century cellars (B18, period 6; Chapter 6), it is not

certain whether they formed several adjoining buildings or several phases of one building constructed before the 1790s. Documentary and pictorial evidence (above, 5.1) confirm that there was a substantial building in this location by the mid 18th century (Fig 40; Fig 41). By 1795 the property belonged to a Mr Yardley (above, 5.1).

Fig 50 The south-west corner of the west bastion (B11) showing the location of mooring ring [163], looking east (0.5m scale)

Fig 51 Detail of mooring ring [163] on the south-west corner of the west bastion (B11), looking east (0.5m scale)

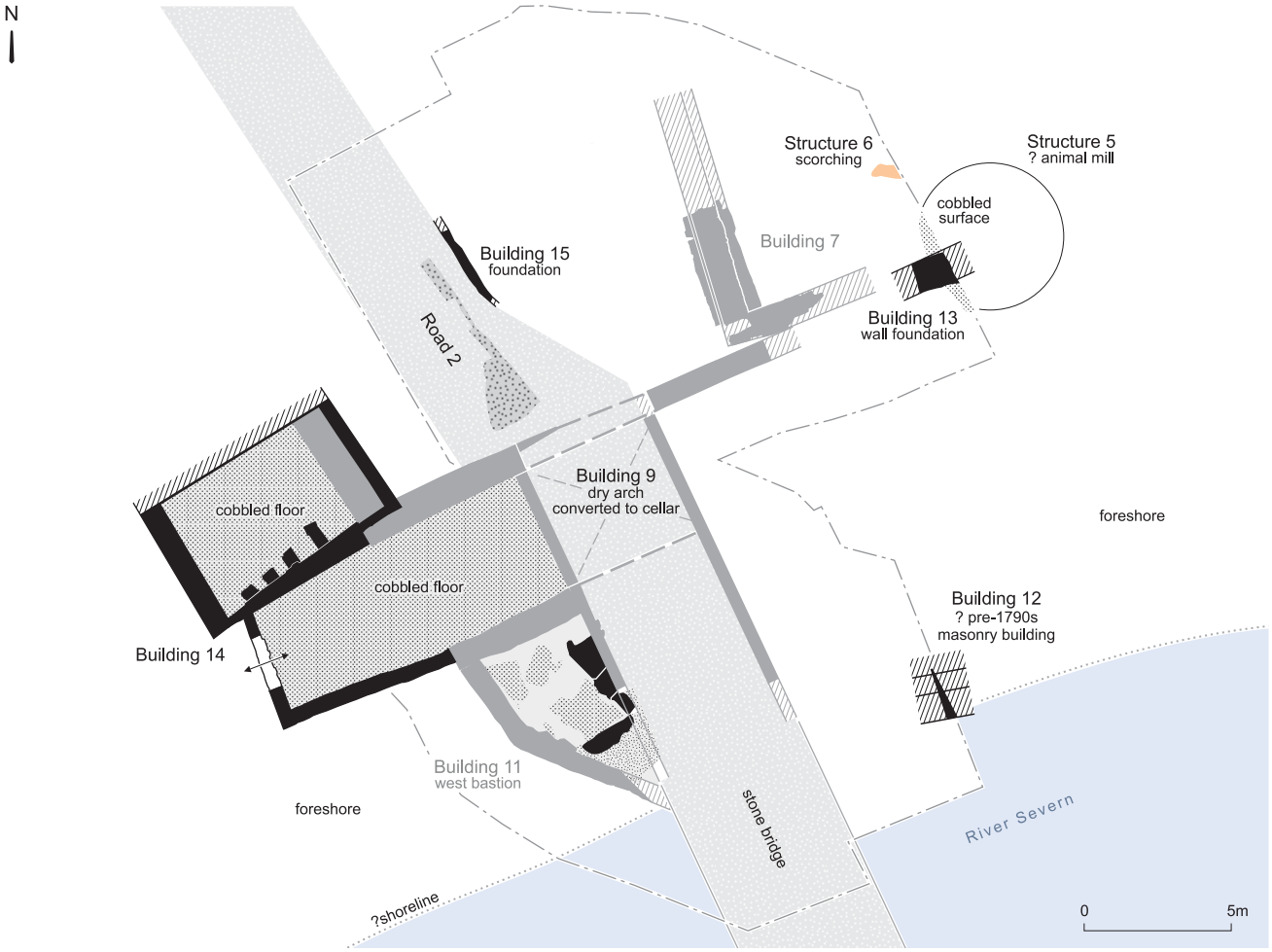

Fig 52 Plan of road (R2), west bastion (B11), new buildings (B12–B15), a possible animal mill (S5) and scorching (S6) associated with an unidentified industrial process, period 5 (scale 1:250)

A sandstone foundation of uncertain plan was revealed, with associated levelling dumps of sterile riverine and beach deposits and three short lengths of east–west aligned sandstone foundation (Fig 52). It is possible that the ? river wall (S8, period 6; Chapter 6.1; Fig 61) also formed part of this building.

FRAGMENT OF A POST-MEDIEVAL BUILDING (B13), TO THE EAST OF THE BRIDGE APPROACH ROAD

This building consisted of a short length of east–west aligned trench-built wall foundation 0.96m wide, constructed of horizontally bedded river cobbles set in a pebbly sand matrix (Fig 52). The only finds evidence is a single sherd of English tin-glazed ware (TGW) from [884], dating to *c* 1630–80. A small pit or robbed-out posthole (not illustrated) is interpreted as part of the same building.

POST-MEDIEVAL POSSIBLE ANIMAL MILL (S5)

Structure 5 consisted of the western portion of what appears to have been a large circular feature with an estimated diameter of 4.8m (Fig 52). It is interpreted as the basal portion of part of a small ?animal-powered mill, presumably serving an industrial function. Its base was lined with cobbles. Two fragments of clay tobacco pipe stem from the construction cut for the base were made after *c* 1630. After the structure went out of use it was backfilled with domestic rubbish, including two clay pipe bowls of Broseley type 4a dating to *c* 1690–*c* 1720, one of them stamped, <CP11> (Chapter 9.3; Fig 107). A similar dating comes from a group of 53 sherds of pottery (17 ENV, 557g), mostly from drinking vessels, bowls and dishes in a range of wares made in the potteries of north Staffordshire, with mottled brown glaze, combed or feathered slip (STMO, STSL), and in brown salt-glazed stoneware (STBRS). There are also sherds from English tin-glazed wares with plain white glaze or decorated (TGW A, C and H) in styles typical of the mid 17th to early 18th century.

SCORCHING (S6) TO THE EAST OF THE BRIDGE APPROACH ROAD

An area of intense heat-contact or scorching of the ground surface, Structure 6 (Fig 52), was not a hearth base, but has been interpreted as part of an unidentified industrial process, such as a furnace, of which no other traces survived. This activity was of pre-19th century date.

QUAYSIDE BUILDING (B14) CONSTRUCTED TO THE WEST OF THE DRY ARCH (B9)

The southern portion of this L-shaped building (B14) was constructed on the former area of open space on the quayside, which gave access to the western side of the dry arch (B9), while its northern portion was constructed along the line of the former west quay retaining wall (S4). Part of Structure 4 was incorporated into the southern portion of Building 14, dated after *c* 1630 by clay pipe stem fragments. It was in use during the 18th century and was one of the buildings retained after 1796 (Fig 52; Chapter 6).

Construction of the northern portion of this cellared building started with the erection of a north–south aligned west gable wall, which was built of reused sandstone ashlar blocks. The east gable wall of this room was a retained portion of the first west bastion (B3; Fig 52). The western gable wall of the southern part of the building was also constructed of reused sandstone ashlar blocks. Originally both portions of this building possessed cobble floors. It appears that the two elements of this storey of Building 14 functioned as two separate cellars, probably entered by wooden stairs or ladders. There were a number of internal modifications to this building. The earliest of these within the northern portion consisted of the placing of a series of sandstone blocks up against the north face of internal wall [651], interpreted as the supports for the joists of a suspended timber floor (Fig 52). Later, part of the east gable wall was partly robbed out. Subsequent structural modifications are described in Chapter 6.

FRAGMENT OF POST-MEDIEVAL MASONRY BUILDING (B15) ALONG THE EASTERN SIDE OF THE BRIDGE APPROACH ROAD

Building 15 consisted of a single fragment of mortared sandstone rubble, aligned north–south. It is of uncertain date and plan (Fig 52).

DISCUSSION

By period 5 there is evidence of cartographic, documentary and pictorial data to supplement the excavated evidence of buildings and structures. The 1608 development of Frankwell Quay seems to have been linked with the modification of the gatehouse bastions (B5, B8) to allow the movement of vehicular traffic along the new quayside and the reopening of the seventh or northernmost (dry) arch (B9) of the Welsh Bridge. Part of the quayside retaining walls (S3, S4) were examined. It is clear that the eastern approach to the bridge was lined by a number of unrelated buildings with masonry foundations (B10, B12–B15). Sadly, the remains of these buildings were too fragmentary for their plans or functions to be determined. However, surviving contemporary buildings in the locality and documentary evidence suggest that they were probably shops with residential accommodation above. The industrial character of the area is reflected by the presence of a ? animal mill (S5) and an area of scorching (S6).

6

THE CONSTRUCTION OF THE NEW WELSH BRIDGE AND ITS IMPLICATIONS FOR THE 19TH-CENTURY DEVELOPMENT OF THE AREA (PERIODS 5–6)

6.1 BUILDING THE NEW WELSH BRIDGE (PERIODS 5–6)

DOCUMENTARY EVIDENCE

In January 1789 the deteriorating structural condition of the Welsh Bridge prompted Shrewsbury Corporation to set up a committee to review its plight. Other committees were subsequently convened in August 1790 to consider the abolition of bridge tolls and to review the case for either widening or rebuilding the Welsh Bridge. By 1791 it had been agreed that tolls should be abolished and that a new bridge should be constructed. All that remained was for the corporation to secure funds by public subscription to carry out these two related projects (Ward 1935, 138–41). The various committee members were no doubt mindful that during 1769–74 the town's other medieval bridge (the English Bridge) had been completely rebuilt (ibid, 47–73). The new baroque-style English Bridge, with its wider roadway and pavements, would doubtless have served as an example of what the new Welsh Bridge might look like. The expansion of the economy and consequential increase in road traffic during the 18th and early 19th centuries resulted in many instances of English civic authorities rebuilding narrow and dilapidated medieval bridges, which were not wide enough for two-way traffic and were therefore causing serious traffic jams (Harrison 2004, 147–9).

On 16 December 1791 an advertisement appeared in the *Shrewsbury Chronicle* inviting people to submit designs for a new bridge. It was to be at least 195ft (59.48m) long and 30ft (9.15m) wide, situated some 206ft (62.83m) downstream of the Frankwell end of the medieval bridge, and it was to be erected for a sum not exceeding £6000. The decision to build the new bridge close to its predecessor involved constructing short lengths of new approach road, but it had the advantage of allowing the old bridge to remain in use during work on its replacement. After some deliberation, a design was chosen for a five-arch masonry bridge, 266ft (81.13m) long, and tenders for its construction were to be delivered on or before 2 April 1792 to Shrewsbury Corporation. The construction and design of the new bridge were carried out by Mssers Carline and Tilley. Building work on the new bridge officially started on 13 May 1793, with the ceremonial laying of its first stone by the Revd John Rocke, Mayor. The piers were built up to the springing of the arches by December 1793, and the arches were completed in December 1794. A watercolour of the old bridge by J M W Turner, RA (1775–1851) in 1794 shows its successor under construction (Fig 53).The new bridge was completed during September 1795. However, there were insufficient funds at this time to complete the bridge approaches. In 1808 the Frankwell approach was 'still in a state of deformity and inconvenience, very unsuitable to so respectable a building' (SA, *Shrewsbury Chronicle*, 16 December 1791; DA5/135/1/1; *Salopian Shreds and Patches* 1923, notes; Owen 1808, 83–4; Ward 1935, 142–3, 148–9). Stone was carted from the demolished old bridge to build the parapet wall at one end of the new bridge and also to make kerbing for the pavement at the entrance to the Quarry Park (SA, 3365/672). About half the Frankwell premises which had been leased by George Scott to Richard Lee in 1778 were taken down to make way for the new bridge approach (SA, 6000/14597). The new Welsh Bridge was finally paved in June 1810 (SA, 3365/2670, p 114 of typescript by J L Hobbs 1959–61, original unfit for reproduction).

The new Welsh Bridge was soon a cause for concern, as the river bed was found to be eroding around the piers. A report by the engineer Thomas Telford to the corporation in October 1832 pointed out that, contrary to his original advice, the bridge had been built on a gravelly bank at an oblique angle to the flow of the river, thus partly obstructing the current. He recommended making the river channel straighter upstream of the bridge and building a piled gravel platform to protect the piers (SA, 6001/371 art 16). Plans by John Carline Jr show that these recommendations would have involved trimming back the Frankwell shore (SA, 3365/2682; Fig 63). In 1833 the pier foundations were consolidated with many barge-loads of large rubble stones, but the river

Fig 53 Watercolour of the old Welsh Bridge in the foreground and the arches of the new bridge under construction to the rear, by J M W Turner, 1794, view looking eastwards (Whitworth Art Gallery, The University of Manchester, acc no. D.1892.90)

shoreline was not altered (Ward 1935, 152–8). This measure was effective, and when Arthur Ward surveyed the bridge in 1933, he recorded 'that all the piers were well surrounded with large rubble stones … and there was no sign whatever of any movement in the structure' (ibid, 158).

Before the new bridge was completed, the demolition of the old one was already being arranged. In March 1795 the materials of the old bridge – five piers, six arches, the spandrils and parapets, the houses on the bridge (lot 1), and the abutment at the Mardol end of the bridge (lot 2) – were put up for auction by Shrewsbury Corporation. At the same time, the whole area of Frankwell Quay (lot 3) and the land around the dry arch at the Frankwell end (lot 4) were also sold (Ward 1935, 150–1). The purchaser of the bridge was to demolish its riverine portion to a very low level, so that the remains would not hinder navigation. The bridge materials were purchased by Mssers Carline and Tilley for £80, Frankwell Quay by Edward Cullis for £55 and the land (including B14) around the dry arch (B9) by George Jones for £140. The demolition of the bridge, therefore, was undertaken by Carline and Tilley, and not by the corporation itself, as suggested by Ward (ibid, 151; SA, 3365/63). The old bridge was dismantled during 1795–7, by which time it was 'in a very ruinous state and very inconvenient and incommodious' (Ward 1935, 135). The demolition of the bridge was still in progress in August 1796 and 'two mutilated arches' were still visible during 1797 (ibid, 135, 150–1; SA, *Shrewsbury Chronicle*, 21 October 1791, 3). Some work apparently still remained to be done at the Frankwell end of the bridge in August 1797 (SA, 3365/73). The demolition of all the superstructure of the bridge, apart from the northernmost or dry arch (B9), left the surviving portion of the bridge roadway as a short cul-de-sac or alleyway (R3). Presumably for safety reasons, a wall was built across the end of this cul-de-sac, which appears on the plan of 1795 as 'New Wall' (Fig 43). A brick wall, [124], in this position was recorded on site in Open Area 12 (below, 6.3).

The construction of the new Welsh Bridge, a short distance downstream of the old one, served as a catalyst for the redevelopment of the Frankwell bridgehead. Frankwell had already started to expand to the north and west of its medieval core during the late 18th century and this expansion accelerated during the 19th century (Fig 54). Numerous small houses were constructed between *c* 1760 and 1840 within the rear portions of the burgage plots, and most of them were demolished during the 20th century as slum clearance. These new properties were reached from the street via alleyways; for instance, there were 20 houses in White Horse Passage behind the White Horse inn (Trinder 2006, 115).

In the 1820s the Shrewsbury Improvements Commission was empowered to repair the carriageways in the suburbs beyond the bridges. In Frankwell they under-drained and raised the lower part of the roadway to counteract flooding, but the inhabitants remained responsible for the footpaths in front of their properties (Butt 1984, 64). In 1838 most of Mountfields, lying to the east of White Horse Passage and to the north of St George's church, belonged to the merchant Richard Drinkwater, who lived at St George's Place. This was laid out in more than 60 garden plots. By 1882 these fields were laid out with streets, most of White Horse Passage had been renamed as Mount Street, and rows of houses were spreading

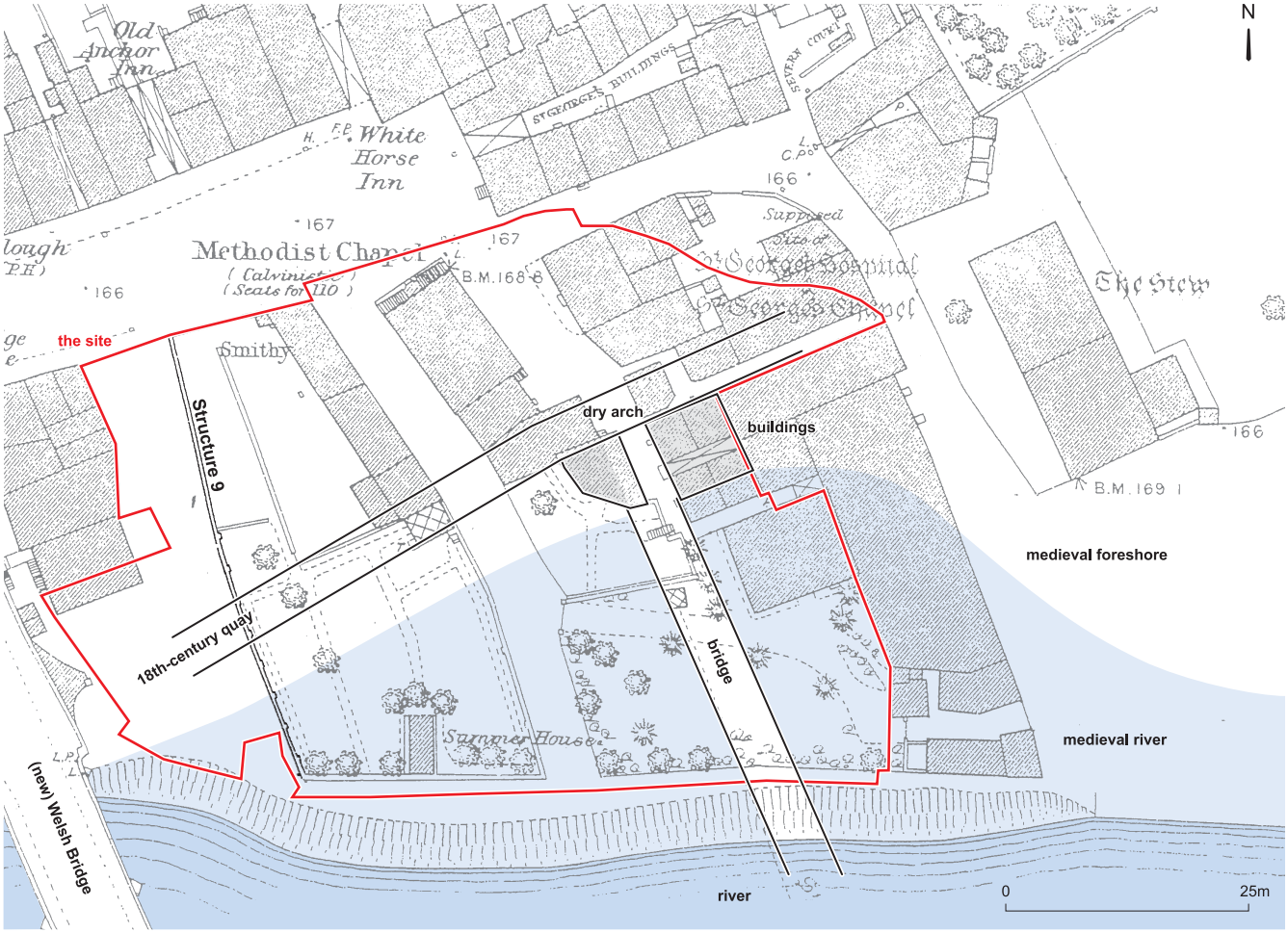

Fig 54 Plan of 19th-century Frankwell showing the extent of the medieval river (toned) and 18th-century features and the site outline superimposed (based on Ordnance Survey map of 1882) (scale 1:750)

across the area. There were 15 public houses in Frankwell when the 1881 census was taken (SA, plan of Shrewsbury 1838; tithe map of St Chad's parish 1849; Ordnance Survey map 1882; Trinder 2006, 118, 126). Amongst them was the Bridge House at 165 Frankwell, where the publican was John Hyslop (*Post Office directory of Shrewsbury* 1882–3; TNA, 1881 England Census (RG 11/2653)). It had been a public house since at least 1841, when the innkeeper was William Flexton, followed by his widow, Priscilla, by 1851 and by another widow, Mary Woodward, by 1871 (TNA, 1841 England Census (HO 107/926/3); 1851 England Census (HO 107/1992); 1871 England Census (RG 10/2776)). It remained a public house until at least 1901 (*Wells and Manton's directory of Shrewsbury* 1886; 1888–9; *Wilding's directory of Shrewsbury* 1896; 1899; TNA, 1901 England Census (RG 13/2540)).

THE NEW WELSH BRIDGE BARGE QUAY AND MASONRY ABUTMENT (S9)

Construction of the new bridge abutment (S9) was preceded by the dumping of gravelly sand on the existing foreshore (OA6, period 5) to raise the ground level some 100–200mm and perhaps also to provide a firmer and drier ground surface. It seems that construction of the Frankwell end of the new bridge involved building a large masonry abutment on the raised foreshore. The eastern or upstream side of this abutment appears to have served as a barge quay (S9) during construction of the new bridge (Fig 55), presumably for the unloading of building materials. Subsequently, after the completion of the bridge, this barge quay was retained. By the late 19th century the inlet had been infilled, but the quay wall was still visible on the Ordnance Survey map of 1882 (Fig 54), as one side of an alley following the eastern side of the warehouse property in the north-west part of the site. The yard attached to this warehouse was later confusingly called Frankwell Quay (TNA, IR 58/75567 no. 7036). At the southern or opposite end of the new bridge a stone quay with warehouses was also constructed (Owen 1808, 84).

The eastern face of the abutment structure was constructed of a series of large (0.85–1.10m long), close-jointed, dressed, rectangular, red sandstone (Keele Beds) ashlar blocks (Fig 56). The external faces of the two surviving courses of ashlar blocks all showed a variety of short, slashed, diagonal tooling marks (vertical chevrons, intermittent dashes and herringbone). A number of the ashlar blocks were set with their long axis at right angles to the line of the wall,

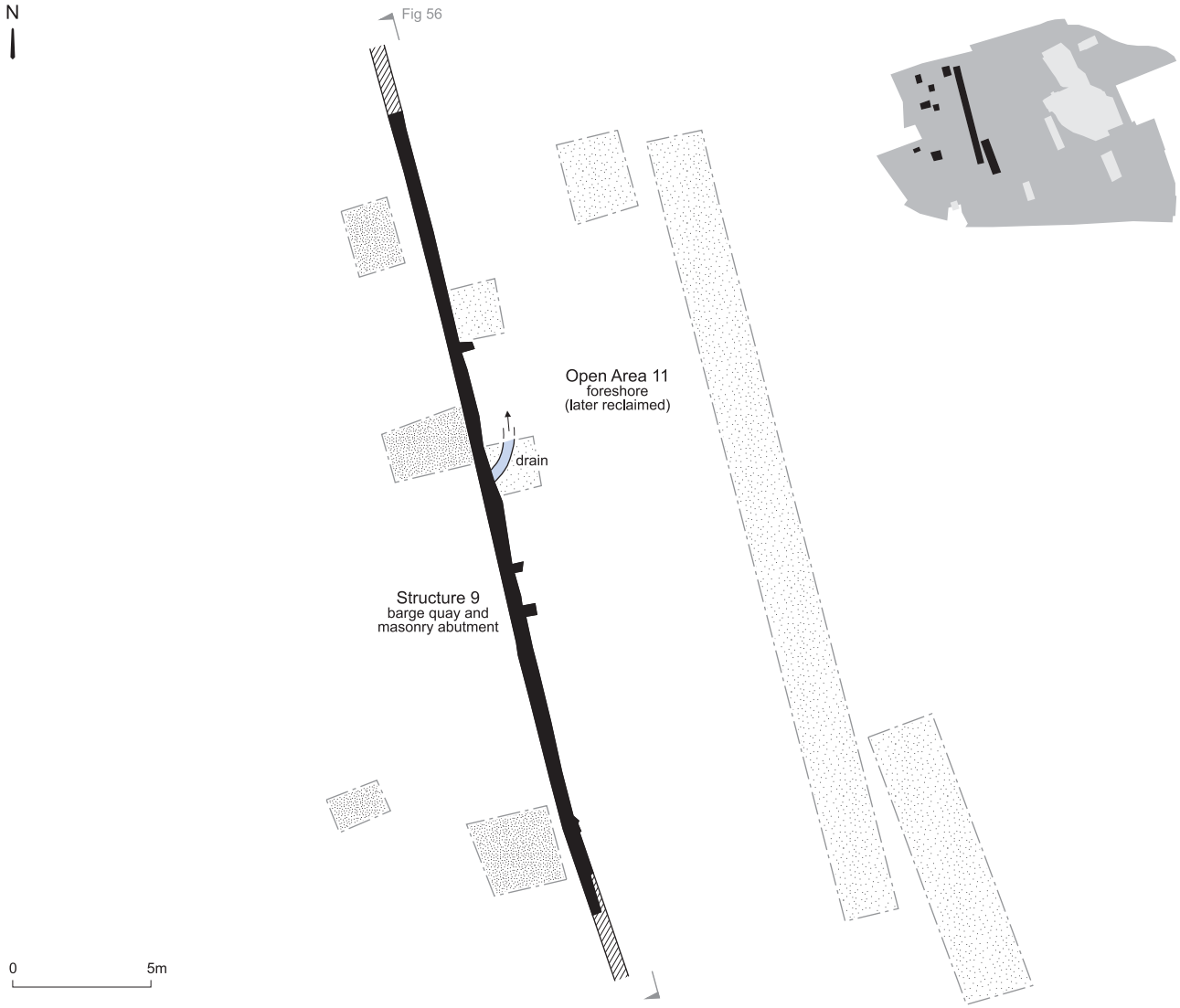

Fig 55 Plan of the barge quay and masonry abutment (S9) of the new Welsh Bridge and the river foreshore (OA11), period 6 (scale 1:250)

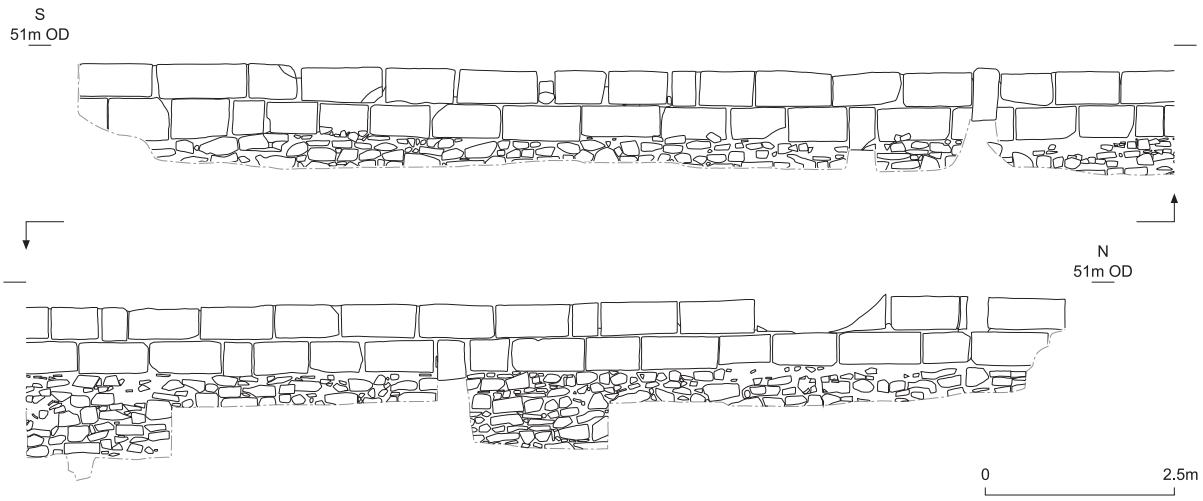

Fig 56 Elevation of the eastern face of the barge quay and masonry abutment (S9) (scale 1:100)

so that their ends protruded (up to 600mm) from the face of the wall. The function of this arrangement is uncertain, possibly the protruding blocks retained mooring or rubbing posts (Fig 56; Fig 57; Fig 59). A north–south length of 29.25m of ashlar masonry was exposed, which continued in both directions beyond the limit of excavation. Towards the southern end of the exposed masonry, there was a change of angle in the line of the face of the masonry (Fig 55). The southern extent of this wall is uncertain; it is possible that it continued southwards to the line of the present river wall (Fig 1). The ashlar was founded on a plinth constructed of very roughly coursed red and light grey sandstone and mortared rubble, the top of which was marked by a 160mm-wide offset (top 48.83m OD; Fig 58). The base of the wall

Fig 57 The external (eastern) face of the barge quay and masonry abutment (S9) being uncovered, showing the southernmost of the two trenches excavated on the west side of the wall; to the rear is the new Welsh Bridge, looking south-west

Fig 58 Detail of the ashlar and rubble foundation plinth of the barge quay and masonry abutment (S9), looking east (0.5m scale)

Fig 59 Detail of the protruding ashlar block in the external (eastern) face of the barge quay and masonry abutment (S9), looking north (0.5m scale)

was exposed in one slot at 48.50m OD. An integral feature of the wall was a stone-lined culvert, [338], capped by a brick-built arch (Table 4). It is assumed that this feature was intended to drain the interior of the structure (Fig 55; Fig 60). After the area to the east of this structure was reclaimed (below, OA11), it appears that the culvert gradually silted up. Finds from within the feature include 19 sherds of pottery dating to *c* 1850–*c* 1900, consisting mainly of cups, saucers, mugs and plates with transfer-printed decoration, and brick (Chapter 9.2). A complete clay tobacco pipe in the same group dates to *c* 1880–*c* 1910, and is marked 'W SOUTHORN & Co BROSELEY 4' (<CP13>, Fig 108; Chapter 9.3). The dumped sandy silts and river sands, which blocked the culvert, contained six sherds of pottery dating to *c* 1800–30.

The sequence of deposits within the structure was examined within two trenches dug on the internal side of the eastern wall (Fig 55; Fig 57). Unfortunately, almost all the earlier deposits here had been disturbed by the installation of several deep north–south aligned service trenches, so nothing relating to its construction could be securely identified. The earliest undisturbed deposit was a patch of a fine-/medium-grained sand containing patches of sand mortar, which may have been a mixture of internal dumping and construction debris. It was sealed by a dump of ashy silt, containing clay tobacco pipes dating at the latest to *c* 1850–70 and *c* 1860–80 (Chapter 9.3), indicating that it had been disturbed by later activity. Subsequent dump layers contained several pieces of broken salt-glazed sanitary pipes (not in common usage until the later 19th century), as well as clay tobacco pipes ranging in date from *c* 1850 to *c* 1880 (11 bowls and 55 stem fragments). A considerable quantity of pottery was recovered (405 sherds, 248 ENV, 8922g) dating mostly to the second half of the 19th century (after *c* 1840), with the latest context, [400], dating to 1873–95. This is chiefly domestic china, consisting of refined white earthenwares (REFW) with transfer-printed, painted and sponged decoration, plain yellow ware and with slip decoration (YELL, YELL SLIP), Rockingham ware with mottled brown glaze (ROCK), English brown salt-glazed stoneware and bone china (BONE), with a heavy emphasis on tea wares.

The later or higher-level deposits within the structure appeared to be the make-up for external surfaces, the presence of fragments of coal, charcoal and cinders suggesting that they are contemporaneous with late 19th-century industrial activity on this part of the site. A smithy was established here before 1882, and there was later a forge nearby (as shown on the Ordnance Survey 1882 mapping; Fig 54). These higher deposits contained a large group of pottery in a similar range of fabrics and forms to those found in earlier levels (145 sherds, 106 ENV, 3616g), broadly dating to *c* 1825–*c* 1900, with the latest context, [389], deposited 1848–1900. Clay tobacco pipes dating to *c* 1850–70 were also found. These layers also included a fragment of hearth smithing bottom and a quantity of iron slag, with some pieces incorporating numerous hammerscale flakes and occasional sphere, which is significant in view of the nearby smithy (Chapter 9.6; Table 10). The external surfaces consisted of thin layers of trampled coal dust including 23 sherds of pottery dating to *c* 1830–*c* 1900.

Fig 60 The stone-lined culvert at the base of the barge quay and masonry abutment (S9) under excavation, looking west

INITIAL PHASE OF FORESHORE RECLAMATION EAST OF THE OLD WELSH BRIDGE: THE ? RIVER WALL (S8)

It appears that during the early 1790s the reclamation of the foreshore to the east of the old bridge started in a small way (Fig 61). This activity consisted of the construction of a short length of east–west aligned sandstone masonry ? river wall (S8) and an associated trampled external clay surface, probably connected with its construction. The masonry is considered unlikely to represent part of one of the pre-1795 buildings along the eastern side of the old bridge, as it is positioned further south than other remains of pre-1795 buildings. However, it is possible that this wall was intended as the southern boundary of a new extension to Yardley's existing house (originally built partly over the site of the east bastion; B12; Chapter 5.1, 5.2). The masonry was found to be incorporated into the southern wall of the block of 19th-century cellared buildings (B18; below, 6.4; Fig 70), which implies that this wall marked an important 19th-century property boundary, perhaps connected with the division of the area into lots during the 1795 auction (discussed above). On balance the wall seems more likely to have been part of an initial phase of localised reclamation, which was soon

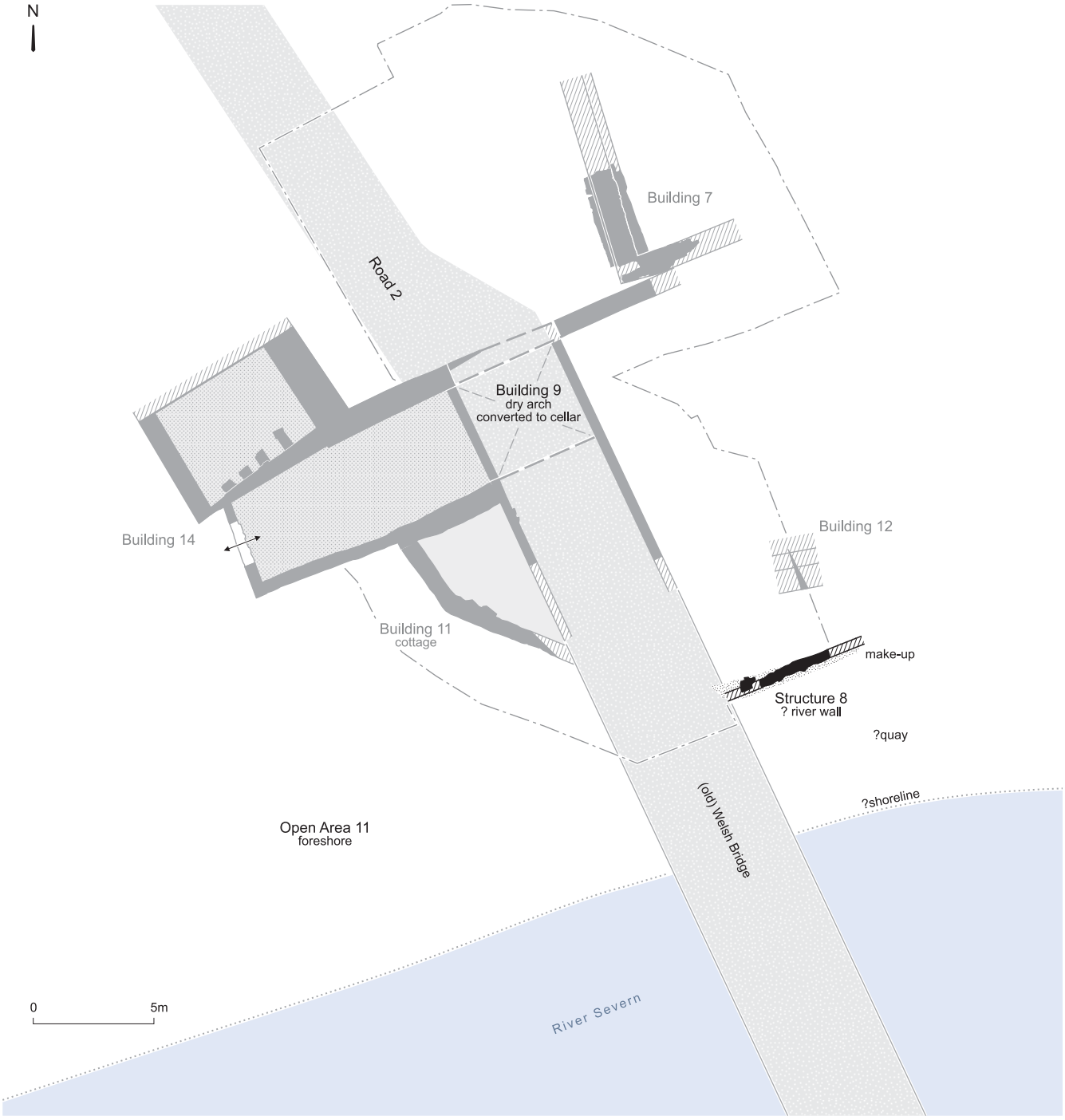

Fig 61 Plan of the initial phase of foreshore reclamation showing the ? river wall (S8), period 6 (prior to bridge dismantlement 1795–7) (scale 1:250)

superseded by a larger scheme (final extent of foreshore reclamation: OA11; below), rather than part of a pre-1795 building. (The Carline and Simpson plan of February 1795 (Fig 43) is annotated 21ft (6.41m) due south of the dry arch, which was then the southern limit of the built-up area along the eastern side of the bridge. Turner's 1794 view (Fig 53) of the old bridge shows that the buildings along its eastern side did not extend beyond the northern edge of the first riverine arch.)

INTERMEDIATE PHASE OF FORESHORE RECLAMATION *c* 1795: RIVER WALL (S7)

It was decided *c* 1795 to extend Frankwell Quay southwards by reclaiming part of the foreshore and to make a similar extension to the south of Yardley's house (B12) on the eastern side of the old bridge. The proposed quay wall appears as a dashed line on the Carline and Simpson plan (Fig 43), labelled 'New quay to be taken in out of the River', stretching 30ft (9.15m) into the river at the west end of the quay and as far south as the south side of the first river arch of the old bridge. On the western side of the line of the former bridge an 11m-long stretch of east–west aligned river wall (S7) was discovered, interpreted as part of this phase of reclamation, and constructed of a mixture of sandstone blocks and brickwork (Fig 62). It is probable that the continuation of this wall to the east of the former bridge was marked by a short length of east–west masonry constructed of larger sandstone blocks, although it has a more southerly alignment than the western wall suggesting that this proposed phase of river wall was not linear, but had an indented plan (cf Fig 70). The impression is that both these walls were constructed of reused

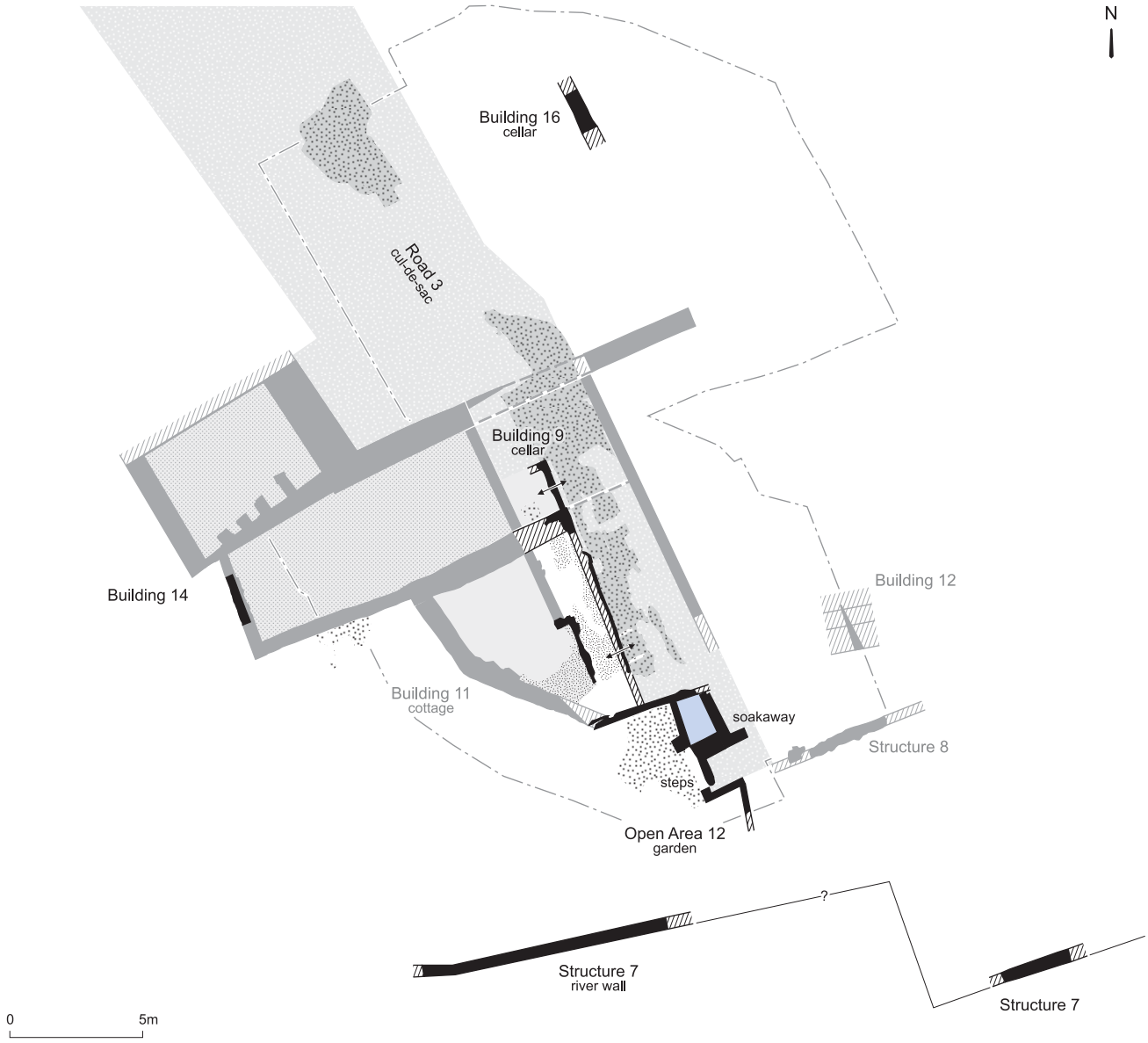

Fig 62 Plan of the intermediate phase of foreshore reclamation and later structural development showing the river wall (S7), adjacent garden (OA12) features and buildings (B11, B12, B14, B16) along the new cul-de-sac (R3), period 6; by this date, early 19th century, the medieval bridge was largely demolished and the adjoining foreshore was reclaimed (scale 1:250)

materials, perhaps obtained from the demolition of the old bridge or its adjoining buildings. It appears that this second foreshore reclamation scheme was also quickly superseded by a larger and more ambitious scheme (OA11; below).

FINAL EXTENT OF THE RECLAMATION OF THE FORESHORE (OA11) BETWEEN THE OLD AND NEW WELSH BRIDGES

At some date after 1795 and before *c* 1830, it was decided to reclaim a much larger area of the foreshore (OA11) and river margin between the two bridges (Fig 55), which meant that the *c* 1795 phase of the river wall (S7, above; Fig 62) was soon redundant and it was largely buried under reclamation dumps. This extended shoreline was inaccurately pencilled in on a plan of 1832–3 (Fig 63), and Hitchcock's town map of 1832 (SA, map of the Borough of Shrewsbury) shows the shoreline in approximately its current position. By this date the inlet or barge quay (S9; above) adjoining the eastern side of the new bridge had apparently been infilled.

The ground level of this reclaimed area (OA11) was raised by dumping waste material on the former foreshore to raise its surface level to reduce the risk of flooding. The dumped material was very mixed, consisting of clayey silts, silty sands, as well as layers of brick and red sandstone rubble and demolition rubble, containing red bricks 3in (76mm) thick. These deposits along the northern edge of the site were generally horizontally bedded, but further south they tended to slope from north to south, indicating the sequence of tipping.

Finds from these dumps include a worn fragment of decorated medieval floor tile, with part of a leaf design (Fig 64, <T1>). Another decorated tile, unstratified, appears to show part of a bird (Fig 64, <T2>). The bird tile is similar in style to another tile with a bird design from St Mary's friary, Shrewsbury, which is a possible source for this example. The friary tile is dated to the 14th or 15th century (Eames 1980, design no. 1994). Both tiles are partly reduced due to a lack of oxygen in firing and are in an identical fabric (SS2), suggesting that they were produced at the same tilery (Chapter 9.2).

Further to the east, around the retained portion of the old Welsh Bridge on the former foreshore (Fig 62), the ground level was raised by the dumping of sand, soil and brick demolition rubble. The material adjoining Building 11 contained pottery (context [19]) dating to *c* 1820–40. During the 19th century at least two rubbish pits were dug here.

Fig 63 Plan of the western part of the site by John Carline Jr, 1831–2, showing the existing buildings and various proposed wharves; across the lower or southern part of the plan the northernmost of three sketched lines shows the proposed trimmed-back shoreline (1); the southernmost line (2), south of the yard and garden (not the pencil line), shows the current waterline according to the annotations on the plan (SA, 3365/2682; with permission of Shropshire Archives)

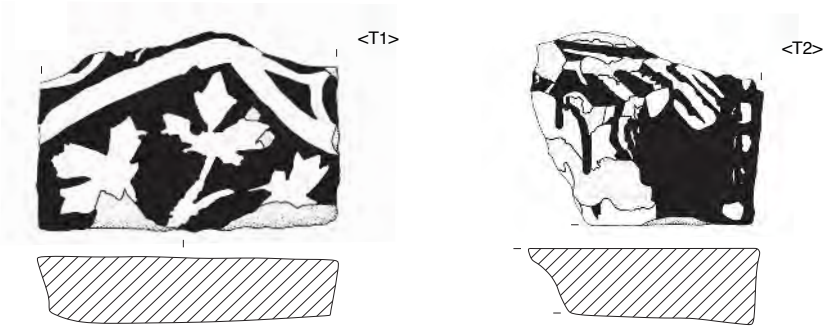

Fig 64 Decorated medieval floor tiles from Open Area 11: <T1> bearing a floral design; <T2> apparently showing part of a bird (scale 1:3)

6.2 THE REDEVELOPMENT OF THE BRIDGE APPROACH DURING THE EARLY 19TH CENTURY (PERIOD 6)

DOCUMENTARY EVIDENCE

After the demolition of the rest of the bridge in 1796–7, the former west bastion (B11), was retained as a cottage and remained in use until its demolition during the 1960s. In the early 19th century the property known as 159 Frankwell was the home of Edward Cullis (discussed further below, 6.3). In March 1824 he made an agreement with the maltster John Gittins about a flight of steps to be built by Gittins at the truncated end of the old Welsh Bridge to give access through Cullis's garden to Gittins's newly built house (included in discussion of OA12; below, 6.3; Fig 62; Walker, deed 9).

Building 14 was apparently part of the property purchased by George Jones in 1795 (above, 6.1). In the valuation of 1910 it was described as two warehouses, owned by G R Wace and occupied by Randall and Sons, the wool-staplers of 164 Frankwell. It was also sold to Thomas Bingley (TNA, IR 58/75567 no. 7040; SA, 4011/77/9 no. 7040). In 2006 Mr Dales informed us that during the 1930s his grandparents had lived in the adjoining property (B11; below, 6.4), which then included part of this property and a brick-floored cellar containing the dry arch (B9) (Mr Dales, pers comm 28 March 2006; this is all the available documentary evidence for the property).

RETAINED BUILDING (B7)

During the early 19th century Building 7 (Chapter 5.2; Fig 44, Fig 52; Fig 61) was demolished down to the level at which it was rediscovered. Its demolition involved systematically robbing out or removing almost all the superstructure of the western wall, [823], originally part of Building 4. All reusable masonry blocks were removed and the remaining debris and rubble scattered across the site of the former building. No datable finds were recovered from the debris.

RETAINED BUILDING (B11) ON THE SITE OF THE WEST BASTION

During the early 19th century a number of structural alterations were made to Building 11 (Fig 62). Firstly, a north–south aligned wall constructed of squared sandstone blocks was added to the eastern wall of the building. Then the interior of the bastion was partly infilled with sandy gravel to raise the floor level. These deposits contained a medieval nib tile (Fig 65, <T4>), over-fired wall tile wasters, brick and unglazed floor tiles, probably of 19th-century date (Chapter 9.2). Two sherds of pottery date to *c* 1700–*c* 1900. There was a brick rebuild of the southern end of the western wall of Building 11.

RETAINED BUILDING (B14) TO THE WEST OF THE DRY ARCH (B9)

The southern portion of the existing cellared building (B14, period 5; Chapter 5.2; Fig 52) to the west of the dry arch (B9) was modified by the extensive rebuilding of the upper portion of the walls within its western half (Fig 62). This rebuilding was carried out with reused ashlar blocks almost identical to those used in the previous phases of construction of the bridge and its associated buildings, so they were presumably derived from the demolition of existing structures. The northern wall of Building 11 was extended eastwards, which then became the southern wall of the enlarged Building 14.

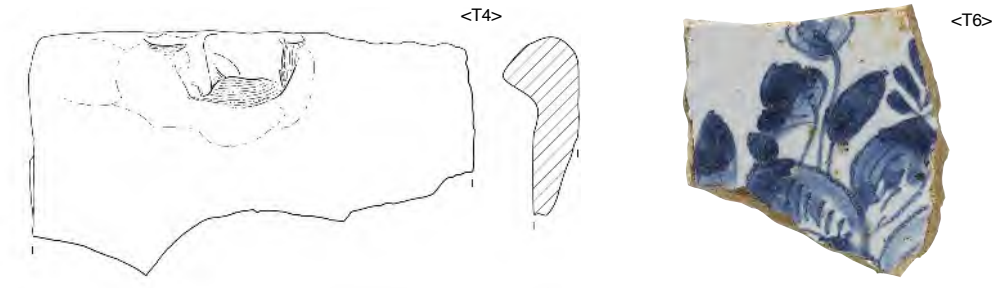

Fig 65 Medieval nib tile <T4> from Building 11 (scale 1:3) and tin-glazed wall tile <T6> with part of flower vase design from Building 4 (scale c 1:1)

The earliest internal activity within this building consisted of the installation of two parallel east–west aligned floor joists, which were later robbed out (not illustrated). The next phase of internal activity began with the dumping of levelling deposits, containing six sherds of pottery dating to *c* 1770–*c* 1800. There were also a possible medieval nib tile or piece of later kiln shelving (Fig 104, <T5>) and a small fragment of tin-glazed wall tile decorated in blue on white with a possible flower vase design (Fig 65, <T6>; Chapter 9.2). Probably made in London in the 18th century, this is the only example of a tin-glazed wall tile found on the site. A white mortar floor surface was laid over these deposits, including three sherds of pottery dating to *c* 1770–*c* 1830. Within the western part of the extended building there was further dumping to level and raise the ground level. This included a medium-sized group of pottery (97 sherds, 21 ENV, 1534g) from [58] dating to *c* 1855–64.

Within the eastern portion of the building, the mortar floor was sealed by another levelling dump on which two parallel east–west aligned concentrations of horizontally bedded sandstone rubble fragments were laid (not illustrated); these are interpreted as supports for floor joists to keep them from contact with the damp ground. Associated pottery (23 sherds, 19 ENV, 282g) dates to *c* 1807–40.

Evidence for the building's ground storey consisted of two phases of shallow slots chiselled into the surrounding masonry to hold joists for suspended timber floors. The earlier set consisted of a line of six slots in the northern face of Building 11 and south wall of Building 14, with three more cut into the north wall (none illustrated). The later set consisted of eight slots in the western face of the dry arch (B9), situated at a higher level than the earlier set (the same level as the bridge roadway). A photograph of the cellar showing the dry arch (B9), taken in the 1950s, shows the joists retained by this later phase of slots (Trumper 2006, 44; Fig 66; Fig 67).

During the 19th century a brick-built blocking wall was constructed to seal off access to the dry arch from its eastern side, when it was converted into a cellar. It was constructed of red bricks – 9 × 4 × 3in (229 × 102 × 76mm) – with some sandstone rubble infill. The wall was oval in plan because of a series of stepped offsets and a broken air vent at the top (visible along the eastern side of the dry arch; Fig 68). A short length of internal wall was built across part of the cellar floor, constructed of sandstone rubble masonry. The other 19th- and 20th-century structural additions to Building 14 consisted of

Fig 66 The western side of the dry arch (B9) and associated brick-paved cellars in the 1950s, looking east (SA, PH/S/13/ W/2; with permission of Shropshire Archives)

Fig 67 The western side of the dry arch (B9) and associated late 19th-century brick paving in 2006; in the foreground is part of one of the 2005 evaluation trenches (tr12), looking east (1.0m scale)

Fig 68 Brickwork blocking access to the eastern side of the dry arch (B9), looking west (0.5m scale)

two fragments of the brick repair or infill, and two fragments of truncated brick superstructure (not illustrated).

6.3 EARLIER 19TH-CENTURY BUILDINGS CONSTRUCTED ALONG THE NEW CUL-DE-SAC (R3) (PERIOD 6)

DOCUMENTARY EVIDENCE

By 1805 the former Yardley house, along the eastern side of the new cul-de-sac (R3), was divided into three dwellings occupied by John Sherry, John Primalt and widow Hall. In May of this year Samuel Yardley's son and heir, Edward, sold them with the adjacent malthouse, stable, cow-houses and the quay on the River Severn for £700 to Edward Gittins of the Isle, Up Rossall. Edward Gittins died in December 1814, leaving the property to his three sons; one of these was John Gittins, who operated the malthouse and soon bought out the interests of his two brothers. The cow-house and a malt kiln had been demolished by July 1816. John Gittins mortgaged the premises several times and sold them in December 1829 to the Revd James Craig. His heirs sold the premises in September 1857 for £2000 to William Lewis, farmer of Buildwas Abbey (Shropshire), later described as maltster of Shrewsbury when he mortgaged the property. By 1867 he was farming at Baschurch, Shropshire (Walker, deeds 1–8, 10–19, 22–3). John Sherry was still in occupation of one of the houses in 1824 and 1829 (Walker, deeds 9, 11). There were still three dwellings here in November 1845, but two of them were empty (Walker, deed 16). In June 1867 there were three houses, but four occupants were listed, partly corresponding to those in the 1871 census return (TNA, 1871 England Census (RG 10); Walker, deed 23). During the 1870s this property was replaced by a new block of four houses (B18; below, 6.4).

To the south of these new houses and abutting eastwards on the southern wing of the Glen Malthouse, John Gittins had built Glen House (158 Frankwell) shortly before March 1824, on ground reclaimed from the river (Walker, deed 9; Fig 69; above, 6.1). The house appeared on plans of 1832–3 (SA, 3365/2682). In 1871 it was inhabited by the maltster Thomas James, his sister Agnes and his bailiff Henry Bowdler (TNA, 1871 England Census (RG 10/2776)). This building was apparently demolished during the 1960s and lay within the site, but, as no trace of it was discovered, its documentary history is not considered in detail.

The Glen Malthouse (161 Frankwell) acquired a three-storey south wing before March 1822, built by John Gittins over land reclaimed from the river (Walker, deed 8); it appears on plans of 1832–3 (SA, 3365/2682; Fig 63; Fig 69). The malthouse was capable of wetting 240 bushels (8728.32 litres) of barley every four days (Trinder 2006, 118). By 1845 it was empty and untenanted. However, by 1857 the premises were being operated by Thomas Lewis, when they were purchased by William Lewis (Walker, deeds 11, 12, 16, 18 and 23). In the valuation of 1910 the malthouse was owned and operated by William Jones and Sons (Maltsters) Ltd, who also had maltings in Belle Vue, a suburb to the south of Shrewsbury. The three elements of the premises in this valuation consisted of three malt floors, a grain store, a kiln and a cellar; two malt floors, three grain stores and granary; plus three malt floors, two grain stores, two granaries and a back room (TNA, IR 58/75567 no. 7034).

Across the road, to the east of the Glen Malthouse, the house called The Stew was extended to the south and east in the 19th century. This was after 1832, but before 1838 (cf SA, 3365/2682 and Wood's plan of Shrewsbury of 1838, and the more detailed Ordnance Survey map of 1882 (Fig 69) with the

plan of The Stew in 1892 from Walker, deed 27). During the early 19th century, The Stew was held by the Frank family and occupied by a sequence of maltsters. In the 1910 valuation it was called The Stew maltings, also operated by William Jones and Sons (Maltsters) Ltd and owned by Arthur Symonds Brown of Hanwood House, Hanwood, *c* 5.6km to the south-west of Shrewsbury (and has since been demolished). It had two malting floors, of which only one was in use, a kitchen, three malt stores, other stores and barley stoves (TNA, IR 58/75567 no. 7016).

BRICK BUILDING (B16) ON THE EAST SIDE OF THE BRIDGE APPROACH

By 1831–2 the area on the east side of the bridge approach had apparently been completely built over (Fig 63), although it is possible that this process was largely completed by 1795 (Fig 43). After a period of truncation or possibly soil quarrying, the site was levelled up by soil dumping containing ceramics of mid 17th- to 18th-century date (Higgins 2005, 13, 39). The remains of Building 16 were very fragmentary, due to later activity, consisting of two fragments of red brick wall foundations 2.5in (64mm) thick (Fig 62); one was aligned east–west (not illustrated) and the other north–south. The latter was of ramshackle construction and contained blocks of reused sandstone rubble. On stylistic grounds the type of bricks used in this building are dated to the late 18th or early 19th century, but on site these bricks were apparently not widely used until after 1790. During the later 19th century the building was replaced by Building 21 (below, 6.4; Fig 70). Building 16 fronted on to the eastern side of Road 3, but as its front portion was removed by later development its plan cannot now be determined.

CUL-DE-SAC (R3) SURFACES AND MAKE-UP

Sandy levelling dumps along the line of the alleyway or cul-de-sac (R3) included one sherd of pottery dating to *c* 1800–40, overlain by fragments of sandstone rubble and brick-paved external surface (Fig 62). Subsequent levelling dumps contained eight sherds of pottery dating to *c* 1807–70. Other associated finds include a small group of animal bones derived from cattle (*Bos taurus*), sheep/goat (*Ovis aries/Capra hircus*) and pig (*Sus scrofa*); one cattle-sized rib fragment from [266] had been sawn through transversely and is evidence of butchery (Chapter 9.8; Table 15). Most of the surviving road surfaces are dated to the later 19th or 20th century, but they were doubtless in existence during this period too (below, 6.4).

THE GARDEN (OA12) AROUND THE OLD WELSH BRIDGE

A brick-built wall across the southern end of the surviving portion of bridge masonry was constructed mainly of an irregular double stretcher bond, but with intermittent headers and some evidence of render on its southern face. This brickwork can be equated with the 'New Wall' on the 1795 plan (above, 6.1; Fig 43; Fig 62).

The 1882 Ordnance Survey map shows that the area to the west and south of the remains of the medieval bridge was open space, laid out as a garden attached to Edward Cullis's house (B11; Fig 69). It was agreed in March 1824 that John Gittins, maltster, would build a flight of steps 4ft (1.22m) wide at the truncated end of the old Welsh Bridge to give access through Cullis's garden to Gittins's newly built dwelling (Glen House). These planned steps were different from the arrangement revealed by excavation and shown on the Ordnance Survey map of 1882 (Walker, deed 9).

The garden was entered via stairs from the western side of the alley (Fig 62). Under the stairs, a rectangular brick-lined soakaway was spanned by a brick-built barrel vault. This soakaway may have disposed of the rain water that accumulated in the cul-de-sac (R3). It went out of use and was backfilled during the early 20th century (Chapter 7.1). Part of the brick-built walls on either side of the steps survived, as did the base of one of a pair of square pillars that stood at the foot of the stairs (the other pillar was missing). Lying between the two retaining walls was an *ex situ* sandstone step (1.15m long) with one worn tread.

6.4 THE LATER 19TH-CENTURY BUILDINGS CONSTRUCTED ALONG THE CUL-DE-SAC (R3) (PERIOD 6)

DOCUMENTARY EVIDENCE

During the late 19th century Shrewsbury was one of a small number of British towns and cities surveyed by the Ordnance Survey at the scale of 1:500. These unique maps represent highly detailed urban topographic surveys, showing features like individual door thresholds and even cellar vents at street level (Fig 69). Unfortunately, the Frankwell sheets printed in 1882 do not show individual property numbers, but many of the relevant numbers are shown on the 1910 valuation survey, which used the 1882 survey as its background mapping (TNA, IR 132/4/1136).

From the 1820s onwards common sewers were laid in the main streets of Shrewsbury. Individual householders had to pay to connect their properties to the main drains. However, as Frankwell was one of the suburbs beyond the bridges, the drain contract did not extend to this area (Butt 1984, 62, 64). In his report of 1854, W Ranger noted that the sewer of the street of Frankwell was 1ft 6in (0.46m) in diameter and 3ft (0.92m) deep. There was no proper sewerage provision here or in any of the other suburbs (Ranger 1854, 44, 46, 96). By 1909 the cottage to the rear of the Methodist chapel (B23) was connected with the town sewer and had a gas supply (SA, D3651/B/69/5/4; Fig 69). In February 1927, the borough instructed Potter Brothers, Thomas Bingley and the representatives of the late William Braddick to repair a private

Fig 69 The area of the site as shown on the Ordnance Survey map of 1882, with the limit of excavation superimposed; building and property numbers are added from the 1910 valuation survey (scale 1:750)

drain which served the Glen Maltings, Glen or Stew Cottages and Glen House, which was now choked at the Maltings, and to construct a new inspection chamber measuring 2ft (0.61m) by 1ft 6in (0.46m) (SA, 2495/WJ box 77/39).

By the late 19th century the area due east of the Methodist chapel (B23) and the alleyway/cul-de-sac (R3) was occupied by a block of seven cottages and yards, known as 1–3 Stew Cottages (sometimes called Glen Cottages) and 149–152 Frankwell (documentary evidence for the Methodist chapel and schoolhouse (B23) is given below). Two of the latter group of properties were partly excavated: properties 151 (B21) and 152 (B19) (Fig 69; Fig 70; below). They were occupied from at least the 1870s to the 1930s by the families of workers, such as hawkers, builders, carpenters, bricklayers, painters, labourers, sawyers, boot-fitters, boatbuilders, fishermen, fishing tackle-makers, cork-cutters, cellarmen and soldiers (*Crocker's directory of Shrewsbury*; *Post Office directory of Shrewsbury*; *Wells and Manton's directory of Shrewsbury*; *Wilding's directory of Shrewsbury*; TNA, 1871 England Census (RG 10/2776); 1881 England Census (RG 11/2653); 1901 England Census (RG 13/2540)). The largest house, opposite the chapel on the north-east corner of the approach to the old bridge (151 Frankwell; B21), was run as a lodging house by the tanner Henry Mason and his wife, Mary, in 1881. There were two married couples and six male lodgers of various trades from all around the country (TNA, 1881 England Census (RG 11/2653)). In 1901 Mary Ann Williams had four lodgers in the house (TNA, 1901 England Census (RG 13/2540)). Other lodging houses lay at 138 Frankwell, on the east side of the Anchor inn, in the years 1861 to 1901, and in White Horse Passage (Trinder 2006, 118). In the 1910 valuation these cottages all contained two upstairs rooms and two downstairs rooms, except 152 (perhaps correctly 151), which had three bedrooms, a parlour, a kitchen and a back kitchen. They were owned by R E Davies of Oak Street and let to working-class families at rents of 3s, 6s or 2s 6d per week (SA, 4011/77/9 no. 7020; TNA, IR 58/75567 nos 7020–6).

South of this block of houses was an alleyway, and on the south side of the alley was a wash house (B17) and a group of four cellared buildings (B18), erected during the 1870s (Fig 69; Fig 70; below). Further east was the Glen Malthouse.

By the 1870s Yardley's house had been replaced by a rectangular block of fully cellared dwellings (B18) separated by a central corridor or passageway, which gave access to the Welsh Bridge cul-de-sac (R3; Fig 69). The four properties

were identified in the 1910 valuation survey as properties 154–157. From at least the 1860s to 1938 these small houses were inhabited by the families of artisans, such as tailors, bricklayers, plasterers, paviours, wheelwrights, maltsters, labourers, laundresses and charwomen (*Crocker's directory of Shrewsbury*; *Kelly's directory of Shrewsbury*; *Post Office directory of Shrewsbury*; *Wells and Manton's directory of Shrewsbury*; *Wilding's directory of Shrewsbury*; TNA, 1871 England Census (RG 10/2776); 1881 England Census (RG 11/2653); 1901 England Census (RG 13/2540)). In the 1910 valuation each of these four houses had two bedrooms, a kitchen and a cellar, with a common wash house (B17) and yard on their north side (TNA, IR 58/75567 nos 7027–30). The houses were owned by Thomas Bingley, who rented them out to working-class tenants (SA, 4011/77/9 no. 7027; TNA, IR 58/75567 nos 7027–30).

In 1881 the bastion house (B11) was occupied by James Evans, a fishing tackle-maker, along with his wife and six children (TNA, 1881 England Census (RG 11/2653)). In 1882–3, according to the *Post Office directory of Shrewsbury*, Evans was still here, but in 1886 and 1888–9 it was occupied by a painter, George Aynce (*Wells and Manton's directory of Shrewsbury*). In 1896 and 1899 the house was occupied by William Randall, a wool-stapler. From 1901–3 it was occupied by Thomas Davis, a stonemason, and his family. During 1906–10 the dwelling was occupied by Mrs Kene (*Wilding's directory of Shrewsbury*; TNA, 1901 England Census (RG 13/2540)). In the 1910 valuation (159 Frankwell; B11; Fig 69; Fig 70), the dwelling consisted of an attic, three bedrooms, a parlour, a kitchen, a bathroom and a cellar. The house and garden totalled 228 square yards (190.63m^2). There was believed to be a public right of way over part of the garden. An old shed was described as a tenant's fixture. The house was then occupied by John Bickley, a coal dealer, who, since the last quarter of 1909, had paid a rent of 12 guineas (or £12 12s) per quarter to G R Wace of College Hill (probably a local solicitor). Wace held the freehold, which was later sold to Thomas Bingley (SA, 4011/77/9 no. 7032; D3651/B/69/5/6; TNA, IR 58/75567 no. 7032). Bickley was still listed as the occupier in 1916 and 1922 (*Wilding's directory of Shrewsbury*). However, in the 1910 census the Bickleys had filled this house with tenants: a family of four, and a couple and four single men, all cattle drovers (TNA, IR 58/75567 no. 7032). The property was subsequently lived in by M Braddick, a haulier, in 1925, 1928 and 1931 (*Wilding's directory of Shrewsbury*). In 1936 and 1938, the house was occupied by James Davis (ibid). One of Mr Davis's grandsons remembers living here in the 1930s with his grandparents – their address was 'the Welsh Bridge'. At this time the property included part of Building 14 and the cellar containing the dry arch (B9) (Mr Dales, pers comm 28 March 2006) (Fig 66).

RETAINED BASTION HOUSE (B11): INTERNAL ADDITIONS

Evidence for additions of late 19th-century or more recent date to the retained bastion house (B11) included a north–south aligned internal brick wall, [4], a salt-glazed foul drain, [217]/[218] (Fig 70), fragments of an unglazed red earthenware floor tile, [5]/[6]/[13] (Chapter 9.2), and a concrete door threshold, [160], inserted into the western wall.

RETAINED BUILDING (B14) TO THE WEST OF THE DRY ARCH (B9): INTERNAL DUMPING

Within the western part of cellared Building 14 (above, 6.2; Fig 62) there was a further phase of soil dumping, which yielded a large quantity of pottery dating to *c* 1855–80. A minimum of 155 vessels in a variable state of preservation (448 sherds, 12,841g; mainly from contexts [56] and [58]) are dated by various manufacturers' marks to the 1850s and 60s. They are characterised by a mixture of tea and dining wares (some of which come from sets with matching decoration) with stonewares and domestic earthenwares used in the Victorian household. Glassware is limited to a few fragments from a pale green glass Hamilton or torpedo-shaped bottle, used for carbonated drinks, part of a dark green glass wine bottle and the base of a pale green glass cylindrical bottle, probably made for preserves.

The tea wares are mostly made in bone china and refined white earthenware with various kinds of decoration. The 'Broseley' transfer-printed pattern is the most common decorative type (Coysh and Henrywood 1984, 62), found on a number of saucers and teacups. The mixture of bone china and refined white earthenware with the 'Broseley' print suggests that these wares may have been used together as a 'set'. The only other matching 'set' is represented by a teacup and saucer in refined white earthenware with overglazed pink lustre decoration. All remaining saucers and teacups are in bone china. These include one saucer with applied 'Chelsea sprig' decoration (Brooks 2005, 42–3) and London-shape teacups decorated with polychrome floral patterns. Three complete Rockingham-type ware teapot lids were recorded, but only one fragmented teapot. Rockingham-type ware is characterised by its treacle-coloured brown glaze on a buff body (ibid, 41–2). It was made throughout the United Kingdom, mostly as jugs and teapots, and was widely exported (for the North American market: Claney 2004).

Tablewares are mainly in refined white earthenware, and include dinner plates with blue shell-edged rim decoration (Brooks 2005, 41–2), although the blue transfer-printed 'willow' pattern dominates. A number of oval serving vessels in refined white ware with underglaze blue transfer-printed stipple and line decoration (TPW2) include one marked by the firm of Hulse, Nixon and Adderley of Longton, Staffordshire (1853–68: Godden 1991, 341, no. 2133). A salt cellar and up to six dinner plates (also in TPW2) all carry the printed mark of Lockhart and Arthur (ibid, 394–5, nos 2401–2), used by this Glasgow-based (Lanarkshire) factory in 1855–64. Plates with the same printed pattern and manufacturer's mark show that the dining wares were probably bought at the same time in order to present a

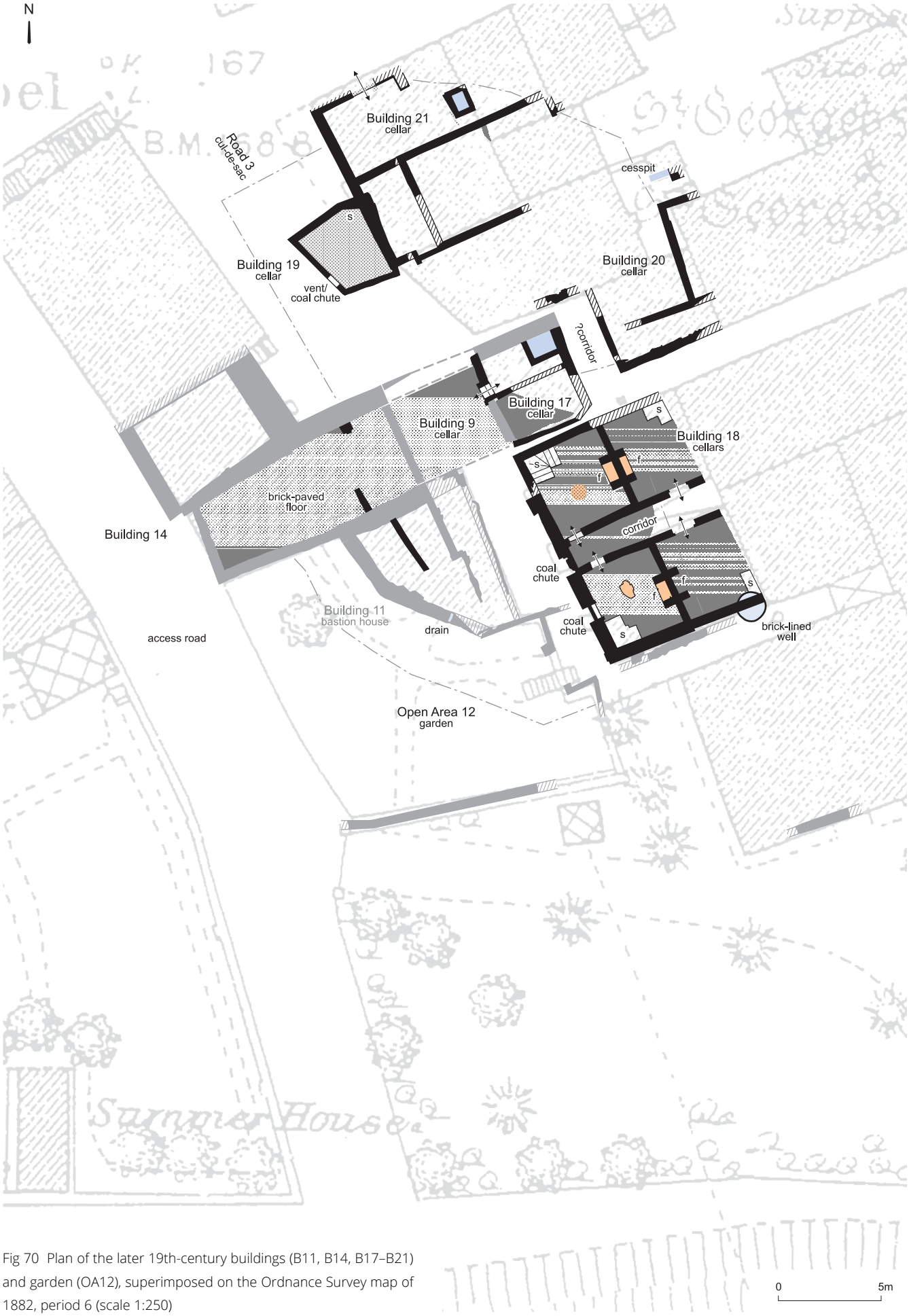

Fig 70 Plan of the later 19th-century buildings (B11, B14, B17–B21) and garden (OA12), superimposed on the Ordnance Survey map of 1882, period 6 (scale 1:250)

uniform table setting. Among the later pottery is a plate with a grey transfer print (TPW4) in the later 19th-century 'dice' pattern. Fragments of two small moulded serving plates in bone china with overglaze floral painted decoration include one that appears to have been riveted and repaired.

There are a few rounded bowls in refined white earthenware and yellow ware with slip decoration, as well as one with sponged decoration – one of the cheapest types available (Brooks 2005, 42). Bowls of this kind would have had a variety of uses, including serving spooned foods such as porridge, soup and stew. There are also sherds from up to four deep bowls in locally made buff-bodied ware with black or mottled glaze or Buckley-type black ware (BUCK). English brown salt-glazed stonewares include vessels which probably contained black lead and ginger beer.

Two clay pipe bowls of Broseley type 9A date to *c* 1850–70 (Chapter 9.3). Other finds include a bone-handled toothbrush. The material formed part of a levelling dump laid down prior to the construction of a brick-paved floor. This final phase of flooring, which extended completely under the former dry arch (B9), remained in use until the demolition of the building during the early 1960s (Trumper 2006, 44; Chapter 7.1). The installation of the floor began with the laying of a thin bedding layer of sand on which a layer of black bituminous damp-proofing material was spread. A single course of red brick pavers was laid over this – unfrogged bricks 9–9¼ × 4½ × 3in (229–235 × 114 × 76mm) (Fig 67; Fig 70). On stylistic grounds these bricks are of late 19th-century date, but the presence of the bituminous damp-proofing confirms that they were relaid during the 20th century.

There was evidence for slight rodent gnawing on a cattle-sized tibia (hindleg bone) from dump deposit [65] (Chapter 9.8; Table 15).

BRICK-BUILT CELLAR (B17) DUE EAST OF THE DRY ARCH (B9)

Building 17, with its distinctive bevelled south-east corner, served as a communal wash house for the adjoining block of four dwellings (B18; Fig 69; cf Fig 70; above). Activity began with the dumping of soil to level up the site. The deposit included a single clay tobacco pipe bowl dating to *c* 1660–80, together with six stem fragments (Chapter 9.3). An east–west aligned brick wall foundation and one aligned north–south were recorded (Fig 70). The use of red unfrogged bricks 9 × 4 × 2¾/3in (229 × 102 × 70/76mm) is an indication of a late 19th-century date for the cellar's construction. The internal floor make-up contained a large copper-alloy disc, <93> (35mm in diameter), probably a button. The flooring consisted of ramshackle brick paving, which included a single sherd of creamware (CREA) dating to *c* 1760–*c* 1830. A later modification to the cellar was identified in a north–south aligned wall foundation, poorly constructed of reused sandstone blocks. It was located 2.0m to the east of the original lining wall, so may have formed part of an access corridor (Fig 70).

Within the north-east corner of the cellar there was a small cesspit, in the form of an L-shaped arrangement of stretcher brickwork built up against two cellar walls (Fig 70). The lower fill, [970], of the pit was formed from decayed organic rubbish and cess containing a large group of pottery (168 sherds, 29 ENV, 6045g), dating to *c* 1830–40. A fragment of cattle (*Bos taurus*) lumbar (lower back) vertebra, transversely chopped, was also recovered, as well as fragments of stone paving (Chapter 9.2, 9.8). The upper fill, [969], of the cesspit, which represented its final use, included a mass of finds-rich household waste. Part of the stem and moulded mouthpiece from a clay pipe dates after *c* 1880. It has a green-glazed tip and carries part of the maker's name stamped incuse along the side of the stem: '…THORN & …BROSELEY', standing for Southorn and Co (Chapter 9.3). A group of pottery from this context dates to *c* 1860–95 (31 sherds, 17 ENV, 859g), but has numerous sherd-links with vessels in the lower fill, [970], with a similar range of forms and fabrics. The identification of fragments from the same vessels spread between the fills of the cesspit indicates the material was derived from the same source. Retrieved in a good condition, much of the pottery appears to have been deposited in one deliberate episode during the third quarter of the 19th century, although some material is earlier. The dating of the pottery is, however, at odds with the smaller quantity of fragmented glass bottles recovered (from [969]), with a small, machine-made, cylindrical bottle in colourless glass dating after 1905, the latest find in the cesspit fill. The remaining glass appears to be consistent with production in the last quarter of the 19th century.

Pieces from two matching sets of dining wares were reconstructed. One is in refined white earthenware, and up to four dinner plates have blue shell-edged rim decoration, evenly scalloped and impressed (Brooks 2005, 41, fig 4.29D). The second set is represented by sherds from three dinner plates in a heavier-bodied refined white ware (ironstone) with underglaze transfer-printed blue decoration (TPW2) in the 'willow' pattern. Both sets are unmarked. A creamware patty pan of the form featured in Spode's 1820 shape book (Whiter 1970, 114, no. 292) was usually used for cooking and serving pies and pastries. A large upright bottle in English stoneware with Bristol glaze (ENGS BRST) (Green 1999, 165–6, nos 391–2) is of a kind generally used in the tavern trade (Fig 71, <P4>). The impressed lettering '865 / BEMAN & WASHBOURNE / LATE MARTIN WASHBOURNE & LLOYD / GLOUCESTER' has survived on the shoulder, along with the mark 'PO… / BRISTOL' in a separate oval stamp. This probably indicates that it was a product of William Powell's Temple Gate pothouse (Askey 1998, 126–7).

Ceramics for tea drinking include a matching teacup and saucer, with moulded decoration and underglaze painted decoration of a butterfly against a floral background, delicately executed in a red palette (BONE PNTD). A bone china saucer with basket-weave moulded decoration (Goss 2005, 28) was also found. In addition there is a fluted coffee can in bone china, with a blue band painted underglaze

around its scalloped rim and gilded details. There is also an intact tea bowl in Chinese blue and white porcelain (CHPO BW), and part of a similar vessel decorated with Chinese figures with famille rose decoration (CHPO ROSE). Both pieces date to the second half of the 18th century and were curated for some time before being discarded.

Hygiene wares are represented by sherds from two chamber pots: one is in plain refined white ware, and the other is in refined white ware decorated with the underglaze blue transfer-printed stipple and line 'Chinese scenery' pattern (Coysh and Henrywood 2001, 56). The mark 'GOODWIN / BRIDGWOOD' identifies the form as made by the Staffordshire manufacturer Goodwin Bridgwood and was used between 1829 and 1831 (Godden 1991).

Much of the glassware recovered from the cesspit fill relates to the drinking of beer/ale, wine and mineral water, with bottles carrying brewery marks for London and Shrewsbury. A bottle made in green glass in a three-part mould and used for ale/beer has the relief-moulded lettering 'IMPERIAL HALF PINT' around the shoulder (Fig 72, <G1>). Three stout or porter bottles in dark green glass and three in pale green glass date from the third quarter of the 19th century. One has survived intact and has a mineral rim finish, while the others survive as bases and lower profiles. All bottles carry brewery marks, with 'B&E' for Barrett and Elers of London represented twice (eg Fig 72, <G2>) on two mineral water bottles, and the word 'SHREWSBURY' on the third indicating a more local source. One bottle has the relief-moulded manufacturing mark for Kilner Brothers Dewsbury (Yorkshire West Riding). The complete base (with a conical push up and rounded heel: Jones 1986, 94–5), rim and neck with a mineral finish from two wine bottles date after the

Fig 71 English stoneware bottle <P4> with Bristol glaze, from cesspit fill [970], Building 17 (scale *c* 1:2)

Fig 72 Glass bottles for ale/beer, <G1>, and mineral water, <G2>, from cesspit fill [969], Building 17 (scale *c* 1:2)

1830s. A complete codd bottle in natural green glass was used for aerated waters; relief-moulded lettering identifies it as made by Ryland of Barnsley (after 1877) (Yorkshire West Riding).

A small portion of the south-west corner of Building 17 survived at superstructure level. It consisted of a short length of a brick- and stone-built wall [198], and a brick-paved step leading up to the threshold of the front door, which was marked by a horizontal sandstone slab (Fig 70).

The western end of the 2.0m-wide alley or passageway between Buildings 17 and 18 was marked by a small area of paving, [3], in yellow bricks, laid edge to edge (Table 4). It had been partly covered by two large horizontal slate slabs, probably placed here after the demolition of the buildings to block the air vent in the eastern wall of the cellar under the dry arch (B9) (B14: above, 6.2). As it was under the alley, this was presumably covered by a grating previously.

BLOCK OF FOUR BRICK-BUILT CELLARS (B18)

The earliest feature of Building 18 examined was a circular brick-lined well, [801], which was later covered by the south-east corner of the properties (Fig 70). As the well was largely covered by two cellar walls, access to it would have been very restricted and water could only have been drawn by means of a pipe supplying a handpump. The well was probably an earlier feature, which was retained during the late 19th-century redevelopment. On the 1882 Ordnance Survey map a letter 'P' (which probably stands for pump) appears over the location of the well (Fig 69).

Before construction of the buildings began, it is likely that any surviving portion of the modified east bastion (B8, period 5; Chapter 5.2; Fig 44) was either demolished or truncated to a lower level. The interior of the former bastion was infilled with a mixture of sandstone rubble mixed with silty and sandy riverine sediments, [512], which, according to the 2005 evaluation, contained glassware of late 18th- or 19th-century date (Evans et al 2006). The undulating site of the new building was levelled up by dumping bricks and sandstone rubble demolition material, river gravel and soil containing 38 sherds of pottery (35 ENV, 403g) in fabrics spanning the 19th century, but date at the latest to *c* 1840–*c* 1900. Other finds from these levelling dumps include a bone or ivory domino, <20>, of late 18th- to 19th-century date, found with pottery dating to *c* 1820–40 (Fig 73). There were also over-fired wall tile wasters (not retained after recording but noted as of 19th- or 20th-century date; Chapter 9.2). Seven clay pipe bowls (found with 17 stem fragments and a mouthpiece) were all significantly earlier in date than the pottery from the levelling dumps. They span the period 1650–1700, with the latest examples of Broseley type AB2A, dating to *c* 1660–80. Five bowls are marked by their makers, with two made by Sam Decon (*c* 1650–80) and one by Richard Legg (1621–1700 (1), 1651–1714 (2)) (<CP3>, <CP4>, <CP6>–<CP8>, Fig 106; Chapter 9.3).

Construction began with the excavation of the foundation trenches for the lining walls, some of which contained spilt construction debris. Presumably to save bricks, the lower portions of the northern, southern and western lining walls were constructed of reused blocks of squared sandstone rubble. The upper portions of the walls were built of stretcher courses of red unfrogged bricks, [11], 9 × 4½ × 3in (229 × 114 × 76mm), bonded by reddish-pink coarse sandy mortar, and with traces of whitewash (no plaster) on their internal faces. The internal, northern and eastern lining walls of these cellars were constructed of the same type of bricks as were used in the southern and western walls, although the blocking pattern of the stretcher courses was interrupted by regular head courses.

The block of cellars was divided internally into four units by an east–west aligned corridor with doors (traces of wooden jambs and hinges survive) leading into each cellar, and by two lengths of north–south walling, each of which contained two back-to-back fireplaces. The chimney breasts were marked by pairs of stub walls joined together at a higher level by rounded arches (Fig 70; Fig 74). Each of the cellars was entered by an L-shaped set of brick-built stairs with stone treads, situated in one corner (Fig 75). There was evidence of a brick-lined vent or coal chute at the western end of the corridor and two smaller vents in both the north-west (not illustrated) and south-west properties (Fig 70). Two copper-alloy brooches or hair slides (<13>, <14> [197]) and a blue ceramic bead were recovered from between the bricks lining the chute at the western end of the corridor. These objects had presumably fallen through the grating or doors that would originally have covered the vent. All three vents were later blocked by roughly built brickwork.

The fireplaces in the north-west, north-east and south-west properties had latterly been partly infilled with rough

Fig 73 Bone or ivory domino <20> from levelling dumps [111], Building 18 (scale *c* 2:1)

Fig 74 The fireplace in the north-west room of the cellar (B18), showing the later infilling partly removed, looking east (0.5m scale)

Fig 75 The stairs in the north-west room of the cellar (B18), looking west (0.5m scale)

brickwork, which had apparently served as the base for either enclosed grates or small cast iron stoves of some description, most of which had been removed during demolition (Fig 76). Any remains of a similar stove in the south-east fireplace had been removed. Their final disuse was marked by a build-up of ash within the fireplaces.

The north-west and south-west walls of the properties retained traces of blue paint overlain by coal dust. The decor of the eastern cellars was uncertain. Where earlier fabric [390] had been incorporated into the cellar walls it was covered with a skim of plaster. It is clear that the corridor and cellar floors had been relaid and repaired at various times. In one instance this was to allow the insertion of salt-glazed sanitary pipes. All four cellars had been paved with Staffordshire blue engineering bricks (laid edge to edge; Fig 77; Chapter 9.2).

Finds from the cellar floors and their make-up included an iron hinge and pivotal door-fitting (<57>, <58>). The central portion of both the north-west and south-west cellars showed evidence of contact with intense heat, which had caused damage and created voids where the brick pavers had disintegrated (Fig 70; Fig 78). The impression is that stoves of some description had stood in the centre of these two cellars,

Fig 76 The basal portion of the grate or stove later inserted in the fireplace in the north-west room of the cellar (B18) (1.0m scale)

Fig 77 General view of the western portion of the cellars (B18), showing the trenches dug through the brick-paved floor, looking north

and were presumably vented into the existing chimneys. All structural remains of the two stoves were presumably removed as scrap metal during the demolition of the buildings. There was also evidence of various rough repairs made to the floor of the south-west cellar, using malting kiln tiles and other paving materials (Fig 79; Chapter 9.2). The presence of the malting kiln tiles can be explained by the building's proximity to several malthouses. The cellars remained in use until the 1960s, when they were all backfilled with demolition material derived from the destruction of the associated superstructure (Chapter 7.1).

PORTION OF CELLARED BUILDING (B19)

Building 19 was known as 152 Frankwell in the 1910 valuation survey, and was one of a group of cottages along the eastern side of the alleyway/cul-de-sac (R3) (above; Fig 69). The cellar fronted on to the eastern side of Road 3 and its

Fig 78 View of the stove position and area of intense contact on the north-west cellar (B18) floor, partly removed to expose the foreshortened east bastion (B8), looking east (0.5m scale)

Fig 79 Rough repairs to the cellar floor of the south-west portion of Building 18, showing the degree of wear and the variety of ceramic tile and brick, looking west (0.5m scale)

street frontage was probably responsible for the irregular trapezoidal plan. Only the western portion of the property appears to have been cellared, as the extent of the cellar is much smaller than the footprint of the building (cf Fig 69; Fig 70). The cellared area was lined with walls constructed of red bricks, 2½in (64mm) thick. It had a brick-paved floor and was entered via stairs situated in its north-east corner. A vent or opening within the western wall probably served as a coal chute; the presence of coal dust on the cellar floor confirms its use for coal storage. Associated finds consist of five small sherds of pottery dating to *c* 1884–*c* 1910, and a single clay tobacco pipe bowl, *c* 1850–*c* 1910.

PORTION OF CELLARED BUILDING (B20)

This property is not individually identified on the 1910 valuation survey, but it appears to have been of one the 'Stew Cottages', which were collectively described in the survey as

two-up, two-down dwellings (above). It seems that they were only partly cellared and, due to later truncation, the shallow foundations of the uncellared portions of the cottages were absent. Building 20 was a rectangular cellared building, represented by part of its southern and eastern lining walls, found along the eastern limit of excavation (Fig 70). It was constructed soon after Building 19 (above), and its lining walls were made of a mixture of red bricks, 3in (76mm) thick, and some reused sandstone blocks. Only a small fragment of the paved floor was preserved in the south-east corner (not illustrated), consisting of bricks 2½in (64mm) thick bedded on sand. The presence of coal dust on the cellar floor shows that latterly it was used to store coal. A brick-lined cesspit was later added, consisting of an L-shaped length of stretcher bond brickwork constructed within one corner of the cellar (Fig 70). Its fill consisted of finds-rich organic rubbish, including a large group of pottery (133 sherds, 23 ENV, 2799g) dating to *c* 1864–80. The state of preservation suggests that this material was discarded in one single episode.

The pottery includes an octagonal moulded jug in drab-coloured stoneware (DRAB) (which Brooks calls 'dyed-body wares': Brooks 2005, 30). Tea wares comprise joining sherds of affordable Rockingham ware teapots with mottled brown glaze; a refined white ware saucer with blue transfer-printed decoration in the 'coral' (sheet) pattern; and a refined white earthenware teacup and saucer with blue cut-out sponged decoration (REFW SPON1). Dining wares are represented by four dessert and two dinner plates in refined white ware decorated with the ubiquitous blue transfer-printed 'willow' pattern. Two of the plates were made by Henry Wileman of the Foley China works in Staffordshire during the 1860s (Godden 1991, no. 671). Part of a dinner plate with a moulded Gothic panelled rim in plain white granite ware (GRAN) is typical of pottery usually made for the North American market (Goodwin and Barker 2009, 38). A ceramic painted figurine, <P5> (Fig 80), in refined white earthenware with underglaze painted decoration (REFW PNTD) in the form of a standing muzzled bear has out-stretched front paws that may originally have been grasping a dog, in reference to the once popular sport of bear-baiting.

Fig 80 Ceramic painted figurine <P5> in refined white earthenware in the form of a muzzled bear, from cesspit fill [972], Building 20 (scale *c* 1:1)

LARGE RECTANGULAR BRICK CELLAR (B21)

This property, known as 151 Frankwell in the 1910 valuation survey, was the largest of the group of cottages on the eastern side of Road 3 (Fig 69). By 1881 it was run as a lodging house (above). It appears that only the eastern portion of the property was cellared, and only the western portion of the cellar survived, due to later truncation and disturbance (Fig 70). The lining walls of the cellar were constructed of red bricks, 2½in to 2¾in (64–70mm) thick, and blocks of reused sandstone ashlar. There was one internal east–west aligned wall of the same construction. Its floor was paved with the same type of bricks used in the lining walls. The presence of coal dust on the cellar floor shows that it was used to store coal. Due to localised damage caused by the foundations of the modern public toilets and their associated services (Chapter 7.1; OA13), as well as the excavation of evaluation trench 5 (Higgins 2005, 13), the central portion of the cellar floor had already been removed. The excavated portion of the cellar was entered by a door within its northern wall, which was later bricked up. This two-storey building is partly visible on a photograph of the site taken *c* 1960 (Fig 85; Chapter 7).

VARIOUS INDUSTRIAL BUILDINGS ON THE WESTERN PORTION OF THE SITE: SMITHY (B22)

When fieldwork started there was one remaining building (B22) situated along the roadway to the west of the chapel (B23); this was demolished in March 2006. It had formerly been the central element of a north–south row of several adjoining industrial buildings of 19th- and early 20th-century date (Fig 69; Fig 81). This remaining building was brick-built, with a ridge roof clad with Welsh slate. It had a rectangular ground plan with two ground-floor doors in its western wall. Built before 1882, it had apparently served as a workshop

attached to a smithy. Across the western portion of the site various small fragments of the truncated brick-built foundations of several industrial buildings and associated external yard surfaces of either late 19th- or early 20th-century date were recorded (not illustrated). The associated external surfaces consisted of either cinders or concrete. There was also evidence for the external dumping of ferrous slag, coal dust and clay, with residual post-medieval floor tile and 13 sherds of associated pottery dating to *c* 1850–*c* 1900.

In the centre of the western area of the site a north–south aligned upstanding wall, [48], over 42m long and up to 1.47m in height, extended south of the limit of excavation. It was constructed of randomly coursed sandstone rubble blocks (Fig 82), and was built directly on top of the eastern wall of the masonry abutment (S9) of the new Welsh Bridge (Fig 69). Judging by the higher contemporaneous ground level on the eastern side of the wall, it had served as both a terrace or retaining wall and a property boundary. There was evidence of two recesses within the eastern side of the wall, both of them probably intended to contain fireplaces that subsequently had been removed. The presence of whitewash along the eastern face of the wall shows that lean-to buildings had been constructed up against it. There was also some evidence of brick repairs and inferior-quality partial rebuilding using the original sandstone blocks. One part of the eastern face had been covered by a concrete skim.

METHODIST CHAPEL AND SCHOOLHOUSE (B23)

Mr Field's warehouse on Frankwell Quay (Chaper 5.1; Fig 41; Fig 69) was acquired by George Jones, who died in 1814. By this date the building was occupied by the barge owner

Fig 81 The smithy workshop (B22) in 2006 shortly before its demolition, looking west

Fig 82 Central portion of the western boundary wall [48], looking east (1.0m scale)

Thomas Bratton, later by David Griffiths and then lay empty for a long period. In April 1863 the surviving trustees of George Jones sold the property to agents acting for a congregation of English-speaking Welsh Calvinistic Methodists (also known as the Presbyterian Church of Wales) (SA, D3651/B/69/5/1 and 2). On the site of the old warehouse the Methodists built a chapel, designed by the borough surveyor, Thomas Tisdale, and built by Evan Davies (B23; Fig 69). It was a 'plain but substantial building', which could accommodate about 200 worshippers. It had a ground-floor schoolroom and an adjoining house was built to the rear (160 Frankwell) as a residence for a schoolmistress. The chapel was opened on 4 May 1865, with a sermon by Dr Edwards of Bala (Merioneth) (*ESJ* 1865; NLW, 7B HZ/1/5/15). It was commented in July 1865 that 'the neighbourhood in which it is built is one of the most populous in town, but it has hitherto been very much neglected; indeed the place was selected for this very reason, the friends hoping that much good may be done without interfering with any other place of worship' (NLW, 7B HZ/1/5/15). The two-storey chapel was built of red brick with a slate roof, and it had a street frontage of 27ft 6in (8.39m) and a length of 46ft (14.03m). It was fronted by a wall and two iron gates, and approached by two flights of stone steps leading to a landing covered by a porch. It was lit by ten iron-framed, round-headed windows and had a sloping floor (NLW, 7B HZ/1/5/15).

In 1895 the Home Mission Report noted that there was a congregation of 50, with 68 in the Sabbath school (including the teachers) and 18 communicants (NLW, 7B HZ/1/5/19). The schoolroom was sometimes flooded by the River Severn. At one of the anniversary services access to the chapel was by means of planks only. By 1900 there were only 23 members, but this was raised to a congregation of 70 by 1903 (Frankwell Presbyterian Church 1905, 12, 15; Cox 1997, 84). A report of this year by the pastor, deacon and secretary stated that the chapel needed repairs and they suggested relocating to new premises in the centre of town: 'There was never a church more unsuitably placed than ours at Frankwell' (NLW, 7B HZ/1/5/20). A new site was purchased in Belmont in the centre of Shrewsbury, where a lecture hall and schoolrooms were built in 1905 (Frankwell Presbyterian Church 1905, 16). The building continued to be used as a mission chapel until July 1909 (*Crocker's directory of Shrewsbury*; *Post Office directory of Shrewsbury*; *Wells and Manton's directory of Shrewsbury*; *Wilding's directory of Shrewsbury*; TNA, 1881 England Census (RG 11/2653); Cox 1997, 86). The premises were then sold for £435 to the ironmongers William John Edward Lewis and John Froggatt as a garage. The chapel and the adjoining house are shown on the accompanying plan (*Wilding's directory of Shrewsbury* 1910; NLW, 7B HZ/1/5/23 and 24; SA, D3651/B/69/5/4 and 6; Fig 69). The conditions of sale stated that:

> the property is sold subject to the stipulation that the trade or business of a licensed victualler or seller of beers, wines or spirits or any other intoxicating liquor shall not be carried on upon the premises or upon any other building to be erected thereon etc, etc. The purchaser shall in his conveyance enter into a proper covenant (so framed as to run with the land as far as possible into whose so ever it may come). (SA, D3651/B/69/5/4)

During 1910 and 1916 a printing workshop was also based on the upper floor of the former chapel, run by Lloyd and Thomas (*Wilding's directory of Shrewsbury*; SA, 4011/77/9 no. 7033). It later became the Autotyre Tyre Centre and is now used as the bar of Theatre Severn, in breach of the 1909 covenant.

The schoolroom possessed its own fireplace, two recessed cupboards and a coal house (SA, D3651/B/69/5/4). The schoolmistress's house to the rear of the schoolroom and chapel was let to the shoemaker John Thomas and his family from at least 1881 until 1922. He was followed by the haulier J R Bickley, and by James Smith in 1936 and 1938 (*Crocker's directory of Shrewsbury*; *Kelly's directory of Shrewsbury*; *Post Office directory of Shrewsbury*; *Wells and Manton's directory of Shrewsbury*; *Wilding's directory of Shrewsbury*; TNA, 1881 England Census (RG 11/2653); 1901 England Census (RG 13/2540)). In 1910, the dwelling consisted of an attic, two bedrooms with fireplaces, a parlour and a kitchen on the first floor, and a basement scullery, pantry and coal cellar supplied via a grating in the street. There was a flushing water closet on the ground floor. John Thomas acted as caretaker to the chapel in 1909 and paid a rent of 3s 6d per week to Lewis and Froggatt in 1910 (SA, D3651/B/69/5/4; TNA, IR 58/75567 no. 7033). During the early 20th century this dwelling was used as a lodging house by the men working in the local foundries and workshops, during which time two phases of a ground-level access ramp were constructed along the eastern side of the property, one of brick and the other of concrete (Mr Dales, pers comm 2006). This house was demolished during the 1960s. Its site was subsequently occupied by the offices and toilets of the tyre fitters, the construction of which had apparently removed all trace of its foundations.

CUL-DE-SAC (R3) FINAL SURFACES, MAKE-UP AND SERVICE TRENCHES

The various surviving areas of flint river-cobbling along the cul-de-sac (R3) were recorded in detail as part of the conservation work (Chapter 8) and repaired where necessary (Fig 83). There was extensive survival of cobbled surfaces over the dry arch (B9), and these were recorded, repaired where necessary and then reburied. The river cobbles that were bedded in sand had obviously been relaid many times as modern services were present, including a disused gas pipe, an electricity cable and a telephone cable (both of which were live) (Fig 70; Fig 84). The cobbles showed evidence of repair and replacement with areas of brick pavers. Pottery recovered from the make-up dates to *c* 1873–*c* 1900. A series of foul drains was installed after 1854 and before 1909 (above), with a brick-built manhole.

Fig 83 Cleaning up the northern area of Road 3 cobbling before recording, looking north

Fig 84 Central and southern area of Road 3 cobbling [84] over the dry arch (B9), looking south (1.0m scale)

THE GARDEN (OA12) AROUND THE OLD WELSH BRIDGE

It appears that the garden (OA12) was laid out in the 1820s and remained in use until the 1960s (above, 6.3; Fig 62; Fig 69; Fig 70). On a 1909 plan of the chapel property the area was described as 'Mr Bickley's yard'. The yard was entered via three steps leading down from the western side of the alley (SA, D3651/B/69/5/6).

6.5 DISCUSSION: THE LATE 18TH TO 19TH CENTURY (PERIODS 5–6)

The expansion of the economy and the steady increase in road traffic from the late 18th century onward provided the impetus for the renewal of many English rural roads and bridges (Harrison 2004, 147–9). Civic authorities routinely demolished narrow medieval bridges, which appeared dilapidated and inadequate to many contemporaries (Harrison et al 2010, 45). It was decided in 1791 to replace the old Welsh Bridge with a new bridge constructed in a different location (above, 6.1). This decision had the advantage that traffic could still use the old bridge without any hindrance during the construction of the new one. The decision to relocate the bridge a short distance did involve some realignment of the approach roads, but nothing like the upheaval that would have resulted in a more densely built-up urban environment. English civic authorities during this period generally chose to build new bridges in the same position that their predecessors had occupied to avoid the cost and upheaval of realigning roads and demolishing properties. For these reasons the new English Bridge (1769–75) was built directly over its predecessor (Ward 1935, 45, 79). One example where the civic authorities chose to relocate a major bridge and completely realign the bridge approaches was in London, where the new London Bridge was constructed during 1824–31, some 35m upstream of its medieval predecessor (Watson et al 2001, fig 124). Once the new Welsh Bridge was completed, its predecessor was not completely demolished. The buildings clustered around the former Welsh Gate were now perceived as an asset, so a short stretch of the historic bridge was accidentally preserved (above, 6.2). Another consequence of the decision to rebuild the Welsh Bridge in a different location was the creation of an inlet between the two bridges along the Frankwell foreshore (OA11). This was soon reclaimed, permanently changing the geography of the area (above, 6.1).

After the construction of the new bridge the former bridge approach road became a cul-de-sac (R3). It remained a feature of the area and partly determined the layout of subsequent development. However, this cul-de-sac (R3) did not become a backwater; as a result of the expansion and industrialisation of Frankwell it was completely redeveloped during this period. The landward portion of the Welsh Bridge escaped demolition, and Building 11 on the site of the former west bastion remained standing until it was demolished in the 1960s (above, 6.2, 6.4; Chapter 7.1). By the late 19th century the eastern side of the bridge approach was occupied by a series of small houses, including a communal wash house with its own coal cellar (B17; above, 6.4). Coal would have been used to fuel the 'coppers' or water heaters where clothes were washed. The best preserved of these excavated dwellings was a block of four small, cellared cottages (B18; above, 6.4) and their brick-lined well, which, according to the 1882 Ordnance Survey map, was served by a handpump (Fig 69). The level of architectural detail shown on these maps is remarkable, but it is curious that no effort was made to record the relevant house numbers. One result of the expansion of Frankwell was the opening in 1865 of a Welsh Calvinistic Methodist chapel (B23) and an elementary school, complete with a house for a schoolmistress (above, 6.4). This development is an example of how the 19th-century Methodist Church sought to meet both the educational and spiritual needs of the rapidly expanding urban community – people were often economic migrants with no social or religious contacts in their new homes. As a result of educational initiatives such as the one in Frankwell, by 1858 an estimated 2.53 million (95%) English and Welsh children out of a total of 2.65 million received some form of schooling, 'though still of very mixed quality and with the majority leaving before they were eleven' (Williams 1961, 137). It was not until the passing of the Forster Elementary Education Act of 1870 and the Elementary Education Act of 1880 that the state intervened to make elementary education compulsory.

7

THE ENVIRONS OF THE OLD WELSH BRIDGE DURING THE 20TH AND 21ST CENTURIES (PERIOD 6)

From the 1920s to the 1960s wooden and corrugated iron industrial sheds and workshops proliferated at the southern ends of the yard properties on the former Frankwell Quays, and appear on a photographic survey of the town undertaken *c* 1960 (Fig 85). Some of these buildings were still standing at the beginning of the redevelopment in 2006.

7.1 FORMER BRIDGEHEAD AREA DEVELOPMENT (OA13): EARLY 20TH-CENTURY ACTIVITY, DEMOLITION OF BUILDINGS DURING THE EARLY 1960S AND SUBSEQUENT LAND USE UP TO 2005 (PERIOD 6)

With contributions by Ian Betts, Nigel Jeffries and Beth Richardson

DOCUMENTARY EVIDENCE

By the mid 19th century, 12 of the medieval burgage plots along Frankwell's main street were lined with a sufficient number of dwellings to be described as 'courts' (Trinder 2006, 115), which were entered from the street by alleys or passageways. These properties had degenerated into appalling slums. In 1861 one writer reported that 'it is a quarter occupied by the working classes. … The passages leading out on to the main road are in terrible condition' (ibid, 116). In 1912 a national newspaper described this locality as 'the most soul-depressing area' of Frankwell (ibid, 117). Slum clearance was, therefore, the greatest change to the built environment of the area during the 20th century. Three houses in White Horse Passage were condemned as unfit for human habitation in 1913, and there was further piecemeal clearance in the 1930s (ibid, 116). However, despite their high density and the back-to-back character of the block of four dwellings (B18; Chapter 6.4), the various buildings on site were apparently retained unaltered until the early 1960s, when the decision was made to demolish them. During the 1950s the dry arch (B9) was recorded as still incorporated in the cellar of Building 14 (Trumper 2006, 44; SA, PH/S/13/W/2; Fig 66; Chapter 6.4). This clearance apparently involved all the properties fronting on to the alleyway known as the Welsh Bridge, including Buildings 11, 14, 17–20. However, the former chapel (B23), Glen House, Glen Maltings and The Stew warehouses were all retained (Fig 69; Chapter 6). The latter two buildings still survive, but are currently unoccupied, while the former chapel (B23) has now been incorporated into the Theatre Severn.

THE FINDS FROM THE EARLY 20TH-CENTURY EXTERNAL ACTIVITY

During the early 20th century the 19th-century brick-lined soakaway (one of the garden features in OA12) under the garden steps was infilled with soil and domestic waste, with comparable material subsequently dumped over the adjoining area of garden (Fig 62; Fig 70). The backfill of the soakaway included a rich assemblage of domestic pottery and glass. A minimum of 161 ceramic vessels (441 sherds, 19,968g) were discarded in three filling episodes (contexts [76], [109] and [204]), representing material derived from different areas of an early 20th-century household. Although some pots are fragmented, consisting of a few sherds each, most were discarded intact (like the dozens of glass bottles found in context [76]) and give the impression of still-useable material being discarded in deliberate filling episodes. A latest date of 1902–30 has been given to the pottery.

Together with the glass discarded in the soakaway, a large portion of the ceramic assemblage is related to food storage and there is an emphasis on English stoneware with Bristol glaze (ENGS BRST) jam and marmalade cylindrical jars or crocks of different sizes, made up to the time of the Second World War. These were found with a few refined white ware 'ribbed' meat paste jars made by the Maling factory in

Fig 85 View of the front of the former chapel (B23; centre left), to its left can be seen 151 Frankwell (B21), *c* 1960, looking south-east; to the right of the chapel are the industrial buildings that fronted on to the street (© Abbeycolor Ltd)

Fig 86 Selection of jars in English stoneware with Bristol glaze, <P1> and <P2>, and refined white ware with underglaze black transfer-printed decoration, <P3>, from soakaway fill [76], Open Area 13 (scale *c* 1:2)

Newcastle upon Tyne (cf Fig 86, <P1>). Containers for products of William Hartley's large food manufacturing concern were represented by a number of English stoneware jars with Bristol glaze, stamped on the base with the company's lighthouse logo surrounded by the lettering 'W P HARTLEY LIVERPOOL & LONDON' (eg Fig 86, <P2>). Marmalade and jams were sold in these vessels. One example of this type is a refined white ware cylindrical jar with underglaze black transfer-printed decoration (TPW3) (Fig 86, <P3>) bearing the inscription 'Grand Medal of Merit Vienna

1873' over an oak-leaf wreath surrounding the product name, 'James Keiller & Sons Dundee Marmalade', and below 'Only Prize Medal for Marmalade 1862'. It has been suggested that between 1873 and 1898 the letter located just below the knot of the wreath is sequentially datable (Mathew 2000, 6–7). If Mathew's method is applied then this jar, with its letter Q, would have been made in 1889 (by the Maling factory in Newcastle upon Tyne, with whose name it is stamped). These canning and food preservation crocks were probably refilled and used a number of times. Storage wares also include ten sherds from a smashed English stoneware medium cylindrical jar with Bristol glaze of a kind usually used to hold a variety of pickles or soups (Green 1999, 167, no. 396), although this particular example had been filled with thick coal tar.

The large quantity of glass bottles dumped within this feature also includes a high proportion of forms used for storage. A few complete forms and joining fragments from up to eight wide-mouthed jars in colourless glass are similar in shape and manufacture to those recovered from the backfill of Building 18 (below). There are also up to 16 cylindrical bottles in pale green glass, made in two-part moulds. These are of a distinctive shape associated with food sauces, and Worcestershire sauce in particular (at least 12 bottles, half of which are intact). They were sealed with a glass and cork sheaf stopper. A squared sauce bottle with rounded corners and sealed with a glass stopper is the only vessel to advertise the maker – Fletchers Shipley – in relief-moulded lettering. Other forms include a slim cylindrical bottle, possibly for containing olives, made in colourless glass in a two-part mould, and with a cork stopper. A squared bottle with rounded corners in pale green glass has an internal screw-threaded rim, and carries lettering for the Bloomsbury works in Leeds (Yorkshire West Riding) and contained Bromley's coffee essence.

There are sherds from seven dinner plates made in refined white ware with underglaze blue transfer-printed stipple and line decoration in the mass-produced and well marketed 'Asiatic pheasants' print. A broken vegetable tureen lid, in the same fabric, is decorated with the equally ubiquitous 'willow' print, although this pattern is otherwise limited to a few rather fragmented dining wares. Among the remaining transfer-printed wares is a comport (in TPW4) with the registration mark for the year 1883 (represented by the letter K: Godden 1991, 527), decorated with a lilac print and the pattern name 'Wilmot' under the crown mark used by the Derby Crown Porcelain Company Ltd works (ibid, 758, no. 1268). A similar form is printed in grey, although it is unmarked and the botanical print difficult to attribute. Other tablewares include an egg cup and a small oval serving plate in plain bone china.

An English brown salt-glazed stoneware spouted ink bottle, made by the Doulton factory in Lambeth (Surrey), is depicted in the manufacturer's price list of 1873 (Green 1999, 368) and is of a long-lived shape used by many potters manufacturing stoneware. This cork-stoppered vessel has an oval stamp near the base, inscribed 'DOULTON/…[ED]/ LAMBETH' with the number '39' in the centre. Numbers added to stamps on stonewares made by Bourne of Denby (Derbyshire) are indicative of the year of manufacture in the first half of the 20th century (so that 01 can be translated as 1901), but this does not seem to have been employed at the Doulton (Eyles and Irvine 2002) or Fulham (Middlesex) factories (Green 1999). This stoneware vessel points to the more mundane elements of everyday life, along with a black-leading bottle that was used in stove-cleaning and polishing (Askey 1998, 102–6).

A small selection of household vessels in locally sourced earthenware fabrics (post-medieval red ware (PMR)) were also found, including the lid from a bread crock and a flowerpot with its accompanying dish. A small jug (the handle is missing) with an external brown glaze was of a kind used for cream or milk (although the spout is not particularly pronounced and would not have poured well) or for condiments/dressings.

There are forms from sets with matching decoration in the ceramic tablewares, cups and mugs. A small selection of bone china includes two saucers and fragmentary teacups with simple overglaze painting. The use of a single band of gilding is a decorative feature that is repeated on the more common refined earthenware coffee cups from the cellar fill of Building 17 (Chapter 6.4), with up to four vessels represented. Bone china with blue transfer-printed decoration comprises two saucers and a teacup with the long-lived 'Broseley' print (Coysh and Henrywood 1984, 62). Although these are unmarked, they all appear to date to the 20th century, as does a mug in refined white earthenware with banded slip decoration (REFW SLIP), similar to 'Cornish ware' (Sussman 1997, 6–11).

There are no ceramic forms directly associated with alcohol; this function is represented instead by glass wine and ale/porter bottles. Evidence for the consumption of Continental wines can be seen in a complete champagne bottle and large joining fragments from a few other bottles, in addition to the upper portions of up to three Bordeaux-type wine bottles. English wine bottles made after 1830 (in a three-part mould, with a mineral rim finish) were also found, as well as fragments from a Dutch gin bottle.

A small number of drinking glasses (fragments from two tumblers and a small tankard), a glass dish and two pieces of ornamental coloured glass were also found. The tumblers, both from [76], are similar but not identical, and are made in heavy lead-crystal cut glass, decorated with eight (<27>) and 13 (<116>) cut flutes respectively. Tumblers and a wide range of other glass vessels in this Gothic-inspired style were common in the 1840s and 1850s, and were first popularised by the London glassmaker Apsley Pellatt, but also made by other glassmakers (Wakefield 1968, 52; Shepherd 1988, 157–61). It is quite possible that the tumblers were 50 years old or more when discarded, as were similar glasses found in a late 19th- or early 20th-century pit in Canterbury, Kent (Shepherd 1988, 161). A fragment from a pillar-moulded dish or bowl with a square lid-seated rim, <115>, and the lower

half of a mould-made, lightly fluted small tankard, both also from [76], are almost certainly 19th century in date, but are difficult to provenance. An abraded and fragmentary small wine glass from [109] is similar to Pellatt's mid 19th-century 'Coburgh' wine glass, with a conical bowl with 11 flutes and two thin wads between the bowl-base and double-waisted stem (Wakefield 1968, 52).

The drinking of ales, porters and stouts is represented by 11 more-or-less complete beer/ale half-pint bottles in pale green and green glass (Fig 72, <G1>). These bottles were made in three-part moulds, and have hand-finished mineral rims and an internal screw thread. Three of the green bottles carry relief-moulded lettering for the Holt brewery in Shrewsbury, with many of the pale green bottles moulded with the lettering and logo of Thomas Southam and Sons and Tanner Brothers (both of Shrewsbury). At least eight green porter bottles were also retrieved. Various breweries are advertised in moulded lettering or on rubber or vulcanite stoppers that were still present: for example, Soames (Wrexham, Denbighshire), Walter T Southam of the Old Salop brewery (Shrewsbury), Showells (Oldbury, Birmingham) and ?Searhooke and Sons (Grays, Essex).

Sanitary and hygiene wares, although limited in number, include some reconstructable forms, notably a wash bowl and ewer in refined white ware with underglaze colour transfer-printed decoration with the same green pattern (featuring a large poppy), and a plain, heavier-bodied refined white earthenware chamber pot. The wash bowl has part of the printed mark 'England', which shows that it was made in compliance with the American McKinley Tariff Act of 1890. (The McKinley tariff, named after Congressman William McKinley, who would later become president of the United States, was a name popularly given to a law enacted by the United States Congress in 1890, which increased the tariffs on some imported goods. This law was repealed in 1894 (Goodwin and Barker 2009, 36).) A range of pharmaceutical and medicine bottles in glass were also found. There are eight slim cylindrical and rounded phials in colourless glass, with a prescription or flared rim finish, used for a range of cure-alls (*Bottle finishes*). Six rectangular bottles in pale green glass, with flat chamfered corners and prescription rim finishes, have one side flat for fixing a label and the other recessed, and they are the same as those recovered from the backfill of the Building 18 cellar (below).

Three rectangular dispensing bottles with flat chamfer, in pale blue glass, have graduation or dosage lines with 'TABLE SPOONS' in relief-moulded lettering. There are also three oval-shaped medicine bottles of a similar colour, one of which has relief-moulded lettering identifying it as made for 'The Salop Infirmary of Shrewsbury', suggesting that it was taken from the hospital nearby. A rectangular bottle with flat chamfers, in pale blue glass, held Kutnow's Powder (a digestive powder) and has a cork-stoppered rim.

Other finds from the soakaway and related dumping include six clay tobacco pipe bowls and 18 stem fragments dating to *c* 1880–*c* 1950. Amongst these are two near-complete thorn pipes (moulded to resemble a briar with thorns), marked 'B SOUTHORN BROSELEY' (Chapter 9.3). Two large plain copper-alloy teaspoons, <11> and <12> from context [76], an iron door-key, <56>, a small bone disc with a large central hole, possibly a spacer, <79>, and two fragmentary leather boots, could all be late 19th or early 20th century in date. The spoons are cheap and machine-made; one, <12>, has an indecipherable name (presumably a factory name) on the back. The small working boots would have been worn by a woman or child. They have an oval-shaped toe, hobnailed soles and a characteristically late 19th- or early 20th-century laced and/or buttoned overlap closure (Goubitz et al 2001, 302, fig 9). Remaining parts consist of two multi-part hobnailed soles (one worn right through), an incomplete vamp, two quarters, a strip with circular metal-rimmed lace eyelets and a detached flap with key-shaped holes for buttons. All stitching is machined. It is difficult to tell whether the boots are a pair; they appear to be the same size, and a right and left foot, but many parts are missing.

A copper-alloy button from context [204] is a 'General Service' button, showing the royal coat of arms surmounted by a Victorian crown, dating the item to between 1871, when the type was introduced, and 1902, when the crown design was changed. General Service buttons were issued in huge quantities during the Second Boer War (1899–1902) and the First World War, when purely regimental buttons were not worn on combat dress.

THE FINDS FROM THE BACKFILL OF THE BLOCK OF FOUR BRICK-BUILT CELLARS (B18)

The backfill of these cellars yielded a wide variety of finds. Exactly where all this material derived from is not known, but the cellars were infilled with what appears to be demolished superstructure. It is probable that the finds, which had no financial value, had been left inside these buildings by their departing residents. Assuming that this interpretation is correct then this assemblage provides a unique insight into the material culture of the residents. Among the many objects recovered from these deposits was a group of pottery that was discarded either freshly broken or intact (five vessels from context [1]). In view of the picture of abandonment and disuse presented by the more frequent glass and other artefacts, it is significant that the pottery is generally much earlier than the 1960s date of demolition. This may imply that it had been kept for some time, perhaps lying forgotten in a corner of the cellar. The first vessel, an intact English stoneware marmalade jar with Bristol glaze, stamped on the base with 'NOT GENUINE UNLESS BEARING W-M. P. HARTLEY'S LABEL', was probably made at the Caledonian pottery at Rutherglen in Glasgow. In 1898 this pottery was acquired by William Hartley's food manufacturing company to produce stoneware jars for jams and other foodstuffs. In 1928 the Caledonian pottery closed when Hartley's decided to use only glass jars. The smashed lower portion of a moulded refined white ware ewer with underglaze blue transfer-printed

stipple and line decoration is stamped with an unclear registration mark of the type used after 1884 (Godden 1991, 527–8). The decoration depicts pairs of dragonflies with a galloping horse partially visible, and although the pattern name is not provided, the print appears to date to the first quarter of the 20th century. There are also single sherds from a refined white ware tureen with underglaze blue transfer-printed stipple and line decoration and a small refined white ware dish with underglaze transfer-printed and red-painted overglaze highlights (TPW6). The only other vessel in this context is part of a moulded bone china teapot decorated with transfer printing and overglaze floral painting (BONE TR6).

It is the few dozen complete (and thereby still useable) glass bottles discarded in the infill of the cellars that form the best-preserved and most noteworthy group of material dumped in the cellar. As all the bottles are machine-made, they were produced after 1905 (*Glassmaking*). However, a variety of other attributes refine their dating to the first half of the 20th century. These glass containers can be divided into four functional categories, used for food, non-alcoholic and alcoholic drinks, and medicine/chemist bottles.

Preserve and food sauce bottles in colourless glass are the most common types. Four cylindrical (or rounded) wide-mouthed jars would have contained preserves such as pickles and jams. They were sealed by a thumbscrew and stopper glass lid and fixed by wire. The faded remnants of the pasted paper labels that once advertised both content and maker remain visible. There is one square bottle with concave chamfers and an external screw-thread finish for fixing a tin lid. Two identical rounded or square-shaped bottles with the same rim finishes would originally have contained sweet pickles, chutneys or horseradish. Five similar small cylindrical jars in colourless glass bear the moulded lettering for the food manufacturing companies of Shippams, Pecks and Oxo. These vessels would have held concentrated meat and fish paste products (eg *Tees Valley Museums*, record no. RECKH.2008.1.2.27/).

Up to 17 complete food sauce bottles in colourless glass were found. Six of these were made for brown sauce and are, therefore, identical to bottles made today for the same purpose. There are also two octagonal tomato sauce bottles (eg Fig 87, <G3>) and two cylindrical glass-/cork-stoppered bottles of Worcestershire sauce style (eg Fig 87, <G4>). Remnants of vinegar are still contained within a rectangular bottle with an external screw-threaded rim. It is a product of the Manor vinegar brewery of Birmingham, as advertised by

Fig 87 Glass bottles for domestic products from cellar fill [1], Building 18: ketchup – <G3>; Worcestershire sauce – <G4>; vinegar – <G5>; and Kruschen salts – <G6> with tin lid (scale *c* 1:2)

the relief-moulded lettering on the flat side of the bottle (Fig 87, <G5>). Among the remaining items in this group is a smaller cylindrical bottle in brown glass with an external screw-threaded rim and a tin lid with the product name Kruschen in relief, made to hold Kruschen salts (a patent medicine) (Fig 87, <G6>). There are also three cylindrical milk bottles of different shapes, with the smaller vessels carrying the sand-blasted lettering 'BANKS FARM/DAIRY/ SHREWSBURY', and relief-moulded lettering 'CO-OPERATIVE/WHOLESALE/ SOCIETY LTD'.

Bottles for medicinal and chemical preparations were also common in the cellar fill. Eight rectangular bottles in colourless glass have either an internal screw-threaded or a prescription rim finish, with a flat side for attaching a label and the opposite panel recessed (*Bottle finishes*). There are also a few similar bottles that are square in shape. Both types were used to hold a range of liquid medicines, but only one advertises its contents, in relief-moulded lettering, 'ELLIMAN'S EMBROCATION' for muscular relief, which is still manufactured (Fig 88, <G7>). Two rectangular-shaped dispensing bottles marked with their graduation or dosage lines (Jackson 2005, 15) have 'TABLE SPOONS' in relief-moulded lettering running vertically down one face. The third bottle contained Sanizal disinfectant (Fig 88, <G8>). There was also a milk of magnesia bottle with relief-moulded lettering, and six poison bottles of different sizes and shapes (oval, cylindrical and octagonal) in green and blue glass (eg Fig 88, <G9>). These poison bottles have vertically ribbed sides, supposedly to aid their identification by the visually impaired.

Ale/beer and wine bottles of different sizes in green and brown glass are also well represented. Three of the four largest examples are champagne vessel-shaped porter/ale bottles (eg Fig 89, <G10>; *Bottle typing*). Relief-moulded lettering identifies them as the products of the 'W & H E TANNER' brewery of Welshpool (Montgomeryshire), Shrewsbury, while the fourth comes from the Truman brewery of London and Burton in Staffordshire (Fig 89, <G11>; dated after 1873). The hard rubber or vulcanite stoppers made for their internally screw-threaded tops have survived, one with lettering identifying the Tanner brewery, the other from the Joules brewery at Stone in Staffordshire with the third reading 'WAR GRADE'. Two half-pint bottles of the same shape were also sealed by hard rubber stoppers bearing relief-moulded lettering advertising their retailer and manufacturer. The first bottle bears the name of the victualler Charles H Oakley of 139 Devonshire Street in Sheffield (Yorkshire West Riding). (Charles H Oakley, of 139 and 141 Devonshire Street, Sheffield, was one of the subscribers to the 1889 version of *A directory of Sheffield*.) The second was produced by 'BOTTLING CO LTD / THE BATH ROW / BIRMINGHAM', relating to this city's famous Davenport and Sons brewery, which operated for nearly 100 years before closure in 1986. Evidence for wine drinking comes from a Bordeaux-shaped wine bottle (cork-stoppered), with a second similarly shaped green glass cylindrical bottle presenting a more bulged neck and an internal screw-thread finish.

Containers for non-alcoholic drinks are limited to two

Fig 88 Glass pharmaceutical and medicine bottles of various forms from cellar fill [1], Building 18: square bottle containing Elliman's Embrocation – <G7>; rectangular – <G8>; and octagonal for poison – <G9> (scale *c* 1:2)

Fig 89 Glass porter/ale bottles from cellar fill [1], Building 18: <G10> – from the W and H E Tanner brewery in Shrewsbury – and <G11> – from the Truman brewery of London and Burton (scale *c* 1:2)

identical moulded bottles in colourless glass (with the front face free for the label) with a 'brandy' or straight-tooled finish (*Bottle finishes*), for aerated waters or fizzy drinks such as Tizer or lemonade (eg Fig 90, <G12>). A similar bottle with an internal screw-thread finish bears the relief-moulded lettering of 'O D MURPHY & SONS LTD WELLINGTON'. This refers to Owen Downey Murphy, who acquired the Wrekin brewery (Shropshire) in 1921; it closed in 1969 (Baugh and Elrington 1985). Two smaller bottles both have a crown cap rim finish (Fig 90, <G13> and <G14>). Made to hold soft drinks, both bottles have relief-moulded lettering identifying the breweries that produced them: W and H Tanner of Welshpool, Shrewsbury; and T (Thomas) Southam and Sons, also of Shrewsbury (they were taken over by Tanner in 1936: *Tanners*).

An unusual find is the complete bowl of a composite pipe, <CP15>, in highly fired clay made in the United States in the late 19th to early 20th century (Chapter 9.3). Other finds from the backfill of the cellars of Building 18 consist mainly of domestic items related to clothing, clothing accessories, including those of a military nature, recreation and housework. A few (coins, a token and military buttons) can be closely dated while the other items could be of either late 19th- or early 20th-century date. A token, <4>, issued by the French Chambres de Commerce post-dates the First World War (issued 1922); the reverse states that it is 'BON POUR 1 FRANC'. There are also two American Lincoln cents: one, <2>, dated 1935 and the other, <3>, dated 1918. A copper-alloy George III halfpenny, <1>, is dated 1799 and this is apparently a curated item or keepsake. Two copper-alloy buttons are both military in origin. One, a slightly domed button with a single loop attachment, is a Royal Air Force

Fig 90 Glass bottles <G12>–<G14> for non-alcoholic aerated drinks, from cellar fill [1], Building 18 (scale *c* 1:2)

button depicting a flying eagle with head lowered and turned to the left, surmounted by a crown (Fig 91, <7>). The other button is gilded and bears the insignia of the King's Shropshire Light Infantry Regiment, an intertwined cursive 'KLI' encircled by a ring with 'SHROPSHIRE' in capitals, surmounted by a crown (Fig 91, <8>). It could have been made in any year between 1903 and 1956, but is more likely

Fig 91 British military uniform metal buttons from cellar fill [1], Building 18: Royal Air Force issue, <7>, and the King's Shropshire Light Infantry, <8> (scale *c* 1:1)

to date to the First World War, which fell within the general date range of the context (1880–1920) (P Duckers, pers comm). Other military items include three rimmed .303 calibre British issue cartridges. These were widely used between 1889 and the 1950s in Lee-Enfield rifles and a variety of machine guns including the Vickers and the Bren (King and Batchelor 1975, 18–19, 32).

A walking stick handle, <74>, is made from a naturally right-angled piece of red deer (*Cervus elaphus*) antler (Fig 92). It has lines of deeply incised crosses to improve grip, decoration on its upper and lower surfaces and three rivet holes at the socket for attachment to a stick. A circular, domed piece of glass, <24>, was the cover from a man's pocket watch. There are also fragments from three hone stones, used for sharpening knives and tools such as sickles. One, <65>, is made from carborundum, a synthetic abrasive compound and post-dating 1885, while the other two, <62> and <64>, possibly from the same hone and very worn, are made from a light yellow sandstone. A dense, flattened,

Fig 92 Domestic finds and toys from cellar fill [1], Building 18: antler walking stick handle <74>, and marbles in glass, <23>, and grey stone, <71> (scale *c* 1:1)

spherical, dark grey stone callender or smoothing stone, <66>, would have been used industrially or commercially in a laundry, or perhaps in a domestic setting for flattening the pile on fabric. Marbles were used as children's toys, easily lost and therefore common finds in 19th- and early 20th-century archaeological contexts. The marbles are made from white pipe clay, <63> (not illustrated), grey stone, <71> (probably German alabaster, commonly used for marble manufacture in this period) and clear or opaque white glass, <23>, marbled with different coloured glasses, or in one case with a red painted band (Fig 92). The only item which would undoubtedly have been used by a woman is a large sub-circular mother-of-pearl shell brooch or hat-decoration, with part of a brass attachment fitting on the reverse, <73>.

The backfill of the cellars also yielded two decorated late Victorian/Edwardian ceramic wall tiles. One of these has a brown transfer-printed geometric and floral design within a frame on an off-white background (Fig 93, <T11>). The other tile has a transfer-printed floral and fruit design in black on a creamy-white background, with hand-painted details in green, orange-brown and pink (Fig 93, <T12>). Two malting kiln tiles were also recovered from these deposits, probably dating to the late 18th century (Fig 94, <T13>; Chapter 9.2).

BACKFILLING OF THE CELLAR OF THE RETAINED BUILDING (B14), TO THE WEST OF THE DRY ARCH (B9)

When Building 14 on the western side of the surviving dry arch (B9) was demolished, the cellar under the arch was deliberately infilled with lumps of brick demolition rubble. This material was retained by a badly built blocking wall, [22], constructed of reused, unmortared brick and stone

Fig 93 Late Victorian/Edwardian wall tiles <T11> and <T12>, recovered from cellar fill [1], Building 18 (scale *c* 1:3)

Fig 94 Malting kiln tile with clusters of three holes (type 1), <T13> (front and back views), recovered from cellar fill [830], Open Area 13 (scale 1:3)

Fig 95 The ramshackle masonry wall, [22], which blocked the western side of the former dry arch (B9), looking west (1.0m scale)

blocks across the western side of the arch (Fig 95).

Four decorated late Victorian/Edwardian wall tiles, very similar to those recovered from the infill of the cellars of Building 18 (above), were found amongst the rubble infill of the dry arch (B9) and retaining wall (Fig 96, <T7>–<T10>), together with a 19th-century malting kiln tile. Most of the wall tiles recovered from the backfilled cellars of Buildings 14 and 18 are from different manufacturers, although these were mainly located in the Staffordshire Potteries. The diversity of designs suggests they may have been derived from different buildings or settings (Chapter 9.2). These tiles would probably have been set in late Victorian or Edwardian fireplace surrounds and would have been considered fashionable, a sign of affluence (below, 7.2). This is of interest, as the general impression is that 19th-century Frankwell was not wealthy, containing some appalling slums. During demolition any cast iron fireplaces would presumably have been removed as scrap metal; the tiles, having no resale value, would have been discarded.

The adjoining cellar was also infilled with mixed brick and sandstone demolition material. A small group of pottery recovered from these deposits (13 sherds, 6 ENV, 2770g) dates to *c* 1919–36. This includes a near-complete jar in English stoneware with Bristol glaze printed with the name 'W P HARTLEY LIVERPOOL & LONDON', and part of a saucer in terracotta ware made at the Watcombe pottery in Devon, stamped 'WATCOMBE TORQUAY', probably a holiday souvenir. A brown-glazed teapot in an unsourced ware is marked 'ALCOCK, LINDLEY, BLOORE LTD', and dates after *c* 1919 (Godden 1991, no. 71), while part of a refined white ware vase with underglaze blue transfer-printed stipple and line decoration is marked with the print name 'LOSEL WARE', made by Cavendish, Keeling and Co Ltd, Burslem, *c* 1912–36 (ibid, no. 2245). Other finds include a small, mould-made, clear glass cylindrical jar, <25>, with a shoulder-border of raised, hatched diamond- and oblique-slashed decoration. This has a collared and hinged lid with a round lifting-knop in the centre and a U-shaped opening for a spoon, and is almost certainly a mustard jar. A small snuff tin is embossed 'SINGLETON'S SUPER-MENTHOL SNUFF' on the lid and 'MANUFACTURED BY SINGLETON & COLE LTD, BIRMINGHAM & BRANCHES, ENGLAND' on the base (with a patent no. 591426). An exotic and possibly foreign curio is an adult male pig or boar's (*Sus scrofa*) tooth or tusk with a band of copper alloy around the middle and a cone-shaped copper alloy mount with a long pointed tip covering the end, <19>.

LATER 20TH- AND EARLY 21ST-CENTURY ACTIVITY

After the demolition of the buildings around the dry arch (B9), the area around the former bridgehead (OA13) was

Fig 96 Late Victorian/Edwardian wall tiles <T7>–<T10> from infill [23] of the dry arch (B9) (scale *c* 1:3)

levelled with dumped soil. Finds from these deposits include a fragment of a stone basin, probably part of a garden ornament, and a rectangular fragment of fireclay with a series of internal pyramidal projections, probably intended for an industrial function (Fig 97, <T16>; Chapter 9.2). The area was subsequently used as a car park until 2006, involving the laying of various cinder and tarmac surfaces. During this period the top portion of the bridge arch was exposed and became covered with vegetation (Trinder 2006, fig 83).

A brick-built public toilet block was constructed on the site of Building 21 (not illustrated). Associated with these toilets were new foul drains and a manhole. There were also a number of service trenches of recent date within the area of the former alleyway. An electricity substation was constructed on the site in 2002 to supply energy to the new flood defence pumps (Environment Agency 2004).

Fig 97 Fragment of possible industrial ceramic <T16> from modern dumping [76], Open Area 13 (scale *c* 1:3)

7.2 DISCUSSION: THE 20TH TO 21ST CENTURIES (PERIOD 6)

It is only relatively recently that the archaeological potential of Victorian and later finds assemblages has been considered and attempts made to understand what contribution this material can make to the study of everyday life (Owens et al 2010; Jeffries and Watson 2012, 91–3). Previously, English urban archaeologists have tended either not to collect such finds, or when they have been collected, they have often not been analysed or published. For instance, the 1988–9 fieldwork at Deansway, Worcester, revealed 'extensive deposits dated to between the early 17th and 19th centuries … and owing to limitations in resources, a cut-off date of *c* 1600 was established during post-excavation work', so this material was never analysed (Dalwood and Edwards 2004, 76). The backfill of the cellars of Buildings 14 and 18, together with the external soakaway in Open Area 12, revealed a wide variety of evidence of everyday life during the early 20th century, including an antler walking stick handle (Fig 92), stoneware jam and marmalade pots (Fig 86), drinking glasses and a diverse range of bottles, which probably contained alcoholic and other drinks, medicines and foodstuffs. Some of these bottles were embossed with makers' names and the poison bottles were ribbed for ease of tactile recognition (Figs 87–90). Pocket-sized children's toys were present in the form of a variety of marbles (Fig 92). Evidence of personal hygiene included a wash bowl, and medical treatment was demonstrated by the presence of three pharmaceutical bottles, one of which was manufactured for the Salop Infirmary in Shrewsbury.

A reminder of the restrictions imposed on daily life during the Second World War was a beer bottle labelled 'WAR GRADE'. This term refers not to the quality of the beer

it contained, but to the wartime restrictions that were imposed on the production of glassware and a range of other scarce commodities such as paper and bicycle tyres. Some hard rubber wartime beer bottle stoppers were labelled accordingly. Beer was not rationed during the war, but because of a shortage of barley for malting its gravity was reduced (in 1940 the average original specific gravity of English beer was 1040.62 and by 1945 it had been reduced to 1034.63: *Brewers' almanac* 1955). The survival of a beer bottle such as this, on which a deposit would have been charged, is of interest – was it deliberately retained or simply forgotten? Evidence of military service or, more likely, souvenirs of it were provided by two uniform buttons, one of which was made for a local regiment (Fig 91) and some .303 calibre cartridge cases. These relatively trivial objects look like the sort of mementos that might have been given to children by service personnel. There were a number of other souvenirs or exotic objects that might have been connected with military service overseas, including a 1922 French token, two low denomination American coins, and an adult pig or boar's tooth or tusk, while a George III halfpenny of 1799 was presumably a keepsake. There were some attractive *ex situ* late Victorian or Edwardian wall tiles (Fig 93; Fig 96); assuming they were used on site these probably imply the presence of several smart fireplaces that might have graced the sitting or front room of a well-to-do family. If this interpretation is correct then it offers a vision of life in stark contrast to the documentary evidence of overcrowded slums and poverty (above, 7.1). The ceramics recovered from the dumping inside the cellar of Building 14 (above, 7.1), as well as the nearby cesspit in Building 17 (Chapter 6.4) and soakaway in Open Area 12 (above, 7.1), all show evidence for sets of matching dining wares, teacups and saucers. Although the residents of these properties might not have been wealthy, they were able to enjoy formal dining with a certain style. Thus the artefactual evidence from these properties presents an impression of people who enjoyed a reasonable standard of material culture and diet in complete contrast to the dire poverty-stricken living conditions described by the press in 1912 (Trinder 2006, 117).

8

THE CONSERVATION AND REBURIAL OF THE FABRIC OF THE OLD WELSH BRIDGE AND ITS ADJOINING BUILDINGS

One of the aims of the project was to conserve and stabilise the upstanding fabric of the dry arch of the historic old Welsh Bridge and its adjoining buildings before their long-term reburial under the main stage of the new Theatre Severn. As the conserved fabric was not going to be exposed to the elements, some tasks, such as the repointing of its open joints, were not required. Instead, only very limited work was carried out to stabilise the few broken or damaged (Keele and Grinshill) sandstone voussoirs and facing stones of the former dry arch (B9). The fractured facing stones were removed, cleaned and stitched together with stainless steel studding 316. The ashlar voussoirs inside the bridge vault were in very good condition and therefore required no conservation work.

The masonry of the dry arch that had previously been partly above ground level was in poor structural condition as deciduous tree roots had pulled some sections of the masonry and the adjoining brickwork apart (Trinder 2006, fig 83). A firm of tree surgeons felled all the trees growing in the vicinity of the upstanding masonry, and then ground out their stumps before conservation work started (Fig 98). In the areas badly affected by root damage the top 0.70m of the damaged fabric was dismantled during March and April 2006 by staff from Richard Strachey Conservation. All the fractured stone blocks or bricks were discarded and then all these areas of brick or stonework were rebuilt in the same style by Richard Strachey staff. All the fractured sandstone blocks or bricks (in the case of 19th-century fabric) were replaced with identical material recovered *ex situ* (mainly from the backfill of cellars). The new fabric was bonded by a white lime/sand mortar (the lime used was hydrated hydraulic 3.5 from St Astier) (Fig 99). The brickwork adjoining the western side of the roadway within the vicinity of the west bastion was in particularly poor condition (Fig 100). Some areas of the cobbled surfaces on the bridge approach, which had been damaged by either root action or frost action, were relaid. The context record [316] details the main areas, where damaged fabric was either

Fig 98 Tree surgeons removing stumps with a grinding machine in February 2006

repaired or rebuilt.

On 25 April 2006, after conservation work on the fabric of the dry arch, the cobbled roadway and adjoining buildings was completed, these structures were reburied under 100 cubic metres of acid-free loose sand. This strategy had been determined by Chris Baker and Richard Hughes of Arup (then known as Ove Arup & Partners) and carried out under the supervision of MOLA by McGees staff. The trenches within Building 18 were also infilled with sand. More sand was packed inside the bridge arch and it was also ramped up against all standing walls (Fig 101). The cobbled surfaces on the bridge roadway and the brick paving in Building 14, on the western side of the arch, were both covered by a 0.3m-thick layer of sand (Fig 102). As a temporary measure wooden bollards were erected around the upstanding masonry.

Fig 99 Conservation work and archaeological recording in progress on the bridge fabric, looking east

Fig 100 Brickwork [46] along the southern side of the bridge fabric after rebuilding and repair, looking north (0.5m scale)

Fig 101 Partly infilled bridge arch, looking north-east

Fig 102 Reburial of the upstanding masonry in progress, looking north

9

SPECIALIST REPORTS

9.1 GEOARCHAEOLOGY

Craig Halsey

INTRODUCTION

The geoarchaeology as a whole, including the methodology for the on-site investigations, is discussed in Chapter 2.6. Details of the lithostratigraphy recorded in the borehole cores, hand augers and archaeological sections can be found in the archive (Chapter 1.3).

PARTICLE SIZE ANALYSIS

INTRODUCTION

Particle size analysis was carried out on the fluvial gravel and sand deposits within BH4A (units 4.14 to 4.21, Facies 3B). This work was undertaken in order to characterise and quantify the deposits, and to identify phases of Holocene/Pleistocene deposition. It was also hoped to examine the possible impact of anthropogenic activity on the sequence of deposition.

METHODOLOGY

The work was carried out in accordance with the method of measuring the particle size of gravel and sand grade material by sieving, as outlined in Gale and Hoare (1991). Each lithological unit identified within the core (ie unit/sample nos 4.14 to 4.21) was carefully removed, weighed and placed through a series of sieves. The sieves were selected to allow intervals to the nearest 0.5Φ (phi-unit). The material collected in each size fraction was weighed and tabulated.

The data were entered into Gradistat, Version 4 (Blott 2000: an Excel-based programme, devised by the Department of Geography, Royal Holloway, London) to calculate a range of sample statistics including the mean, sorting (standard deviation), skewness and kurtosis for each sample. Grain size parameters were calculated arithmetically and geometrically (in microns) and logarithmically (using the phi scale) (Krumbein and Pettijohn 1938). Linear interpolation was also used to calculate statistical parameters by the Folk and Ward (1957) graphical method and derive physical descriptions (such as 'very coarse sand' and 'moderately sorted'). Gradistat also provides a physical description of the textural group and the sediment name (such as 'fine gravelly coarse sand') after Folk (1954).

RESULTS

The physical descriptions of the samples are provided in Table 1, according to Folk (1954). This table also provides the statistical data according to the Folk and Ward (1957) method. Values are given in logarithmic form (ie the phi scale) only.

DISCUSSION

The statistical values from the particle size analysis demonstrate, at first appearance, a fairly consistent character to the gravel and sand deposits up through the profile. The sediment types (according to Folk 1954) consist predominately of poorly to very poorly sorted, bimodal medium to sandy coarse gravels. The mean value for the particle size ranges from -2Φ to -3Φ, which denotes a medium to very fine gravel fraction. The skewness value, which ranges from -0.167Φ to 0.37Φ, demonstrates that the distributions tend towards the finer range of the particle size. The kurtosis or peaked curve of the distribution has a platykurtic profile characteristic of poorly sorted sediments.

Bimodal, poorly sorted distributions are characteristic of coarse fluvial bedload sediments produced by mixtures of deposits laid down by unsteady flows. The bimodality of the sediments refers to the dominance of two clast sizes (ie sand and gravel) within the deposits. This relationship between coarse- and fine-grained sediments within fluvial deposits can

Table 1 Sample statistics and descriptive terms for Borehole 4A

Units	Textural group*	Sample type*	Sediment name*	Mean (M)**		Sorting (σ)**		Skewness (Sk)**		Kurtosis (K)**	
				Logarithmic (Φ)	Description	Logarithmic (Φ)	Description	Logarithmic (Φ)	Description	Logarithmic (Φ)	Description
4.14	sandy gravel	polymodal, very poorly sorted	sandy coarse gravel	-2.054	fine gravel	2.420	very poorly sorted	0.370	very fine skewed	0.747	plateykurtic
4.15	sandy gravel	bimodal, very poorly sorted	sandy very coarse gravel	-2.738	fine gravel	2.682	very poorly sorted	0.717	very fine skewed	0.655	very plateykurtic
4.16	sandy gravel	bimodal, poorly sorted	sandy very fine gravel	-1.091	very fine gravel	1.953	poorly sorted	-0.167	coarse skewed	0.792	plateykurtic
4.17	sandy gravel	bimodal, very poorly sorted	sandy coarse gravel	-2.881	fine gravel	2.224	very poorly sorted	0.447	very fine skewed	0.763	plateykurtic
4.18	gravel	bimodal, very poorly sorted	coarse gravel	-3.071	medium gravel	2.160	very poorly sorted	0.496	very fine skewed	0.971	mesokurtic
4.19	sandy gravel	trimodal, very poorly sorted	sandy coarse gravel	-1.641	very fine gravel	2.423	very poorly sorted	-0.030	symmetrical	0.639	very plateykurtic
4.20	gravel	polymodal, poorly sorted	medium gravel	-2.799	fine gravel	1.744	poorly sorted	0.185	fine skewed	0.880	plateykurtic
4.21	gravel	bimodal, very poorly sorted	medium gravel	-2.942	fine gravel	2.059	very poorly sorted	0.241	fine skewed	0.846	plateykurtic

* after Folk 1954; ** Folk and Ward 1957 method

be explained in a number of ways. The finer-grained sands may be deposited as thin layers, during low stage flow events, or by entrapment and infiltration into the interstices of the gravels (Gale and Hoare 1991). Usually this bimodality is the result of the simultaneous deposition of fine material from suspension and gravel from the bedload.

On closer inspection of the distribution curves, two phases of deposition can be identified. The three lower units (4.19 to 4.21) display a general fining upwards sequence, with the mean changing from fine gravel to very fine gravel. There is also an increase in the sand-sized particles from *c* 20% to 40% (ie phi unit greater then -1Φ). This is characteristic of a drop in discharge and velocity, which allows the entrained sand particles to drop from suspension. The overlying deposit (unit 4.18) marks a change in the fluvial conditions, with medium gravel becoming the mean unit and sand content dropping back down to *c* 20%. The Folk (1954) method shows that these upper units (4.18 to 4.14) can be characterised as sandy coarse or sandy very coarse gravels. The distribution curves for the deposits (Fig 103) also demonstrate that in many of these units the percentage of coarse gravel (ie phi units less than -5Φ) rises to between 30% and 50%. This indicates that stream power increased up through the sediment profile in order to entrain the coarser-grained material.

The interface between these two phases is apparent from the change in modality. Unit 4.20 and unit 4.19 display polymodal and trimodal distributions. This is likely to be as a result of reworking and mixing of the two dominant clast sizes within the first phase and second phase episodes of deposition. Possible reworking is also suggested by the polymodal distribution of the uppermost unit 4.14.

In conclusion, the poorly sorted, bimodal sand and gravel units are characteristic of deposition within unsteady, high-energy flow conditions. Such conditions are characteristic of cold climate, braided river environments, where a rapid change from cold to warm episodes results in high-energy meltwater discharges cutting a lower terrace, followed by a phase of aggradation. However, whereas these types of deposits usually see an overall fining up sequence due to a drop in discharge rates, and a reduction in coarse-sized sediment supply to the catchment area, these samples see the reverse. This, in addition to the polymodal and trimodal nature of some of the sediments, suggests a significant amount of reworking has occurred. Therefore, although these sediments were initially deposited probably at the interface of the Pleistocene and Holocene periods, they have been significantly reworked throughout the Holocene period. This may have occurred due to high-magnitude flood events disturbing and reordering the raft of gravel and sand material, or as a result of anthropogenic activity disturbing the deposits.

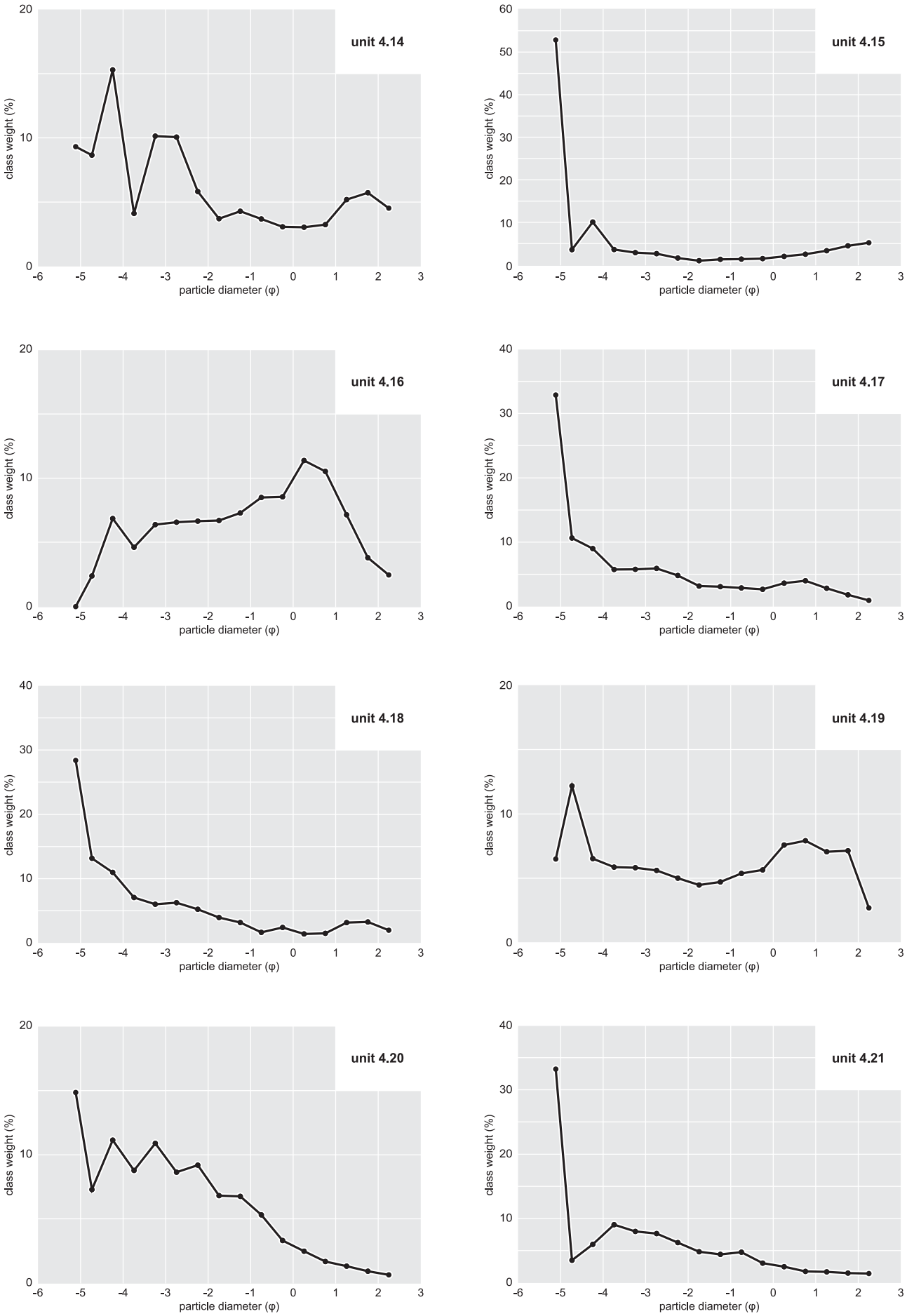

Fig 103 Particle size analysis frequency distribution curves for deposits with Facies 3B, units 4.14 to 4.21 in Borehole 4A

9.2 THE BUILDING MATERIALS

Ian M Betts and Terence P Smith

INTRODUCTION

A total of 122 fragments of ceramic and stone building materials were recovered from the site, along with 35 mortar samples. Together these weigh over 36.5kg – a few malting kiln tiles and other items were too heavy to weigh.

FABRIC TYPE

Most of the ceramic building material form types have been classified by fabric type. These are numbered SS1 to SS18 – the letters 'SS' standing for 'Shrewsbury' and 'Shropshire'. A brief description of each fabric can be found in Table 2.

ROMAN CERAMIC BUILDING MATERIAL

Fabric: SS1

One complete square brick measuring 196 × 191 × 39–48mm was recovered from a worn mortar floor in the post-medieval phase of Building 7 (Chapter 5.2). This is almost exactly the standard size of a Roman *bessalis* brick (Brodribb 1987, 3). However, it is also similar in size and colour to a number of post-medieval paving tiles, although these occur in a different fabric (below). There is no evidence of wear on the top of the brick from Building 7, which has an uneven surface, but a post-medieval date cannot be discounted. There is very little evidence for Roman occupation in Shrewsbury, although a few fragments of tile of Roman date were found on the site of Shrewsbury Abbey (Bryant 2002b, 136).

MEDIEVAL CERAMIC BUILDING MATERIAL

Illustrated medieval ceramic building material is catalogued in Table 3.

Table 2 Main ceramic building material fabric types

Fabric	Type	Date	Colour	Fabric description
SS1	brick	?Roman	brownish-red	fine micaceous clay with abundant darker red clay and cream silty bands; occasional black iron oxide (up to 0.5mm)
SS2	floor tile	1300–1500	light brown, orange, grey core	scatter of quartz (up to 0.8mm); occasional dark red iron oxide (up to 2mm) and rock fragments (up to 6mm)
SS3	floor tile	medieval	orange	common quartz (up to 0.5mm); occasional dark red and black iron oxide (up to 1mm)
SS4	nib and other roofing	medieval/ ?post-medieval	brownish-orange	scatter of small quartz (up to 0.4mm); occasional black and dark red iron oxide (up to 1mm)
SS5	?nib	? medieval/ post-medieval	brownish-red	common quartz (up to 0.8mm) and rock fragments (up to 6mm); scatter of dark red and black iron oxide (up to 1mm)
SS7	roofing	?medieval	reddish-orange	common quartz (up to 0.8mm); scatter of black iron oxide (up to 1mm)
SS8	roofing	? medieval/ post-medieval	brownish-orange	scatter of small quartz (up to 0.2mm); occasional dark red and black iron oxide (up to 1mm)
SS8	floor	1700–1900	(not recorded)	sandy fabric, frequent quartz (up to 1.0mm)
SS9	floor	1700–1900	(not recorded)	fine fabric with occasional small quartz (up to 0.2mm)
SS10	Delft wall tile	1720–70	pink	occasional small quartz; dark red and black iron oxide and yellow silty inclusions (up to 0.2mm)
SS11	wall tile	1889–*c* 1905	white	fine fabric with few or no inclusions
SS12	malting tile	*c* 1725–1800	dark brownish-red	scatter of small quartz (up to 0.3mm); ? white calcium carbonate (up to 2mm); dark grey iron oxide (up to 1mm)
SS13	malting tile	1800–1900	orange, pink	common red and reddish-brown clay pellets (up to 2mm); scatter of black iron and cream ?silty rock fragments (up to 1mm)
SS14	brick	*c* 1780–*c* 1800	red, brownish-orange, grey core	common quartz (up to 0.8mm); scatter of dark red and black iron oxide (up to 2mm)
SS15	brick	*c* 1784–1900+	red, orangey-red	not retained but recorded as 'very sandy', 'fairly sandy' and 'moderately sandy'*
SS16	brick	*c* 1830–1900	grey	scatter of small quartz (up to 0.2mm)
SS17	brick	1800–1940	yellow	common black iron oxide and grey inclusions (? fired clay/ceramic) (up to 45mm); occasional ? white calcium carbonate (up to 1mm)
SS18	?	post-medieval	off-white	scatter of rock fragments and dark red iron oxide (up to 2mm); clay matrix characterised by numerous voids (? decayed organic matter)

* see Table 4

Table 3 Details of illustrated ceramic building material <T1>–<T16>

Cat no.	Acc no.	Context	Period	Land use	Type	Fig no.
<T1>	-	[329]	6	OA11	medieval floor tile	64
<T2>	<109>	[+]	-	-	medieval floor tile	64
<T3>	-	[892]	5	OA10	medieval floor tile	45
<T4>	-	[7]	6	B11	nib tile	65
<T5>	-	[295]	6	B14	?nib tile	104
<T6>	<76>	[58]	6	B14	tin-glazed wall tile	65
<T7>	<34>	[23]	6	B14	Victoran/Edwardian wall tile	96
<T8>	<35>	[23]	6	B14	Victoran/Edwardian wall tile	96
<T9>	<37>	[23]	6	B14	Victoran/Edwardian wall tile	96
<T10>	<39>	[23]	6	B14	Victoran/Edwardian wall tile	96
<T11>	<33>	[1]	6	B18	Victoran/Edwardian wall tile	93
<T12>	<36>	[1]	6	B18	Victoran/Edwardian wall tile	93
<T13>	-	[830]	6	OA13	malting tile (type 1)	94
<T14>	-	[13]	6	B18	malting tile (type 2)	105
<T15>	-	[13]	6	B18	malting tile (type 3)	105
<T16>	-	[76]	6	OA13	?industrial	97

FLOOR TILE

Fabric: SS2, SS3

Two decorated floor tiles, both with a worn upper surface, were recovered from the site. One, measuring 121mm in breadth by 29mm in thickness, came from reclamation dumps in Open Area 11 (period 6; Chapter 6.1; Fig 64, <T1>), whilst the other, which is 29mm thick, was unstratified (Fig 64, <T2>). Both are partially reduced due to a lack of oxygen in firing and both are in an identical fabric (SS2), suggesting that they were made at the same tilery. One decorated tile shows part of a leaf design (<T1>), whilst the other appears to show part of a bird (<T2>). The bird tile is very similar in style to another tile with a bird design from St Mary's friary, Shrewsbury, which is a possible source of the example from the current site. The friary tile is dated by Eames (1980, design no. 1994) to the 14th–15th century. There is no indication as to where any of these decorated tiles were made.

A plain brown-glazed floor tile was recovered from road backfill in Open Area 10 (period 5; Chapter 5.2; Fig 45, <T3>). This measures 114–116mm square and is 24–26mm in thickness. It is unusual in having two large (*c* 4mm diameter) nail holes near the corners of one edge. These may represent nails protruding downwards from a wooden block used to cut off excess clay during tile manufacture. This was the standard technique used to make medieval Low Countries floor tiles, although here the nails are much smaller (usually 1–2mm diameter). Such holes were also generally positioned in each corner, sometimes with an additional hole in the centre.

NIB TILE

Fabrics: SS4, SS5

A nib tile (SS4) was recovered from internal dumping in the cellar of Building 11 (period 6; Chapter 6.2; Fig 65, <T4>). The nib has been formed by hand in the upper face, either whilst the tile was still in the mould or immediately after demoulding. This would have meant fixing the tile to the roof with the sanded side uppermost – a not entirely satisfactory arrangement, but one known from elsewhere. It is 178mm in breadth by 18mm in thickness; its length is not preserved. Nib tiles begin in the 13th century, but ceased to be made in most areas during the 14th century, although they persisted in a few areas such as the Severn valley down to the 17th century (Smith 2004, 145). The Shrewsbury nib tile is probably of medieval date.

Another possible roofing tile, with what appears to be a very crudely formed nib, came from internal levelling dumps within Building 14 (period 6; Chapter 6.2; Fig 104, <T5>). It is uncertain whether this tile, which is in a completely different fabric (SS5), is another nib tile or some sort of kiln shelving of post-medieval date.

ROOFING TILE

Fabrics: SS4, SS6, SS7

What appears to be a medieval roofing tile made from coarse clay (SS6) was recovered from Open Area 7 ([911]; period 4; Chapter 3.4). It measures 15mm in thickness. Less sandy roofing tile (fabrics SS4, SS7) measuring 13–19mm in thickness was recovered from levelling dumps prior to the construction of the cellar of Building 18 (period 6) and Open Area 10 (period 5).

Roofing tile fabric types SS4 and SS7 probably represent slight differences in clay composition used at the same tilery or tile-making area. It is possible that the roofing tiles found in dumping associated with Building 18 may be parts of nib tiles as they are of similar thickness. These are in a slightly less sandy version of fabric SS4.

POST-MEDIEVAL CERAMIC BUILDING MATERIAL

Illustrated post-medieval ceramic building material is included in Table 3.

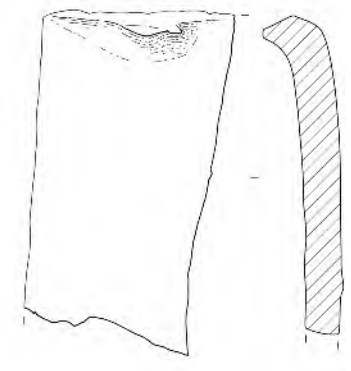

Fig 104 Crudely formed nib tile <T5> from Building 14 (scale 1:3)

FLOOR TILES

Fabrics: SS8, SS9

A number of plain unglazed floor tiles were associated with Building 5 (although they are unlikely to have come from the building itself) and Open Area 10 (period 5; Chapter 5.2), and Building 11 and Building 22 (period 6; Chapter 6.4). Unlike floor tiles of medieval date most of these have vertical rather than bevelled sides. Only one, from Building 11, preserves its full dimensions of 123–124mm square by 35mm in thickness. The thickness of the other floor tiles ranges from 18mm to 36mm. It is likely that all are of 18th- to 19th-century date.

TIN-GLAZED WALL TILE

Fabric: SS10

A small fragment of tin-glazed 'delft' wall tile was recovered from levelling dumps within the extended cellar of Building 14 (period 6; Chapter 6.2; Fig 65, <T6>). This shows what appears to be part of a flower vase design similar in appearance to that found on 18th-century London-made tiles (Horne 1989, 62–3, 334–42; Betts and Weinstein 2010, 173, no. 410). Alternatively, it could be a Dutch import of similar date.

VICTORIAN WALL TILES

Fabric: SS11

A notable feature of the ceramic building material from the site is the presence of a spectacular set of Victorian wall tiles (Fig 96, <T7>–<T10>; Fig 93, <T11> and <T12>). Four came from rubble infill of the dry arch and retaining wall (B14, period 6; Chapter 7.1; <T7>–<T10>), whilst two others came from demolition rubble (B18, period 6; Chapter 7.1; <T11> and <T12>). Five are transfer-printed, with three having additional hand-painted colours.

Surprisingly, most of the tiles were made by different manufacturers, although these were mainly located in the Staffordshire Potteries. The diversity of designs suggests they may derive from different buildings. They certainly provide a good snapshot of the type of decoration used in fashionable Shrewsbury dwellings in the late Victorian/Edwardian period. Although mass-produced and relatively inexpensive, they are likely to derive from something higher than artisan-level housing. Many tiles were probably set in fireplace surrounds.

<T7> (Fig 96)
<34>, [23]; period 6, B14
This tile is decorated with what appears to be the base of a vase. It is a brown on white transfer-printed design with hand-painted additions in yellow, green and pink. There is a series of small vertical ridges for keying in the base. Only the thickness of 9mm is preserved. This tile was made by the Derby Tile Company Ltd at Belper, Derbyshire, *c* 1895–*c* 1900.

<T8> (Fig 96)
<35>, [23]; period 6, B14
This is a relief-moulded, dust-pressed tile with an art nouveau floral and abstract design in green and blue. It has a ridged back with a raised capital 'C'. It preserves only a thickness of 11mm. This was made by W and E Corn Ltd, either at the Top Bridge Works, Longport or at their Pinnox Works at Tunstall (both in Staffordshire), to which they moved in 1903 (Pearson 2005, 469). The tile dates to *c* 1903–4.

<T9> (Fig 96)
<37>, [23]; period 6, B14
The tile has a complex transfer-printed, cross-shaped, floral design in brown on white with additional hand-painted elements in yellow, green, blue and dark pink. The tile measures 155 × 154 × 9mm. In the centre of the raised circular keying mark on the back is printed in ink: 'R(J or reversed P) Nº 127422 S.F. & JB122'.

This tile was made by Smith, Ford and Jones. The design registration number (127422) dates to March 1889, so the tile can be dated to this year or later (Lockett 1979, 64). Smith, Ford and Jones were a small firm of tile-makers, probably established at the Cleveland Pottery, Burslem (Staffordshire), *c* 1889. Later that year they appear to have moved to the Lincoln pottery also in Burslem.

<T10> (Fig 96)
<39>, [23]; period 6, B14
This tile has a transfer-printed floral design in reddish-brown on white, with areas block-printed in yellow. There are various marks on the base, much of which is obscured by mortar. Between a set of raised ridges are the letters: '…] WORKS / STOKE ON TRENT'. There is a further line of smaller letters/numbers which cannot be deciphered. Below this, in brown ink, is what appears to be a pattern number: 'N 2(?)00(91?) Nº 2715'. In one corner is the Minton company's circular stamp: the full stamp would read 'MINTON'S / CHINA WORKS / STOKE ON TRENT'. The surviving tile measures ? × 155 × 11mm.

Minton first began making tiles in the 1830s, but the Shrewsbury tile dates to *c* 1900. It was made at a large new factory established by Minton Hollins and Co in Stoke-on-Trent (Staffordshire) in 1869 (Pearson 2005, 465–6).

<T11> (Fig 93)
<33>, [1]; period 6, B18
This tile is transfer-printed in brown on off-white with a geometric and floral design within a frame. The ridged back has a raised capital M in the centre. The tile measures 155 × 155 × 10mm. This appears to be a Wedgwood tile blank which was passed on to another company for decoration: the Marsden Tile Company located at the Fairfield Works, Dale Street, Burslem, Staffordshire (Pearson 2005, 464). The tile dates to *c* 1895–*c* 1900/5.

<T12> (Fig 93)
<36>, [1]; period 6, B18
This tile has a transfer-printed floral and fruit design in black on a creamy-white background with hand-painted details in green, orange-brown and pink. The ridged back has a diagonal keying pattern and part of a circular mark with what may be the letter L or number 1. The pattern number is given in brown ink: 5024. The tile measures *c* 157 × 155 × 10mm. A tile with the same design is illustrated by Lockett (1979, 208, fig 62), with the suggestion that it was made by S Fielding and Co at the Railway pottery, Stoke-on-Trent. More recent work has shown that it was in fact made by the Henry Richards Tile Company, in their Pinnox works at Tunstall (Staffordshire) *c* 1903 (formerly W and E Corn Ltd until 1903; above).

Over-fired wall tile wasters were recovered from internal dumping in Building 11 (period 6; Chapter 6.2), levelling dumps prior to the construction of Building 18 and a late 19th-/20th-century surface dump (period 6; Chapter 6.4).

MALTING KILN TILES

Fabrics: SS12, SS13

There are six malting kiln tiles from the site, five of which are machine-made products dating from the 19th century. The sixth tile, which was found with pottery of 1740–1800, is more crudely made. In the Netherlands similar tiles used in malting kilns may be dated to the period between 1750 and 1850, after which they were rapidly superseded by perforated metal plates (Hollestelle 1989).

Malting kiln tiles were used to form the floors of maltings, the holes and tiny perforations allowing heat to enter from below without the barley falling through. Some have mortar blocking the holes and have thus been reused or used initially for something other than their intended purpose.

The malting kiln tiles can be placed in three categories based on the arrangement of perforations in their top face:

Type 1: clusters of three tiny holes

Type 2: eight tiny holes arranged in circles, with a ninth hole in the centre

Type 3: nine tiny holes arranged in diamond shapes of 3 × 3 holes.

The first type (SS12), which is probably of mid to late 18th-century date, came from 20th-century demolition rubble in Open Area 13 (period 6; Chapter 7.1). This has clusters of three holes and is much thinner than later malting kiln tiles,

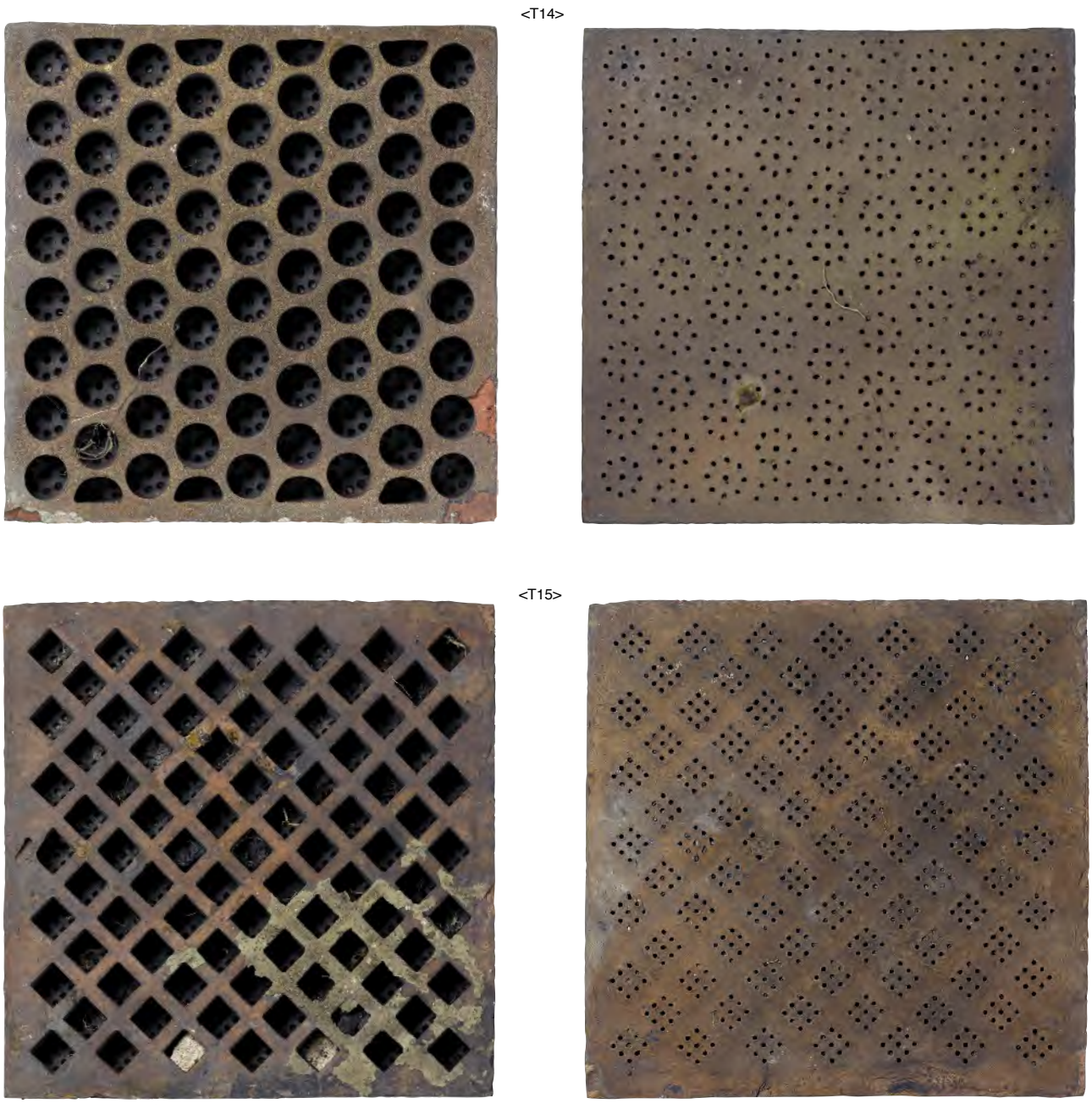

Fig 105 Malting kiln tiles reused as cellar floor paving, Building 18: with circular holes – <T14> (front and back views); with diamond holes – <T15> (front and back views) (scale *c* 1:3)

measuring only 20mm. There are round holes measuring 12mm in diameter in the tile base (Fig 94, <T13>).

Malting kiln tiles of types 2 and 3, of 19th-century date, came from the brick-paved cellar of Building 18 (period 6; Chapter 6.4), levelling dumps prior to the construction of the cellar of Building 18 and the rubble infill of the dry arch and its retaining wall (B14; period 6; Chapter 7.1). These are all of similar size and fabric (SS13), suggesting they originate from the same 19th-century tile manufacturer. Three examples preserve their full dimensions of 304 × 303 × 48mm, 305 × 304 × 46mm, and 309 × 306 × 41mm; thicknesses range from 41mm to 48mm. The malting kiln tile with the nine-hole circular pattern has an arrangement of round holes, 28mm in diameter in the base (Fig 105, <T14>), whilst the tiles with the nine-hole diamond pattern have diamond-shaped holes measuring 19–20mm square in the tile base (Fig 105, <T15>).

BRICKS

Fabrics: SS14, SS15, SS16, SS17

The only bricks from period 5 were found in the road surface (R2) and Building 10 (Chapter 5.2). The partially complete brick from Road 2 has rather irregular sides, suggesting that it is slightly earlier in date than the other bricks recorded (SS14). It is also slightly smaller in breadth and thickness (Table 4), which would suggest a pre-19th-century date. The bricks from Building 10 are of 19th-century date.

All the bricks from period 6 appear to be of 19th-century or later date. Bricks were collected from Buildings 11 and 14 (Chapter 6.2), 18 and 21 (Chapter 6.4), Open Area 12 (Chapter 6.3) and Structure 9 (Chapter 6.1; Table 4). Most bricks are various shades of red and orange (SS15), but samples of 'blue' (actually grey) engineering bricks were also collected from the cellar floors of Building 18 (SS16; Chapter 6.4). One of these is a purpose-made paviour with the usual diamond pattern (known as a 'chequer brick') to provide a grip and with a double-square frog with screw-marks in the lower bedface; the other is a plain paviour. The former would have been made by machine-pressing, the latter probably as an extruded wire-cut product. They were made using material from the Coal Measures in the West Midlands, with Staffordshire especially important in their manufacture. The site's examples are certainly later than *c* 1830, when such bricks were first manufactured.

A 19th-century yellow brick (SS17) was recovered from part of Building 18, along the east side of the alleyway/cul-de-sac (R3). This has light brown glazed header ends. More curious are the very sandy red bricks from the Open Area 12 garden (SS15), as these have an almost square format. They may have been intended for some specific industrial use; alternatively they may be 'tax bricks' – large bricks designed to save on the brick tax of 1784, payable on the number of bricks produced: this led to some unusually large bricks being made until 1801, when the tax was increased for bricks larger than 10 × 5 × 3in (254 × 127 × 76mm). A 19th-century date is more likely.

INDUSTRIAL COMPONENT

Fabric: SS18

A 76mm-thick fragment of fireclay was recovered from recent dumping in Open Area 13 (period 6; Chapter 7.1). It is rectangular and has a serrated rim with a series of small pyramidal projections rising from the base, inside the rim (Fig 97, <T16>). It presumably served some sort of industrial function, although its precise purpose is not clear. It was found with what appears to have been a circular object (<-> [76]), again made of fireclay, pierced through the centre, with a *c* 16mm-diameter hole. This circular object has a burnt outer skin, which would also imply some industrial function.

Table 4 Brick dimensions (mm) and details

Period	Land use	Context	Size (mm)	Comments
5	R2	[876]	? x 98 x 45–47	red, moderately sandy
	B10	[122]	? x 113 x 54	red, fairly sandy; probably paviour
6	B11	[100]	? x 114 x ?	red, sandy; fragment with mortar on broken edge
	B14	[59]	245 x 120 x 72; 228 x 108 x 70	red, fairly sandy; sharp arrises
	B17/B18	[3]	227–228 x 105–107 x 74–75	pinkish-buff with quartz and stones
	B18	[9]	245 x 120 x 80	orange-red, fairly fine with some quartz
	B18	[13]	260 x 128 x 55	blue engineering brick with chequer paviour and frog
	B18	[13]	273 x 140 x 55	blue engineering brick, plain paviour
	B18	[16]	244 x 118 x 80	red, moderately sandy
	B18	[69]	232 x 113 x 71	orange-red, fairly sandy
	B18	[98]	246 x 120 x 81	orange-red, moderately sandy; sharp arrises
	B21	[260]	238 x 124 x 62	red, very sandy with pebbles; poorly made
	B21	[264]	230 x 108 x 55	red, fairly sandy; quite sharp arrises; ?paviour
	OA12	[161], [167]	236 x 109 x 107; 230 x 111 x 109	red, very sandy; almost square format
	S9	[338]	236 x 112 x 70	red, moderately sandy

PAVING

A broken stone paving slab, probably originally rectangular in shape, was found in the fill of a cesspit associated with Building 17 (period 6; Chapter 6.4). It is made from fine-grained cream sandstone and measures 80mm in breadth by 30mm in thickness. There are two types of mortar attached to the base, suggesting reuse from an earlier stone floor. The sharp and precisely cut edges of the slab would suggest a 19th- or 20th-century date.

GARDEN ORNAMENT

Part of a large basin with a lug, made from what appears to be a grey limestone, was found in Open Area 13 (period 6; Chapter 7.1). It is probably a 19th-century garden ornament as it was found in dumping over a garden.

9.3 THE CLAY TOBACCO PIPES

Jacqui Pearce

INTRODUCTION AND METHODOLOGY

The clay tobacco pipe assemblage from the site was recorded in accordance with current MOLA practice. The English clay pipe bowls have been classified and dated according to Atkinson's type-series of Broseley pipes, since nearly all the finds appear to have come from this source (Atkinson 1975); these are indicated in the records by the prefix AB. Pipes that cannot be related to the Broseley typology have been classified according to Oswald's simplified general typology, and given the prefix OS (Oswald 1975). Quantification and recording follow guidelines set out by Higgins and Davey (1994; Davey 1997).

A total of 237 clay pipe fragments were recovered from the site, including 50 bowls, 176 stem fragments and 11 mouthpieces. Twenty-one pipes have makers' marks, and 12 have decoration of one form or another. There is one imported pipe (from the USA), and two English pipe bowls that cannot be related to any identifiable source. Most of the rest appear to have been made at Broseley in Shropshire, the closest large centre of clay pipe manufacture and undoubtedly a major supplier of pipes for the Shrewsbury market from the 17th century onwards, although there is at least one example that can now be identified as coming from Much Wenlock, also in Shropshire.

The clay pipe assemblage is in reasonable condition, with several 19th-century examples, one of them complete and two almost complete. Since these are short, 'cutty' pipes, quite thick-walled, they tend to survive better than pipes with thin bowls and long stems. Earlier, 17th-century pipes from the site have fared less well, although they have thick stems and often quite substantial bowls. The stems from this period are highly fragmented, and some of the bowls are incomplete, hindering identification. A number of long stem fragments, of late 18th-/19th-century date, were found in later contexts, but none could be joined together or reconstructed into whole pipes. Broseley was well known for its long-stemmed pipes throughout the 19th century (Boothroyd and Higgins 2005, 202) and this is the most likely source. Almost all the pipe bowls show evidence of having been smoked, some of them heavily and repeatedly. The clay pipes illustrated here are listed in Table 5.

PROVENANCE, DATING AND CHARACTER OF THE CLAY PIPE ASSEMBLAGE

Most of the clay pipes found on the site are of Broseley type. Broseley is a small town on the south bank of the Severn Gorge, situated about 19km east of Shrewsbury. It became a major centre for clay pipe manufacture, continuing to make pipes into the middle of the 20th century (Atkinson 1975). Pipe-making began in the town in the mid 17th century, and from *c* 1660 onwards became increasingly important, with various families of pipe-makers responsible for producing considerable quantities of pipes with a widespread distribution in the surrounding area (ibid, 11). Output steadily increased over the course of the 19th century, with the Southorn family gaining a complete monopoly over the town's pipe industry *c* 1850 (ibid, 13). Before this date the products of other pipe-makers working in various small towns in Shropshire can be found alongside Broseley pipes across the county. It is possible that some of the unmarked pipes from the site or unidentified marked examples came from nearby towns other than Broseley. One pipe previously thought to be of Broseley manufacture (a John Roberts pipe made *c* 1680–*c* 1720, residual in [864], Building 17, period 6) can now be attributed to Much Wenlock, some 19km south-west of Shrewsbury and only 5km from Broseley.

The earliest pipe recovered from the site is of type OS16 (*c* 1610–40), found in Road 3 (period 6), and made in white clay unlike the coarse yellowish local clay that was used by early Broseley pipe-makers (Fig 106, <CP1>). The pipe may have been made in London and brought into the town, and, with its small bulbous bowl, would fit with types of this date. It is stamped underneath the heel with a simple five-petalled flower motif in relief, examples of which are known in various forms on London pipes of this early period. The earliest Broseley pipes are of Atkinson's type 1b, of which two examples are recorded, dating to *c* 1650 and both found in Building 18 (period 6). Made from local coarse clay, one is poorly finished, although milled, and has the maker's initials 'IG' stamped in relief underneath the heel (Fig 106, <CP2>). Atkinson (1975) has no record of this mark or of a maker with these initials working at Broseley and it is possible that the pipe was made at a nearby centre. Found in the same land-use feature was a type OS5 pipe bowl (*c* 1640–60), made in a fine white clay, again unlike the local material and imported from elsewhere, possibly London, where it would equate with Atkinson and Oswald's (1969) type 10. The pipe is well burnished and milled, and is stamped in relief under the heel

Table 5 Details of illustrated clay tobacco pipes <CP1>–<CP15>

Cat no.	Acc no.	Context	Period	Land use	Form	Date (approx)	Decoration *	Marks	Type **	Method ***	Position ****	Comments	Fig no.
<CP1>	<52>	[275]	6	R3	OS16	1610–40	-	flower	R	S	H	-	106
<CP2>	<94>	[668]	6	B18	AB1B	1650	-	'IG'	R	S	H	maker unidentified	106
<CP3>	<50>	[112]	6	B18	OS5	1640–60	-	'TC'	R	S	H	? Thomas Clarke	106
<CP4>	<47>	[110]	6	B18	AB2A	1660–80	-	'RL'	R	S	H	Richard Legg (1) 1621–1700 (2) 1651–1714	106
<CP5>	<96>	[832]	5	B7	AB5B	1680–1720	-	'RL' in heart	R	S	H	Richard Legg, probably 1651–1714	106
<CP6>	<48>	[110]	6	B18	AB2A	1660–80	-	'SAM DECON'	R	S	H	Sam Decon *c* 1650–80	106
<CP7>	<46>	[110]	6	B18	AB2A	1660–80	-	'SD'	R	S	H	Sam Decon	106
<CP8>	<51>	[112]	6	B18	AB2A	1660–80	-	'?D' / gauntlet	R	S	BF/H	Gauntlet stamp on back of bow/?D in roundel on heel	106
<CP9>	<98>	[864]	6	B17	AB2B	1660–80	-	'SD' / gauntlet	R	S	BF/H	Gauntlet stamp on back of bowl/ SD under heel/ Sam Decon 1650–80	107
<CP10>	<99>	[940]	6	B17	AB2A	1660–80	-	'?OB'	R	S	H	possibly OB or DB	107
<CP11>	<95>	[827]	5	S5	AB4A	1690–1720	-	'?TG'	R	S	H	possibly Thomas Gething *c* 1700–50	107
<CP12>	<101>	[864]	6	B17	AB5A	1680–1720	-	'JOHN/ROB/ERTS'	R	S	H	John Roberts b 1652 d 17?? Much Wenlock	107
<CP13>	<54>	[328]	6	S9	AB9D	1880–1950	-	'W SOUTHORN & CO BROSELEY 4'	I	S	SL	complete	108
<CP14>	<42>	[76]	6	OA13	AB9D	1880–1950	THRN/RIBV	'B SOUTHORN BROSELEY 5'	I	S	SL	near complete	108
<CP15>	<->	[1]	6	B18	-	1878–1951	-	-	-	-	-	Pamplin Smoking Pipe and Manufacturing Company, Pamplin City, USA	108

*decoration: RIBV – vertical ribbing, THRN – thorn; **type: I – incuse, R – relief; ***method: S – stamped; ****position: BF – back of bowl, H – heel, SH – sides of heel, SL – along sides of stem

with the maker's initials 'TC' in a scalloped frame (Fig 106, <CP3>). A Thomas Clarke is recorded in Broseley *c* 1640–80 (Oswald 1975, 190), but the clay is not typical of the centre's output at this date so another source seems more likely.

Eight clay pipe bowls of Broseley type 2a (*c* 1660–80) were recorded, four of them with makers' marks. Five of these come from Building 18, contexts [110] and [112], and two from Building 17 (period 6; Chapter 6.4). All are made in the coarse, yellowish local clay, with a longer bowl, thick walls and stem, and all marked pipes have the maker's initials or name stamped in relief on the heel. Five of the pipes have good to average burnishing on the bowl and stem, which is very much a feature of Broseley pipes at this date. One example, <49>, has the initials ?'IC' under the heel, which is slightly more pronounced than is usual with this form, more in line with type 1c (which was also current *c* 1660–80). These could stand for John Clarke, born in 1618 and died in 1663 (Atkinson 1975, 88). Although Atkinson had not seen any examples of this pipe-maker's work at the time his study was published, Oswald (1975, 190) notes that marked 'IC' pipes suggest a later date, which could well place them within the range suggested for type 2a.

Another type 2a pipe is marked 'RL' in a small roundel, stamped to one side of the wide heel (Fig 106, <CP4>). A second stamped mark on the back of the bowl, facing the smoker, takes the form 'R / gauntlet / L'. It was probably made by Richard Legg (1), recorded in Broseley between 1621 and 1700 (Oswald 1975, 191). Atkinson records a similar mark with gauntlet on a type 3 bowl, repeated on the heel (Atkinson 1975, 67), falling within the same date range as type 2a. A second pipe from the site is stamped 'RL' on the heel in a heart-shaped surround, but is of a different form again: a type 5b, made in local clay, with a tailed heel, poorly burnished and fully milled (Fig 106, <CP5>). This was found in Building 7, [832] (period 5; Chapter 5.2), and the bowl shape dates to *c* 1680–*c* 1720 so falls within the period during which Richard Legg (1) was working, although his son of the same name was also a pipe-maker in Broseley, born in 1651 and died in 1714 (ibid). The pipe, therefore, could have been made by either maker, since both are known to have produced examples of this particular shape.

Three of the other type 2a pipes from the site were made

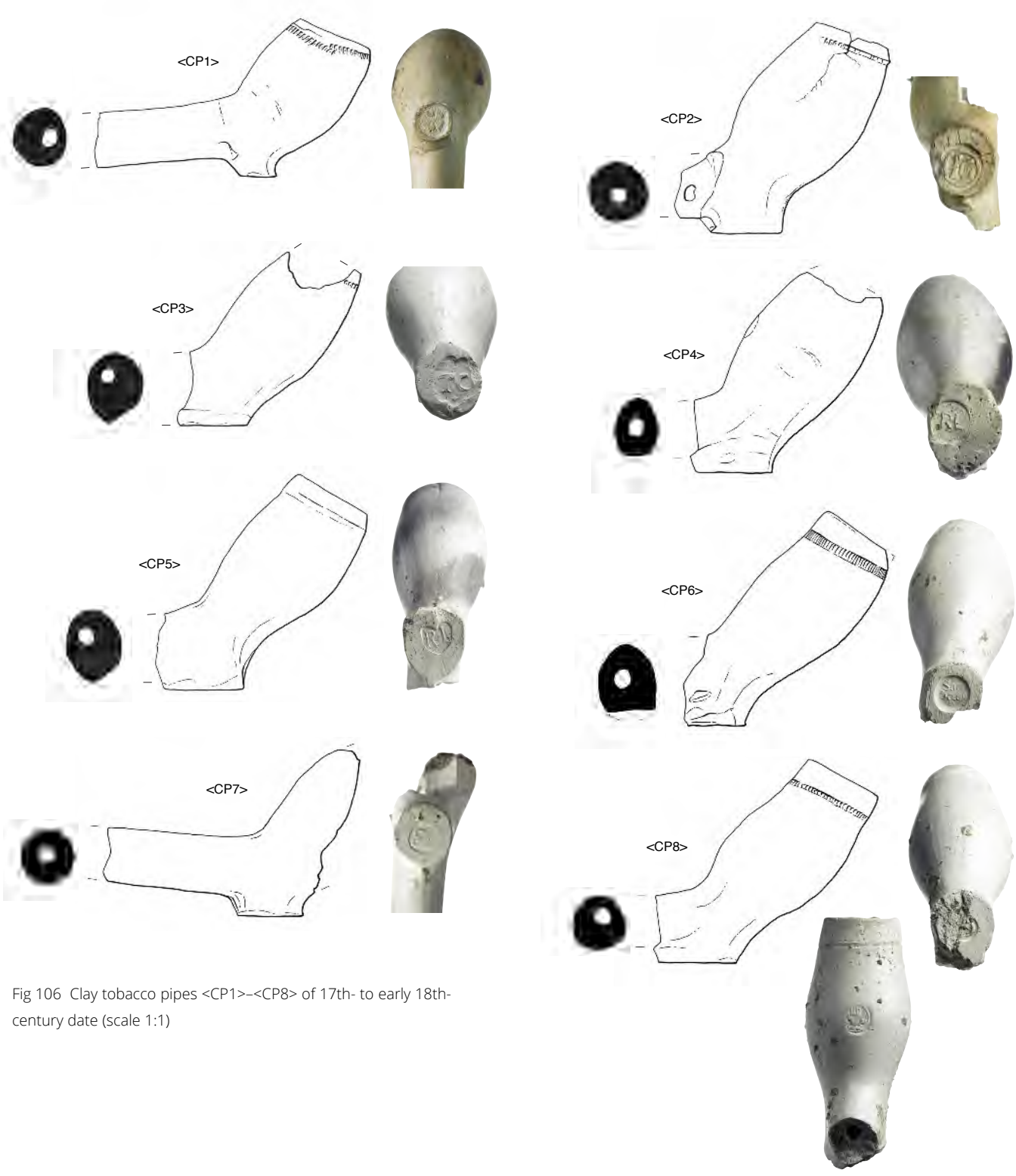

Fig 106 Clay tobacco pipes <CP1>–<CP8> of 17th- to early 18th-century date (scale 1:1)

by Sam Decon, as well as another pipe of type 2b, which falls within the same date range. This pipe-maker appears to have been quite prolific, and although his dates are unrecorded, all known marked pipes made by him date to *c* 1650–80 (Atkinson 1975, 52). Three of the site's pipes are well finished, with good burnishing and a fully milled bowl; one incomplete pipe has no evidence for burnishing. In one example (a type 2a pipe from [110]), the name 'SAM / DECON' is given in full on two lines within a square surround, stamped in relief on the heel (Fig 106, <CP6>). Three pipes have the stamped initials 'SD' in a roundel on the heel (Fig 106, <CP7>, <CP8>; Fig 107, <CP9>). Two of these have an additional stamped mark in the form of 'S / gauntlet / D' in a small roundel on the back of the bowl, facing the smoker; the third may have had a similar mark but is incomplete. In one example (Fig 106, <CP8>) the stamp is positioned so that the fingers of the gauntlet are pointing up towards the rim, which is the usual orientation for gauntlet stamps. In the other example (Fig 107, <CP9>) the stamp has been reversed, so that the fingers are pointing downwards, probably no more than a simple mistake

in the workshop. There is another pipe from [110], <45>, which has a gauntlet between two raised dots stamped in relief on the heel. This may have been made by Sam Decon, although Richard Legg also used this symbol in some of his marks; only the heel has survived, so the original form is uncertain.

One other type 2a pipe bowl, from Building 17, [940], has a slightly flared rim, three-quarters milled. It is hard to see whether or not the pipe was burnished as the surface is degraded and discoloured by the deposit in which it was found. The initials ?'OB' in a roundel are stamped in relief on the heel (Fig 107, <CP10>). There is no recorded pipe-maker with these initials working in Broseley in the late 17th century, although an Oliver Price was married there in 1684, so was probably working before then. However, the B is much clearer than the first initial, so it is unlikely to represent 'OP'.

Of the 17 Broseley-type pipes of 17th- to early 18th-century date recorded (*c* 1630–*c* 1720), 15 are milled around the top of the bowl, most of them fully where the bowl is complete, and two around three-quarters of the circumference. There are also 15 pipe bowls that have been burnished to give a fine polished surface, typical of Broseley pipes of this period, although not all burnished pipes are milled as well. Both features are indications of quality, and a milled and burnished pipe would have cost more, in relative terms, than a pipe that had not been finished in this way. These pipes were made at a time when the Broseley industry was becoming well established and Shrewsbury was clearly a major market.

Pipes dating to the late 17th/early 18th century include two Broseley type 4a bowls (*c* 1690–*c* 1720) from Structure 5 (period 5; Chapter 5.2), a type 5a pipe (*c* 1680–*c* 1710) from Building 17 (period 6) and a type 5b of the same date from Building 7 (period 5; Chapter 5.2). The type 4a pipe has the initials ?'TG' stamped in relief on the heel. It is made in local clay and is well burnished with three-quarters milling (Fig 107, <CP11>). The second initial is unclear, hindering accurate identification of the maker. One other marked pipe of similar date comes from Building 17 and has been recorded as a Broseley type 5a. It has the wide, heart-shaped heel with long tail typical of type 5 pipes, and is fully milled and finely burnished. The maker's mark is distinctive: 'JOHN / ROB / ERTS' stamped in relief over three lines within a rectangular surround (Fig 107, <CP12>). The John Roberts who used this particular mark has previously been listed as a Broseley pipe-maker (Atkinson 1975, 75), although recent research has shown that another member of the Roberts family worked in Much Wenlock, where he is recorded in 1678/9 (Higgins 2007, 30–1). Known examples of the pipe mark, including one from the Town Wall Garage site in Shrewsbury (site code TWGS04), suggest a working period of *c* 1680–1730 (ibid, 31), which fits in well with the form of the pipe from the current site. A noteworthy feature of both Shrewsbury pipes is a small gap in the burnishing at the stem/bowl junction,

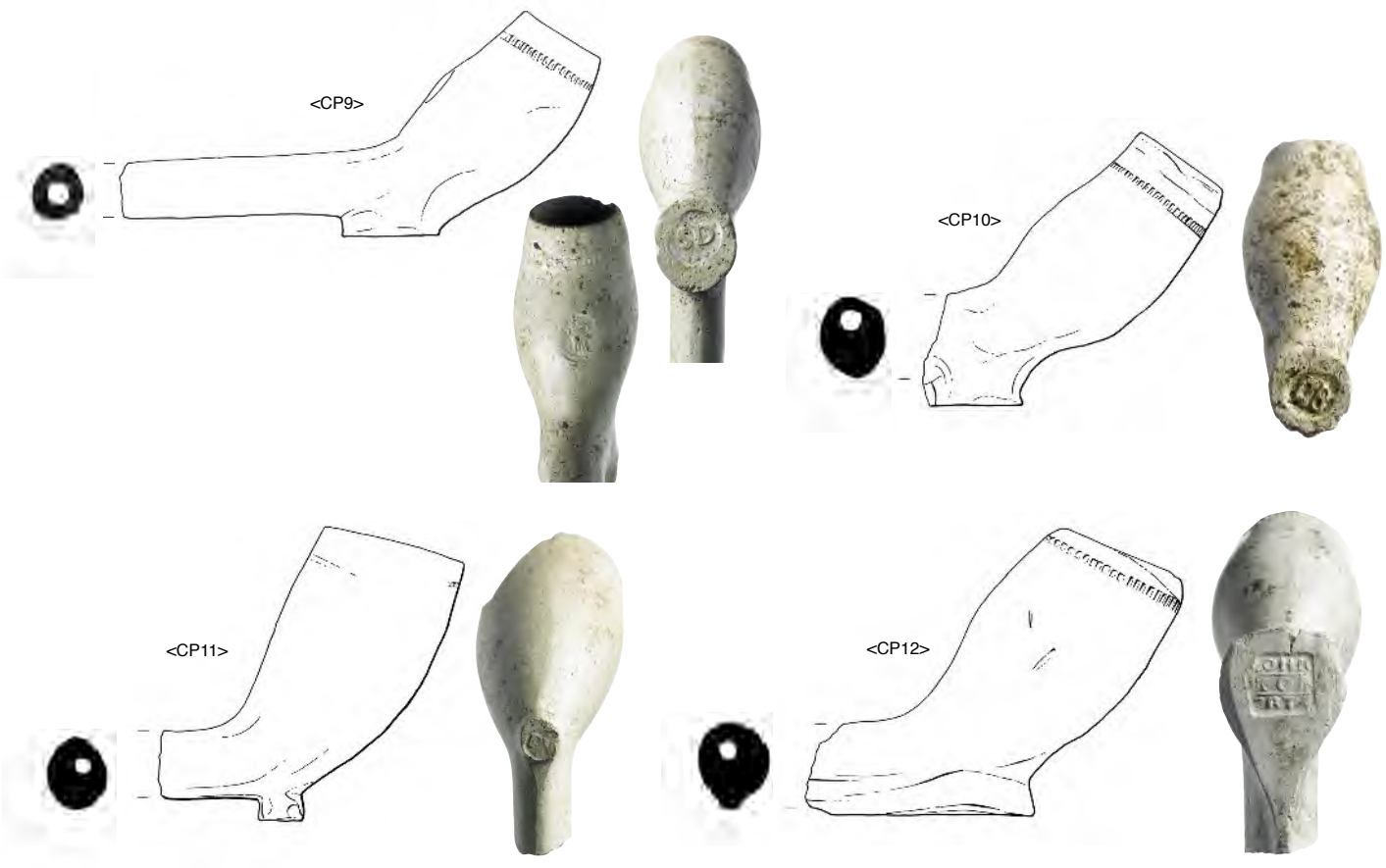

Fig 107 Clay tobacco pipes <CP9>–<CP12> of 17th- to early 18th-century date (scale 1:1)

which Higgins sees as a possible characteristic of this pipe-maker's work. Examples of Roberts pipes come mostly from Much Wenlock, although further finds have been made in Shrewsbury, as well as Chester, Willaston in Cheshire and Brewood in Staffordshire (ibid, 33). A clay pipe kiln excavated in 2006 on land between High Street and St Mary's Lane in Much Wenlock yielded hundreds of pipes marked by John Roberts and is currently undergoing analysis (Peacey 2007).

No pipes made between *c* 1720 and 1780 were recorded on the site, but there are a few pipe bowls dating to the late 18th/early 19th century. Two examples each of Atkinson's types 8A and 8B have large, brittle, upright bowls and were found in Open Areas 10 (type 8A; period 5; Chapter 5.2) and 13 (type 8B; period 6) and in Structure 9 (types 8A and 8B; period 6). Most of the remaining identifiable pipe bowls date to the second half of the 19th or early 20th century. Sixteen pipes are of Broseley type 9, which range in date from *c* 1850 to *c* 1950. Four of these are marked, all of them made by the prominent Southorn family, who dominated production in the town during this period, and ten pipes are decorated or 'fancy' types. A complete cutty pipe of type 9d (*c* 1880–*c* 1950) from Structure 9 (period 6; Chapter 6.1) has a green-glazed tip with moulded diamond nipple, and the stem is facetted behind the junction with the bowl (Fig 108, <CP13>). The name 'W SOUTHORN & Cº BROSELEY 4' is stamped incuse along the top of the stem. The firm of Southorn worked under this name from 1850 to 1900, using the same marks up to the 1950s (Atkinson 1975, 85). Another example of similar date is a thorn pipe from Open Area 13 (period 6), with the mark '…OUTHORN … BROSELEY 5' stamped incuse along the top of the stem and part of the green-glazed tip remaining (Fig 108, <CP14>). Part of the stem of another thorn pipe has a similar but indistinct mark, and one pipe from Structure 9 (<-> [399], period 6), is stamped with the name 'E SOUTHORN BROSELEY 8' along the stem. This was made by Edwin Southorn, who was 20 years old in 1841 and was still working in 1863, reportedly firing his pipes in the W Southorn kilns (Atkinson 1975, 82). There are also two type 9a and one 9b pipe bowls with moulded leaf seams, and three with feathered seams, one of them with vertical fluting. No marks remain on any of these decorated types.

A very unusual find is the bowl of a pipe made in brown-washed, highly fired red clay, found in the backfill of the Building 18 brick-built cellars, [1] (period 6; Fig 108, <CP15>). The acutely angled bowl was designed to be used with a separately fitted stem, usually a reed, so is complete in itself, with close-set vertical ribbing or fluting. This type of pipe was made by the Pamplin Smoking Pipe and Manufacturing Company in Pamplin City, Virginia, USA, which operated from 1878 to 1951. The Akron Smoking Pipe Co of Mogadore, Ohio (1890–1919), owned a plant in Pamplin and also produced Pamplin-style pipes during this period (*Pamplin*). Such finds are extremely unusual in an English context, particularly in the Midlands, and the pipe probably represents a souvenir of travels in the United States.

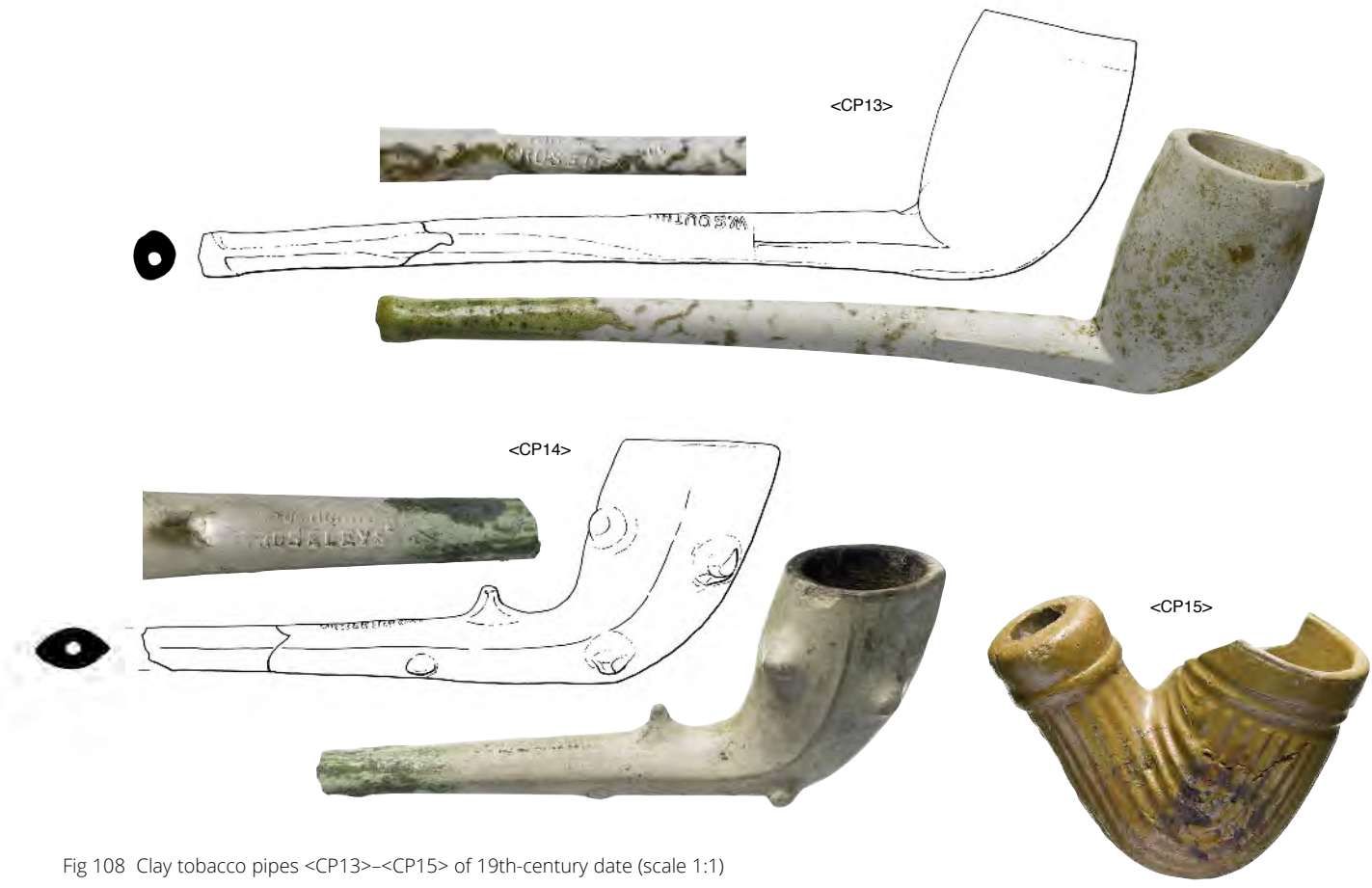

Fig 108 Clay tobacco pipes <CP13>–<CP15> of 19th-century date (scale 1:1)

DISCUSSION

The clay pipe assemblage from the site provides valuable evidence for the importance of the Broseley clay pipe industry in the town of Shrewsbury, from the early products of the mid 17th century, through to the reign of the Southorn family in the 19th century and beyond. Although other centres are probably represented in the excavated material, with at least one pipe attributable to the Much Wenlock pipe-maker John Roberts, identifiable Broseley products are the main types recorded. This is unsurprising, given the proximity of the two towns, only 19km apart, with Much Wenlock 5km south of Broseley. Both centres of pipe manufacture had strong links, exemplified by the activities of the Roberts and other families whose products were distributed over a relatively wide area. In the 18th century, the well burnished and finished Broseley pipes, with a characteristically fragile tall bowl, were particularly valued for their quality, although no examples of these types were recorded on the site. At least 13 different 17th- and 19th-century pipe-makers are represented by marked examples of their work, with Sam Decon's pipes the most numerous (at least four items). The only identifiable non-Broseley products are the probable London early 17th-century pipe with stamped flower, the John Roberts pipe and the American Pamplin-type example, although other marked pipes whose makers have not yet been identified could have been made in centres other than Broseley.

9.4 POTTERY AND GLASS

Nigel Jeffries with Paul Blinkhorn and Victoria Bryant

The pottery from the site was all recorded in accordance with current MOLA procedures, with quantification by sherd count (SC), estimated number of vessels (ENV) and weight in grams (g). The medieval and early post-medieval pottery (up to the 18th century) was identified and reported by external specialists, Victoria Bryant and Paul Blinkhorn, so that it could be viewed within the context of regional ceramic supply and use, with specific reference to fabric types already recognised in Shrewsbury. The later 18th- to 20th-century pottery was recorded by Nigel Jeffries of MOLA since regional variation is less significant for the period following the rise of the Midlands potteries during the Industrial Revolution. The specialist report presented in this chapter consists of a summary of the earlier pottery in its regional context. Description and discussion of the far more numerous later wares, by Nigel Jeffries, is integrated into the main body of the text. All later pottery was recorded using standard codes for fabric, form and decoration, which can be accessed at: http://www.mola.org.uk/resources/medieval-and-post-medieval-pottery-codes. All the fabrics found on the site are listed in Table 6 by their fabric code, expansion and date range. A catalogue of the illustrated post-medieval pottery is listed in Table 7.

The bulk glass (bottles, phials and window glass) from Shrewsbury was not recorded at assessment level and therefore no statistical counts are available for this material. Nevertheless, the majority of this material – which is almost exclusively dated to the later 19th and 20th century and include many complete vessels – is integrated into the main body of the chronological narrative. The terminology used here to describe the various technological and manufacturing aspects, bottle shapes and details are largely drawn from the Historical Glass Bottle Identification and Information section of the Society for Historical Archaeology website (http://www.sha.org/bottle/), which has a particular emphasis on glass of this date. Details of the illustrated vessel glass is given in Table 8.

MEDIEVAL AND EARLY POST-MEDIEVAL POTTERY

Paul Blinkhorn and Victoria Bryant

The medieval and early post-medieval pottery assemblage submitted for analysis comprises 71 sherds from a minimum of 41 vessels with a total weight of 1552g (Table 9). Where possible pottery fabrics are referenced to the fabric reference series developed from excavations at Shrewsbury Abbey (Bryant 2002a). However, not all fabrics identified at the current site were also found at Shrewsbury Abbey, and unfortunately there is no general fabric series for Shropshire or Shrewsbury. Those fabrics prefixed 'SAF' were also identified at Shrewsbury Abbey, while those prefixed 'F' were not (Table 6). Fabrics dating to the 17th and 18th centuries are not listed in Table 9, but are included with the later types discussed in the main narrative.

The medieval pottery assemblage is fairly typical of the Shrewsbury area, and many of the fabrics have been identified before on both ecclesiastical (Bryant 2002a) and secular sites (Buteux 1992). The majority of the pottery is local in origin and again this is a common feature of assemblages from Shrewsbury (Bryant 2002a; Rátkai 2006) and indeed the West Midlands generally.

The presence of Chilvers Coton 'A' (F11) and 'C' (F10) wares is worthy of comment, as such pottery has not been noted in Shrewsbury in the past. The Chilvers Coton industry, located near Nuneaton (Warwickshire) (Mayes and Scott 1984) was one of the largest in the Midlands, and supplied much of Warwickshire and Leicestershire with the bulk of its pottery dating from the mid 13th century onwards. A few sherds were present at Stafford Castle (Staffordshire), *c* 40km to the north-east of this site (Rátkai 2007, 70). In the medieval period Coventry (Warwickshire) was also an internationally important cloth production centre, so the presence of such pottery in Shrewsbury may be evidence of trade between the two centres, with wool the obvious commodity. The fact that Nuneaton and Shrewsbury are linked by Watling Street may also be relevant, as traffic moving from the latter to London would have passed very close to the Chilvers Coton manufactories. This also raises the

Table 6 Medieval and post-medieval pottery fabric codes

Fabric	Expansion	Date range AD (approx)
Medieval		
F10	Chilvers Coton 'C' ware	1300–1400
F11	Chilvers Coton 'A' ware	1250–1400
F49	late medieval red ware	1300–1550
SAF3	early glazed sandy ware	1180–1300
SAF4	early glazed sandy ware	1180–1300
SAF5	coarse-tempered ware	1200–1400
SAF16	Midlands purple ware	1400–1600
SAF27	Stafford-type ware	900–1000
SAF30	Cistercian-type ware	1480–1600
SAF79	medieval buff ware	1300–1400
SAF80	local unglazed ware	1100–1300
Post-medieval		
AGAT	agate ware	1730–80
BBASG	glazed black basalt ware	1770–1880
BLACK	black ware	1600–1900
BLUE	blue stoneware	1800–1900
BONE	bone china	1794–1900
BONE LUST	bone china with lustre decoration	1794–1900
BONE PNTD	bone china with underglaze painted decoration	1794–1900
BONE TR2	bone china with underglaze blue transfer-printed stipple and line decoration	1807–1900
BONE TR4	bone china with underglaze colour transfer-printed decoration (green, mulberry, grey etc)	1825–1900
BONE TR6	bone china with underglaze transfer-printed and overglaze painted decoration	1810–1900
BUCK	Buckley-type black ware	1700–1900
CHPO BW	Chinese blue and white porcelain	1590–1900
CHPO ROSE	Chinese porcelain with famille rose decoration	1720–1800
COLGE	coloured-glazed refined white ware	1800–1900
CONP	continental porcelain	1710–1900
CREA	creamware	1740–1830
CREA SLIP	creamware with slip decoration	1775–1830
CSTN	Cistercian ware	1480–1600
DRAB	drab-coloured stoneware	1720–50
ENGS	English brown salt-glazed stoneware	1700–1900
ENGS BRST	English stoneware with Bristol glaze	1830–1900
ENPO BW	English porcelain with underglaze blue-painted decoration	1745–1830
ENPO HP	English hard paste porcelain	1780–1900
ENPO UTR	English porcelain with underglaze blue transfer-printed decoration	1760–1900
FREC	Frechen stoneware	1550–1700
JASP	jasper ware	1775–1900
MAJO	majolica	1850–1900
MISC	miscellaneous unsourced post-medieval pottery	1480–1900
MISC IMP	miscellaneous imported unsourced post-medieval pottery	1480–1900
MISC SLIP	miscellaneous unsourced post-medieval slipware	1480–1900
MISC WW	miscellaneous unsourced post-medieval white ware	1480–1900
MORAN	Midlands orange ware	1400–1820
MPUR	Midlands purple ware	1400–1750
MY	Midlands yellow ware	1550–1700
NDGT	north Devon gravel-tempered ware	1600–1800
NOTS	Nottingham stoneware	1700–1800
PEAR	pearlware	1770–1840
PEAR BW	pearlware with underglaze blue-painted decoration	1770–1820
PEAR PNTD	pearlware with underglaze painted decoration	1770–1840
PEAR SLIP	pearlware with slip decoration	1775–1840
PEAR TR1	pearlware with underglaze blue transfer-printed Chinese-style line-engraved decoration	1770–1810
PEAR TR2	pearlware with underglaze blue transfer-printed stipple and line decoration	1807–40
PMFR	post-medieval fine red ware	1580–1700
PMR	post-medieval red ware	1580–1900
RAER	Raeren stoneware	1480–1610
REFW	refined white earthenware	1805–1900
REFW CHROM	refined white earthenware with underglaze polychrome-painted decoration in 'chrome' colours	1830–1900
REFW ERTH	refined white earthenware with underglaze polychrome-painted decoration in 'earth' colours	1805–20
REFW PNTD	refined white earthenware with underglaze painted decoration	1805–1900
REFW SLIP	refined white earthenware with slip decoration	1805–1900
REFW SPON	refined white earthenware with sponged or spattered decoration	1805–1900
REFW SPON1	refined white earthenware with cut-out sponged decoration	1830–1900

Table 6 (cont)

Fabric	Expansion	Date range AD (approx)
REST	red stoneware	1730–80
ROCK	Rockingham ware with mottled brown glaze	1800–1900
SMEAR	smear-glazed white stoneware	1795–1900
STBRS	Staffordshire-type brown salt-glazed stoneware	1690–1730
STMO	Staffordshire-type mottled brown-glazed ware	1650–1800
STSL	Staffordshire-type combed slipware	1660–1730
SWSG	white salt-glazed stoneware	1720–80
TGW	English tin-glazed ware	1570–1846
TGW A	English tin-glazed ware with blue- or polychrome-painted decoration and external lead glaze (style A)	1570–1650
TGW C	English tin-glazed ware with plain white glaze (style C)	1630–1846
TGW D	English tin-glazed ware with blue- or polychrome-painted decoration and external lead glaze (style D)	1630–80
TGW H	English tin-glazed ware with pale blue glaze and dark blue decoration (style H)	1680–1800
TPW	refined white ware with underglaze transfer-printed decoration	1780–1900
TPW FLOW	refined white ware with underglaze transfer-printed 'flow blue' decoration	1830–1900
TPW2	refined white ware with underglaze blue transfer-printed stipple and line decoration	1807–1900
TPW3	refined white ware with underglaze brown or black transfer-printed decoration	1810–1900
TPW4	refined white ware with underglaze colour transfer-printed decoration (green, mulberry, grey etc)	1825–1900
TPW5	refined white ware with underglaze three-colour transfer-printed decoration	1845–1900
TPW6	refined white ware with underglaze transfer-printed and overglaze painted decoration	1810–1900
WHIST	white stoneware	1790–1900
YELL	yellow ware	1820–1900
YELL SLIP	yellow ware with slip decoration	1820–1900

Table 7 Details of illustrated post-medieval pottery <P1>–<P5>

Cat no.	Acc no.	Context	Period	Land use	Fabric	Form	Fig no.
<P1>	-	[76]	6	OA13	ENGS BRST	JAR	86
<P2>	-	[76]	6	OA13	ENGS BRST	JAR	86
<P3>	-	[76]	6	OA13	TPW3	JAR	86
<P4>	-	[970]	6	B17	ENGS BRST	BOT UPR	71
<P5>	<110>	[972]	6	B20	REFW PNTD	FIGU	80

Table 8 Details of illustrated glass <G1>–<G14>

Cat no.	Context	Period	Land use	Bottle form	Fig no.
<G1>	[969]	6	B17	ale/beer	72
<G2>	[969]	6	B17	porter/stout	72
<G3>	[1]	6	B18	food sauce	87
<G4>	[1]	6	B18	food sauce	87
<G5>	[1]	6	B18	food sauce	87
<G6>	[1]	6	B18	food sauce	87
<G7>	[1]	6	B18	medicine	88
<G8>	[1]	6	B18	medicine	88
<G9>	[1]	6	B18	poison	88
<G10>	[1]	6	B18	porter/ale	89
<G11>	[1]	6	B18	porter/ale	89
<G12>	[1]	6	B18	carbonated drinks	90
<G13>	[1]	6	B18	carbonated drinks	90
<G14>	[1]	6	B18	carbonated drinks	90

possibility that at least some of the Midlands purple (SAF16) and Cistercian-type (SAF30) wares found in Shrewsbury may have originated at Chilvers Coton; these were common products of the late medieval phase of the industry, and the former in particular makes up the commonest pottery type in the sample analysed from the site.

The range of fabric types indicates that there was activity at the site from around the 12th century onwards, although there are also two sherds of 10th-century Stafford-type ware (SAF27), one apparently stratified ([908], OA5, period 4; Chapter 3.1) and the other residual in an overbank flood deposit ([253], OA5, period 4), dating to the 12th to 13th century. Shrewsbury was a Saxon burh and finds of redeposited Stafford-type ware are not uncommon in later deposits from the town, with securely stratified examples of the fabric known from 7 St Austin's Street, *c* 100m to the south-west of the current site (Hannaford 2005, 3).

The 12th and 13th centuries are represented by a small number of stratified jar and glazed jug sherds in contexts [7], [121], [253], [898], [902], [904], [917], [919] and [961], and also residual in later medieval and post-medieval contexts (Table 9). The late medieval assemblage comprises mainly fragments of Midland purple ware and late medieval red ware (F49) jars and jugs or cisterns, along with a few fragments of Cistercian-type ware cups. This is a fairly typical pattern for the period in the town, with Cistercian-type and Midland

Table 9 Distribution and quantification of medieval and 16th-century pottery across the site, by period and land use

Period	Land use	Context	TPQ *	TAQ **	Fabric	Form	Decoration	SC	ENV	Wt (g)	Date range AD (approx)	Expansion
4	B4	[904]	1180	1300	SAF3	JUG	GLE	1	1	10	1180–1300	early glazed sandy ware
	B4	[904]	1180	1300	SAF80	JAR	UNGL	1	1	13	1100–1300	local unglazed ware
	B6	[121]	1180	1300	SAF4	JUG	GLE	3	1	47	1180–1300	early glazed sandy ware
	B6	[249]	1180	1300	SAF3	JUG	-	1	1	1	1180–1300	early glazed sandy ware
	OA5	[253]	1100	1300	SAF27	BOWL/JAR	-	1	1	4	900–1000	Stafford-type ware
	OA5	[253]	1100	1300	SAF80	CP	-	7	1	18	1100–1300	local unglazed ware
	OA5	[908]	900	1000	SAF27	JAR	UNGL	1	1	9	900–1000	Stafford-type ware
	OA7	[905]	1400	1600	F10	JAR	GLE	1	1	26	1300–1400	Chilvers Coton 'C' ware
	OA7	[905]	1400	1600	SAF16	JUG	GLE	1	1	5	1400–1600	Midlands purple ware
	OA8	[961]	1180	1300	SAF3	JUG	GLE	1	1	4	1180–1300	early glazed sandy ware
	S1	[917]	1100	1300	SAF80	JAR	UNGL	1	1	16	1100–1300	local unglazed ware
	S2	[919]	1100	1300	SAF80	JAR	UNGL	1	1	11	1100–1300	local unglazed ware
5	B7	[902]	1180	1300	SAF3	JUG	APD	1	1	19	1180–1300	early glazed sandy ware
	OA10	[252]	1400	1600	SAF30	MISC	-	1	1	32	1480–1600	Cistercian-type ware
	OA10	[252]	1400	1600	F49	JUG	-	2	1	30	1300–1550	late medieval red ware
	OA10	[252]	1400	1600	SAF16	JUG	-	3	1	177	1400–1600	Midlands purple ware
	OA10	[252]	1400	1600	SAF3	JUG	-	1	1	4	1180–1300	early glazed sandy ware
	OA10	[252]	1400	1600	SAF5	MISC	-	1	1	5	1200–1400	coarse-tempered ware
	OA10	[252]	1400	1600	SAF79	JUG/PIP	-	2	1	14	1300–1400	medieval buff ware
	OA10	[278]	1480	1600	F10	JAR	-	1	1	8	1300–1400	Chilvers Coton 'C' ware
	OA10	[278]	1480	1600	F11	MISC	-	1	1	2	1250–1400	Chilvers Coton 'A' ware
	OA10	[278]	1480	1600	SAF30	TYG	-	1	1	6	1480–1600	Cistercian-type ware
	OA10	[880]	1400	1600	SAF16	JUGPTCH	-	6	1	258	1400–1600	Midlands purple ware
	OA10	[883]	1480	1600	SAF16	JAR	-	5	3	121	1400–1600	Midlands purple ware
	OA10	[883]	1480	1600	SAF30	CUP	BRGL	1	1	30	1480–1600	Cistercian-type ware
	OA10	[892]	1400	1600	?SAF16	JAR ST	GLE	1	1	270	1400–1600	? Midlands purple ware
	OA10	[892]	1400	1600	?SAF16	JAR	UNGL	4	3	107	1400–1600	? Midlands purple ware
	OA10	[892]	1400	1600	SAF79	JUG	-	1	1	3	1300–1400	medieval buff ware
	R2	[232]	1480	1600	F11	JUG	-	1	1	9	1250–1400	Chilvers Coton 'A' ware
	R2	[232]	1480	1600	F10	JUG	-	2	1	55	1300–1400	Chilvers Coton 'C' ware
	R2	[232]	1480	1600	F49	BOWL	-	5	1	56	1300–1550	late medieval red ware
	R2	[232]	1480	1600	SAF16	JAR	-	1	1	25	1400–1600	Midlands purple ware
	R2	[232]	1480	1600	SAF30	TYG	-	4	1	37	1480–1600	Cistercian-type ware
	R2	[863]	1400	1600	SAF16	JAR	UNGL	1	1	32	1400–1600	Midlands purple ware
6	B11	[7]	1180	1300	SAF3	JUG	GLE	1	1	10	1180–1300	early glazed sandy ware
	B18	[668]	1400	1600	SAF16	JUG	GLE	3	1	55	1400–1600	Midlands purple ware
	OA13	[898]	1250	1300	F11	JUG	GRGL	1	1	23	1250–1400	Chilvers Coton 'A' ware
Total								71	41	1552		

* TPQ – terminus post quem; ** TAQ – terminus ante quem

purple wares in particular well known in late medieval deposits (eg Barker 1961).

Overall, the earlier medieval assemblage is not of particularly high quality. The earlier medieval material in particular is generally in fairly poor condition, comprising single sherds from individual vessels, some of which show signs of wear. It seems that those which were not redeposited in later contexts are the products of secondary deposition, with the stratigraphic record suggesting that some of the apparently stratified material is in fact residual. The later medieval pottery is in much better condition, with larger sherds and showing little sign of wear. Some vessels are represented by several sherds in the same context, particularly the Midland purple vessels. Rim sherds from medieval Cistercian-type cups and Midlands purple jars and the base of a Cistercian-type cup were recorded.

The post-medieval material submitted for analysis comprises entirely household earthenwares of types which are fairly typical in the town. The more refined tablewares were recorded by Nigel Jeffries and are discussed in the main narrative.

9.5 THE ACCESSIONED FINDS

Beth Richardson

The majority of the 67 non-ceramic accessioned finds from the site are of late post-medieval date, and were found with the large groups of ceramics and glassware recovered from a soakaway and the cellar fills of the Victorian buildings. The

bulk glass (bottles and phials) have been recorded and analysed separately by Nigel Jeffries (above, 9.4). There are also two residual Saxo-Norman and medieval artefacts. The finds have been given individual accession numbers, and are listed in the MOLA Oracle database and the Assessment Catalogue under the site code NEV06, available from the MOLA archives (Chapter 1.3). Selected finds are described and illustrated within the main text.

9.6 THE IRON SLAG

Lynne Keys

METHODOLOGY

A small slag assemblage weighing 7.122kg was examined by eye and categorised on the basis of morphology and colour. Each slag type in each context was weighed except for smithing hearth bottoms, which were individually weighed and measured. Quantification data are given in Table 10.

EXPLANATION OF TERMS AND PROCESSES

Activities involving iron can take two forms.

1) *Smelting* is the manufacture of iron from ore and fuel in a smelting furnace. The resulting products are a spongy mass called an unconsolidated bloom (iron with a considerable amount of slag still trapped inside) and slag (waste). The latter may take various forms depending on the technology used: tap slag, run slag, dense slag, or furnace slag.

2a) *Primary smithing* involves hot-working (by a smith using a hammer) of the bloom on a string hearth (usually near the smelting furnace) to remove excess slag. The bloom becomes a rough lump of iron ready for use; the slags from this process include smithing hearth bottoms and micro-slags, in particular tiny smithing spheres.

2b) S*econdary smithing* involves hot-working, using a hammer, of one or more pieces of iron to create or repair an object. As well as bulk slags, including the smithing hearth bottom, this generates micro-slags: hammerscale flakes from ordinary hot-working of a piece of iron (making or repairing an object) or tiny spheres from high temperature welding to join or fuse two pieces of iron.

Most of the slag in the assemblage (almost 5kg) was diagnostic of secondary iron smithing. A smaller quantity (1.8kg) was undiagnostic, that is could not be assigned to either smelting or smithing because of its morphology or because it had been broken up during deposition, redeposition or excavation. Other types of debris in the assemblage may be the result of a variety of high temperature activities – including domestic fires – and cannot be taken on their own to indicate ironworking was taking place. These include fired clay, vitrified hearth lining and cinder, although, if found in association with ironworking debris, they may have been produced by smithing activity.

The slag type described as 'smithing hearth bottom' is a plano-convex-shaped slag formed as a result of high temperature reactions between the iron, iron-scale and silica from either a clay furnace lining or the silica flux used by the smith. The iron silicate material from this reaction slag dripped down into the hearth base forming slag which, if not cleared out, developed into the smithing hearth bottom. Before it could grow large enough to block the tuyere hole (where the air from a bellows entered the hearth) the smithing hearth bottom was removed and usually dumped in the nearest pit, ditch or unused area (the exception to the rule is its removal for reuse elsewhere as surface metalling or for reclamation on waterfronts, for instance). The proximity of cut features or dumps with amounts of smithing hearth bottoms to a building is often a good indication that the structure may have been used for smithing activity.

KEY GROUPS

Structures 1 and 2 (period 4; Chapter 3.4; Table 10), which are assigned to the medieval period, are both significant, not for the quantity of slag but for where it was found. In Structure 1, the robbed posthole [928] fill [927] contained three smithing hearth bottoms. On most sites, slag in dug features was deposited when the feature was still open but out of use. In this case the question is: was the slag likely to have been there before the post was removed, that is because it was being used as a post pad? The slag in Structure 2 [920] fill [919] came from a robbed beam slot, although the small quantity makes it unlikely that it formed padding. The close proximity of these features suggests that smithing activity was taking place nearby after the structural features had been robbed out.

Structure 9 (period 6; Chapter 6.1; Table 10), dump [370] dated by pottery to 1825–1900) contained evidence (in the form of hammerscale) that secondary smithing activity was taking place somewhere nearby. Hammerscale (not visible to the naked eye when it is in soil) usually remains in the immediate area of smithing activity (around the anvil and between it and the hearth) when larger (bulk) slags are cleared out. The further away from the focus of smithing or the more deposits containing bulk slags are redistributed, the less of it there is likely to be. Its presence can only be detected on site by using a magnet or by soil sampling. The hammerscale was noted in this case because it formed part of the make-up of the slag from [370].

DISCUSSION OF THE ASSEMBLAGE

The assemblage hints at smithing activity from the early medieval period onward. The slag from the early riverside deposits indicates ironworking took place somewhere along or near the river from where floods deposited it, but the quantity is small and the slag abraded so it does not have the same significance as the groups discussed above. What the assemblage does indicate is that the site is peripheral to

Table 10 Quantification of iron slag by period and land use

Land use	Context	Feature	Slag type	Weight (g)	Length (mm)	Breadth (mm)	Depth (mm)	Comments
Period 4								
B4	[904]	(residual)	smithing hearth bottom	277	90+	90	40	-
	[904]	(residual)	undiagnostic	43	-	-	-	-
	[904]	(residual)	undiagnostic	400	100	65	65	shape irregular for smithing hearth bottom
	[911]	(residual)	undiagnostic	28	-	-	-	-
OA5	[253]	dump	cinder	13	-	-	-	-
	[253]	dump	smithing hearth bottom	295+	100	65+	30	incomplete
	[253]	dump	smithing slag	56	-	-	-	very magnetic
	[253]	dump	undiagnostic	78	-	-	-	? part of smithing hearth bottom
	[253]	dump	vitrified hearth lining	66	-	-	-	-
	[285]	dump	undiagnostic	141	-	-	-	? curved base part of smithing hearth bottom
	[285]	dump	vitrified hearth lining	17	-	-	-	-
OA5	[221]	dump	cinder	10	-	-	-	-
	[221]	dump	stone	9	-	-	-	-
	[221]	dump	undiagnostic	18	-	-	-	-
OA7	[933]	dump	cinder	51	-	-	-	-
	[933]	dump	iron	38	-	-	-	two lumps
	[933]	dump	smithing slag	50	-	-	-	concreted flake hammerscale
	[933]	dump	vitrified hearth lining	5	-	-	-	-
S1	[917]	dump	undiagnostic	42	-	-	-	-
	[927]	dump	smithing hearth bottom	162	70	70	30	-
	[927]	dump	smithing hearth bottom	1181	130	110	60	-
	[927]	dump	smithing hearth bottom	1476	170	130	60	-
	[927]	dump	undiagnostic	22	-	-	-	-
	[927]	dump	vitrified hearth lining	4	-	-	-	-
S2	[919]	dump	cinder	56	-	-	-	-
	[919]	dump	undiagnostic	37	-	-	-	magnetic
	[919]	dump	undiagnostic	352	120	50+	60	shape irregular for smithing hearth bottom
Period 6								
B18	[155]	(residual)	smithing hearth bottom	383	100	50+	60	incomplete
S9	[361]	barge quay and abutment	fuel ash slag	99	-	-	-	-
	[361]	barge quay and abutment	undiagnostic	104	-	-	-	-
	[370]	later dump	smithing slag	89	-	-	-	numerous hammerscale inclusions
	[370]	later dump	undiagnostic	541	-	-	-	? part of smithing hearth bottom; inclusions flake, occasional hammerscale; tiny coal fragments
	[393]	later dump	smithing hearth bottom	979	160	120	50	many small coal inclusions
Total				7122				

smithing activity in both the medieval and post-medieval periods. In the latter period there is some documentary evidence for a smithy or forge having operated nearby (discussion of Frankwell Quay: Chapter 5.1; B22: Chapter 6.4).

9.7 POLLEN ASSESSMENT

Phillip Allen

METHODOLOGY

The core liners were cut open, and the cores were cleaned and prepared for pollen analysis in the laboratory. The sampling interval was not uniform, but varied throughout the sedimentary sequence; a sample thickness of 0.5mm was employed. At each selected level, between 1.5g and 4g (wet weight) of sediment was removed, from which 1g of sediment was then removed for study, on which standard preparation procedures were carried out. Two *Lycopodium* (batch number 483216) tablets were added to each sample prior to chemical preparation for the purposes of calculating pollen and charcoal concentrations, as described by Stockmarr (1971). The chemical preparation of the samples followed the procedure described by Barber (1976).

All counts were undertaken using a Nikon Optiphot microscope at a magnification of x400, and x1000 when needed. A target of 300 grains of pollen per level was set,

excluding exotic grains, spores and aquatics, to give a total land pollen (TLP) sum. Identification of pollen grains and spores was aided with the use of keys in pollen textbooks, including primarily Faegri and Iversen (1989) and Moore et al (1991), and by comparison with modern pollen reference material (type slides) of the Department of Geography, University of Exeter.

A total of 16 levels were removed from the cores and monoliths for pollen analysis (12 from the borehole cores, and four from the monoliths). Only the borehole cores preserved pollen. The borehole and depth from which the material came is presented in Table 11.

The counted pollen has not been placed into a zoned pollen diagram (TGView) as the number of levels is too few, and the curves would be misleading. Instead a brief summary of each level is presented. The actual and percentage count data are available in Allen and Brown (2006).

RESULTS

The results of the pollen analysis are presented below for each borehole and monolith sampled. All samples were from Facies 4 (OA4, period 4; Chapter 2.6).

BOREHOLE 8

BH8 (47.43–47.42m OD)
The area of one slide (22 × 22mm) was completely counted for the evaluation; the concentration of pollen was far too sparse to count 300 polymorphs. The slide contained degraded organic material, although the quality of the recorded pollen was acceptable. The arboreal pollen consisted of alder (*Alnus*), oak (*Quercus*) and birch (*Betula*) in descending order. Shrubs were represented by hazel (*Corylus avellana* type). The herbs were the dominant pollen group, including ribwort plantain (*Plantago lanceolata*) and buttercup or crowfoot family (Ranunculaceae) pollen, both of which are indicative of anthropogenic activity. Further evidence of human activity was recorded in the form of cereal-type pollen, such as barley (*Hordeum* type) and oats/ wheat (*Avena/ Triticum* type).

Table 11 Borehole (BH) core sample details

Borehole	Depth below ground level/or top of excavated area (m)	m OD	Unit no. of core/monolith or context number
BH8	3.400–3.410	47.430–47.420	8.10
	3.450–3.460	47.380–47.370	8.10
	3.545–3.555	47.285–47.275	8.10
	3.580–3.590	47.250–47.240	8.10
BH12	3.415–3.425	47.435–47.425	12.8
	3.460–3.470	47.390–47.380	12.9
	3.505–3.515	47.345–47.335	12.9
	3.570–3.580	47.280–47.270	12.9
BH13	3.290–3.300	47.480–47.470	13.5
	3.335–3.345	47.435–47.425	13.6
	3.440–3.450	47.330–47.320	13.7
	3.530–3.540	47.240–47.230	13.7

BH8 (47.38–47.37m OD)
The area of one slide was completely counted for the evaluation; the concentration of pollen was far too sparse to count 300 polymorphs. The slide contained degraded organic material, but the quality of the recorded pollen was acceptable. The arboreal pollen consisted of alder, birch and oak in descending order. Shrubs were represented by hazel. The herbs were the dominant pollen group, including grasses (Poaceae), cornflower (*Centaurea cyanus*) and dandelions (Lactuceae). Cinquefoils (*Potentilla* spp), hoary/greater plantain (*Plantago media/major*) and buttercup or crowfoot family pollen, are indicative of anthropogenic activity. Further evidence of human activity was recorded in the form of cereal of oats/ wheat.

BH8 (47.285–47.275m OD)
The area of one slide was completely counted for the evaluation; the concentration of pollen was too sparse to count 300 polymorphs. The slide contained a high amount of degraded organic material, although the quality of the recorded pollen was acceptable. The arboreal pollen consisted of willow (*Salix*), alder, oak and ash (*Fraxinus*). Shrubs were represented by hazel. The herbs were the dominant pollen group, including grasses, ribwort plantain and buttercup or crowfoot family pollen, both indicative of anthropogenic activity. Further evidence of human activity was recorded in the form of cereal-type pollen, such as barley and oats/wheat.

BH8 (47.25–47.24m OD)
The area of one slide was completely counted for the evaluation; the concentration of pollen was too sparse to count 300 polymorphs. The slide contained a high amount of organic material, but the quality of the recorded pollen was acceptable. The arboreal pollen was characterised by alder, ash and birch. Although the representation of birch was unusually high, this may be a result of pollen being transported from upriver sites. Shrubs were represented by hazel. Herbaceous pollen taxa were the most frequently represented within this level, including grasses, rose family (Rosaceae) and sorrel (*Rumex acetosa/acetosella*). Evidence for human activity was present in the form of cinquefoil, buttercup or crowfoot family, dandelions and the cereal pollen oats/wheat.

Interpretation of BH8

The range of pollen from BH8 was relatively diverse, with many pollen types indicative of a wet or riparian environment. The preservation condition of the polymorphs

was mainly good, although many of the grains have been damaged (crumpled, corroded and ruptured), possibly due to being transported and deposited in a fluvial setting. The dominant arboreal taxon for the core was alder, which is in agreement with the environment of deposition, as alder is a native tree of damp or wet ground, often found beside rivers, ponds and canals or in wet woodland, or within a riparian zone (the interface between land and a flowing surface-water body). The herbs were dominated by grasses indicating open ground, either expansive grassland or open areas within a woodland context. The human activity represented disturbed ground, in the form of ribwort plantain, cinquefoil, buttercup or crowfoot family and sorrel. Additional human evidence was recorded in the form of cereal pollen, suggesting that some arable cultivation was occurring locally.

BOREHOLE 12

BH12 (47.435–47.425m OD)
The area of one slide was completely counted for the evaluation; the concentration of pollen was too sparse to count 300 polymorphs. The slide contained a high amount of degraded organic material. Arboreal pollen was notably absent from the counted taxa. Shrubs are represented by the occurrence of hazel (*Corylus avellana* type). Daisy family (Asteraceae), sheep's bit (*Jasione montana* type) and grasses (Poaceae) represent the herbaceous pollen. However, dandelions (Lactuceae) pollen dominates this level, which may be indicative of degradation and poor preservation of a wider range of pollen types. No specific anthropogenic indicator species are recorded; this absence is notable and uncharacteristic.

BH12 (47.39–47.38m OD)
The area of one slide was completely counted for the evaluation; the concentration of pollen was too sparse to count 300 polymorphs. The slide contained a high amount of degraded organic material, but the quality of the recorded pollen was acceptable. Alder (*Alnus*), birch (*Betula*) and oak (*Quercus*) represented the arboreal pollen, whilst shrubs were represented by hazel and heather (*Calluna vulgaris*). Herbaceous pollen was the most diverse group recorded, including dandelions, ragweed type (*Ambrosia* type), the pink family (Caryophyllaceae) and the goosefoot family (Chenopodiaceae). Evidence for human activity was present in the form of ribwort plantain (*Plantageo lanceolata*), cinquefoils (*Potentilla* spp), buttercup or crowfoot family (Ranunculaceae) and the cereal pollen oats/wheat (*Avena/Triticum* type). The cereal-type pollen was recorded in higher than usual levels, almost 5%, which may indicate that arable cultivation took place close to the site.

BH12 (47.345–47.335m OD)
The area of one slide was completely counted for the evaluation; the concentration of pollen was too sparse to count 300 polymorphs. The slide contained degraded organic material, although the quality of the recorded pollen was good to acceptable. Alder, oak and willow (*Salix*) represented the arboreal pollen, whilst hazel represented the shrubs. The most diverse range of pollen types recorded was herbaceous, including, grasses, dandelions, the carrot family (Apiaceae), ragged robin (*Lychnis flos-cuculi*) and cornflower (*Centaurea cyanus*). Evidence for human activity was provided by the presence of ribwort plantain, cinquefoil and buttercup or crowfoot family. Further anthropogenic indicators were the cereal pollen oats/wheat and barley. Oats/wheat pollen is recorded in unusually high numbers, and represents *c* 10% of all the pollen counted at this level.

BH12 (47.28–47.27m OD)
The area of one slide was completely counted for the evaluation; the concentration of pollen was too sparse to count 300 polymorphs. The slide contained degraded organic material, but the quality of the recorded pollen was good. Alder and oak represent the arboreal taxa, whilst no shrubs were recorded at this level. Grasses were the dominant herbaceous pollen, followed by the daisy family, dandelions and the carrot family. The range of herbaceous pollen was quite diverse and included mugwort/wormwood type (*Artemisia* spp), the goosefoot family, meadowsweet (*Filipendula*) and the knotweed family (Polygonaceae). Ribwort plantain, buttercup or crowfoot family and cinquefoils represent anthropogenic-induced disturbed ground. Further evidence of human activity was indicated by the presence of the cereal pollen barley (*Hordeum* type).

Interpretation of BH12
The range of pollen from BH12 was relatively diverse, with many taxa indicative of wet or damp conditions, for example willow, ragged robin and meadowsweet. The preservation condition of the taxa was predominantly good, although many of the grains had been damaged (crumpled, corroded and ruptured), possibly due to being transported in a fluvial setting, or deposited in highly oxygenated environments. The dominant arboreal type for the core was alder, which indicates damp ground or riparian woodland. Willow was present in this core, providing further evidence of a wet or damp environment. The human activity represented disturbed ground, in the form of ribwort plantain, cinquefoil, buttercup or crowfoot family and sorrel. The pollen evidence, when considered with the stratigraphy from BH12, indicates a very disturbed area, possibly a river inlet or foreshore. Additional evidence for human activity was recorded in the form of cereal pollen, suggesting that arable cultivation was occurring locally. It is important to note that oats/wheat pollen was found in unusually high amounts of *c* 10%; the norm is *c* 2% (T Brown, pers comm). This uncharacteristic representation may indicate that cereals were being grown adjacent to the site, probably on the low terrace area to the west. The good condition of the cereal pollen indicates short transport distances and rapid deposition in anoxic conditions.

BOREHOLE 13

BH13 (47.48–47.47m OD)
The area of one slide was completely counted for the evaluation; the concentration of pollen was too sparse to count 300 polymorphs. The slide contained degraded organic material, but the quality of the recorded pollen was acceptable. Willow (*Salix*) was the most frequently recorded arboreal pollen, followed by alder (*Alnus*), birch (*Betula*), oak (*Quercus*) and pine (*Pinus*) respectively. Shrubs were represented by hazel (*Corylus avellana* type) and heather (*Calluna vulgaris*). There was a diverse range of herbaceous pollen; the most frequently recorded type was grasses (Poaceae), followed by dandelions (Lactuceae), meadowsweet (*Filipendula*), cornflower (*Centaurea cyanus*) and the daisy family (Asteraceae). Human activity was indicated by the presence of ribwort plantain (*Plantageo lanceolata*), cinquefoils (*Potentilla* spp) and buttercup or crowfoot family (Ranunculaceae).

BH13 (47.435–47.425m OD)
The area of one slide was completely counted for the evaluation; the concentration of pollen was too sparse to count 300 polymorphs. The slide contained degraded organic material, but the quality of the recorded pollen was acceptable. Alder was the only representative of arboreal pollen, and hazel attested to shrubs. The range of recorded herbaceous pollen was limited to sheep's bit (*Jasione montana* type), grasses and hoary/greater plantain (*Plantago major/minor*). True fern (*Filicales*) and meadow-rue (*Thalictrum*) were also recorded, but in single counts for each.

BH13 (47.33–47.32m OD)
The area of one slide was completely counted for the evaluation; the concentration of pollen was too sparse to count 300 polymorphs. The slide contained degraded organic material, but the quality of the recorded pollen was acceptable. Alder, birch, oak, willow and lime (*Tilia*) represent the arboreal pollen types, whilst hazel indicates the presence of shrubs/scrub. The herbaceous types are relatively well represented, with grasses being the most frequently recorded. Other herbaceous pollen include the carrot family (Apiaceae), cornflower, meadowsweet, rose family (Rosaceae) and sorrel (*Rumex acetosa/acetosella*). The presence of cinquefoil and barley (*Hordeum* type) cereal pollen represent evidence of human activity.

BH13 (47.24–47.23m OD)
The area of one slide was completely counted for the evaluation; the concentration of pollen was too sparse to count 300 polymorphs. The slide contained degraded organic material, although the quality of the recorded pollen was acceptable. Alder, oak and birch represent arboreal taxa, whilst shrubs are represented by hazel. The range of herbaceous taxa is relatively limited, with grasses being most frequently recorded, followed by dandelions, cornflower and the carrot family. Buttercup or crowfoot family and the cereal pollen of oats/wheat (*Avena/Triticum* type) and barley represent evidence of human activity.

Interpretation of BH13
The range of pollen from BH13 was relatively diverse, with many pollen types indicative of wet or damp conditions, for example willow, cornflower and meadowsweet. The preservation condition of the pollen was predominantly good, although many of the grains had been damaged (crumpled, corroded and ruptured), possibly due to being transported in a fluvial setting, or deposited in highly oxygenated environments. The dominant arboreal type for the core was alder, which indicates damp or wet ground, or riparian woodland, where accompanied by willow, which was also present in this core. This provides additional evidence of a wet or damp environment, possibly a riparian zone or perennial inlet where inundation of water was frequent. The human activity represented disturbed ground, in the form of ribwort plantain, cinquefoil, buttercup or crowfoot family and sorrel.

The range of human-indicator pollen types from Frankwell shows that there was continuous human activity locally. The mixture of anthropogenic and fluvial sediments (above, 9.1) indicates a long history of human interaction along this stretch of urban river margin. While the pollen types indicate a local environment of damp, disturbed ground, the presence of cereal pollen show that arable cultivation was taking place nearby, presumably on the higher ground.

DISCUSSION

This section is structured as a series of comments on selected pollen and spore types.

Alder (*Alnus*): significant quantities were present throughout the sampled cores. This is not unusual as alder is very tolerant of waterlogged conditions, and today it is perhaps the most common waterside tree of the Shropshire Severn (Tucker 1994, 113). A native tree of damp or wet ground, it is often found in a riparian zone or in wet woodland, where it will often grow with willow. The relative abundance of its pollen could reflect growth close to the sample site, or from upstream.

Oak (*Quercus*): this is consistently represented in the sampled cores. Oak was possibly growing both on the slopes adjoining the flood plain and on higher ground within the flood plain, although mature trees will tolerate flooding. Its presence may be indicative of mixed woodland close to the sample site; it can grow on damp sites with alder.

Willow (*Salix*): this was recorded in six levels, which is not unusual as willow is frequently associated with damp environments, such as flood plains or river banks (Tucker 1994, 114), but not with waterlogged soils. Willow is often under-represented in pollen diagrams, possibly due to pollarding of the mature trees.

Hazel (*Corylus avellana* type): very well represented in the sampled cores. Hazel was possibly an understorey component to deciduous woods, wood margins or hedges, or it represents a scrub environment close to the river bank. Hazel was extensively coppiced as a source of raw material for making hurdles and such like.

Heather (*Calluna vulgaris*): shrubs are poorly represented in this assemblage. Heather was not frequent within the sampled core, but was present and may, in this environmental context, represent the scrub environment associated with oak woodland, wet heath or poor grassland.

Herbs: grasses (Poaceae) are consistently the most frequent herbaceous pollen type recorded within the sampled cores. The wide representation of herbs represents largely open land cover, but there are some indications of woodland and shade, such as ferns common polypody (*Polypodium*) and true fern (*Filicales*).

Wetland and wet grassland: these are well represented by taxa such as ragged robin (*Lychnis flos-cuculi*) associated with damp pasture, damp or moist grassland, ditches and meadows; meadowsweet (*Filipendula*); sheep's sorrel (*Rumex acetosella*) and common valerian (*Valeriana*). The cores also had a strong representation of herbs associated with disturbed ground or grazing activities including ribwort plantain (*Plantago lanceolata*), sorrel (*Rumex acetosa/acetosella*) and dandelions (Lactuceae), indicating human activity either at or close to the site. Further waste ground indicators were cornflower (*Centaurea cyanus*) and sheep's bit (*Jasione montana* type).

Arable cultivation: in addition to the flood plain and mixed land cover pollen types previously described there was a high representation of arable cultivation. The presence of the cereal-type pollen such as barley (*Hordeum* type) and oat/wheat (*Avena/Triticum* type) from the sampled cores is sporadic, but does indicate arable cultivation.

Aquatics: the sporadic representation of moss (*Sphagnum*) represents the changeable wet to dry conditions of the site and local wetland. However, there is always the possibility that some of this material had been transported from upstream by the river.

COMPARISON WITH OTHER POLLEN DIAGRAMS IN THE REGION

The diversity of pollen identified in the cores indicates a complex local environment and, for this reason, the data are significant. However, the lack of high-resolution sampling makes it difficult to interpret, as the levels counted are not from a continuous sampling context, therefore they represent a snapshot of different sections of the cores. The closest pollen diagram to the site is 2.5km to the north-east, at Cross Hill (Shropshire). Here part of a former meander of the medieval Severn, known locally as the 'Old River Bed' was sampled (Pannett and Morey 1976). A 5m section was logged and pollen samples were removed for analysis. The sampling resolution, by current standards, was coarse, every 10cm. However, the pollen data are still comparable, recording types such as alder (*Alnus*), oak (*Quercus*), willow (*Salix*), grasses (Poaceae), plantains, the carrot family (Apiaceae), dandelions (Lactuceae) and cereals, signifying that the pollen findings from the site are consistent with those of Pannett and Morey (1976) at Cross Hill.

The interpretation of the Cross Hill pollen initially describes a woodland landscape dominated by mixed oak, with a fringing swamp or alder woodland environment along the course of the palaeochannel. The pollen data record a major vegetation change, attributed to the medieval period, when the woodlands had been cleared and superseded by open pasture and arable land (Pannett and Morey 1976). However, as no radiocarbon dates were obtained from the Cross Hill pollen sequence, its chronology has been estimated from the historic geography of the area. The interpretation of the pollen from the site is consistent with the evidence from Cross Hill. The pollen evidence indicates that the alder woodland was widespread, probably along the palaeochannel and fringes of the river channel; this environment did not change until the medieval period, where significant changes in land use occurred. This involved the creation of the medieval open fields of the Isle of Coton, on the adjacent terraces, and possibly attempts to drain parts of the flood plain, so that it could be farmed.

9.8 ANIMAL BONE

Alan Pipe

INTRODUCTION AND METHODOLOGY

Each identifiable fragment was recorded in terms of species, skeletal element, body side, age, sex, fragmentation and modification. Evidence for age at death was derived from surface texture, epiphysial fusion or dental eruption and wear as appropriate, following Amorosi (1989), Bull and Payne (1982), Grant (1982), Payne (1973) and Schmid (1972). Pathological changes were identified, described and interpreted following Baker and Brothwell (1980). Species and skeletal elements were determined using the MOLA animal bone reference collection together with Boessneck (1969) and Schmid (1972). Fragmentation was recorded using a numerical zone method devised internally at MOLA. Similarly, post-mortem modifications – butchery, working, burning and gnawing – were described using standard codes and conventions in use by MOLA Osteology. All fully fused, skeletally adult and well-preserved bones were measured using the techniques of von den Driesch (1976). Table 12 shows total and period recovery from the site as species and fragment counts. Table 13 shows the overall assemblage catalogue from the site in terms of species, skeletal representation, age, epiphysial fusion and sex. Table 14 shows mandibular (lower jaw) dental eruption and wear evidence and age estimates (after Payne 1973; Grant 1982).

FAUNAL COMPOSITION

This well-preserved, but very small assemblage allows some qualitative interpretation of recovery in terms of species, carcass part and age at death. For each period, the bulk of the fragment count was provided by the major mammalian domesticates, particularly sheep/goat (*Ovis aries/Capra hircus*) (including sheep) and, to a lesser extent, cattle (*Bos taurus*), with comparatively few fragments of pig (*Sus scrofa*) and no definite identification of goat. Cattle- and sheep-sized fragments total 46 fragments, 29.5% of the total fragment count. Chicken (*Gallus gallus*) produced only two fragments: an adult humerus (upper wing) and juvenile tibia ('drumstick') from Open Area 10 ditch fill [252] (period 5; Chapter 5.2); horse (*Equus caballus*) produced only a worn tooth from Building 4 make-up [904] (period 4). For all periods sheep/goat (and 'sheep-sized') provide the bulk of the fragment count with cattle (and 'cattle-sized') substantially sparser, and pig comparatively very scarce. Recovery of fish

Table 12 Recovery of hand-collected and wet-sieved animal bone by fragment counts

Species		Period			Total
Common name	Latin name	4	5	6	
Ray, thornback	*Raja clavata*	-	1	-	1
Chicken	*Gallus gallus*	-	2	-	2
Cattle	*Bos taurus*	10	12	5	27
Cattle-sized	-	8	9	5	22
Sheep	*Ovis aries*	3	1	2	6
Sheep/goat	*Ovis aries/Capra hircus*	20	29	11	60
Sheep-sized	-	12	5	7	24
Pig	*Sus scrofa*	4	6	3	13
Horse	*Equus caballus*	1	-	-	1
Total		58	65	33	156

Table 13 Catalogue of hand-collected and wet-sieved animal bone, by period and land use

Period	Land use	Context	Feature	Taxon	Bone	Age	Fusion Prox/ant	Fusion Dis/pos	Sex	No.
4	B1	[312]	debris	cattle	innominate	-	-	-	-	1
	B1	[312]	debris	cattle	radius	-	fused	-	-	1
	B1	[312]	debris	cattle-sized	innominate	-	-	-	-	2
	B1	[312]	debris	cattle-sized	rib	-	-	-	-	1
	B1	[312]	debris	pig	phalange 1	sub-adult	just fused	fused	-	1
	B1	[312]	debris	sheep	metatarsal	-	fused	-	-	1
	B1	[312]	debris	sheep-sized	vertebra, thoracic	-	-	-	-	1
	B1	[312]	debris	sheep/goat	humerus	-	-	-	-	2
	B1	[312]	debris	sheep/goat	innominate	-	-	-	-	1
	B1	[312]	debris	sheep/goat	tooth, mandibular	young adult	-	-	-	1
	B1	[312]	debris	sheep/goat	metacarpal	-	fused	-	-	1
	B1	[312]	debris	sheep/goat	skull	-	-	-	-	1
	B4	[867]	make-up	sheep/goat	mandible	adult	-	-	-	1
	B4	[904]	make-up	cattle	phalange 1	juvenile	unfused	fused	-	1
	B4	[904]	make-up	cattle	scapula	-	-	-	-	1
	B4	[904]	make-up	cattle-sized	long bone	-	-	-	-	1
	B4	[904]	make-up	cattle-sized	rib	-	-	-	-	3
	B4	[904]	make-up	horse	tooth	adult	-	-	-	1
	B4	[904]	make-up	pig	innominate	-	-	-	-	1
	B4	[904]	make-up	pig	metacarpal 4	-	fused	-	-	1
	B4	[904]	make-up	sheep-sized	long bone	-	-	-	-	5
	B4	[904]	make-up	sheep-sized	rib	-	-	-	-	4
	B4	[904]	make-up	sheep/goat	vertebra, cervical	juvenile	-	unfused	-	1
	B4	[904]	make-up	sheep/goat	innominate	-	-	-	-	1
	B4	[904]	make-up	sheep/goat	innominate	-	-	-	-	1
	B4	[904]	make-up	sheep/goat	nasal	-	-	-	-	1
	B4	[904]	make-up	sheep/goat	scapula	-	-	-	-	1
	OA7	[933]	make-up	cattle	radius	-	-	-	-	1
	OA7	[909]	pit	sheep/goat	hyoid	adult	-	-	-	1
	OA7	[905]	make-up	cattle	ulna	-	-	-	-	1
	OA7	[905]	make-up	sheep/goat	tooth, maxillary	adult	-	-	-	1
	OA7	[905]	make-up	sheep/goat	tibia	-	-	-	-	1
	OA8	[924]	grave	cattle	tooth, maxillary	adult	-	-	-	1
	R1	[203]	make-up	sheep	metacarpal	-	fused	-	-	1
	R1	[203]	make-up	sheep	metatarsal	-	fused	-	-	1
	R1	[203]	make-up	sheep-sized	rib	-	-	-	-	1
	R1	[203]	make-up	sheep/goat	metacarpal	-	-	-	-	1
	R1	[203]	make-up	sheep/goat	metatarsal	-	-	-	-	1

Table 13 (cont)

Period	Land use	Context	Feature	Taxon	Bone	Age	Fusion Prox/ant	Fusion Dis/pos	Sex	No.
4	R1	[203]	make-up	sheep/goat	metatarsal	-	-	-	-	2
	R1	[203]	make-up	sheep/goat	phalange 1	adult	fused	fused	-	1
	R1	[293]	make-up	cattle	calcaneum	adult	fused	-	-	1
	R1	[319]	dump	cattle	femur	-	-	fused	-	1
	R1	[319]	dump	cattle	phalange 2	adult	fused	fused	-	1
	R1	[319]	dump	sheep-sized	rib	-	-	-	-	1
	S1	[917]	posthole	cattle-sized	rib	-	-	-	-	1
	S1	[917]	posthole	pig	vertebra, cervical	juvenile	unfused	unfused	-	1
5	B5	[303]	dump	cattle	radius	-	fused	-	-	1
	OA10	[278]	ditch	cattle	mandible	young adult	-	-	-	1
	OA10	[278]	ditch	cattle-sized	rib	-	-	-	-	1
	OA10	[278]	ditch	pig	tooth, mandibular	adult	-	-	-	1
	OA10	[278]	ditch	pig	tooth	-	-	-	-	1
	OA10	[278]	ditch	sheep-sized	rib	-	-	-	-	3
	OA10	[278]	ditch	sheep/goat	hyoid	adult	-	-	-	1
	OA10	[278]	ditch	sheep/goat	tooth, mandibular	adult	-	-	-	1
	OA10	[278]	ditch	sheep/goat	tooth, maxillary	adult	-	-	-	1
	OA10	[278]	ditch	sheep/goat	phalange 3	adult	fused	-	-	1
	OA10	[892]	ditch	cattle-sized	long bone	-	-	-	-	1
	OA10	[892]	ditch	cattle-sized	rib	-	-	-	-	1
	OA10	[892]	ditch	sheep-sized	rib	-	-	-	-	1
	OA10	[892]	ditch	sheep/goat	tibia	-	-	-	-	1
	OA10	[252]	ditch	cattle	calcaneum	juvenile	unfused	-	-	1
	OA10	[252]	ditch	cattle	mandible	-	-	-	-	1
	OA10	[252]	ditch	cattle	mandible	-	-	-	-	1
	OA10	[252]	ditch	cattle	mandible	-	-	-	-	1
	OA10	[252]	ditch	cattle	phalange 2	adult	fused	fused	-	1
	OA10	[252]	ditch	cattle	sacrum	juvenile	unfused	-	-	1
	OA10	[252]	ditch	cattle	scapula	-	-	fused	-	1
	OA10	[252]	ditch	cattle-sized	rib	-	-	-	-	2
	OA10	[252]	ditch	chicken	humerus	adult	fused	fused	-	1
	OA10	[252]	ditch	chicken	tibia	juvenile	-	-	-	1
	OA10	[252]	ditch	pig	humerus	-	-	-	-	1
	OA10	[252]	ditch	pig	innominate	-	-	-	-	1
	OA10	[252]	ditch	sheep/goat	vertebra, cervical	adult	fused	unfused	-	1
	OA10	[252]	ditch	sheep/goat	horn core	adult	-	-	-	1
	OA10	[252]	ditch	sheep/goat	innominate	adult	fused	fused	male	1
	OA10	[252]	ditch	sheep/goat	mandible	-	-	-	-	1
	OA10	[252]	ditch	sheep/goat	mandible	adult	-	-	-	1
	OA10	[252]	ditch	sheep/goat	mandible	adult	-	-	-	1
	OA10	[252]	ditch	sheep/goat	tooth, mandibular	adult	-	-	-	2
	OA10	[252]	ditch	sheep/goat	tooth, mandibular	adult	-	-	-	2
	OA10	[252]	ditch	sheep/goat	metacarpal	-	fused	-	-	1
	OA10	[252]	ditch	sheep/goat	metacarpal	-	-	-	-	1
	OA10	[252]	ditch	sheep/goat	tooth, maxillary	adult	-	-	-	1
	OA10	[252]	ditch	sheep/goat	skull	-	-	-	-	2
	OA10	[252]	ditch	sheep/goat	tarsal, central	-	-	-	-	1
	OA10	[252]	ditch	ray, thornback	dermal spine	-	-	-	-	1
	R2	[232]	make-up	cattle	tooth, mandibular	sub-adult	-	-	-	1
	R2	[232]	make-up	cattle-sized	rib	-	-	-	-	1
	R2	[232]	make-up	pig	femur	foetal/neonate	unfused	unfused	-	1
	R2	[232]	make-up	sheep	metatarsal	-	fused	-	-	1
	R2	[232]	make-up	sheep-sized	vertebra, thoracic	-	-	-	-	1
	R2	[232]	make-up	sheep/goat	hyoid	-	-	-	-	1
	R2	[232]	make-up	sheep/goat	mandible	adult	-	-	-	1
	R2	[232]	make-up	sheep/goat	mandible	adult	-	-	-	1
	R2	[232]	make-up	sheep/goat	mandible	adult	-	-	-	1
	R2	[232]	make-up	sheep/goat	mandible	-	-	-	-	1
	R2	[232]	make-up	sheep/goat	tibia	-	-	fused	-	1
	R2	[836]	make-up	cattle-sized	rib	-	-	-	-	1
	R2	[836]	make-up	pig	tibia	-	-	-	-	1
	R2	[201]	make-up	cattle-sized	rib	-	-	-	-	1
	R2	[201]	make-up	sheep/goat	radius	-	fused	-	-	1
	S4	[274]	structural	cattle	phalange 1	adult	fused	fused	-	1

Table 13 (cont)

Period	Land use	Context	Feature	Taxon	Bone	Age	Fusion Prox/ant	Fusion Dis/pos	Sex	No.
5	S5	[827]	external	cattle	scapula	-	-	fused	-	1
	S5	[827]	external	cattle-sized	long bone	-	-	-	-	1
	S5	[827]	external	sheep/goat	metacarpal	adult	-	fused	-	1
6	B11	[218]	ditch	sheep/goat	humerus	-	-	-	-	1
	B11	[218]	ditch	sheep/goat	metatarsal	juvenile	-	unfused	-	1
	B14	[58]	dump	cattle-sized	rib	-	-	-	-	1
	B14	[65]	dump	cattle-sized	tibia	juvenile	-	-	-	1
	B14	[66]	dump	pig	tooth	juvenile	-	-	-	1
	B17	[969]	cesspit	cattle	vertebra, lumbar	-	-	-	-	1
	B18	[110]	make-up	cattle	phalange 1	adult	fused	fused	-	1
	B18	[110]	make-up	sheep	metatarsal	-	fused	-	-	1
	B18	[112]	make-up	cattle-sized	long bone	-	-	-	-	2
	B18	[112]	make-up	sheep/goat	femur	-	-	-	-	1
	B18	[112]	make-up	sheep/goat	tooth, mandibular	adult	-	-	-	1
	B18	[112]	make-up	sheep/goat	tooth, maxillary	adult	-	-	-	1
	OA13	[76]	dump	cattle	vertebra, cervical	juvenile	unfused	unfused	-	1
	OA13	[76]	dump	cattle	ulna	-	-	-	-	1
	OA13	[76]	dump	sheep-sized	rib	-	-	-	-	1
	OA13	[76]	dump	sheep/goat	scapula	-	-	fused	-	1
	OA13	[90]	dump	sheep-sized	rib	-	-	-	-	1
	OA13	[207]	make-up	sheep-sized	skull	-	-	-	-	2
	OA13	[207]	make-up	sheep/goat	tooth, maxillary	-	-	-	-	1
	R3	[298]	dump	cattle	scapula	-	-	fused	-	1
	R3	[298]	dump	sheep	metatarsal	adult	fused	fused	-	1
	R3	[298]	dump	sheep/goat	mandible	adult	-	-	-	1
	R3	[298]	dump	sheep/goat	metatarsal	-	fused	-	-	1
	R3	[266]	dump	cattle-sized	rib	-	-	-	-	1
	R3	[275]	dump	sheep-sized	long bone	-	-	-	-	2
	R3	[275]	dump	sheep-sized	rib	-	-	-	-	1
	R3	[275]	dump	sheep/goat	tooth, maxillary	adult	-	-	-	2
	R3	[199]	debris	pig	mandible	juvenile	-	-	female	1
	R3	[199]	debris	pig	tooth, mandibular	juvenile	-	-	female	1
Total										156

Table 14 Mandibular dental eruption and wear of the hand-collected and wet-sieved animal bone, by period and land use (after Payne 1973; Grant 1982)

Period	Land use	Context	Feature	Taxon	Wear stage (Grant 1982)	Wear stage (Payne 1973)	Age estimate (years)
4	B1	[312]	debris	sheep/goat	M3/7	M3/7	2.0–3.0
	B4	[867]	make-up	sheep/goat	M3/10	M3/13	3.0–4.0
5	OA10	[278]	ditch	cattle	M1/13; M2/12; M3/7	-	>3.0
	OA10	[278]	ditch	pig	PM4/9	-	2.0–3.0
	OA10	[252]	ditch	cattle	PM2/3	-	2.0–3.0
	OA10	[252]	ditch	sheep/goat	M3/7	M3/7	2.0–3.0
	OA10	[252]	ditch	sheep/goat	M3/10	M3/11	3.0–4.0
	OA10	[252]	ditch	sheep/goat	PM14; M1/16; M2/12	PM13; M1/18; M2/13	3.0–4.0
	OA10	[252]	ditch	sheep/goat	M1/12; M2/12; M3/10	M1/13; M2/13; M3/12	3.0–4.0
	R2	[232]	make-up	cattle	M3/6	-	>3.0
	R2	[232]	make-up	sheep/goat	PM4/10	PM4/10	2.0–3.0
	R2	[232]	make-up	sheep/goat	PM4/10; M1/12; M2/12; M3/8	PM4/7; M1/13; M2/13; M3/8	2.0–3.0
	R2	[232]	make-up	sheep/goat	PM4/10; M1/12; M2/12; M3/8	PM4/9; M1/13; M2/13; M3/8	2.0–3.0
	R2	[232]	make-up	sheep/goat	M3/2	M3/2	<1.0
6	B18	[112]	make-up	sheep/goat	M3/12	M3/15	4.0–6.0
	R3	[298]	dump	sheep/goat	M3/12	M3/15	4.0–6.0

was limited to a single dermal spine of a marine/estuarine species: a ray, probably roker or thornback ray (*Raja clavata*), from Open Area 10 ditch fill [252]. This is an economically important food species found in shallow waters around all British coasts and is the main constituent of the 'skate' caught by angling and landed by inshore lining and bottom-trawling (Wheeler 1978, 35–6).

With these exceptions, there was no recovery of fish, amphibians, poultry, 'game' birds or mammals, scavengers or commensal species, and there was therefore no potential for interpretation of local habitats and no indication of higher-status consumption and waste disposal.

For each period, the fragment counts for the major domesticates – cattle, sheep/goat and pig – suggest primary-processing and post-consumption waste associated with a meat diet predominantly derived from beef, mutton, lamb and pork and/or bacon. Although including skeletal elements of prime meat-bearing quality – vertebrae, upper fore- and hindleg – the major domesticates were represented largely by elements of the head, foot and toe with a particular bias towards maxilla (upper jaw), mandible (lower jaw), metacarpal (forefoot) and metatarsal (hindfoot), relatively robust areas of more limited meat-bearing value often discarded after primary carcass-processing. The overall impression is of disposal of post-consumption waste with a rather larger component derived from primary carcass-processing; all predominantly associated with consumption of beef, mutton and pork and/or bacon from prime adult animals. The small size of the period assemblages does not allow worthwhile inter-period or intra-site comparison.

Dental evidence for cattle, sheep/goat and pig indicates consumption and disposal predominantly of adult, although not old, animals, with cattle in the third and at least the fourth years; sheep/goat in the third, fourth and fifth to seventh years; and pig in the third year. Epiphysial fusion also mainly indicates recovery of adults but with significant recovery of juveniles, although there are no infants and only one foetal or neonate animal, a piglet from Road 2 make-up deposit [232] (period 5; Chapter 5.2).

MODIFICATION

Apart from clear evidence of butchery on cattle, sheep/goat and pig, there was no tool-mark evidence for bone- or horn-working or any other industrial or craft activity (Table 15). One possible exception is an adult sheep metatarsal from period 4 (R1, make-up [203]; Chapter 3.3), which had been knife-cut at the midshaft, probably resulting from skinning. Butchery evidence from cattle and sheep/goat indicates midline splitting of skulls and vertebrae, probably from division of the carcass into 'sides'; and transverse chops on major long bones, probably associated with removal and subdivision of the limbs into manageable 'joints'.

Table 15 Modification of the hand-collected and wet-sieved animal bone, by period and land use

Period	Land use	Context	Feature	Taxon	Bone	Modification	Description
4	B1	[312]	debris	cattle	radius	butchery	split midline
	B1	[312]	debris	cattle-sized	innominate	butchery	chopped transverse
	B4	[904]	make-up	cattle	scapula	butchery	split lateral/medial
	OA7	[905]	make-up	cattle	ulna	butchery	chopped transverse
	R1	[203]	make-up	sheep	metatarsal	skinning	knife-cut posterior midshaft
	R1	[319]	dump	cattle	femur	gnawing	canine/slight
5	OA10	[278]	ditch	cattle-sized	rib	butchery	chopped transverse
	OA10	[252]	ditch	cattle	mandible	butchery	chopped transverse
	OA10	[252]	ditch	cattle	sacrum	butchery	split midline
	OA10	[252]	ditch	cattle	scapula	butchery	split lateral/medial
	OA10	[252]	ditch	pig	innominate	butchery	chopped transverse
	OA10	[252]	ditch	sheep/goat	innominate	butchery	knife-cut acetabulum
	OA10	[252]	ditch	sheep/goat	metacarpal	gnawing	canine/slight
	OA10	[252]	ditch	sheep/goat	skull	butchery	split midline
	OA10	[252]	ditch	sheep/goat	skull	pathology	horn core rudimentary
	R2	[232]	make-up	sheep/goat	mandible	butchery	knife-cuts medial
	R2	[232]	make-up	sheep/goat	mandible	pathology	premolar 2 absent
	R2	[201]	make-up	cattle-sized	rib	butchery	knife-cuts medial
	S5	[827]	external	cattle	scapula	butchery	split lateral/medial
6	B14	[58]	dump	cattle-sized	rib	butchery	chopped medial
	B14	[65]	dump	cattle-sized	tibia	gnawing	rodent/slight
	B17	[969]	cesspit	cattle	vertebra, lumbar	butchery	chopped transverse
	OA13	[76]	dump	cattle	vertebra, cervical	butchery	split midline
	OA13	[76]	dump	cattle	ulna	butchery	chopped medial
	R3	[298]	dump	cattle	scapula	butchery	split lateral/medial
	R3	[266]	dump	cattle-sized	rib	butchery	sawn through transverse

Table 16 Greatest lengths and stature estimate of the hand-collected and wet-sieved animal bone, by period (after von den Driesch and Boessneck 1974)

Period	Land use	Context	Taxon	Bone	Max length (mm)	Estimated stature (m)
5	OA10	[252]	chicken	humerus	79	-
6	R3	[298]	sheep	metatarsal	127	0.577

Pig produced only one butchered bone, a transversely chopped innominate from period 5 (OA10, ditch fill [252]; Chapter 5.2), possibly in preparation of a 'chump' chop.

Virtually all butchery involved use of cleavers and knives, although one bone, a cattle-sized rib fragment from period 6 (R3, dump [266]; Chapter 6.3), had been sawn through transversely.

Evidence for gnawing is extremely sparse; canine gnawing was noted on a cattle femur from period 4 (R1, dump [319]; Chapter 3.3), and a sheep/goat metacarpal from period 5 (OA10, ditch fill [252]; Chapter 5.2). Slight rodent, probably mouse, gnawing was noted on a cattle-sized tibia from period 6 (B14, dump [65]; Chapter 6.4).

PATHOLOGICAL CHANGES

Recovery of evidence for pathological change was limited to two records, both from period 5. A sheep skull from Open Area 10, ditch fill [252] showed a polled horn core; a sheep/goat mandible from Road 2, make-up deposit [232] showed non-metrical variation with absence of the second premolar (Table 15; Chapter 5.2).

STATURE ESTIMATES AND METRICAL DATA FOR THE MAJOR DOMESTICATES

Table 16 gives the greatest lengths for all complete well-preserved long bones. Only one bone, a sheep (*Ovis aries*) metatarsal from period 6 (R3, dump [298]), was sufficiently complete and well preserved to allow calculation of an estimated stature, a withers (shoulder) height of 0.577m, at the lower extreme range of late post-medieval sheep statures from the City of London (A Pipe, pers obs).

9.9 THE HUMAN REMAINS

Brian Connell

METHODOLOGY

All data were entered on to the MOLA human osteology relational database (Oracle 9). The osteological methods used are detailed in Connell and Rauxloh (2003), but these can be summarised as follows: as this sample contained only adults, the determination of age at death was based on morphological changes on the pubic symphysis (Brooks and Suchey 1990), the auricular surface (Lovejoy et al 1985; Buckberry and Chamberlain 2002) and on changes at the costo-chondral junction (Iscan et al 1984; 1985) where applicable. The determination of the sex of adult skeletons was based on visual observation of pelvic and skull characteristics following Phenice (1969) and Rösing et al (2007) and were scored on a five-point scale following Buikstra and Ubelaker (1994). Measurements from each skeleton were recorded following Brothwell (1981) and Buikstra and Ubelaker (1994). The calculation of adult stature was based on the formulae devised by Trotter (1970).

All pathological changes to bones and teeth were described following Roberts and Connell (2004), which recommends that all palaeopathology recording should be based on the accurate description of the location and type of bone changes, plus their distribution within the skeleton. General classifications of disease processes follow Ortner (2003) and Aufderheide and Rodriguez-Martin (1998) and are supported with clinical data from Resnick (2002).

THE SKELETONS

The remains from four individuals were examined. All of the skeletons had been truncated or disturbed by post-medieval intrusions, or in one case, [855], by the limit of excavation (Fig 30a; Chapter 4.7).

SKELETON [855]

The remains consist of vertebrae (T6–T12), four right ribs and the infraspinous portion of the right scapula. They are from an adult individual, although the sex cannot be determined. The thoracic vertebrae show extensive ossification of ligamentum flavum, perhaps suggesting that this was an older adult.

SKELETON [925]

These remains consist of a skeleton truncated at the legs. It represents the most complete skeleton in this sample (skull, spine, upper limbs, torso and left femur). This skeleton was radiocarbon-dated to cal AD 1260–1320 (68% probability) or cal AD 1350–90 (95% probability) (Beta 241622, 690±40 BP; below, 9.10). The skeleton is from an adult male aged 36–45 years at death. There are several pathological changes in the skeleton. Firstly, the vertebral column shows intervertebral disc disease in the cervical vertebrae (C5–C6) and there are multiple Schmorl's nodes (disc herniations) in the lower thoracic and lumbar vertebrae. The left second metacarpal has a midshaft fracture that has healed. The distal segment of the bone has inclined by approximately 15°. Metacarpals are often broken by injuries

to the head of the bones with the fingers flexed, that is punching with the fist (Dandy and Edwards 1998, 224). A minor congenital defect was also present in this individual because the atlas vertebra was fused to the skull. This is an example of border shifting, where vertebrae assume the characteristics of adjacent spinal segments, in this case known as occipitocervical border shifting. This is the most commonly seen expression of border shifts at this level (Barnes 1994, 88).

SKELETON [932]

These remains consist of fragments of torso, pelvis and femora. Very little of the skeleton was found and the bones are very poorly preserved. It was not possible to determine the sex of this individual, although the remains are those of an adult. No pathology was observed, although a non-metric trait (bilateral third trochanter) was seen on the femora.

SKELETON [962]

The remains of skeleton [962] consist of the lower legs only (right tibia and both feet). The remains are poorly preserved and no pathology was seen. The remains are those of an adult, although the sex could not be determined.

OTHER REMAINS

Three human tibia bones were identified among the hand-collected and wet-seived animal bone: one from road make-up [232] (R2, period 5) and two from external deposit [827] of the possible animal mill (S5, period 5).

DISCUSSION

The significance of these remains mainly derives from the fact that they represent the first skeletal evidence of a hospital cemetery in Shrewsbury (Chapter 4.6, 4.7). However, it has to be borne in mind that the remains comprise only four very incomplete individuals. The very small sample size and poor preservation have severely limited the amount of data that could be retrieved from these burials.

9.10 RADIOCARBON DATING

Craig Halsey and Bruce Watson

Two geoarchaeological subsamples were submitted to Beta Analytic for accelerator mass spectrometry (AMS) radiocarbon age estimation. The samples were taken from the top and base of the organic silts within BH4A (units 4.9 and 4.13; Fig 10; Figs 12–14; Chapter 2.6). The samples were processed to extract the detrital organic fraction from the sediment. The organic fraction was submitted for dating. The radiocarbon age estimates are presented in Table 17. Calibration was provided by Beta Analytic, using the calibration data published in Stuiver et al (1998), and is quoted to 95% confidence levels.

A sample from one of the human burials was subsequently submitted to Beta Analytic (Beta 241622, 690±40 BP). Calibration for this third date was provided by using the data published in Reimer et al (2004) (Table 17). This calibrated date at 68% probability is cal AD 1260–1320 or at 95% probability, cal AD 1350–90.

Table 17 Radiocarbon results; results are calibrated using published data (Stuiver et al 1998; Reimer et al 2004)

Laboratory no.	Sample reference	Material and context/ unit no.	$\delta^{13}C$ (‰)	Radiocarbon age (BP)	Calibrated date (68% confidence)	Calibrated date (95% confidence)
Beta 216902	NEV06_4.9	upper part of fluvial deposit BH4A	-26.6	1460±40	-	cal AD 540–660*
Beta 216903	NEV06_4.13	lower part of fluvial deposit BH4A	-27.6	1360±40	-	cal AD 630–710*
Beta 241622	NEV06_[925]	human bone [925]	-18.6	690±40	cal AD 1260–1320**	cal AD 1350–90**

* result using the calibration data published in Stuiver et al 1998; ** result using the calibration data published in Reimer et al 2004

FRENCH AND GERMAN SUMMARIES

RÉSUMÉ

Madeleine Hummler

Un programme exhaustif de recherches archéologiques et géo-archéologiques fut mené à bien par MOLA (Museum of London Archaeology) en 2006–2007, avant la construction du 'Theatre Severn' dans le faubourg de Frankwell à Shrewsbury. Le fleuve Severn, qui a tant influencé la forme de la ville, constitue un élément clef pour la compréhension du site. La géomorphologie de cette partie amont du fleuve a créé des méandres : une crique sur la courbe extérieure a formé un lieu d'arrimage abrité à l'intérieur des plaines alluviales. La zone, tout comme le quartier de Frankwell, était régulièrement inondée jusqu'à la construction d'ouvrages de protection contre les eaux. Les analyses polliniques de contextes datant de l'époque anglo-saxonne ont révélé qu'il s'agissait bien d'un milieu dominé par des prairies humides, bien que certains indices signalent également la présence de zones boisées et de champs arables.

Au cours du IXe siècle apr. J.-C. Frankwell devint un faubourg tête de pont du bourg fortifié (*burh*). La présence de matériel archéologique dans des contextes secondaires indique que le site a probablement été établi au Xe siècle. Cependant les premières activités datables remontent au XIIe siècle ou peu après : il s'agit de remblais provenant d'ailleurs déposés pour rehausser le niveau du sol. A l'origine on traversait la Severn par un gué mais au début du XIIe siècle un pont (Welsh Bridge) reliant Frankwell au quartier de Mardol avait été construit. La rive du côté Frankwell de ce pont d'époque normande était probablement défendue par une porte en maçonnerie de frome trapézoïdale. Au XIIe siècle la construction de deux bastions carrés en maçonnerie semble avoir suivi cette première phase d'ouvrages défensifs du pont. Ces aménagements étaient peut-être liés au remplacement d'un pont en bois par un pont en pierre. Les bastions à l'entrée du pont furent reconstruits à plus grande échelle au XIIIe ou au XIVe siècle, vraisemblablement à la suite de l'octroi d'une concession royale en 1282. Ces bastions étaient connus sous le nom de Welsh Gate et représentaient les défenses les plus avancées du pont. Le pont possédait également une porte intérieure, dénommée St George's Gate, et plus au sud une tour de pont-levis appelée Mardol Gate. De nos jours les ponts fortifiés sont rares en Angleterre et au Pays de Galles car ils ont été démolis à l'époque postmédiévale ; cependant des recherches en cours sur ce type de structure ont établi qu'il existe au moins 38 exemples de ce genre de pont, y compris English Bridge de l'autre côté de Shrewsbury. Henri Tudor (qui deviendra le roi Henri VII) traversa Welsh Bridge sans rencontrer d'opposition le 12 août 1485 avant de se diriger vers l'est pour affronter l'armée de Richard III à Bosworth.

Welsh Bridge était aussi connu sous le nom de St George's Bridge à cause de sa proximité avec un hôpital portant le nom de ce saint établi autour de 1155 le long du côté est de la voie d'accès au pont. Les fouilles ont révélé des inhumations dans ce secteur, dont une datée par radiocarbone vers la fin du XIIIe ou début du XIVe siècle. Ces tombes faisaient vraisemblablement partie du cimetière de l'hôpital. Il semble qu'au cours du XIIIe ou XIVe siècle on érigea un grand bâtiment en maçonnerie donnant sur la rue devant le cimetière de l'hôpital.

La construction en 1608 à Frankwell d'un quai pour barques jouxtant Welsh Bridge a probablement mené à la réduction des bastions d'entrée pour élargir l'arc le plus septentrional du pont (demeuré caché jusqu'alors) et permettre l'accès des quais aux véhicules. Cet accès a nécessité la construction des murs de soutènement des quais. Au XVIIe et au XVIII siècle divers bâtiments et peut-être un moulin actionné par le travail des bêtes furent construits le long de la voie d'accès au pont.

En 1789 Welsh Bridge était en mauvais état et la ville (Shrewsbury Corporation) décida de remplacer le pont. Le nouveau pont fut construit entre 1793 et 1795 à environ 60m en aval de l'ancien. Dans la partie ouest du site un mur d'appui massif en maçonnerie et un quai pour barques furent reliés à la construction du nouveau pont. L'aménagement du nouveau pont déclencha une série de transformations majeures. Premièrement on gagna une très grande surface de terrain sur l'ancienne crique en déplaçant les rives de 30 à 35m vers le sud. Deuxièmement on démolit entièrement l'ancien pont sauf son arc septentrional (à sec) et l'ancien bastion occidental. Les vestiges du pont et de sa voie d'accès devinrent un cul-de-sac à l'intérieur des terres. Au début du XIXe siècle on bâtit une rangée de maisons en briques le long de la voie d'accès à l'ancien pont, à l'est, et en 1865 une chapelle méthodistes et une école furent fondées à l'ouest. Cette chapelle a été incorporée au nouveau théâtre comme 'bar de la chapelle'. Toutes les propriétés résidentielles du site ont été rasées dans les années 1960. Les remblais des caves et le remplissage de quelques fosses d'aisances et de quelques puisards ont produit un mobilier varié (verre et céramique compris) du XIXe siècle et du début du XXe siècle. Les vestiges de l'arc nord du pont furent stabilisés et les parties endommagées réparées ou reconstruites avant d'être à nouveau enfouies sous la scène du nouveau théâtre.

ZUSAMMENFASSUNG

Madeleine Hummler

Während 2006–2007 führte MOLA (Museum of London Archaeology) ein ausführliches archäologisches und geoarchäologisches Untersuchungsprogramm vor dem Bau des neuen ‚Theatre Severn' im Vorort von Frankwell in Shrewsbury durch. Der Fluss Severn, der die Stadt Shrewsbury so geprägt hat, ist der Schlüssel für unser Verständnis des Befundes. Die Geomorphologie dieses Abschnittes des oberen Severns hat Mäander gebildet. Eine Bucht, die einen geschützten Anlegeplatz innerhalb eines flachen Überschwemmungsgebiets bot, ist in der äußeren Schlaufe eines Mäanders entstanden. Dieser Bereich, wie auch der größte Teil von Frankwell, war bis zum Bau von Hochwasserschutzanlagen regelmäßig überflutet. Pollenanalytische Ergebnisse aus angelsächsischen Schichten haben gezeigt, dass die umweltlichen Verhältnisse vorwiegend auf Auen deuten. Einige Hinweise auf Wälder und Ackerbau waren aber auch vorhanden.

Im 9. Jh. entwickelte sich Frankwell als Brückenkopf-Vorort der befestigten Stadt (*burh*) von Shrewsbury. Den Funden in sekundärer Lage nach wurde die Fundstätte erstmals im 10. Jh. besiedelt. Jedoch fand die älteste, sicher datierte Tätigkeit erst im Laufe des 12. Jhs oder sogar später statt: Es handelte sich um die Deponierung von Erde, die von außen gebracht wurde, um den Boden zu erhöhen. Ursprünglich überquerte man den Severn mittels einer Furt, aber eine Brücke (Welsh Bridge), die Frankwell mit dem Bezirk Mardol verband, wurde am Anfang des 12. Jhs gebaut. Wahrscheinlich war der in Frankwell liegende Teil der normannischen Brücke mit einem trapezförmigen Steintor geschützt. Im Laufe des 12. Jhs war diese erste Phase der Brückenbefestigung scheinbar mit zwei Bollwerken ersetzt. Möglicherweise liegt dieser Umbau mit dem Ersatz der alten Holzbrücke durch eine Steinbrücke in Zusammenhang. Während des 13. Jhs oder im 14. Jh. wurden die Torbollwerke vergrößert, wahrscheinlich infolge einer königlichen Förderung von 1282. Diese Bastionen waren auch Welsh Gate genannt und waren die äußerst gelegenen Teile der Brückenbefestigungen. Es gab auch ein inneres Tor, St George's Gate genannt, und eine Zugbrücke (als Mardol Gate bekannt) lag weiter südlich. Heute kommen mittelalterliche befestigte Brücken in England und Wales sehr selten vor, weil sie in der frühen Neuzeit niedergerissen wurden; neue, laufende Forschung hat aber nachgewiesen, dass es mindestens 38 solche Strukturen gab, einschließlich der English Bridge auf der anderen Seite von Shrewsbury. Am 12. August 1485 überquerte Henry Tudor (später König Heinrich VII.) ungehindert die Welsh Bridge auf dem Weg nach Osten, wo er dem Heer von Richard III. in Bosworth entgegenging.

Welsh Bridge war auch als St George's Bridge bekannt, weil die Brücke in der Nähe eines nach diesem Heiligen genannten Spitals lag; dieses Spital wurde um 1155 n.Chr. entlang der östlichen Seite der Straße die zur Brücke führte gegründet. Die Ausgrabungen haben Bestattungen entdeckt, darunter eine, die eine ^{14}C-Datierung des späten 13. Jhs oder frühen 14. Jhs ergeben hat. Die Bestattungen gehörten wahrscheinlich zum Spitalfriedhof. Ein großes Steingebäude wurde offenbar während des 13. oder 14. Jhs entlang der vor dem Spitalfriedhof gelegenen Straße errichtet.

Der Bau im Jahre 1608 einer Landestelle für Binnenschiffe in Frankwell unmittelbar neben der Welsh Bridge muss man wahrscheinlich mit der Reduzierung der Torbollwerke in Zusammenhang bringen, sodass der bisher verborgene nördlichste Bogen der Brücke erweitert werden konnte, um die Zufahrt von Fahrzeugen bis zu den Kais zu ermöglichen. Solch eine Zufahrt benötigte eine Festigung der Kaianlagen mit Stützmauern. Verschiedene Gebäude und vielleicht auch eine Mühle, die mit Tieren betrieben wurde, wurden im 17. und 18. Jh. entlang der Brückenzufahrtsstraße gebaut.

Welsh Bridge war 1789 in solch einem schlechten Zustand, dass die Stadt (Shrewsbury Corporation) entschließ, die alte Brücke zu ersetzen. Die neue Brücke wurde zwischen 1793 und 1795 etwa 60m flussabwärts von der alten Brücke gebaut. Ein massiver Brückenpfeiler aus Stein und eine Kaianlage wurden im westlichen Teil des Geländes in den neuen Brückenbau eingegliedert. Diese neue Brücke war der Anlass zu mehreren erheblichen Veränderungen. Erstens wurde mit der Verschiebung der Uferlinie 30 bis 35m weiter südlich ein sehr großes Areal der ehemaligen Bucht des Flusses rückgewonnen. Zweitens wurde die ganze alte Brücke, mit der Ausnahme vom nördlichsten (trockensehenden) Bogen und vom westlichen Bollwerk, niedergerissen. Die Überreste der Brücke und der ehemaligen Zufahrtsstraße sind eine landumschlossene Sackgasse geworden. Im frühen 19. Jh. wurde eine Reihe Häuser aus Backstein entlang der östlichen Seite der ehemaligen Brückenzufahrtsstraße gebaut. Eine Methodistenkapelle und eine Schule wurden 1865 an der westlichen Seite der Brückenzufahrtsstraße eröffnet. Die ehemalige Kapelle ist heute im neuen Theater als ‚Bar der Kapelle' eingebaut. Sämtliche Wohnhäuser wurden in den 1960er Jahren abgerissen. Verschiedene Funde des 19. Jhs und des frühen 20. Jhs, darunter Keramik und Glas, wurden aus der Zuschüttung der Keller und einigen naheliegenden Jauchegruben und Sickergruben geborgen. Die Überreste des nördlichsten Bogens der ehemaligen Brücke wurden stabilisiert und die beschädigten Teile wurden entweder wiedergutgemacht oder wiederaufgebaut und dann unter der Hauptbühne des neuen Theaters vergrabt.

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Page numbers in **bold** indicate illustrations and maps
All street names and locations are in Shrewsbury unless specified otherwise
County names within parentheses refer to historic counties

B	Building
OA	Open Area
R	Road
S	Structure