

Worcester Urban Archaeological Strategy

**An outline resource
assessment and
research
framework for the
archaeology of
Worcester**



September 2007

This report is dedicated to three people whose vision and determination made the creation of an archaeological resource assessment and research framework for Worcester possible:

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Cover picture: Roman well at The Butts (Mike Napthan Archaeology)

An outline resource assessment and research framework for the archaeology of Worcester

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1 Introduction

1.1 The context and purpose of the outline resource assessment and research framework

There has been a settlement at Worcester for over 2000 years. For nearly all of these two millennia this place (essentially the present city centre) would have been recognisably urban by the standards of its time. Only a handful of towns in Britain can make a claim to such longevity. However – and here Worcester stands in contrast with many similar towns – much of this history of urban life is little known.

For nearly a millennium, until the end of the 9th century AD, archaeology is the only source by which we can understand Worcester's development. For several hundred more years archaeology remains the principal source, alongside the historical documents. For the later medieval and post-medieval periods, archaeological evidence is still important in many areas of the city's development and life which are poorly (if at all) served by documents, and crucially provides a means to demonstrate the contribution of the past to the present, through the fabric of buildings and below ground remains, and to describe and analyse the present form of the city.

Archaeological research into Worcester's past has, of course, a much shorter history, and serious attempts to understand the development of Worcester through the archaeological remains were not made until the mid-1960s. In the past 40 years, our understanding of the development of Worcester, particularly in the period up to the 'high medieval' (c 1250-1300) has increased enormously, and most of this is due to archaeological research, principally triggered by development.

As a result it is now possible to set out a resource assessment and research framework, identifying areas where our knowledge through archaeology is insufficient or lacking, but could be enhanced through structured and targeted archaeological research, including excavation. It is not intended that this resource assessment and research framework should be exclusive, and it can be expected that many new subjects for research will be added during the lifetime of this document, due to new discoveries or reassessment or reconsideration of previous archaeological work or other sources. Indeed, many new subjects have been added during the preparation of the document.

Not only is it now possible to set out research priorities in a more informed way than hitherto, but the increased pace of archaeological fieldwork makes it imperative that research priorities are identified, disseminated, and discussed as widely as possible among the archaeological community and beyond. The outline resource assessment and research framework is intended specifically to contribute to the following aims:

- In line with the Regional Research Framework, to provide a research context and grounding for development-related work
- To provide a basis for research programmes to answer particular questions or needs
- Generally to catalyse research into Worcester's past
- To provide a clearly articulated understanding of the results of archaeological research which can support initiatives to make information on Worcester's past more widely available.

1.2 Origins and development of the resource assessment and research framework

This outline resource assessment and research framework for the archaeology of the City of Worcester has been prepared as part of the final stage of the English Heritage-supported *Worcester Urban Archaeological Strategy* programme. It forms part of the assessment and characterisation stage of the programme, taking the place at this stage of a formally published assessment report. The intention remains to seek funding for an assessment report at a later date, perhaps following the publication of recent major excavations. In this, it sits alongside the *Historic Townscape Characterisation of Central Worcester* (consultation draft) and the *Archaeological Deposit Characterisation* (consultation draft). All are based to a greater or lesser extent upon the *Urban Archaeological Database* (UAD), which now forms the core of the city's Historic Environment Record (HER). While the deposit and townscape characterisations seek to describe particular aspects of the city's total archaeological resource and assess their significance, the resource assessment and research framework specifically examines the question of the major gaps or lacunae, as currently understood, in our knowledge of the city's archaeology, and how these might be addressed in the future. These are also considered, where appropriate, in the context of the city's wider regional and national significance for archaeological research.

Outstanding research questions are identified period by period

and, for most periods, are grouped into broader themes. Many are city-wide in their application (this refers mainly to the present urban core) though others apply only to restricted areas or even individual sites. The resource assessment and research framework for the outer areas of the city remain less well developed for all periods, and this will be evident from reading this document.

There are some issues that are not specific to particular periods but recur through all or most – either because they concern general themes that are of interest or present difficulties in all periods, or because they concern particular geographical areas over more than one period. These are examined together in section 7 (Cross-period themes). Section 8 identifies some issues relating to the overall dataset, including distributional biases, and offers a preliminary assessment of the archaeological potential and significance of Worcester as a whole.

Due to the resources available at this stage of the project, it was decided that the preparation of the resource assessment and research framework should in the first instance be carried out by one person (Nigel Baker). This took place during late 2003 and 2004, with further contributions up to mid-2006. Only very limited consultation took place during this period. The text was edited by James Dinn in stages between late 2004 and mid-2007.

Nigel Baker's work took specific account not only of published material but also of the (at the time, unpublished) conclusions of the Deansway excavation report (Dalwood and Edwards 2004), which make specific reference to research aims for Worcester, principally for the Roman – medieval periods. The section on Roman ironworking is informed by a research seminar held in Worcester in July 2001.

The resource assessment and research framework will be subject to regular review. This will aim to fit with the regular review programme of the Regional Research Framework (to be announced). However it is likely that review of specific periods or themes will be needed earlier than this. These may be developed through research seminars and/or circulated papers.

Comments on the resource assessment and research framework are welcomed at any time, and may be sent to Worcester City Council's Archaeological Officer (archaeology@worchester.gov.uk).

1.3 West Midlands Regional Research Framework

This document was produced during the later stages of the Regional Research Framework process and therefore benefitted from most of the web published papers. However, the regional research strategy itself was not available at the time of writing. It is intended to relate the Worcester strategy to the regional strategy when that is completed.

For Worcestershire, the relevant Regional Research Framework resource assessment papers (originally presented in 2002-03, subsequently rewritten for web publication) are:

Earlier prehistory: all papers covered the region as a whole (listed at http://www.iaa.bham.ac.uk/research/fieldwork_research_the_mes/projects/wmrrfa/sem1.htm)

Later prehistory: Derek Hurst, Middle Bronze Age to Late Iron Age Worcestershire (http://www.iaa.bham.ac.uk/research/fieldwork_research_the_mes/projects/wmrrfa/sem2.htm)

Roman and sub-Roman: Neil Lockett, Worcestershire in the Roman period (http://www.iaa.bham.ac.uk/research/fieldwork_research_the_mes/projects/wmrrfa/sem3.htm)

Post-Roman – Norman Conquest: Hal Dalwood, Worcestershire in the Post-Roman to Conquest Period (http://www.iaa.bham.ac.uk/research/fieldwork_research_the_mes/projects/wmrrfa/sem4.htm)

Medieval: Victoria Bryant, Medieval Worcestershire-Priorities and Potential (http://www.iaa.bham.ac.uk/research/fieldwork_research_the_mes/projects/wmrrfa/sem5.htm)

Post-medieval to c 1750: Malcolm Atkin, Archaeology in Worcestershire 1500-1750 (http://www.iaa.bham.ac.uk/research/fieldwork_research_the_mes/projects/wmrrfa/sem6.htm)

Post-medieval from c 1750: James Dinn, Worcestershire from 1750 (http://www.iaa.bham.ac.uk/research/fieldwork_research_the_mes/projects/wmrrfa/sem7.htm).

Other papers of particular relevance to Worcester include three covering specifically urban issues:

Nigel Baker, The Emergence of Towns in the Late Saxon Period -
http://www.iaa.bham.ac.uk/research/fieldwork_research_the_mes/projects/wmrrfa/sem4.htm

Nigel Baker, The Archaeology of the Larger Medieval Towns -
http://www.iaa.bham.ac.uk/research/fieldwork_research_the_mes/projects/wmrrfa/sem5.htm

Hal Dalwood, The Archaeology of Medieval Towns in the West Midlands -
http://www.iaa.bham.ac.uk/research/fieldwork_research_the_mes/projects/wmrrfa/sem5.htm.

1.4 Previous research strategies and agendas for Worcester

This document is by no means the first attempt at formulating a list of priorities for archaeological or historical research in the city. It is but the latest of a series, either explicitly framed, or more often implicit. The success of archaeological research in any particular period can be judged by the extent to which research questions, having been answered or reformulated on the basis of more exact knowledge, disappear from succeeding agendas, or are amended and developed.

Date	Author	Title / source	Periods covered
2004	Dalwood and Edwards	<i>Excavations at Deansway</i>	Roman – medieval
2004	Baker and Holt	<i>Urban growth and the medieval church</i>	Medieval
1997	Barker	Cathedral precinct	Anglo-Saxon and later
1990	Hughes	PhD thesis	Early post-medieval
1987	Mundy	Deansway excavation project design	All periods
1983	Roberts	Worcester excavation programme project design	All periods
1982	Beardsmore	Unpublished typescript	All periods

1980	Carver (1980a, 1980b)	<i>Medieval Worcester</i>	All periods
1969	Barker	<i>The Origins of Worcester</i>	All periods
1950s	Richardson	TWNC papers	Natural landform, elements of Roman and medieval

Table 1 Research statements and key documents

The Anglo-Saxon and medieval city remained firmly the province of documentary historians and architectural historians until the 20th century; to earlier writers, archaeology in Worcester was synonymous with the Roman period. The view that the city had Roman origins had been more or less settled even before serious antiquarian research began. The place-name Worcester was correctly taken as a sign of Roman origin, and writers from the 16th century to the 19th tried in vain to identify a likely Roman place-name for it from the Antonine and other contemporary itineraries. To Valentine Green, writing in the 18th century, the question of whether Worcester originated in the Roman or Anglo-Saxon period was still worth asking, though he himself answered it conclusively with reference to Andrew Yarranton's 17th-century excavations of slag deposits and associated Roman coins, other Roman coin finds around the city, and Roman roads in the countryside heading in the direction of Worcester (Green 1796). To Jabez Allies (1852) any remaining doubt regarding the existence of a Roman settlement on the site was dispelled by the discoveries made in Britannia Square in 1829. As the 20th century began, the Victoria County History was able to list discoveries of coins, metal objects, pottery and slag surfaces at Britannia Square, Pitchcroft, the castle, Broad Street, the High Street, St Swithin's Street and Diglis. Professor Haverfield could conclude:

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'...we seem to be justified in assuming that some small country town or village occupied the site of Worcester in Roman times. The comparative frequency of first and second-century coins suggests further that this town or village was already in existence in the early part of the Roman occupation. If we accept the Pitchcroft *scoriae* as Roman, we could add to our conception of Roman Worcester the notion of iron-smelting, though we should be unable to explain why such an industry arose at a place then

so unimportant.'

(Haverfield 1901, 207-8)

Around this time J W Willis-Bund began writing about aspects of the physical form and remains of the Anglo-Saxon and medieval city. He developed a theory that Worcester began as a settlement of 'rude huts' erected upon a low mound or *tump*, which was later fortified by a rampart; within this enclosure the Cathedral was built. Further discussion is mired in the confusion – common in turn-of-the-century archaeological writing about Worcester – between the late 9th-century *burh*, referred to in the foundation charter of 889-899AD, and the Norman castle motte (Willis-Bund 1910).

There was a distinct gap in research into Worcester's past in the middle years of the 20th century, a period which was characterised by a relatively low level of archaeological fieldwork in the face of a number of very large commercial developments (eg the very limited watching briefs in response to excavation for trading basements at Marks & Spencer and Woolworths in the High Street). This period did see the beginnings of modern archaeological work in the city, with the excavation at Little Fish Street in 1957 (Gelling 1958), and the associated watching brief on the construction of the first phase of Worcester Technical College in 1959 (Richardson and Ewence 1961). Nevertheless, a broader research agenda can only really be glimpsed here in the work of Linsdale Richardson on the geomorphology of the city and surrounding area, published as a series of papers in the *Transactions of the Worcestershire Naturalists Club* between 1954 and 1965.

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The first modern research agenda for the city was formulated by Philip Barker in the 'Programme of future projects', with which he concluded the main narrative section of his *Origins of Worcester* (Barker 1969, 40-42). This was, in summary, as follows:

Prehistoric

- To grasp every opportunity to examine the late Iron Age occupation of the present city centre area and to closely examine all excavated Roman defensive sequences for evidence of predecessors
- The geophysical survey and excavation of Gorse Hill, to investigate the concentration of flint implements there
- The sustained collection of deposit data everywhere within the city limits to model the natural surface of the Worcester terrace

Roman

- Further investigation of the interior of the defended earthwork, much of the area masked by the Cathedral close, should be a priority
- Further investigation of the northern suburb and its iron-working industry
- Research excavation in the west bank floodplain to test Barker's hypothesis of a road approaching from the west
- 'The search for the fort should be continued', emphasising the area south of the Cathedral within the King's School grounds

Sub-Roman

- Detailed research excavation of the post-Roman, pre-medieval, 'dark earth' type soils found in the Cathedral close area, with a view to detecting ephemeral building remains and possible dark age sequences
- Careful scrutiny of Roman pottery assemblages for imported post-Roman amphorae

Anglo-Saxon

- Location, identification and research excavation of the Anglo-Saxon Cathedral churches of St Peter's and St Mary's; investigation of other pre-Conquest monastic ranges
- Opportunistic excavation of the interiors of the city's medieval parish churches, with the aim of establishing complete sequences from their foundation onwards. St Helen's to be regarded as a particular priority, with the greatest potential for the longest sequence
- Finding the *burh* defences

Norman and medieval

- Excavation of the castle bailey (the motte having been destroyed) to establish the interior layout of the castle and its buildings
- The continued investigation and excavation of the city wall and ditch
- Investigation of the Upper Tything-Little London area to follow-up documentary references to the presence of 'potters' there
- The excavation of house sites in uncellared areas. Barker singled out Sidbury as a possible location for building sequences extending back into the pre-Conquest period
- To undertake multi-disciplinary investigations combining excavation and documentary research (on the lines then being pioneered in Winchester)

Post-medieval

- Though the period was outside his remit, Barker included the investigation of the Civil War defences, including Fort Royal, in his agenda for the city.

Only for the medieval and post-medieval periods has substantial progress been made with this agenda.

Martin Carver's *Medieval Worcester* (1980a) was the next major archaeological publication on the city, but did not include a research agenda as such. Rather, it presented a general archaeological model for the post-Roman and medieval city, and detailed models for particular aspects of it – such as the development of the Cathedral, and of the river crossing, for instance. The main thrust of *Medieval Worcester* was, however, the site evaluation, the first for Worcester. This defined a general area of archaeological importance, within which was a 'known area of high archaeological yield' which required, Carver argued, 'a scheme for the implementation of a policy of protection and recording' (1980c, 25, figs 6 and 7). Nevertheless, Carver's volume posed a number of significant new research questions, some of which were answered in the following decade, some of which remain unanswered today. Amongst the latter, for example, was the question of the antiquity of the medieval Severn Bridge and the whole development of the river crossing. Carver proposed that the medieval bridge had Roman origins and remained a substantial factor in the location and continuity of settlement, but its site remains untouched by excavation (1980c, 20-21). Another question that loomed large in the Carver volume was the location of the Anglo-Saxon *burh* and its defences; substantial progress was made on this, however, before the end of the 1980s.

Many of the issues raised by Barker's *Origins of Worcester*, and Carver's volume, were reiterated by Clive Beardsmore, Keeper of Archaeology at Worcester City Museums, at the beginning of the 1980s. His research design (WCM files, typescript, 1982) was expressed as a list of broad issues that he saw as priorities for future archaeological research:

- Evidence of the earliest settlement
- The location of the suspected Roman fort
- The size and importance of the Roman town
- The possible Roman origin of the Severn Bridge
- The existence or not of a Roman harbour
- Continuity of settlement 410-690AD
- The size of the Anglo-Saxon town and the character of its

defences

- The location and development of the Anglo-Saxon Cathedral
- Medieval churches and chapels
- Medieval personal and domestic life
- The medieval city wall and its modifications

While this document certainly informed thinking within Worcester City Council over the next decade or so, it remained unpublished, and consequently did not gain wider currency.

It will be apparent from the pages below that, while many of these issues remain firmly on the agenda, the questions asked of them have been substantially refined, or re-defined.

Hughes's research on construction in Worcester in the 16th and 17th centuries (Hughes 1990), while not setting out an explicit research agenda for this and related topics, nevertheless remains a key work for the archaeology of this period, which has been insufficiently exploited.

The early development of the Cathedral was another subject tackled by Carver (1980b, 7) – and one that still lacks a resolution. However, the archaeology of the precinct subsequently received a substantial boost by the appointment of Philip Barker as the Cathedral's first archaeological consultant. His 1997 research design for the Cathedral (Barker 1997) called for comprehensive recording and analysis of the standing buildings, a comprehensive geophysical survey of the precinct, including interiors of buildings, and selective excavation with an emphasis on earlier periods. Few of his major objectives have been achieved and many of his questions are repeated here, despite many subsequent small-scale investigations, and two major excavations, around and inside the chapter house.

Baker and Holt (2004) do not propose a research framework as such. However their work proposed a model for the development of the city from its Roman origins (first published in Baker *et al* 1992) which has informed much of this document and most of the archaeological work to have taken place in the city since the early 1990s.

The Deansway report (Dalwood and Edwards 2004) is the most recent published work on Worcester to include explicit research priorities. The project took place within a formal and developing site-specific research framework – given the extent of the excavations it could better be termed 'area-specific'. City-wide research questions are implicit throughout the

chronological synthesis (sections 3.3-3.11, Dalwood and Edwards 2004, 36-76) and the thematic discussion (section 4, Dalwood and Edwards 2004, 77-110). Specific research agendas are set out in section 4 (archaeobotany – Moffett 2004; animal bones – Nicholson and Scott 2004; Roman iron industry – Jackson 2004), and others are summarised in section 5 (Dalwood and Edwards 2004, 113-14). It should be noted, however, that the contextual discussions are based on Carver (1980a), only incompletely updated to the early 1990s.

A resource assessment and research framework for aggregate producing areas in Worcestershire has recently been published in draft (Jackson and Dalwood 2006). Although there are no areas within Worcester which are likely to be subject to aggregate extraction in the foreseeable future – and the aggregates document generally avoids discussion of issues relating to urban archaeology – nevertheless the Worcester and aggregates research frameworks will need to inform each other.

1.5 Location, geomorphology and topography of Worcester city centre and surrounding areas

The present land-surface of the city centre area was first presented in graphic form (contour map, with contours at 5-foot intervals) by Carver in his *Medieval Worcester* volume (1980c, 18, fig 5), to show a promontory of some 16ha, bounded by the 70-foot (21m) contour line. The surface geology had already been mapped at a small scale by Barker (1969, 11, fig 1), drawing upon earlier work by Richardson (numerous papers between 1955 and 1965). Many of the latter's recorded observations were made in an effort to reconstruct the surface of the gravel terrace, a process that required that the depth of 'made ground' (archaeological deposit) be understood first. Carver, on the other hand, was more concerned with the archaeological potential of the deposit accumulations, and the historical and settlement implications of the morphology of the natural site and changes made to it. This was expressed in a series of 'sampling zones' presented as a table and a map (Carver 1980c, 29 and fig 8). Carver's pioneering work is only now being eclipsed by a more detailed, computer-generated surface terrain model and a much more detailed deposit model based principally on data collected since 1990 (*Archaeological deposit characterisation*, draft 2006).

The present surface morphology of the city centre is much as described by Carver and his predecessors: a flat-topped

promontory peaking at about 26m AOD in the High Street close to St Helen's, with levels descending very gradually from there to the north, and more steeply to the west, south and east. The eastern edge of the gravel terrace, incised by the Frog Brook, is marked by a gentle slope; the western, riverside, edge by a much steeper escarpment indented by a number of defiles. The underlying natural surface of the terrace now appears to have a slight peak at about 22m AOD between the Cathedral and the Bishop's Palace, and another to the north-east, between The Trinity and Mealcheapen Street, also at about 22m AOD. The present 'High Street ridge', best observed in the steep rise of Chapel Walk and City Arcades, appears to be a completely artificial (anthropogenic) phenomenon and probably a largely post-Roman one. Philip Barker's opinion (1969, 12), based on his Broad Street excavation, that the natural surface of the whole of the gravel terrace has marked undulations (in the order of a metre or two over short distances) has not so far been borne out by subsequent investigations. The Deansway excavations in particular found the gravel surface to be fairly flat, and in general it appears that the variations are more gradual.

Local anomalies in the surface of the gravel terrace are probably most archaeologically significant where they occur on its edges. Defiles or gullies cutting into the western slope are known (from south to north) in the area of Severn Street, the Cathedral watergate, the former Warmstry Slip, Copenhagen Street, possibly Hood Street, and at The Butts. These indentations in the natural contours were used and doubtless exaggerated by access roads to and from the waterfront, and by defensive ditches of all periods (at Severn Street, probably at the Cathedral watergate, at Warmstry Slip and at The Butts). At least some (Copenhagen Street, The Butts) were caused by and/or occupied by minor watercourses. Some (Hood Street, where there was a slipway in the 18th century, and the Cathedral watergate) may have been used for additional waterfront moorings.

Much more work will be required before the boundaries of the floodplain alluvium can be accurately mapped around the west, south and east sides of the promontory. So far, this can only really be done for the Newport Street/All Saints Road area, where a number of evaluations and boreholes, followed by excavation in 2005, allow the terrace edge profile to be reconstructed and reclamation activities over it identified (*Archaeological deposit characterisation*, draft 2006, sections 7 and 8). Elsewhere, particularly in the South Quay – Hood Street area and below the Cathedral, the junction of the

Severn floodplain and the gravel terrace remains unexplored.

Even more uncertainty surrounds the natural morphology and adaptation of the Frog Brook and its valley. The eastern slope of the gravel terrace in the New Street – Friar Street area has been fairly well explored, but much remains to be learnt about the Frog Brook floodplain south of the castle site and, in particular, the extent and nature of the alluvial zone where it is crossed by Sidbury.

Beyond the city centre, Worcester is characterised by extensive gravel terraces, especially on the W bank of the Severn (the St John's terraces, between Severn, Laughern Brook and Teme), and on the E bank (Barbourne and Northwick, N of the city centre). Both of these are areas which would conventionally be considered to be of high archaeological potential, especially for the prehistoric and Roman periods, though largely built up by c 1970, and so far little explored. To the E is a series of steep-sided hills, up to just over 100m high at Elbury Park and 98 m at Leopard Hill – that is, relatively high for this part of central Worcestershire – with heavy soils over Mercian Mudstone. Due to the late 20th century eastward spread of Worcester, opportunities for archaeological investigation have been more frequent in the 'New Warndon' area.

Research priorities:

RP1.1 The surface morphology of the gravel terrace

The area of high ground on top of the terrace, near the southern end of the promontory, was an early settlement focus. Whether the slight natural summit north-west of the Cathedral has a specific archaeological character is not yet known. These minor morphological features on the top of the gravel terrace may have had a key role in the shaping of settlement patterns from the late Iron Age onwards, and identifying and understanding them should be a priority.

RP1.2 The character and development of the Frog Brook valley and stream

Although there is a general acceptance that the Frog Brook and its valley were important in Worcester's development, there is still very little understanding of the character of this area or of changes to it through time. The location of the natural course of the stream, understanding how it has been manipulated, and the elucidation of the depositional history of the valley bottom (especially alluviation) are key priorities (see also section 3.3).

RP1.3 The dating, character and origins of Severn alluviation

Worcester may be able to contribute significantly to the history of the Severn as an important potential location for interstratified occupation and alluvium deposits.

RP1.4 Location and characterisation of palaeochannels of the Severn

Palaeochannels of the River Severn, whether on the E or W bank, may contain important palaeoenvironmental information, while the location of the river channel in the past will also have had a bearing on the development of the settlement.

RP1.5 Confluence of Frog Brook and Severn

The location and nature of the confluence, and the history of its adaptation and engineering, may be important in understanding Worcester's relationship to the river, especially with reference to possible waterfront activities.

RP1.6 Stream valleys and gullies on E bank of Severn – their identification, character and significance

Richardson's model of the eastern valley side marked by streamlets and gullies running off the gravel terrace on to the floodplain has not been well tested. Any surviving features of this type may be important foci of early activities (communications, defences) and are likely to contain localised reservoirs of deep waterlogged deposits.

RP1.7 Dating of gravel terraces

Worcester may provide important opportunities for dating the Severn gravel terraces, especially using optically-stimulated luminescence.

RP1.8 Investigation and mapping of Holocene terraces and alluvium

The distribution and extent of Holocene terraces and alluvium may have significant implications for understanding the development of occupation at Worcester. It may be possible to map these using GPR and boreholes.

RP1.9 Investigation of Holocene flooding

The alluvium deposits, especially in the Severn and Frog Brook valleys, are likely to contain important information about flooding in these catchments, and consequently about climate and land-use well beyond Worcester. Dating by optically-stimulated luminescence should be considered.

RP 1.10 Understanding of the hydrological system and identification of areas of potential and preservation

Aspects of the hydrological system in the city centre and immediately surrounding areas are covered in RPs 1.2, 1.4, 1.6, and implicit in many others. Modelling of the hydrological system is crucial to an understanding of preservation, especially of organic remains.

2 Prehistory

2.1 Introduction

For much of the prehistoric periods, there is little material from Worcester, and the archaeology of Worcester must be considered principally in the light of evidence from the surrounding areas. There is, so far, little evidence to suggest that the site of the present city had any sort of 'special status' until the late Iron Age.

For most of prehistory the evidence comes entirely from stray finds, either surface finds or residual material, and few flint scatters have been recorded. Any earlier prehistoric activity in the city centre has been so fragmented by intensive Roman activity, by medieval pit-digging, and by large-scale modern development, that very few interpretable remains survive. In addition, only very few archaeological interventions in the city centre have reached deep enough, and on a large enough scale, for any potential prehistoric deposits to be recognised or interpretable (or indeed for their absence to be determined with any degree of confidence).

2.2 Early prehistory – Palaeolithic and Mesolithic

Only very few flint finds have been recorded from the Palaeolithic and Mesolithic periods. These include Palaeolithic handaxes from Henwick Pit and St John's Sewage Works, and a scraper from St John's. Scatters of Mesolithic flints from higher ground E of the city, at Whittington Road and Gorse Hill, suggest that these may have been locations for settlement. Smaller numbers of Mesolithic flints have been recorded from other sites, including St John's. Within the area of the Worcestershire aggregates survey, Mesolithic sites have been recorded at a density of 0.20 sites per sq km (Jackson and Dalwood 2006, 45; at this density there would be an estimated 6.5 sites in Worcester).

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Research priorities:

RP2.1 Evidence for settlement on Gorse Hill and other high ground

Further research on Gorse Hill, Elbury Mount and similar locations, to clarify the nature of earlier prehistoric activity there.

2.3 Neolithic and early-middle Bronze Age

Apart from finds from excavations, around 9 (neolithic) and 7-8 (Bronze Age) locations are recorded as having produced dated flint finds. Many of the date attributions could usefully be reassessed. The large Deansway and Magistrates Court excavations produced 42 and 6 worked flints respectively. The Deansway sites showed a slight concentration of flints (all from later contexts), and it was suggested that cut features may have been removed by later activity (Dalwood and Edwards 2004, 36).

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Other finds from Worcester have included a polished flint axe from Bilford Pit, and socketed bronze axes from the gas works (Tolladine Road), and Castle Hill.

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To date, then, there is little (probably no) stratified evidence for earlier prehistoric activity in Worcester.

Within the area of the Worcestershire aggregates survey, Neolithic sites have been recorded at a density of 0.28 sites per sq km, and Bronze Age sites at 0.31 sites per sq km (Jackson and Dalwood 2006, 57; at this density there would be an estimated 9 Neolithic and 10 Bronze Age sites in Worcester).

Research priorities:

RP2.2 Analysis of neolithic – early Bronze Age flint and other finds and their distributions

Analysis of the dating, character and distribution of flint and other finds may indicate areas of activity.

RP2.3 Identification of stratified neolithic – early Bronze Age remains in the city centre

Where stratified remains survive these would be of great importance in characterising the early settlement of the city centre area.

2.4 Middle-later Bronze Age and Iron Age

Evidence of activity from later prehistory is rather more diverse, comprising metalwork, pottery and buried features and stratified deposits. There is however not enough evidence

as yet to suggest the nature of activity, including occupation, at Worcester for most of the period. Most of the material dates from the 100 years before the Roman conquest.

A Bronze Age sword and spearhead have been found in the R Severn. Presumably these reflect the common pattern of deposition of metalwork in and around rivers. Other finds have been made elsewhere in the R Severn in Worcestershire, and there are also antiquarian references to finds from the R Isbourne in SE Worcestershire. Past dredging and channel change in the Severn mean that the chances of finding stratified material in the present river will be small, and deposits will usually be inaccessible; infilled palaeochannels would present a better prospect.

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An annular enclosure site was excavated at Perdiswell in 2000 (Griffin *et al* 2002); the enclosure ditch seems to have functioned as a palisade trench. Radiocarbon dating gave a date range of 1600-1200 cal BC, while the very small pottery assemblage was dated to the early-middle Bronze Age. The closest parallels for this site are with enclosed urnfields from northern England, though no evidence of burials was found at Perdiswell.

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A concentration of Dobunnic coins in the city centre led Cunliffe (1991, 174) to suggest Worcester as the possible site of a territorial *oppidum*. The finds include six coins from Deansway, and Iron Age coins are also known from the R Severn, and from beyond the city centre, at Green Hill and Kingston Avenue. Worcester's location on the Severn in between known late Iron Age production areas at Droitwich (salt) and Malvern (pottery) makes this an attractive suggestion.

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A bank and ditch were identified by Barker at the Lychgate development site, and are thought to have been late Iron Age in date. The bank sealed occupation surfaces which Barker identified as late Bronze Age. At the nearby Newdix Court site, some briquetage was recovered. The bank and ditch have not been encountered in any subsequent work in the city centre.

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At Deansway, excavated features which probably dated to the late Iron Age included a roundhouse (represented by a curving gully), a post-built structure, pits, gullies and a boundary ditch. There was also a horse burial. Very little pottery (including Droitwich briquetage) was present, and it was nearly all residual. A small quantity of iron slag came from contexts which were thought to be late Iron Age in date.

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Two sherds of Iron Age pottery were found at the Kardonia site, and a single sherd, and a possible hearth, at Blackfriars.

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Enclosures at Warndon (EPDR watching brief) and Elbury Mount (possible site) could represent later prehistoric or Roman settlement sites. A third enclosure, at Perdiswell, could also be prehistoric. An Iron Age occupation site, set within a pattern of ditched enclosures, has more recently been identified in work at Bath Road (former MoD oil depot site). This was replaced by ironworking in the Roman period (report forthcoming).

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It would perhaps be surprising if Worcester and its immediate hinterland did not follow the pattern of scattered enclosed settlement which is evident over much of the county and indeed the region in later prehistory. The question of more nucleated settlement, or even a territorial *oppidum*, should focus attention on the city centre, but the evidence so far is very slight.

Research priorities:

RP2.4 Further investigation of potential ritual complex in Perdiswell area

The annular enclosure at Perdiswell is unlikely to have been completely isolated, and associated features may survive in this general area.

RP2.5 Investigation of the context of later prehistoric metalwork in R Severn

Palaeochannels with later prehistoric fills could preserve stratified evidence for structured deposition of metalwork.

RP2.6 Investigation of the defences and interior of the Iron Age enclosure (or territorial *oppidum*)

Every effort should be made to identify remains of the bank and ditch of the potential late Iron Age enclosure, and any evidence of associated occupation or other activity.

RP2.7 Investigate potential Iron Age origins for metalworking

The recovery of ironworking slag from late prehistoric contexts would be very significant.

RP2.8 Scientific dating of prehistoric remains

Every opportunity should be taken to obtain radiocarbon dates

from securely stratified contexts.

RP 2.9 Environmental material from later prehistoric contexts

Every opportunity should be taken to obtain samples for palaeoenvironmental analysis from later prehistoric contexts.

RP 2.10 Investigation of later prehistoric land divisions and major boundaries

Later prehistoric land divisions and boundaries have been identified as an important area of research in Worcestershire, but no evidence for these has yet been found in Worcester.

RP 2.11 Reassessment of ceramic evidence

It would be valuable to collate and reassess all the ceramic evidence for later prehistoric Worcester.

3 The Roman period

3.1 Introduction

'Less is known about the small town of Worcester than probably almost any other in Britain. Yet it has been recognised as a Roman site since Camden...'

(Burnham and Wachter 1990, 232-4)

Despite substantial progress since the 1990 publication of *The small towns of Roman Britain*, Burnham and Wachter's statement remains highly pertinent, if no longer completely true. A partial measure of this may be made by reviewing Barker's research agenda for the Roman period in *Origins of Worcester* (see section 1.3). Although the northern suburb and its iron-working industry have been fairly extensively explored, other areas have not, and, in particular, very little more is known now about the interior of the defended area than was the case in 1969. The presumed fort has still not been found. And, though opinion has moved on, and no one is looking for Barker's hypothesised West Bank road, the basic shape of the road network in and around the settlement is still largely a matter for conjecture.

Similarly, although recent archaeological work has tended to increase the known areas of Roman occupation, the limits of the town, and the changes in its size and layout through time, are still poorly known. Recent work on field names, combined with reinterpretation of stray finds, has begun to suggest a focus of Roman occupation around Lansdowne Road, some way to the NE of the known area of Roman occupation.

In short, although some aspects and some areas of Roman Worcester – probably known as *Vertis* to its inhabitants – are now reasonably well understood, some of the most fundamental characteristics of the settlement remain obscure. The many lacunae in our understanding of Roman Worcester are probably best expressed either in terms of issues relevant to particular periods – specifically the conquest and 1st century AD, and the 4th to 6th centuries, or as general issues that are less chronologically specific (unless to the apogee of Roman Worcester in the 2nd and 3rd centuries). Other general issues have been found to be recurrent in other periods, and are dealt in section 7 (Cross-period themes).

While the principal interest in the Roman period is in the town, the immediately surrounding hinterland should not be forgotten. Evaluation of a number of sites has demonstrated the presence of a series of small settlements, and also systems of field boundaries, but to date the work has not proceeded beyond identifying that these sites exist. Within the area of the Worcestershire aggregates survey, Roman sites have been recorded at a density of 0.7 sites per sq km (Jackson and Dalwood 2006, 80; at this density there would be an estimated 23 Roman sites in Worcester).

Research priorities:

RP3.30 Documenting the extents of Roman Worcester

Although the settlement is known to have fluctuated in size and layout through the Roman period, its extent at various times is still not clearly known. In particular the suggestion of a further focus of activity around Lansdowne Road, so far known only from circumstantial evidence (including field names), would merit structured exploration.

RP3.31 The hinterland of Roman Worcester

Worcester's hinterland in the Roman period is poorly understood, though a small number of settlement sites are known, both enclosed and unenclosed, as well as possible field ditches. Further fieldwork may help in understanding settlement and land-use patterns.

3.2 Early Roman

The late Iron Age and the early Roman settlement

Any assessment of the degree of continuity between the post-conquest Romano-British settlement and any preceding, pre-conquest late Iron Age settlement is hampered by two major problems. Firstly, the general lack of information about settlement on the Worcester site in either the late Iron Age (see section 2.4) or the post-conquest period. Secondly, the difficulty in distinguishing native material culture either side of the conquest, a problem that applies equally to pottery, the use of coinage, and house types. All that can be said at the moment is that the Romano-British settlement does not seem to have developed on a virgin site: it was an intensified, and by degrees urbanised, version of something that was already there.

A few particular strands of continuity may be discerned. In functional terms, agricultural land-uses and scattered, extensive, domestic activity appear (on present evidence) to have been dominant either side of the conquest, though the volume of Iron Age coinage from the site may indicate the steady growth of a market economy. Secondly, and probably not unrelated, is the possibility that ironworking – along with agriculture, evidently the dominant activity of the Roman settlement – was already a feature of the pre-conquest settlement (see section 2.4). Elements of morphological continuity are certainly present, though probably dependent on simple geographical determinants. Philip Barker's sequence on the Lich Street site suggests the probable superimposition of a later 1st-century ditched enclosure, just possibly a fort, over or within a pre-existing earthwork enclosure towards the southern tip of the gravel peninsula. Other examples that may be suspected but cannot be demonstrated are the probability of the use of the natural ford across the Severn (the site of later bridges) in the pre-Roman centuries, and the possibility that the (much later) High Street, which forms a ridgeway down the axis of the gravel terrace, was in use in the pre-Roman period as well as – probably – the Roman period. Of these various potential elements of continuity, it is the question of ironworking that is the most significant.

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Research priorities:

RP3.1 Distribution of 1st-century AD settlement

Further exploration of the character and geography of 1st-century AD settlement, with an emphasis on the central (south High Street/Cathedral) area to determine morphological and functional development either side of the conquest.

RP3.2 Potential early origin of the Roman iron industry

Determining the scale, organisation and technology of any pre-conquest iron industry. Was it a subsidiary domestic activity of no great significance in a predominantly agricultural settlement, or an early component of a regional or sub-regional system developed to its logical conclusion in the 2nd and 3rd centuries AD? How did it fit into the pattern of 1st-century BC / AD exchange implicit in the regional distribution of pottery, briquetage (salt), quernstones and other goods?

RP3.3 Comparison of the material culture of Roman Worcester and other sites

Further comparative work on the 1st-century material culture

from the Worcester site, and other sites in the rural hinterland that did not go on to develop the range of functions that the Worcester settlement did. See also RP7.23.

The conquest, and the fort question

While the presence of a conquest-period fort somewhere on the Worcester site is highly likely, unambiguous proof of it is still not forthcoming. An early theory that a fort lay south of the Cathedral on the King's School swimming baths site (Shearer 1962) was disposed of by Barker in *The Origins of Worcester* (Barker 1969, 99). To date, the only excavated feature which could potentially derive from a conquest-period military fortification is the V-shaped ditch 'a' excavated by Barker in the 1960s on his Lich Street site. It contained Flavian-period pottery in its primary silt, 2nd-century pottery in its upper silt, and was interpreted by the excavator as a possible fort ditch dug in the second half of the first century (Barker 1969, 44-50). The ditch was just one in a stratified sequence of probable defensive features extending from the pre-Roman period into (probably) the post-Roman, suggesting that this area – the highest part of the Worcester peninsula, what Willis-Bund had once called 'the tump' – was the defensible location of preference over a long period of time.

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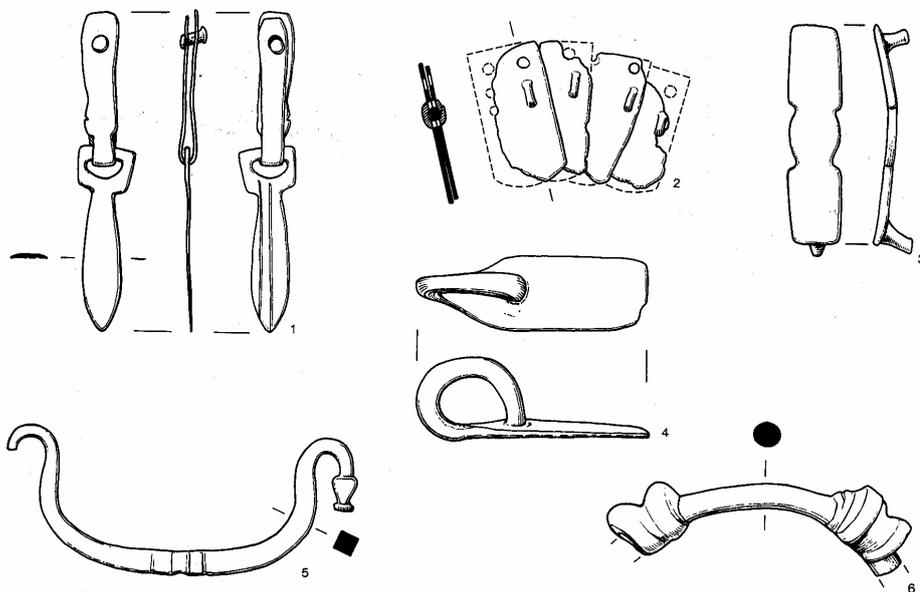
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Fig. 40 The military equipment (scale 1:1)

Military metalwork from Sidbury (Worcestershire Historic Environment and Archaeology Service)

However, there was, and is, no corroborative artefactual evidence for a military presence in the Lich Street/College Street area of the city centre. On the contrary, early military metalwork has only been found elsewhere. Pre-AD 60 brooches with military associations, 1st-century military weaponry, armour and horse harness, and early Samian ware, were all found on the Deansway excavations, suggesting an early military presence somewhere nearby (Dalwood and Edwards 2004). The most logical context for this would be a fort sited on the edge of the gravel terrace overlooking the natural ford across the river. Artefacts with military associations were also found at Sidbury (Darlington and Evans 1992). Until the site of the fort (assuming it existed) is proved, it will remain impossible to judge whether or to what extent it, and any associated infrastructure, made any contribution to the morphology of the developing town.

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Research priority:

RP3.4 Evidence for early Roman military presence

Continuation of the search for a conquest-period military presence as the first stage of the definition of any military contribution to the growing economy or developing morphology of the 1st-century civilian settlement.

Early growth

The second half of the 1st century on the Worcester site seems to have been characterised by the extremely rapid spread of low-intensity settlement, seemingly mainly agriculture-based, over a wide but not necessarily continuous area. Pottery of the period has been found over much of the footprint of the later city and beyond: in the core area N of the Cathedral (Lich Street); c 400m N on the Deansway sites, and a further c 200m N at Farrier Street. To the E, 1st-century activity has been found on sites in Friar Street and Sidbury, and c 300m NE (St Martin's Gate) beyond the later (medieval) city defences.

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Determining the precise character of settlement in this period is more difficult, and dependent upon controlled excavation on a reasonable scale of surviving deposits. The Deansway evidence (Dalwood and Edwards 2004) pointed to agricultural activities, including crop processing and stock rearing, within large plots or closes, with ancillary buildings and yard surfaces; there was domestic occupation nearby. Similarly, the very small-scale excavations at Farrier Street recorded shallow

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pits and gullies representing low intensity agricultural uses, with domestic occupation nearby. At Sidbury, occupation immediately to the east of a substantial boundary ditch had been removed by later levelling (Darlington and Evans 1992, 10-12). The large areas excavated on the N side of Castle Street (the Police Station and Magistrates' Court sites) seem to have been devoid of activity at this period.

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3.3 Apogee: the second and third centuries

Settlement morphology and land-use

While the extent of the Roman-period settlement is becoming gradually apparent, its general internal morphology remains extremely obscure. In large measure this is a product of the bias of the archaeological sample in favour of the periphery, particularly the northern suburb, at the expense of the centre (see also section 8.2).

The 'northern suburb' was a broad zone of dispersed occupation: generally with dwellings, agricultural and ancillary buildings, and metalled yard surfaces within irregular ditched, fenced, or possibly hedged, enclosures. The density of occupation appears to have varied from area to area, and over time. Thus occupation in the Deansway area became more intensive in the 2nd to 4th centuries and the domestic enclosures or compounds were serviced and demarcated by a series of parallel minor roads, at least one of which was a cul-de-sac. These minor roads do not themselves seem to have been a focus for building or to have been used for commercial functions. Others were. The north-south road passing through the (later) Blackfriars area, salvage excavated by Barker in the 1960s and by Charles Mundy in 1985-6, was flanked by post-built buildings. The road excavated on the Sidbury site (Darlington and Evans 1992) also appears to have been a magnet for building, including a 'strip building', a type characteristic of trading frontages in Roman small towns. It also appears to have been a street space used for marketing activities, probably at a road junction immediately outside the core of the settlement. There may also have been strip buildings at the Magistrates Court site at this period (analysis underway; A Boucher, pers comm).

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This issue raises one of the more substantial gaps in our understanding of Roman Worcester. Roman 'small towns' were in general very closely related to the developing road network. Many grew or were promoted as linear settlements along a single road, or at a road junction, acquiring side streets and a

more complex morphology as they developed over time. In most cases commercial functions predominated in these settlements and were expressed by the (to a greater or lesser degree) intensive exploitation of the street frontages for trade, with strip buildings arranged perpendicular to the street, often in narrow plots reminiscent of medieval burgages (Burnham and Wachter 1990). This aspect is, with the above exceptions, entirely absent from the archaeological record for Roman Worcester: there is so far no direct evidence for a commercial zone along a primary through-route passing through the settlement. But given the limited extent and geographically skewed sample that has been investigated, it is entirely possible that such an axis nevertheless exists: particularly as the Ravenna Cosmography confirms the existence of an important through-traffic route between Droitwich and Gloucester.

The obvious candidate for such a primary route and potential commercial axis is the line of the later High Street. Philip Barker first raised the suspicion that the High Street had a Roman predecessor on the basis that the largest of the Lich Street ditches (late Roman ditch 'b') appeared to be butt ending in proximity to the street, probably for a gate, and on the strength of an observation of metalling 2.44m below the street nearby. 19th-century antiquarian observations of metalling over some distance along the street tentatively support the same conclusion (Barker 1969, 50). Recent works in the High Street did not extend to the probable depth of Roman surfaces. There is also a suspicion that, north of the medieval city, the continuation of the line of the High Street by Foregate Street and The Tything had some significance in the Roman period as it appears to form an eastern limit to the low-intensity Roman-period occupation demonstrated in a number of excavations in the Farrier Street – Castle Street area. However, this still falls some way short of proof that a Roman road followed the later High Street line, and, apart from very limited exposures of masonry buildings under and opposite the Guildhall (see below), the character of any buildings either side of it remains unknown.

As noted earlier, one of the major failings of archaeological research since *Origins of Worcester* has been the lack of opportunity to investigate the character of the area enclosed within the later Roman earthwork defences. This is a fundamental barrier to understanding the status and function of the whole settlement: to what extent was there a morphologically distinct and functionally distinguishable 'urban core'?

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Other Romano-British small towns offer a number of possible scenarios for what might be found there. Some defensive enclosures enclosed substantive urban cores defined by governmental or, more rarely, civic buildings that differentiated that part of the settlement from the remainder. Some defensive enclosures merely formed 'strongpoints', their position determined by tactical criteria within undifferentiated ribbon settlements. However, in some instances (as at Kenchester) the superimposition of defences could alter the development trajectory of the settlement within and lead to denser building patterns and increased morphological complexity. In other examples (as at Wall) the new intramural area might be cleared and/or deserted (Burnham and Wachter 1990, 29-31). Any of these, or none, could apply at Worcester. Further, if the defences did indeed enclose a distinct urban core distinguished by governmental or civic functions, was it also functionally differentiated from the remainder of the settlement by the exclusion of iron production?

Research priorities:

RP3.5 Roman origins of the High Street

Extension of the excavated sample in the High Street area, with a view to determining whether or not the High Street does indeed have a Roman predecessor, and the eventual determination of the general pattern of building, and the functions it contained, in this period.

RP3.6 Area within Roman defences

Extension of the excavated sample into the area within the Roman defences, in order to better understand the overall internal morphology of the Roman-period settlement and the impact of the defences upon it.

The road network and its development

The road network has been referred to a number of times already, from which it will be apparent that this, too, presents a number of major unsolved problems. The lines of two major roads approaching the settlement are visible in the surrounding countryside: from Droitwich to the north-east, and from Gloucester to the south. The Roman origin of these roads is supported by later documentary evidence, specifically Anglo-Saxon charters that refer to them using the term *straete*, implying a made-up road (Hooke 1980). While these and six other *straete* routes can be seen approaching the city, their course is lost as soon as they enter the built-up area, and

they have not been seen in any of the fieldwork along their projected alignments..

Within the town, roads of Roman origin are only clearly demonstrable where they have been found by excavation: antiquarian (or indeed recent) observations of metalled surfaces may relate to yard surfaces as often as they do to roads. The consequence is that much of the internal road network, and therefore the settlement's basic morphological frame, and its development, remain unknown

The possibility that the line of the medieval High Street represents that of an underlying Roman road has already been discussed. The existence of another major north-south road, approximately on the line of medieval Birdport and modern Deansway following the top of the riverside escarpment, is implied by side streets that appear to lead off it, and the concentration of activities towards the western side of Deansway sites 1 and 2 (Dalwood and Edwards 2004).

The first road to be excavated within the settlement was found in Barker's Broad Street excavations; it is also representative of the problems inherent in reconstructing the intra-settlement road network. It was found running on a north-south alignment, had been established in the late 1st century or later, metalled with pebbles to a width of c 5.5 metres; later, it was metalled with slag to a width of over nine metres (Barker 1969, 63). The road was excavated again in 1985-6 by Charles Mundy, and its basic sequence, dating and direction confirmed. Part of a road on the same alignment, c 100 metres further north, outside the later city wall, was recorded in plan and in section in 1988-90 on the Farrier Street site, though there was no possibility of excavating it. In its first phase (2nd or 3rd-century) it was cobbled; subsequently (3rd-4th-century) it was metalled with slag (Dalwood *et al* 1994, 78-80). It was – naturally – interpreted as a northward extension of the Blackfriars road found by Barker and Mundy. Road surfaces seem, however, to have been absent at an intermediate site (8-12 The Butts), though other Roman deposits were found and excavated there. The road was also absent from sites further along the projected alignment to the north, in particular, the large Magistrates' Court site. The Blackfriars road had, from its width and direction, been interpreted as a major route entering the Worcester settlement from the north, but it now seems probable that it did not continue far beyond the line of the later city wall: an explanation is not yet forthcoming. The discovery of an east-west road on a perpendicular alignment just to the west at 14-

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24 The Butts in 2003 adds some further complexity in this area (report forthcoming).

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An analogous case is presented by the road found in excavations at 23-29 Sidbury in 1976-77 (Carver 1980d; Darlington and Evans 1992), and also recorded in a watching brief to the south-east. The road began with a featureless but well-worn pebble surface established in the early 2nd century. Later in the century it was fenced-in to form a corridor running in a NW-SE direction, but there was no one, clear, single ruling orientation until the surface was re-metalled with slag in the later 3rd century. After that, the metalled area exposed in the excavation was again broad (more than 17 metres wide) with no clear axis; and was encroached upon by ephemeral structures. There was also a possible second, east-west, road just to the north of the excavated area (sub-phase 5.2), which may have been situated close to the junction of the two roads converging on a gate into the settlement; the second road was, however, interpreted from a series of separate observations of slag surfaces that could have been unrelated. A road junction at this point could have produced the complex changes in alignment found in the excavation. It was also suggested from the width of the exposed metalling, and from the ephemeral structures cut into it, that the whole area, just outside the defences, may well have been colonised by marketing activities (Darlington and Evans 1992, 95-96). One or more bridges or fords would have been required for traffic to cross the Frog Brook. Projection of the line of the excavated Sidbury road to the south-east would suggest a crossing somewhere in the area immediately north of the standing medieval buildings of the Commandery. However, this remains unconfirmed by excavation.

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The presence of Roman burials in the Severn Street area (the King's School/castle site, St Alban's School, and Mill Street: see cemeteries section, below) may imply that a road approached the settlement more directly from the south as well as from the south-east. At present, however, the undeveloped state of archaeological knowledge of much of the Cathedral and castle area makes the position of such a road (and any associated crossing of the Frog Brook and its floodplain) completely unpredictable.

Within the lightly built-up northern suburb, in the mid-2nd century a regular layout of minor east-west roads was established. The Deansway excavation found a series of three, one of them terminating just within the eastern site boundary, suggesting that they ran into the area from a major north-

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south street to the west (see above). The streets that ran through the excavated area without stopping may have linked through to another north-south street on the line of the later High Street (see above). The most significant point about this sequence is that it demonstrates a degree of planning, or higher-order decision-making, imposed on the existing settlement in the 2nd century. The scale of this project is unknown, but it may well have extended further into the areas north and south of the Deansway excavations. The agency responsible for it is unknown, though the action would have necessitated a re-organisation of existing boundaries in addition to the physical labour and capital investment of creating new metalled streets. It also highlights the growing morphological complexity of the expanding and increasingly dense settlement.

The history of the river crossing and the bridging of the Severn were questions raised by Martin Carver in his *Medieval Worcester* volume (1980c). He noted an antiquarian observation that, when the medieval Severn Bridge was being demolished in the late 18th century, the cores of the bridge piers were found to be composed of fused iron slag (Carver 1980c, 20). Carver suggested that the piers might have survived from a Roman bridge, having remained in use through the Anglo-Saxon period; he also drew attention to the necessity of the west bank causeway as an engineered dry approach to the bridge over the floodplain. It is now thought that loose slag could have been freshly quarried for hardcore not far from the bridge site in the medieval period and might subsequently have fused in the wet conditions offered by a bridge pier. Roman slag was also used in medieval core work at the Cathedral: in the crypt, and in the Chapter House foundations (Chris Guy, pers comm). Unless the (probably deeply buried) bridge abutments are excavated, the only way in which the use of the bridge site, including the natural ford, in the Roman period will be demonstrable will be via excavation of one or more approach roads in the immediate vicinity, on either bank. Recent work at Newport Street has suggested that the medieval street was indeed preceded by a Roman road on a similar alignment, though quite deeply buried. Further knowledge of the degree of engineering investment in the approaches to the crossing site may provide an indication of whether the river was indeed bridged in this period, or merely forded. Lack of understanding of the development of the river crossing is a problem which Worcester has in common with several other towns in the region, including Roman Gloucester and Wroxeter, and Anglo-Saxon Shrewsbury.

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A crossing in the area of Lowesmoor Terrace, extending the alignment of Rainbow Hill, which itself continues the alignment of the road from Droitwich, would probably also have been required.

Research priorities:

RP3.7 Roman road network

Further excavation of city centre and suburban sites will, cumulatively, build up a more complete picture of the Roman road network. Roman roads followed by modern streets will, however, remain elusive unless the street spaces themselves are investigated. Opportunistic monitoring of road works and service replacement will, cumulatively, add to the data for these too. However, pre-emptive geophysical survey (eg by carefully selected GPR transects) may provide a useful predictive management tool by identifying the extent and depth of services and the presence of deep metalling sequences.

RP3.8 Dumping of Roman iron slag

Further investigation of the dumped slag phenomenon across the settlement and its roads may be able to determine how this process was managed – whether as an ad hoc activity by individuals mainly concerned with waste disposal, or as a co-ordinated policy by a civic authority to improve the intra-settlement road network and assist in reclamation projects.

RP3.9 Potential Roman bridge

Any and all opportunities to investigate the historic Severn Bridge site should be taken, on both banks. It is assumed that any remains of riverbed pile clusters from successive bridges will have been removed by dredging. All opportunities to investigate the construction and chronology of the west bank causeway, and to establish the presence and character of a potential east bank causeway, should be taken.

Cemeteries

So far, there is archaeological evidence of two inhumation cemeteries (with a possible third site) and one cremation cemetery, with scattered burials elsewhere. To the south of the Cathedral and castle, the St Alban's School site has produced inhumations probably dating to the mid-3rd to 4th centuries. Its extent is unknown. The excavations took place on the school site, the former Diglis bowling green, a raised area of gravel terrace that appears to represent the

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southernmost tip of the Worcester promontory, cut off to the north by the cutting of the castle ditch (and possibly earlier ditches) on the line of Severn Street. It may, therefore, be taken as a classic instance of a cemetery located on the margin of the built-up and settled area, outside the (later defended) town limits.

Two 19th-century discoveries seem to indicate the presence of a cremation cemetery in or around the same area as the inhumation cemetery. Complete glass vessels, numerous Roman brooches and other small finds were found during the demolition of the castle earthworks (Allies 1852, 15-23). A Roman urn or jug in perfect condition was reportedly found 'about a third of the way up' the castle motte, suggesting that it was not simply a dump of excavated soil containing residual artefacts, but that it incorporated an earlier mound, possibly a barrow (Carver 1980c, 22-3; Dunkin (ed) 1851, 38). A second discovery was made of several complete Roman pottery vessels, some containing cremated bone, on Mill Street (Binns 1865).

A second inhumation cemetery, dating to the later 4th century, was excavated at Deansway (site 4). This was established in a part of the site that was reorganised when iron production ceased. 14 north-south inhumations, including decapitated burials, were excavated (Dalwood and Edwards 2004).

Burials found in a limited watching brief at 11-12 New Street could be evidence of a third cemetery; this could be close to a Roman road leading towards Droitwich.

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Research priority:

RP3.10 The southern Roman cemetery

Further work (excavation, geophysical survey) on the castle site and in the surrounding areas to determine the character of the area in this period and confirm the presence and extent of the probable cemetery.

Other infrastructure and amenities

Apart from the fragmentary exposures of the road system and the defences, there is very little further evidence for the infrastructure or civic amenities of the fully-grown Romano-British town. There was, however, a system of water supply, at least in one part of the town. The Sidbury excavations found evidence of wooden water pipes following the southern edge of

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the street in the late 3rd century. The level of the trench fell to the south-east, though if the pipe was fed from a source at a much higher level – for example, via an aqueduct from the south-east – this need not preclude interpretation as a public piped supply entering the settlement from outside.

There is so far no direct evidence for civic or governmental buildings. The evidence for masonry buildings in a Romanised tradition is dealt with below. The best *in situ* evidence is, as discussed later, from two very small-scale exposures either side of the High Street a few metres north of the Roman defences. It is possible that either or both of the buildings contacted could have been public buildings. If the circular building under Britannia Square was not, as has been suggested, a temple, no other candidates are known.

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Civil engineering works of various descriptions may be expected, or are already known or suspected from the archaeological record. As discussed above, a series of metalled roads appears to have been driven through the dispersed settlement of the Deansway area in the mid-2nd century. Reclamation on a large scale, at least in terms of depth of ground, appears to be a characteristic of the floodplain edge in the Newport Street area. How this was organised (whether community-wide or by individual property holders) is not known, but could probably (over time and via a number of exposures) be determined by excavation. Reclamation activities may be anticipated wherever the expanding built-up area encountered floodplain; therefore along the riverside zone, in Sidbury and the Frog Brook generally, including its confluence with the Severn at Diglis.

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There is a long history of reclamation by landfill in the floodplain at Diglis, and antiquarian evidence of a former channel (Allies 1852, 29-30). The mouths of tributaries entering the Severn are notoriously mobile and it is highly probable that attempts will have been made to stabilise the natural riverbanks to secure any infrastructure and protect any property interests. Whether this amounts to the harbour predicted by Carver (1980c, 21) on the basis of ten-metre depths of alluvium is another question. The lower Frog Brook was clearly manipulated in the medieval period to provide a flow into the city ditch and to drive the Frog Mill, and it is not at all unlikely that it was subject to improvements and diversions in the Roman period too. Waterfront functions may have been accommodated at or near its confluence, though it seems likely that the settlement's principal quays would have been closer to the main area of settlement, and as close as

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possible to the main areas of iron production. This implies that commercial quays are most likely to have been situated along the Severn waterfront where it was most easily accessible from the main terrace, quite possibly in the areas of the Anglo-Saxon and medieval North and South Quays. The medieval Cathedral watergate occupies another waterfront site which could have been used from an early period, marked by an easy approach via a (?natural) defile running down the slope. An unexplained masonry wall sighted deep below the monastic reredorter could be related to this activity. However, lack of knowledge of the waterfront zone is a problem in all periods in the city's archaeology, and is discussed further below (section 8.2).

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Research priorities:

RP3.11 Roman public buildings and infrastructure

Further sustained investigation by excavation across the settlement in order to identify further aspects of the Roman settlement's non-road infrastructure: public/civic buildings, further evidence of water supply.

RP3.12 Roman activity in the Frog Brook valley

Subjects would include potential sequences of engineered changes to and movements of the watercourse system, associated infrastructure (revetments, waterfronts/quays, quayside structures), reclamation areas (with artefact-rich landfill deposits), drainage regimes and alluviation processes and chronology. The area is likely to be a rich source of environmental data (see also RP1.2, 1.5). A multi-disciplinary investigation of the Frog Brook valley would be required to address this on a broad scale, but more limited opportunistic work may allow the potential to be established.

Defences

Once more, it is Barker's *Origins of Worcester* that continues to dominate the agenda. The defensive sequence he explored on the key Lich Street site in 1965-66 has already been discussed in the context of the probable Iron Age defences (ditch 'c/f', sections 2.4, 3.2), and the early Roman defences, the candidate for a conquest-period fort (ditch 'a'). By far the most substantial features in this sequence were however a late Roman ditch ('b') and its associated rampart (Barker 1969, 45-53). The ditch was hand-excavated in a c 10-metre-square sample area and salvage-recorded across the development site as it was mechanically exposed. The ditch was shown to

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be in the order of thirty metres wide, but narrowing and becoming shallower as it approached the High Street, suggesting that there was a gate there. Pottery in its primary silts showed that it had been dug in the late 2nd or early 3rd century or later; there were small quantities of mortar in the ditch fills, but little stone rubble, leading Barker to the conclusion that there was no masonry wall, at least in this area.

The defensive circuit that Barker proposed on the basis of his Lich Street excavation has been (cautiously) accepted in the years since. He suggested that the late Roman defences could be equated with a defensive ditch found and excavated in Little Fish Street (the site of the Technical College) by Peter Gelling, and observed shortly afterwards in building work for the college. Its course south of Lich Street was less certain but, in his view, had to pass to the north of the site of the Norman castle, as early 19th-century finds of Roman artefacts there were consistent with the site having previously been that of a Roman (extramural) cemetery. Since the *Origins of Worcester*, no substantive new discoveries relevant to Barker's hypothesised enclosure have been made, though some observations and re-interpretations have amended it. Further support for the position of the northern defences crossing the High Street just north of St Helen's Church may be found in observations of sloping strata recorded in a redevelopment on the corner of the High Street and Copenhagen Street in the 1960s (Marmion House). Support for the southward continuation of ditch 'b' beyond Lich Street and College Street may be found in a borehole log noted at the time of the Lychgate redevelopment, and in a much more recent observation of deep fill below 11 Edgar Street. Recent authors have also suggested that the castle is more likely to have been built within the southern arc of the Roman defences and to have re-used them, and that much of the circuit was deliberately levelled in the late Anglo-Saxon period (Baker and Holt 2004). On the other hand, geophysical (electromagnetic) survey on College Green in 1999 suggested that it is crossed by two large parallel E-W ditches; one possibility is that one of these is the Roman ditch and the other the castle ditch. A more detailed survey of this area would be needed to allow the features to be more accurately characterised.

Major questions remain. Barker's earthwork enclosure undoubtedly exists, but while its north, north-eastern and eastern sides have been reliably located, its south side remains completely untested by excavation. None of the gates has been excavated, though the sites of northern and eastern

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gates can be predicted with some accuracy. Dating, too, is extremely imprecise. The *terminus post quem* for the ditch of the late 2nd century or later has not been refined, and it is unknown whether the defences were built in the 3rd, or the 4th century – or even later. Esmonde-Cleary (1987, 157) has commented on the unusually large size of the defences compared with those of other small towns, but the implications of this for the status and function of the Worcester settlement are not at all clear. Nor is the relationship of this bank and ditch to the Iron Age and earlier Roman defences entirely clear. At only one point – Barker's controlled excavation within the Lychgate redevelopment site – have Iron Age, early Roman and late Roman defences been found superimposed. The courses of the circuits may have diverged elsewhere: on the north-west side only a late Roman ditch was found by Gelling at Little Fish Street. The unusual, apparently subcircular (or at least curvilinear, in marked contrast to the polygonal form of most Roman town defences) course of the late Roman defences could nevertheless have resulted from the refurbishment of successive earlier defences, though perhaps on slightly divergent alignments.

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There are other uncertainties. Lengths of ditch have been excavated or detected by geophysics that may or may not be related to the sequence described above, and may or may not represent public defences rather than private boundaries. A late 1st-century ditch running north-south was excavated on the frontage of the Sidbury site. It may have been a continuation of Barker's Lich Street ditch 'a' (the possible fort ditch), but neither the function nor the width of the Sidbury excavation ditch could be determined (Darlington and Evans 1992, 10-11). A geophysical (GPR) survey under the Edgar Tower in 1991 also located a target which was interpreted as the edge of a north-south ditch. This remains completely uninterpretable.

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Finally, it should not be forgotten just how small Barker's controlled excavation on the Lychgate site really was. The weight of hypothesis borne by the results from this area has been considerable, and urgently requires support from modern excavation, conducted on an appropriate scale, elsewhere.

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Research priorities:

RP3.13 Dating and characterisation of probable late Roman defences

Confirming and refining the late Roman date attributed to the construction of Barker's ditch 'b' and its associated rampart,

and their character.

RP3.14 South side of Roman defensive circuit

Establishing the course of the defences south of Edgar Street and determining their relationship (if any) to the castle, eg in terms of refurbishment or levelling/replacement.

RP3.15 Buried soils beneath Roman earthworks, and ditch deposits

The excavation by Barker at Lich Street of extraordinarily well-preserved archaeology under and including Iron Age and later rampart material underlines the value of further excavation on the defences for the examination of buried soils and landscapes. Ditch deposits may, in some locations, be permanently waterlogged and therefore potentially rich sources of environmental data; they may also in some locations be rich in artefacts.

RP3.16 Presumed Roman north and east gates

Location and investigation of the sites of the presumed north and east gates.

Buildings

A range of building types is now known from Roman Worcester. Relatively complete plans of timber buildings were first identified in the Sidbury excavations of the late 1970s. These included a circular building in the native tradition, and a large timber-framed 'strip building' of a type familiar from commercial contexts (perhaps by town-based professional builders) in Romano-British towns (Darlington and Evans 1992, 16, 23). The Deansway excavations produced fragmentary evidence for a number of small, post-built agricultural buildings or workshops, together with a foundation platform and rubble footing for two domestic timber-framed buildings. Another post-built structure of (unusually) 3rd-century date was excavated at Sidbury (Darlington and Evans 1992).

There is a growing body of evidence for fully Romanised buildings, whether of timber-framed or masonry construction. Excavations either side of the High Street at the City Arcades site and under the Guildhall both found evidence of Roman buildings, though at some depth in very small trenches. At the former site a mortar floor was found cut by robber trenches (robbing of masonry walls) which had roof tiles and painted plaster in their fills. At the latter, the earliest deposit contained

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masonry building debris including tiles from hypocaust pilae of 2nd-century or later date, and a squared block of oolitic limestone was associated with a wall line represented by a robber trench containing mortared limestone rubble, ceramic roof tiles and box flue tile. Whether these fully Romanised buildings fulfilled a civic, private or governmental role is impossible to say, though the contemporary finds assemblage from the City Arcades site was domestic in character.

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The earliest discovery of a Roman masonry building in Worcester is also the most enigmatic. In 1829 the sandstone foundations of a circular building thirty feet (9.15m) in diameter were found in the centre of Britannia Square, while building a cellar, and Roman pottery and more than fifty coins were recovered from the spoil (Allies 1852, 2-3). Barker (1969, 15) thought the remains most likely to be those of a temple of Romano-Celtic type, and this interpretation has since been widely though not universally accepted. Further remains have been observed on the S side of Britannia Square, where a masonry building foundation and a small fragment of polychrome mosaic were recorded in a watching brief, while there are anecdotal reports of an *in-situ* mosaic from the same area. Roman building debris has been found in other interventions in the surrounding area. It is becoming uncertain whether the interpretation of the site as a temple complex is correct; other possibilities, such as a shrine associated with a villa, or perhaps an apsidal structure (ie semi-circular rather than circular), should also be considered.

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More commonly, in fact more or less throughout the settlement, indirect evidence for Romanised buildings is found in the form of a background noise and occasional concentrations of discarded or re-used building materials. Such debris was found on the Sidbury site and included roof- and flue-tiles, bricks, glass, painted wall plaster, stone architectural fragments and possible *tesserae*. Small quantities of ceramic roof- and other tiles, building stone, stone tiles and flags, were also retrieved from rubble deposits imported onto the Deansway sites. Most recently, a much larger assemblage of building rubble, including painted plaster, *tesserae*, and flue and roof tiles from a well-appointed fully Romanised building have been excavated from a Roman well in the Butts; the assemblage has secure tpq of the end of the 4th century AD. The wide distribution of such material makes it probable that much of it was salvaged from houses of Romanised type and not solely from a few centrally-located official or civic buildings. However, until *in situ* remains are contacted and excavated on a sufficient scale for ground plans to be

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determined, the range of building types in the settlement will not be fully understood.

Research priorities:

RP3.17 Widening the excavated sample of Roman Worcester

Widening of the existing sample by excavation in areas other than 'the northern suburb' on a scale sufficient to determine building plans and functions.

RP3.18 Character of Roman activity in the Britannia Square area

Further investigation of the Britannia Square area to understand the character of the masonry buildings known to lie there and their implications for the range of functions present in the Roman settlement.

RP3.29 Collation of data on Roman building materials

An understanding of the range of buildings present in Roman Worcester would be greatly enhanced by a systematic study of the building materials which have been recovered to date.

Industry in Roman Worcester – ironworking and beyond

Iron smelting has been recognised as a feature of Roman Worcester since Andrew Yarranton's excavation and re-smelting of dumped slag in the mid-17th century. The phenomenon was first explored archaeologically in Barker's 1966 Broad Street excavations, since when a few further production sites and very many dumped slag deposits – used for metalling roads and yards and as landfill – have been excavated. In Burnham and Wachter's account of Romano-British small towns (1990) Worcester is identified as one of a number of settlements having a specialised industrial function.

Production sites or actual furnaces have now been excavated across the footprint of the later (medieval) walled city and beyond. Production sites have been located on the City Arcades site (next to the Shambles), Deansway site 4, and Barker's Broad Street excavations. Even further north, the Castle Street police station site may offer another example of a production site, though a direct association between a large slag dump and a burnt clay feature found there could not be definitively proved. Deposits of dumped slag occur over an even wider area, from Sidbury to the Castle Street Magistrates' Court excavations, a kilometre to the N; and from

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the riverside at Pitchcroft and Newport Street, c 700m eastwards into the St Martin's Gate area beyond the medieval defences. Slag has also been found to occur in deposits under the Cathedral (Chris Guy, pers comm). The concept of a 'northern iron-working suburb' now needs to be modified, and re-stated in terms of an extensive settlement everywhere – except perhaps at its core – permeated by iron production, or its waste products.

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The chronology of the iron industry is more uncertain, at least in terms of its inception. Small quantities of smithing slag were found in tentatively-dated late Iron Age contexts on Deansway site 1. This is rather earlier than other evidence from the Deansway sites, or from other excavations in the city, and its validity and significance require further investigation (see below). The earliest definite evidence for smelting occurred in late-1st to early 2nd-century (site period 3) deposits on Deansway sites 1 and 4, and the activity probably continued until the later 3rd century (Jackson 2004). This is consistent with results elsewhere around the city. On the Sidbury site small quantities of slag began to appear in a third sub-phase of the second century; the road passing through the site was made up with large quantities of slag in the late 3rd century (Darlington and Evans 1992). The road found in the Farrier Street excavations was made up with slag, and slag was being imported onto the site in the 3rd to 4th centuries (Dalwood *et al* 1994). Barker's original Broad Street excavations dated the iron production here to the 3rd-4th centuries. On Mundy's Blackfriars site, iron production was still going in the late 3rd-early 4th century, when its waste products were dumped over the nearby road, apparently now abandoned.

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Despite the ubiquity of ironworking residues under the city, and the number of production sites found, some fundamental questions still need to be addressed (as articulated by Jackson, 2004). The source of the ore has usually been assumed to have been the Forest of Dean, though a more local source in the Worcester Graben, the Permian-Triassic basin occupied by the lower Severn valley, has also been suggested. The location of this putative ore deposit is completely unknown, but presumably it was worked out in antiquity.

The scale of the dumped residues deposited around the Worcester site implies a massive output, spread over more than two centuries, and this in turn implies a huge demand for fuel, probably charcoal from local (managed?) woodland and forest. The location of the iron industry at Worcester may have been determined by the need to balance access to fuel, access

to ore, and the distribution requirements of the finished product or products.

Although ironworking is by far the most visible of Roman Worcester's industries, there is now some evidence for other industrial activity in the town. At Deansway, there was evidence for glassworking in the 3rd century AD (Cool and Jackson 2004). At the Conder Building site, limited evidence for copper and lead (copper alloy?) working was found. It has recently been suggested that pottery manufacture may have occurred in the area around the Magistrates Court site (analysis underway; J Evans, pers comm), though confirmation of this awaits the completed pottery analysis.

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Research priorities:

RP3.19 Origins of the Roman iron industry

Any further data on the origin, particularly the possible pre-conquest origin, of iron manufacture in the Worcester settlement should be sought, in particular as part of the larger question of the relationship between the pre-conquest settlement and its Romano-British development.

RP3.20 Roman iron industry – production sites

The investigation of more primary production sites (as opposed to dumped residues in secondary contexts) should be a priority. Particular regard should be paid to the scale of production and its social setting. Was this a full-time professional industry or a seasonal activity on a domestic scale?

RP3.21 Roman iron industry – raw materials, including fuel

As Robin Jackson and others have pointed out, the regional implications of iron production on the Worcester site are unknown. Recognition of ore from excavated sites is key, and further work on the identification of ore sources is a priority. Investigation of rural settlement patterns may throw some light on the exploitation of local charcoal resources.

RP3.22 Relationship of Worcester to other Roman ironworking sites

Allied to the above, Jackson points out that semi-industrial iron production was also a feature of much smaller rural settlements in the Worcester area and around the Severn estuary. To fully understand the context of the Worcester industry, further investigation of the smaller components of

the regional settlement hierarchy will have to take place.

RP3.23 Smithing, and the finished products of the Roman iron industry

What *was* the finished product? Deposits associated with smithing activity require further investigation. Where suitable dated assemblages of iron objects occur, scientific (chemical) analysis should be used to identify potential sources of ore.

RP3.24 Other Roman industries

Was the iron industry the only significant industry in the Roman settlement? The availability of fuel, the well-developed distribution network (roads and the river), the existence of a consumer market and, possibly even, the same or similar infrastructure (furnaces, kilns), are all likely to have encouraged the development of other industries, including the smelting and working of metals, and glass and pottery manufacture.

RP3.25 The consumption of iron (and other materials) within Roman Worcester

The evidence for iron production is obvious and extensive, the other side of the equation – the importation of consumer products from elsewhere – is less so. The level and diversity of the material culture of the iron-producing urban community at Worcester requires further definition and comparison with that of other settlements.

3.4 Late Roman and post-Roman

Once again, our understanding of the changes taking place in the Worcester settlement is limited by the distribution of the excavated sample. Some aspects of what was happening in the later 3rd to 5th centuries are nevertheless clear, and there is enough evidence now to show that the built-up area contracted, but unevenly, at different speeds in different parts of the settlement. As ever, the central area is the least known.

The Sidbury area, probably just outside the defended perimeter to the south-east, was abandoned by the early-mid-4th century. A trampled green loam deposit built up over the road surface at the western end of the excavated area in the late 3rd or early 4th century. A few patches of a worn, undateable, pebble surface incorporating pieces of slag and limestone were found overlying the loam. Marshy sediments accumulated at the eastern end of the site, representing

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inundation from the Frog Brook that may imply a change in or failure of a local drainage regime (Darlington and Evans 1992, 30-31, 99). The wider local implications of the abandonment of this once-busy area and its road are not yet understood. Does the cessation of traffic through the excavated area imply that the Frog Brook crossing was replaced, possibly further south, producing a new route that was the precursor of Anglo-Saxon Sidbury?

In the late 3rd to early 4th century much of the area of the Deansway sites was used for penning animals. The southern street continued in use into the later 3rd century and was repaired with iron slag and pebbles. It then went out of use and was covered with midden material containing a mid-4th-century coin. The other streets similarly disappeared beneath midden material from intensive corralling of animals. A building on site 3 was disused by the late 3rd century. On site 4, iron production ceased, the area was re-ordered with new boundary ditches and fences, and this area too was partly given over to corralling livestock. A small inhumation cemetery (14 north-south burials were excavated) developed on site 4 in the later 4th century. Stockyards and cemetery gave way to grazing, and the soils covering the site developed as a 'dark earth' deposit, interpreted as a grassland soil (Dalwood and Edwards 2004).

To the north, on the 1985-6 Blackfriars site T7, in the late 3rd or 4th century the road had been re-laid with slag when a clay-founded building was constructed on its west side with a metalled track to its rear. The road apparently went out of use while iron production continued in the vicinity, slag being dumped on the road. A probable timber building was built over it, but dark soil accumulated over the site. The alignment of the metalled track to the rear of the roadside building was, however, perpetuated in later boundary alignments (Mundy 1986). Similar threads of topographical continuity were apparent in the Deansway sites, where a number of Roman alignments (roads and boundaries) were perpetuated through later centuries, despite the absence of archaeologically detectable features to account for their survival. The excavators suggested that alignments persisted in the form of boundaries marked only by hedges.

Just north of here, a Roman well at 1 The Butts had been infilled with an assemblage of material dated by coins and pottery to the late 4th century AD (coin *tpq* of 364). The assemblage was striking for the large quantity of building materials: stone roof tiles (many showing signs of burning),

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part of a limestone column, *tesserae*, bricks, *pilae*, box-flue tiles, roof tiles, painted wall plaster and *opus signinum*.

Much further north, on the former County Education Offices site on Castle Street, a Roman surface was covered by a midden deposit that included *tesserae*, slag and pottery (shell-gritted ware jars) of late 4th to 5th-century date. This unusually late material suggests that the northern suburb did not contract uniformly: some places (farmsteads?) within it apparently remained inhabited long after their neighbours had gone and their surroundings had reverted to grazing land. Other peripheral areas or sites may have remained inhabited late into the 4th century. 19th-century finds of Roman coins of the mid- and late 4th century from the site of the castle suggest that activity was taking place there right through the 4th century and possibly beyond. What that activity was, however, remains unknown.

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Towards the centre of the settlement, the masonry buildings found in small-scale trenching either side of the High Street were robbed. The latest Roman yard surface in the test-pit beneath the Guildhall was covered with animal bone and demolition debris before a dark soil developed. On the City Arcades site opposite, iron smelting at the east end of the site probably ceased before the end of the 3rd century; occupation of the masonry building to the west may also have ceased before 300 (Griffin *et al* 2004). Almost nothing is known of the sequence within the defences. 'Dark earth'-type deposits, probably representing cultivation soils, have been seen in a number of small-scale interventions within the defended area (for example, in the grounds of the Bishop's Palace).

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Finally, it has been suggested from much later historical evidence that St Helen's church, located just within the Roman defences on the High Street, was founded and endowed with rural property at a date before the foundation of the Worcester see in the late 7th century; further, that the church may itself be of late Roman origin (Bassett 1989; Baker 1980; Baker and Holt 2004). Given the complete absence of supporting archaeological evidence, such a claim might seem bold – to say the least. However, in Gloucester the church of St Mary de Lode had an analogous relationship to the senior minster church, St Peter's Abbey, now the Cathedral, with later documentary evidence suggesting that the former had lost rural possessions to the latter. When excavated, St Mary's was found to occupy the site of a well-appointed Roman building, probably part of a baths building, with evidence of a sub-Roman mausoleum intervening between the Roman building

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and the first Anglo-Saxon church (Bryant and Heighway 2004). Such a sequence could well await discovery below St Helen's in Worcester.

Research priorities:

RP3.26 Sampling and analysis of late Roman dark earth

Scientific analysis of 'dark earth' deposits overlying Roman levels was found on the Deansway excavations to be virtually the only source from which the post-4th-century pre-Anglo-Saxon history of the site could be read. Further sampling of such deposits should take place in other areas to further document the processes of contraction and change in the late Roman and early post-Roman settlement.

RP3.27 Investigation of the central areas of the late Roman settlement

Extension of the excavated sample into the central areas of the settlement, particularly within the defences, is essential if changes in the overall character of the settlement, its functions, and its status, are to be understood. The Cathedral area may be of particular significance: are there any discernible threads of institutional continuity between the late Roman settlement and the foundation of the 7th-century see?

RP3.28 Investigation of late Roman activity in the castle area

Excavation of the castle site in the early 19th century produced late 4th-century, Byzantine and late Anglo-Saxon coins. The character of the activity represented by these finds is totally unknown, and investigation of the site using modern techniques is long overdue. (see also RP4.19)

4 The pre-Conquest period

4.1 Post-Roman Worcester (400-700AD)

Worcester belongs to that group of English cities that enters the historical record towards the end of the 7th century as a consequence of the foundation of a see during the reorganisation of the Church under Archbishop Theodore. Apart from the implication of the place's importance in the fact of the foundation there, the contemporary context remains obscure, though the scale of the earthwork defences surrounding the Cathedral shows that they must still have been a substantial, possibly defendable, feature. The most immediately relevant archaeological evidence is that of a pair of burials close to the Cathedral from about the time of or slightly before the foundation of the see (Barker *et al* 1974). A coin of the Byzantine emperor Phocas (602-610) was one of the finds from the demolition of the castle motte. Historical and topographical evidence has been used to suggest that there was also an early Church presence in the northern part of the enclosure, based on the church of St Helen, and possibly others (Baker 1980; Bassett 1989; Baker and Holt 2004).

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Archaeological evidence for activity elsewhere in Worcester comes from the Deansway and Blackfriars excavations (Dalwood and Edwards 2004). These were able to show continuing agricultural (pastoral) activity in the area of the former Roman settlement to the north of the Cathedral, from analysis of 'dark earth' deposits occurring between Roman and medieval levels, and were able to demonstrate the intermittent survival of features of the Roman landscape: roads, road alignments, and boundaries.

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Research priorities:

RP4.1 Definition of the context of the foundation of the see

Identification of any pre-Cathedral central-place functions that may have contributed to the location of the see in Worcester. This could include earlier ecclesiastical activity on the Cathedral site, a secular, political presence, perhaps in the same area, or evidence that the earthwork defences were maintained or refurbished during this period.

<p>RP4.2 Anglo-Saxon Cathedral church of St Peter Location and exploration of surviving remains of the first Cathedral church of St Peter, its setting, and any preceding activities on the site.</p>
<p>RP4.3 Potential early Anglo-Saxon origins of St Helen's church Testing the hypothesis that the church of St Helen was extant in this period, and may have been the principal church before the foundation of the see, possibly developing from a Roman antecedent.</p>
<p>RP4.4 Analysis of post-Roman dark earth Further scientific analysis of 'dark earth' type deposits throughout central Worcester in order to determine their origin and composition, the activities they represent, and the implications of these for the recycling of the remains of the Roman settlement in later centuries.</p>
<p>RP4.5 Identification of survival of Roman landscape elements Further excavation of Roman landscape elements (roads, boundaries) to determine the degree to which the Roman landscape contributed to the Anglo-Saxon and medieval townscape, and to determine what processes were at work in the transformation.</p>

4.2 Middle Anglo-Saxon Worcester (700-850AD)

Middle Anglo-Saxon Worcester, particularly of the 8th and early 9th centuries, is at least as obscure as the earlier period, perhaps even more so. Direct archaeological evidence is limited to coin finds, including a *sceat* from Deansway site 2 and another, unstratified, of early/mid-8th-century date from 91 High Street (Dalwood and Edwards 2004; Fendall 1969). Historical evidence suggests that the bishops of Worcester were active in trade and probably maintained ships and commercial premises in London in the 8th century, and some manifestation of these activities may be apparent in Worcester, perhaps on the Severn waterfront. The historical model suggests that Worcester before the *burh* was an episcopal city in which there was no active royal interest (Baker and Holt 2004). There is certainly no evidence from Worcester comparable with that from Hereford, for organised urban planning and secular settlement in this period;

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Worcester, in the reign of Offa, remains utterly obscure.

Research priorities:

RP4.6 Location, identification and definition of middle Anglo-Saxon secular settlement and its relationship to Church institutions, buildings and precincts

The historical model suggests a community within the earthwork enclosure that was dominated by the Church: Cathedral clergy, bishops' retainers and military retinue, their households and servants; priests serving the other churches, and specialist craftsmen serving all of these. So far, this is a purely historical model, without any supporting archaeological evidence.

RP4.7 Investigation of the post-Roman survival of the Roman earthwork enclosure

Further examination of the Roman earthwork enclosure, first fully defined by Philip Barker from his Lich Street excavations, could provide evidence of its survival and use in the post-Roman period. Barker's work was conducted under extremely adverse conditions on an active construction site, and the basic defensive sequence and its chronology urgently requires confirmation and refining (see also RP3.13, 3.14, 3.15, 3.16, 4.12).

RP4.8 Exploration of potential early (middle Anglo-Saxon) church sites

Historical evidence suggests, with varying degrees of certainty, the existence of St Helen's (see RP 4.3), St Alban's, and St Margaret's (unlocated, in the Warmstry Slip area) in the middle Anglo-Saxon period. None have been excavated.

RP4.9 The development of the waterfront in the middle Anglo-Saxon period

Exploration of the development of and activity along the Severn waterfront, in the area of the Cathedral and its precinct (given that bishops are known to have been ship owners by the mid-8th century), and around the present South Quay, identifiable as part of an episcopal estate leased to the royal family in the 10th century.

4.3 Late Anglo-Saxon Worcester (850-1066AD)

Late Anglo-Saxon Worcester has enjoyed a high academic

profile for more than half a century as a consequence of its surviving documentation: the charter of 889-899 describing the agreement between the crown and the bishop for the foundation of the new borough or *burh*, and the series of episcopal conveyances of rural manors with attached urban properties, known as the Oswald Leases. The former in particular has long been considered a key text for understanding late Anglo-Saxon urbanism – revealing the motives and mechanisms for founding a *burh*, and something of its administration and physical character through the details of provisions for defences, streets and market place (Stenton 1947, 521-522). Few other pre-Conquest *burhs* have their foundation documented in this way (London is a notable exception, and the Bishop of Worcester was associated with that too), and therefore the archaeological reality of the Worcester *burh* will be of national significance.

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The northern *burh* defences (more accurately, post-Roman pre-Conquest defences shown to have been in use *c* 900AD) were found by excavation in 1989 in the course of the Deansway excavation project, which also sampled a large area within the defences (Dalwood and Edwards 2004). A large post-Roman, pre-medieval ditch discovered by excavation on the City Arcades site is stratigraphically and topographically consistent with it being the eastern *burh* ditch. The southern perimeter of the *burh* remains unlocated but it is probable that the earlier earthwork defences around the Cathedral were re-used and refurbished in this period. Candidates for the alignment of these defences include the Severn Street – Mill Street line later followed by the castle defences, and a more northerly line across College Green. In summary, the Worcester *burh* was probably a small (*c* 8.5 acres/3.5ha) defended annexe added to the north side of the earlier defended enclosure around the Cathedral.

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The Severn Bridge is first mentioned in an account of its repair just before 1088 (Carver 1980c, 20), and the river was therefore fairly certainly bridged before the end of the late pre-Conquest period. The bridge may possibly have been built *de novo* contemporaneously with the construction of the *burh* in the late 9th century. It may, however, have been built centuries earlier and have been a locational factor in the development of the settlement, possibly even a factor in the location of the see.

Nothing whatever is known of the process by which a permanent, dense, population was established within the new *burh*, and its social composition and geography remain

completely obscure – though better understood towns offer some possible analogies. The Cathedral enclosure could well, at first, have remained an ecclesiastical enclave. The new defended northern annexe most probably contained the *ceap stow* or market place (the later High Street). It certainly contained one large high-status property on its waterfront, and may have contained others, possibly occupied by the bishop's retainers and their households.

There is as yet no archaeological evidence for the bishop's *haga* mentioned in a charter of 904. This is thought to have been north of Copenhagen Street and is discussed in some detail by Baker and Holt (2004, 176-77).

Limited exposures of banks or possible banks, constructed of red marl, at Severn Street and City Walls Road during street works, and in one evaluation trench at Royal Worcester Porcelain, may potentially be associated with a further *haga* or annexe to the SE of the main *burh*. This could be the *be suthan byrig* or *Suthbiri*, mentioned in a charter of 969 and the origin of the street name Sidbury (see Hooke 1980, 40). Another possible annexe defence is evidenced by a pre-medieval ditch on City Walls Road near New Street.

There are signs that the *burh* interior was re-planned following the step-by-step dismantling of the defences, and large plots laid out as part of that process. This may have taken place before the end of the 10th century. Excavated material remains of this period cannot be dated with accuracy, but extramural occupation appears to have been developing in the 10th century, certainly along Sidbury (though see above for consideration of an annexe enclosure in this area), but possibly also towards the river crossing at the bottom of Newport Street. Craft functions and the craft-working sector of the population may have been concentrated outside the defences in these areas. Both had access to watercourses, the Frog Brook in Sidbury, the Severn in Newport Street. The latter was, in later medieval centuries, the core of the craft-working district in All Saints' parish (Barron 1989).

The original Cathedral church of St Peter remains unlocated (see above), so too does the Cathedral church of St Mary, now generally thought to be an addition of the 10th century by Bishop Oswald. Both churches probably lie beneath the present Cathedral, excavations in and around the chapter house in 2003 having shown the existence in that area of a pre-Conquest cemetery probably diminishing in density towards the south. This is consistent with a tentative

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interpretation of geophysics results from the present choir, and with the demolition of Anglo-Saxon St Mary's by Bishop Wulfstan at the commencement of his 1084 building campaign.

Eight out of the ten medieval parish churches are thought, mostly on the basis of later documentation, to have been pre-Conquest foundations, mostly either episcopal or monastic; only one (St Clement) appears to have been a proprietary church. The sites of two non-parochial chapels of this period are lost: St Margaret, thought to have been in the Quay Street / Group Lane area (part of a medieval building was recorded here in 1913), and St Marina, perhaps within the area of the Copenhagen Street car park. Previously the references to these chapels had been taken to refer to one site. Following recent excavations at the Commandery, and the discovery of the medieval chapel building, the site of St Gudwal's chapel can be identified with more certainty. With the exception of a single evaluation trench at St Clement, none of the city churches has been excavated (though there has been more limited archaeological work at several); a recent evaluation trench on the site of St Peter the Great was outside the probable footprint of the medieval church and did not contact any medieval structural remains. Their constructional history remains a complete blank, in many cases right up to their rebuilding in the 18th or 19th century.

Fragmentary domestic buildings from the later part of the period were examined in the Deansway excavations. Their plans were generally difficult to determine but they were built using earth-fast posts and timber sills in slots. The late pre-Conquest timber-lined cellars familiar from many contemporary towns (eg Coppergate, York, and London, Gloucester, Chester, Oxford) are not yet represented in Worcester.

One model of the end of the *burh* as a fortified place proposes that it disappeared as a consequence of a sequence of planned urban extensions. This is based on topographical evidence of urban landscapes with signs of organised planning superimposed over former defences found by excavation; it is supported by documentary evidence for the occurrence of standardised (mainly shilling) rents from Cathedral property in the same parts of the city (Baker and Holt 2004). The model is clearly a contentious one in that it proposes that pre-Conquest bishops organised the demolition of their city's defences and that, by implication, the growth of an urban population made this process both viable and necessary, perhaps as early as

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the mid- to late 10th century.

Research priorities:

RP4.10 Patterning of occupation and other activity within the *burh* defences

Not even the most basic population data is available for the pre-Conquest town before Domesday. In particular, the size, density and social composition of the population of the *burh*, and its extramural areas, in any period are totally unknown, and any opportunity to examine deposits of the period should be taken. The presence of exceptionally deep and possibly well preserved archaeological deposits in the Newport Street area and in the Sidbury floodplain zone suggests that these areas in particular may have outstanding potential for looking at the growth and character of a craft-working population in this period. Within the *burh*, areas of deep deposit along the High Street are of paramount significance. See also RP 4.22.

RP4.11 The Cathedral churches in the late Anglo-Saxon period

The pre-Conquest Cathedral churches have not yet been located. The form, development and inter-relationship of the two churches would add greatly to knowledge of the pre-Norman monastic community, its character, size and evolving liturgy.

RP4.12 Anglo-Saxon defensive circuits

It is not possible to date the defensive features so far excavated any more narrowly than to a post-Roman, pre-medieval bracket. Scientific dating evidence is required before it can be demonstrated that the defences of the *burh* of c 890-900 AD were newly built at that time. The present models of the Worcester *burh* also suggest that the Roman earthwork enclosure around the Cathedral formed the southern half of the enceinte, and was presumably refurbished at this time, if not before. Controlled excavation of the Roman defences is required to confirm their date, any history of post-Roman repair, their course south of the Cathedral, and their eventual fate.

RP4.13 Demolition and re-planning of the *burh* defences

The historical-geographical model of post-mural planned redevelopment needs to be tested by excavation, and by the identification and dating of settlement remains overlying infilled ditches or levelled banks. Key areas for the

investigation of this question are the eastern side of the High Street; St Swithin's church and its vicinity; the Copenhagen Street – Fish Street area; and the eastern side of the Cathedral Close, north and south of Edgar Street.

RP4.14 Anglo-Saxon urban churches

The hiatus in our knowledge of the Anglo-Saxon churches will only be filled by excavation of the interiors of surviving churches (St Helen, St Swithin, All Saints, St Alban, St Martin) or the sites of former churches (St Peter the Great, St Andrew, St Clement). Particular churches offer specific targets: under All Saints may be the remains of an Anglo-Saxon 'gate church' attached to the defences; excavation within St Helen may be able to confirm the historical evidence for its extraordinary antiquity.

RP4.15 The Anglo-Saxon High Street

The High Street has been the city's principal and wealthiest street throughout recorded history. There are indications that it has Roman origins, that it may have remained in use through the early part of this period (suggested by its relationship to St Helen's church), and was the *ceap stowe*, the market place, of the *burh*. Apart from the waterfront, it is the most likely location for the development of an early trading community operating from fixed premises, and for the appearance of the most advanced urban commercial building types. It can be expected that deposits will survive along the actual frontages only exceptionally rarely.

RP4.16 Late Anglo-Saxon secular buildings

Issues such as the geographical zoning of building types and social and economic differentiation within the settlement cannot begin to be addressed until the sample is extended beyond the Deansway area, into the suspected commercial core and probable craft-working peripheral streets.

RP4.17 Late Anglo-Saxon material culture

The material culture of the urban population of this period is known only from artefacts and deposits from the Deansway excavations and from Carver's excavations on Sidbury. No primary occupation deposits contemporary with the lifetime of the *burh* have yet been identified. Issues of social and economic zoning within (or within and without) the settlement cannot begin to be addressed on present evidence.

RP4.18 The river crossing in the Anglo-Saxon period

Carver's (1980) hypothesis that the pre-Conquest bridge re-

used surviving masonry piers with iron slag cores, and abutments, remains untested. Deep foreshore deposits may contain surviving abutment sequences and evidence of approach works and possibly fortifications. As with the Roman period (RP3.9), evidence for the approaches to the river crossing will also be significant.

RP4.19 Anglo-Saxon activity on the castle site

The area of the former castle (now the King's School site) remains almost untouched by modern excavation. However, clearance of the castle earthworks between the 1820s and 1840s produced coins of various reigns spanning the mid-10th to 11th centuries and a single coin of a 7th-century Byzantine emperor. The context of these discoveries remains completely unknown.

RP4.20 Anglo-Saxon cemeteries

Skeletal evidence for the pre-Conquest population will lie within the Cathedral's lay cemetery, to the north of the Cathedral. Although it remained in use into the 19th century and accommodated most of the population of Worcester until the Reformation, it may be possible to locate coherent burial sequences from this period that may be a unique source of demographic data. A less disturbed group, though presumably representing a very specific social grouping, is to be found in the monastic cemetery south of the Cathedral. Excavation has shown this to include a mixed population, possibly the pre-reformed Cathedral community and their families (Clarke 1980; Chris Guy, pers comm); this too deserves further investigation for its more specialised but clearly evident demographic potential.

RP4.21 The agricultural hinterland in the Anglo-Saxon period

Investigation of Worcester's contemporary agricultural hinterland may contextualise developments in Worcester itself, possibly in terms of the relationship between town-planning episodes and re-organisations of the Cathedral's rural estates. Worcester has, potentially, a unique contribution to make to debates about landscape change and social organisation in the later 9th and 10th centuries as a consequence of the extensive survival of monastic documentation (the Oswald leases, see above). Environmental evidence should have an important part to play, given suitable sampling opportunities.

RP4.22 Possible late Anglo-Saxon annexe defences at Sidbury and elsewhere, and their interiors

There is little current knowledge of the number or extent of *hagas* or annexes associated with the 9th-century *burh*, the nature of their defences, or the nature of occupation and other activity in their interiors. As with the medieval suburbs, understanding these enclosures and comparing them with the central areas of Worcester will be important in developing an understanding of the economic and social trajectory of the settlement as a whole. Deep deposits close to the Frog Brook are thought to have particular potential (see RP4.10).

5 The medieval period

5.1 Introduction

The corpus of archaeological evidence for medieval Worcester after the Norman Conquest is, like other periods, dominated by the Deansway excavations of the late 1980s – on account of their scale, and the high quality of the excavated deposits (Dalwood and Edwards 2004). Prior to the Deansway project, the only extensive controlled excavation of medieval tenements had been Carver's Sidbury excavations of the mid-late 1970s (Carver 1980d), though Charles Mundy's Blackfriars excavation had examined a marginal area built on by the Dominicans in the 14th century. Philip Barker's excavations on the Blackfriars and Lychgate sites in the 1960s had managed to record medieval deposits, features and finds – but in conditions that were far from ideal. Since the conclusion of the Deansway excavations and the advent of PPG16, there has been an explosion of archaeological data derived from rather smaller-scale fieldwork, but under controlled conditions.

A quick review of Philip Barker's research priorities expressed in the late 1960s shows that all of his goals for the medieval period have now – at least in part – been achieved. The investigation of Worcester Castle by excavation, building recording and geophysical survey has finally begun, if only on a microscopic scale in relation to the size and potential complexity of the monument and with little clearer idea so far of its internal geography. Investigation of the medieval city defences has, as Barker advocated, continued, though the archaeological record is skewed heavily in favour of the eastern perimeter as a consequence of the investigations that Barker himself began in advance of the City Walls Road scheme of the 1970s. Investigation of the medieval tile-making industry at the far end of the northern suburb has commenced with the excavation of a kiln site at The Tything. The excavation of uncellared or partly cellared house sites and tenement sequences has taken place at Deansway and (as Barker proposed) Sidbury. Actual street frontage sequences remain largely elusive, though recently it has been possible to record limited exposures in the High Street. Finally, interdisciplinary approaches combining documentary evidence and excavation have been fundamental to a number of archaeological investigations, notably at Deansway (Currie, in Dalwood and Edwards 2004).

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However, despite the growing body of data, the total excavated sample of the medieval town still remains very small, estimated in 2005 as amounting to less than 2% of the likely built-up area. As a consequence, a number of crucial questions about the character of medieval Worcester remain unanswered, and form an agenda for research priorities in the years to come.

5.2 Urban settlement

One of the most fundamental subject areas that can still not really be discussed from archaeological sources is that of changes in the extent of urban settlement over time. Documentary sources provide a very crude picture (literally) for the end of the period, with indications of the urbanisation of particular areas in earlier centuries. The biggest unknown is the chronology of post-Conquest suburban growth. An end-point is provided by John Speed's map of 1610, with its conventional depiction of the extent of suburban housing. However, not only is this a conventional rendering, it was drawn towards the end of a phase of massive population growth (see section 5.3) and its implications for the period ending c 1500 remain to be tested. Nor is the question of suburban extent necessarily a simple one. Later cartographic evidence has been used to define the limits of what appear to be planned medieval urban extensions, such as The Tything-Foregate Street suburb, provided with back service lanes and associated garden crofts (Baker and Holt 2004). However, excavation of one site within this suburb showed that, in the medieval period, the site in question was in solely industrial use without any evidence of associated habitation – thus invalidating any assumptions about population level based on the extent and layout of the suburbs. Continued small-scale development-related evaluations will allow a much more accurate picture to be cumulatively built up of the real extent of medieval occupation. Attaching a precise chronology to this may however be more difficult, given the shallow and less well preserved character of suburban deposits, and it may be some time before historical issues such as the impact of the 14th-century epidemics can be addressed in the suburbs.

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Questions of changing settlement extent and density within the walls can be addressed already in a few areas. The large scale of the Deansway excavations provides the only archaeological sample yet at the 'neighbourhood' level. The excavations revealed an increasing density of occupation and property division in that area between the 11th century and the later 14th, followed by less intensive occupation, with industrial

uses moving into areas where housing had previously stood. On the other hand, the building up of the Mealcheapen Street area in the course of the 13th century and King Street in the late 16th can, so far, only be demonstrated from documentary evidence – either of actual building activity or of the transformation of conveyed property from lands or gardens into tenements (Hughes 1990 and pers comm). Such local sequences, as well as making predictions of the presence or absence of archaeological deposits of particular periods possible, also put flesh on the bones of generalised historical cycles of growth and decline and illustrate their actual effect on the fabric of the city.

Research priority:

RP5.1 The medieval suburbs

Definition of the changing extent, function and density of suburban settlement, including consideration of the impact of the construction of the medieval defences on the pre-1200 suburbs

5.3 Population and demography

Estimates of the size of the urban population are available or may be made from 1086 on, the accuracy of the population figures increasing greatly for later centuries.

Date	Estimated population
1086	2000
1300	3000-4000
1377	3100
1563	4250
1640s	c 8000
1678	10,354

The figures for the medieval period are based on statistics derived from tax returns, translated into total population figures by means of standard multipliers for the size of taxed households, and, from the 13th century on, estimation by historians of the proportion of the population excluded from the tax returns by virtue of their poverty, or their location. Far more accurate population statistics may be made after 1538 from the first surviving city parish registers (see section 6.2), and these remain the standard source for demographic calculations before the census returns of 1801. While

archaeological sources have little or nothing to add to estimates of total population, particularly for the later centuries, they can still contribute to the demographic picture, directly and indirectly. Directly, via skeletal evidence that contributes to understanding patterns of age at death, nutrition, occupational disorders, pathologies and disease. Indirectly, via data on changing standards of living, housing and sanitation, and evidence for the changing extent and density of settlement (see section 5.2).

A fundamental limiting factor applies to the availability of skeletal evidence for Worcester's medieval population. This is the maintenance by the Cathedral of a burial monopoly over the city parishes throughout the middle ages. Almost the whole urban population, from the earliest medieval centuries, was at least in theory buried in the lay cemetery on the north side of the Cathedral. The known exceptions are those buried in one of the two friary cemeteries, or at St Oswald's Hospital during epidemics (Baker and Holt 2004). Archaeological investigation of the Cathedral's lay cemetery has so far been confined to small-scale investigations in the cellars of buildings on its periphery. At 5a College Yard, 55 inter-cut inhumations were found packed into an area of thirty square metres within a depth of just 300mm. The much more intensively used central areas of the cemetery have never been sampled to any depth, and the impact of continuing burial through the post-medieval centuries and periodic levelling episodes on earlier populations is unknown, but probably severe.

Another implication of the Cathedral's burial monopoly is that city parish churchyards should not contain burials earlier than the end of the middle ages: with the exception of a single mention in 1405 of a cemetery at All Saints, there are no medieval references (in wills, for example) to burials in city churchyards. Consequently, comparison between parish populations, to set alongside other socio-economic data (see section 5.4 etc), will probably never be possible in Worcester. This, however, is a historical assumption that needs to be tested: it is quite clear that, in certain circumstances, the Cathedral's monopoly could be and was broken.

There has been no significant archaeological research on either of the friary cemeteries. The location of the Dominican friary's Holy Churchyard is known from documentary evidence (Hughes (ed) 1986), and a small number of graves were salvage-excavated there in 1967, but not subsequently analysed, and it can be assumed that most of this cemetery was destroyed in the 1960s (Barker 1969, 64 and n.137).

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Knowledge of the Franciscan cemetery outside the city wall to the east of Friar Street is limited to two chance finds, suggesting that it may never have been seriously disturbed. The surviving part of it may potentially hold a large, coherently stratified population spanning a very specific period in time (c 1225 to 1538). On the analogy of friaries elsewhere, the Gloucester Blackfriars for example, it could be surprisingly extensive and populous. It could also be drawn from a very broad cross-section of society, from William Beauchamp, Lord of Elmley, buried there in 1268, to a substantial number of the poorest townspeople who were sympathetic to the friars' mission and perhaps unable to afford the Cathedral's burial fees. A contemporary account of very wet ground conditions in the cemetery also suggests some possibility of exceptional conditions for archaeological preservation. This cemetery may, in short, represent the best and possibly the only opportunity for the archaeological investigation of the demography of medieval Worcester.

Research priorities:

RP5.2 The Greyfriars cemetery

Location and excavation of the Franciscan (Greyfriars) cemetery, potentially the best and possibly only chance of examining skeletal evidence for the medieval city population

RP5.3 Medieval churchyards

Sample excavation in one or more city churchyards to establish the reality or otherwise of the Cathedral's alleged monopoly of burial throughout the Middle Ages.

RP5.4 The Cathedral's lay cemetery

Sample excavation within the (probably most intensively-used) southern-central area of the Cathedral's lay cemetery in order to assess archaeological conditions there, particularly the length of the sequence and the degree of disturbance to early deposits as a consequence of post-medieval burials and levelling-down episodes.

5.4 Houses and housing

The archaeology of medieval domestic building is a large, but in Worcester, seriously under-developed, subject area. Potentially, the study of buildings by excavation, and by analysis of surviving structures, will offer new insights into rebuilding cycles and the chronology and impact of economic

change; into changing technologies; and into changing living conditions and lifestyles. With the exception of fragmentary remains of rear wings of 13th-14th-century buildings at 23-29 Sidbury in Carver's excavations, the published corpus of excavated medieval houses in Worcester derives almost entirely from the Deansway excavations. To these may be added a small number of surviving medieval houses (some recorded), a smaller but increasing number of recorded stone undercrofts, and also a substantial number of buildings (mostly of late medieval date) from the excavations at Newport Street (these await analysis and identification of status and function).

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Rebuilding cycles and the urban economy

Underlying the major trends of the medieval economy, every town has to a greater or lesser extent its own, distinctive, economic trajectory. This may, depending on the strength of later economic movements, leave an enduring impact on the townscape. Such is the case in Worcester. Unlike, for example, Gloucester and Shrewsbury, Worcester does not appear to have experienced serious economic decline in the later 15th century. The reverse seems to have been the case. The evidence available at the moment points to a building boom beginning in the last quarter of the 15th century, flattening off slightly in the early/mid-16th century, and then beginning a period of even faster growth from the 1560s (Dyer 1973, 1981; Hughes 1990). The impact of this is still evident in those streets, particularly Friar Street and Sidbury, which escaped the most vigorous rebuilding and re-fronting activity in the 18th century. The evidence for late medieval and early post-medieval rebuilding cycles is mainly documentary – based particularly upon conveyances and wills – supported by the evidence of the surviving buildings, dated by the typology of their carpentry. From the 16th century on the documentary sources are good enough to identify economic movements on a decade-by-decade basis. So far, the structural evidence lacks this degree of precision. However, were the opportunity to be taken to begin the accumulation of dendrochronological dates from buildings undergoing repair, this situation would be transformed, the impact of documented economic change assessed and the late medieval roots of Worcester's 'Great Rebuilding' could be firmly established and explored (see also section 6.3).

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For periods before the later 15th century, any evidence for the chronology of building activity is going to be derived from archaeological evidence. The precision with which this can be

applied will vary on a site-by-site basis according to the availability of good dating evidence: generally either closely dateable ceramics or materials susceptible to scientific (particularly dendrochronological) dating. The excavated sequences of the Deansway sites were dateable with enough precision to show, for example, the impact of economic and population trends either side of the Black Death (section 5.3, above). With further excavation, particularly of similar marginal (back street) sites that have experienced fluctuating building cover rather than periodic (and unrecoverable) rebuilding on the same footprint, it should be possible to build up a detailed picture of the behaviour of the city economy throughout the period.

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Building technology

The evolution of house-building techniques can, so far, only be studied from the Deansway excavations, though the trends identifiable there are also visible in the results of smaller-scale investigations and, more widely, are replicated in most English medieval towns. Buildings constructed with earth-fast foundations dominate the pre-Conquest period, with some indications of a move away from earth-fast posts to horizontal timber baseplates in slots, and some evidence of mass-walled (turf, cob) structures. Timber-lined cellars of the type found widely in late pre-Conquest England have yet to be found in Worcester. Dwellings with earth-fast foundations continued to be built up to the late 13th or 14th century when fully framed buildings on dwarf walls become the norm. Stone domestic buildings and undercrofts appear in the archaeological record from the late 12th century on. Ceramic roof tiles appear in the 13th century, though thatch was still in common use until the 15th (Dalwood and Edwards 2004).

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Houses, standards of living, and urban society

In one way, the Deansway excavations provide a representative snapshot of medieval town life: the stone-built first-floor halls of the wealthier citizens intimately mixed with the one- or two-roomed dwellings of poorer craftsmen. This pattern is completely consistent with what contemporary documents tells us about the social geography of the city: that although the central parishes (St Helen, St Swithin) were much wealthier than the marginal parishes (St Peter the Great), in every parish wealthy households and poorer ones were intermixed. But despite the scale of the Deansway project, it still represents a very small sample of the total number of households of the high medieval city. The extremes

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of medieval urban society are probably barely represented in the archaeological record. Towards the top end are recorded fragmentary remains of wealthy stone buildings on the High Street (84-85 High Street: Dalwood 1992; 92-94 High Street). At the lower end, so far, are the smaller dwellings on Powick Lane found in the Deansway excavations, but the smallest, poorest, single- or two-room cottages known from the documentary evidence are not yet identifiable from archaeological evidence. Hughes (1990) has identified areas colonised by such buildings in the late medieval period, and these should be a priority for future excavation projects: to examine the structures and use of such buildings, together with their associated material culture.

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Buildings and commerce

The High Street has been, throughout the city's recorded history, the wealthiest street in Worcester. It was almost certainly the market place (*ceap stowe*) of the Anglo-Anglo-Saxon *burh*, and it remained the premier trading street of the Middle Ages. New developments in commercial architecture will almost certainly have occurred there first. The High Street is, however, significantly under-represented in the archaeological record, at least in terms of modern investigations under controlled conditions, and there have been few opportunities. At the City Arcades site (Griffin *et al* 2004), modern cellarage had reduced archaeological deposits on the street frontage down to Roman levels, or even down to the natural gravel. High Street properties with an older generation of cellarage, of limited extent and depth, need to be identified to enable scarce and vulnerable High Street frontage deposits, or near-frontage deposits, to be identified and managed (and potentially investigated). Such deposits were found (and protected) in the 2004 watching brief on works on the High Street. Standing buildings and undercrofts offer another avenue for investigating the development of commercial architecture, principally for the end of the period, though an undercroft investigated behind the frontage of 84-85 High Street dated from the end of the 12th century (Dalwood 1992). Timber-framed buildings of medieval date are known or may be suspected to survive encapsulated in later brickwork in some of the traditionally built-up properties, particularly on the west side of the High Street.

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The majority of archaeological excavations have taken place on secondary streets (Sidbury and Birdport for example) or on back lanes (Powick Lane). Because of 20th-century street widening, or the technical difficulties inherent in excavating

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right up to the edge of a carriageway in use, actual street frontages are barely represented in the archaeological record (the 2004 High Street watching brief is an exception to this). It is only the rear wings and back rooms of frontage buildings that have been investigated in any detail. As a consequence, archaeology is not yet in a position to document changes at the 'cutting edge' of commercial building in the medieval period.

Research priorities:

RP5.5 Investigation of later medieval construction through dendrochronology

Increasing understanding of the chronology and implications of late medieval construction activity by a programme of dendrochronological dating of the city's earliest standing buildings.

RP5.6 Investigation of the chronology of medieval building and rebuilding

Extending the excavated sample to gather further data on the chronology of building construction activity throughout the city and suburbs.

RP5.7 Identification and investigation of poorer occupation areas in the medieval city

Extending the excavated sample into (for example) the King Street area to examine the dwellings and standards of living of the urban poor and labouring class.

RP5.8 The medieval High Street frontages

The management and investigation of deposits associated with the principal trading frontages of the High Street is a priority objective

RP5.9 Medieval street frontages and the relationships of buildings with street surfaces

Excavation right up to, or into, street spaces to identify the configuration of urban buildings on trading frontages.

RP5.32 Medieval construction, materials and techniques

Using the results of archaeological excavation, building survey and documentary research, and comparison with other parts of England, to develop a clearer picture of the construction trade in the medieval period, its organisation, use of materials and techniques.

5.5 Urban society - social structure and geography

The first surviving post-Domesday taxation records, from the late 13th and late 14th centuries, give the earliest glimpses into the social structure of the medieval city. The same sources offer the first insights into the city's social geography, revealing an inner core of the wealthiest parishes (the High Ward, comprising St Helen's, St Swithin's and St Alban's parishes) and an outer fringe of larger, less wealthy, but still populous parishes straddling the city wall. The suburbs were home to the poorest sectors of urban society, with some notable pockets of poverty in St Clement's parish and St Peter the Great. At face value, this implies a classic picture of an English medieval town, with a steep land-price gradient, peaking in the restricted area of one or two principal trading streets and declining swiftly towards the margins, the cul-de-sacs, and the extramural suburbs. However, as Pat Hughes notes, this simple pattern obscures a more complex detailed pattern, in which even the wealthiest parishes had poor inhabitants living in close proximity to the wealthiest households (Hughes 1990). This, too, is very much the message of the Deansway excavations, whose neighbourhood-scale sample was able to recover a pattern of life wherein the first-floor halls of the moderately wealthy were never very far from the one- and two-room timber-framed dwellings of the poorer craftspeople.

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Research priorities:

RP5.10 Identification and excavation of sites of high potential for the understanding of medieval society and social geography across the city centre

Further excavation will, cumulatively, add detail to and act as a control on the documentary model of the distribution of wealth across the city, with its weighting towards the central commercial areas. Excavation of large sample areas or the concentration of excavations within particular zones will (on the lines of the Deansway investigations) be able to shed further light on the micro-social geography of medieval neighbourhoods, and the organisation of space by certain sectors of urban society.

RP5.27 Medieval boundaries and land divisions

Identification and analysis of features marking boundaries and

land divisions. Boundaries may be marked by features such as ditches or fences, or their position may be indicated by the distribution of other features within plots. The treatment of boundaries is a key indicator of social geography relating to the aims of RP5.10.

5.6 Material culture, trade and consumption

The Deansway excavations provided insights into depositional processes on domestic tenements that are of fundamental importance to the recovery of the material culture of the medieval city. The excavators concluded that: 'domestic refuse was not generally discarded into pits, whether dug for the purpose or opportunistically. It was concluded that most domestic refuse was initially dumped onto rubbish heaps, and subsequently only a proportion of the material was incidentally incorporated into pits, ditches, and other features as backfill'. Further, 'that large amounts of domestic and industrial refuse were routinely removed from medieval and post-medieval tenement plots'. The consequence of this was that 'At the broad level of the entire Deansway pottery assemblage, patterns of supply and demand can be observed, but any similarities or differences in assemblages between individual tenement plots have been obscured by the removal of much of the rubbish' (Dalwood and Bryant 2004).

Where was the rubbish taken? The Worcester documentary evidence from the 16th century points to common middens on the fringes of the suburbs (Hughes 1980, 280). In Worcester, the maintenance by scouring of the city ditch, as late as the Civil War, means that one of the favoured disposal zones of other towns (Shrewsbury, for example) – town ditches, in close proximity to the gates – is unlikely to contain material relevant to this period. One possible location for rubbish-rich landfill is the waterfront zone, though in Worcester depositional processes in this context are little understood (see section 8.2). The social context of artefact assemblages in landfill deposits behind successive advancing waterfronts, if such a process is present, will be related to the scale of the containing structure. If waterfronts were developed on a plot-by-plot basis (as in Redcliffe Street, Bristol), artefact assemblages may be associated with a particular household. Or if, for example, the construction of the riverside city wall was followed by a landfill-reclamation exercise, assemblages would obviously have a different, much wider-scale, provenance. Nevertheless, as a resource for studying city-wide

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consumption patterns and consumer products over a limited period, such deposits may offer a valuable resource, as excavation in other towns has shown.

Research priorities:

RP5.11 Identification and excavation of major common rubbish disposal zones in and around the medieval city

Particular attention should be given to the riverside waterfront areas where reclamation by landfill is likely to have taken place, and suburban margins

RP5.12 Sampling of medieval backplot areas

Continued sample excavation of disposal zones in backplot areas, to build up a picture of differences in the material culture of households in contrasting parts of the city.

RP5.28 Trade and imports – raw materials and finished goods

Finds assemblages may give an indication of the prevalence of imported everyday and luxury durable goods, and of some perishables (such as meat), but the import of most perishable goods, in particular foodstuffs, will be harder to assess. Sites providing this information (especially from waterlogged deposits) will be of particular importance.

5.7 Industry and production

One of the success stories of the excavation of medieval Worcester has been the identification of industrial or craft production activities, from excavated structures and from residues. The Deansway excavations (Dalwood and Edwards 2004) found evidence for:

- Lime burning (for building or tanning)
- Smithing and ironworking (including smelting)
- Leather working (small-scale/unspecified/possible parchment making)
- Textile manufacture
- Baking
- Whetstone manufacture
- Bronze founding (substantial late 14th-15thC bell/casting foundry: Taylor 1996)

With the exception of the late medieval bronze foundry, which

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was a substantial enterprise, all production was on a small scale, at the individual household level. In addition to the Deansway excavations, the earlier Sidbury excavations, covering three tenements, found bronze working in all three and a professional bone worker in the central tenement (Carver 1980d).

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It must be said that this small archaeological sample does not at all resemble the picture derived from documentary evidence of the occupational structure of the medieval city. The late 14th century poll tax returns recorded 46 different crafts, dominated by the victualling trades (22% of occupations), butchers and brewers being the most numerous. The next most numerous group were leather workers. The cloth trade then accounted for 15% of trades, split equally between weavers, dyers and fullers (Barron 1989). At that time, the cloth industry was engaged in finishing (dyeing, shearing etc; fulling was done in rural mills) cloth produced in the countryside. In the course of the 15th century the character of the industry changed, switching to primary production of high-quality broad cloth. The sector grew, and by the end of the 16th century dominated the occupational structure, accounting for 40% of city tradesmen. The archaeological visibility of these processes is of course extremely variable. Spinning and weaving may not be archaeologically detectable; dyeing and fulling usually are. Dyeing –along with other capital-intensive water-using processes – has been absent from the archaeological record, though this must be at least in part a product of the distribution of the archaeological sample away from the known riverside industrial district of All Saints' parish (Newport Street and Dolday). Field evaluation of a site between these two streets revealed late medieval hearths which have been provisionally interpreted as associated with dyeing. Many more hearths and other structures associated with the textile industries were revealed during the subsequent excavation (analysis underway).

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The suburbs accommodated other archaeologically visible and locationally specific industries, primarily brick- and tile manufacture, potting, and extractive industries serving the building trade. Late medieval tile production has recently been found towards the far end of the Tything suburb, and at two sites in Lowesmoor, while several other tileries are known from documentary and antiquarian sources. Worcester's tiles were widely distributed across the Midlands, Wales and the south-west of England, giving this industry regional if not national prominence.

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Part of a medieval tile kiln excavated at 9-10 The Tything (Worcestershire Historic Environment and Archaeology Service)

Research priorities:

RP5.13 Medieval industry on the riverside

Extension of the excavated sample into the riverside industrial zone of All Saints' parish (Newport Street and Dolday) to examine the technology, scale and organisation of capital-intensive medieval water-using industries.

RP5.14 Industry and land-use patterns in the suburbs

Further excavation in suburban areas to identify the range and scale of industries located there and as a (negative) guide to the extent of settlement (see RP5.1).

RP5.29 Medieval cloth processing industries

Consideration of the component features of the medieval cloth processing industries, and identification and investigation of sites. The Newport Street and Dolday area will be an important sample area (see RP5.13), but the scale of the 15th century and later cloth industry suggests that sites may also be sought in other parts of the city.

RP5.30 Medieval ceramic industries

Worcester's wider importance as a tile-producing centre gives

a broader impetus to the need to understand this industry. As well as floor and roof tiles, the range of products probably included bricks of various types, and perhaps ovens. Dating of the kilns is important. The overall layout and landscape of tileries should be investigated, not just the kilns themselves. Although 'Worcester-type' wares are widely found in the city, no pottery manufacturing sites have been identified.

RP5.31 Other medieval industries

The Deansway excavations gave an indication of the range of industries which might be found during the medieval period, but the documentary sources point to many more. Excavation elsewhere in the city will help to show how widespread and significant some of these industries were.

5.8 Religion and the Church

One of the sub-plots of the story of medieval Worcester is the declining influence of the bishops, and the Cathedral Priory, in virtually every respect, in the city that had once been theirs. In part this phenomenon is a natural outcome of the growth and increasing complexity of the urban economy and the society it supported; in part it is related to the growth of civic independence and self-government. Nevertheless, Church institutions continued to play a hugely significant role in the life of the city and its population, and church buildings continued to dominate the urban landscape, even after the Reformation. By the end of the Middle Ages, in addition to the Cathedral and its priory, the city had ten parish churches (eleven including St John), a nunnery, two friaries, two hospitals and several non-parochial chapels. Church institutions occupied around a quarter of the total built-up area and about a third of the intramural city (Baker and Holt 2004). The archaeological study of the medieval Church has been very unevenly developed: some aspects are well served, others are effectively untouched.

Parish churches and chapels

The greatest hiatus in the archaeological record is arguably that aspect of organised religion that was most important to its citizens – the parish church. Everyday life was distinctly parish-orientated; parish identities were strongly individual and parish communities cut across social networks and social divisions (Dyer 1973, 177-9). The character and development of the parish churches in the medieval period is, however,

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virtually unknown. Six retain some medieval fabric above ground (St Helen, St Alban, All Saints, St Andrew, St Swithin and the suburban St John in Bedwardine) but none of these has been comprehensively recorded or studied. Four were substantially or totally rebuilt in the 18th century and little is known of the medieval buildings; two were rebuilt in the 19th century and later demolished; one medieval building (St Andrew) was demolished, except for the tower, as late as the mid-20th century. Archaeological excavation of church interiors has so far been confined to St Nicholas, and there only on a very small scale without contacting medieval fabric or deposits. There have also been minor interventions recorded at St Helen, St Alban, St Clement, St Andrew, St John in Bedwardine and St Peter the Great.

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Non-parochial chapels are similarly largely untouched by modern archaeology. The sites of the chapels (Anglo-Saxon in origin) of St Margaret and St Marina are not known precisely. That of St Gudwal is indicated by the 13th century and later remains of a substantial masonry structure of high quality found at the Commandery in 2006, and associated burials found during evaluation in 2004. The locations of the medieval castle chapel of St Peter the Less, the chapel of the Holy Trinity Guild, and the extramural chapel of St Ursula are all unknown. The chapel of St Catherine may be identifiable with a structure found in the late 19th century.

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The Cathedral and Cathedral Close

The establishment of a permanent archaeological consultant to the Cathedral was a substantial step forward in the protection and resolution of its archaeology. Since that date major excavations have taken place around and within the chapter house, and there have been many small-scale reactive interventions in advance of rebuilding programmes and other works. The recording and analysis of the fabric of the Cathedral church, and other buildings, have proceeded steadily, and geophysical survey of the precincts has continued. Despite these substantial achievements, Philip Barker's aims of comprehensive coverage of the precinct by geophysics, and of its buildings by survey and analysis, remain a long way from being achieved. Apart from the questions surrounding the location and development of the pre-Conquest Cathedral churches (see section 4.3), the greatest outstanding research issues concern the planning, buildings and life of the Cathedral priory, particularly in its pre-14th-century phases beyond the claustral ranges. In some respects (such as the location of the monastic infirmary) archaeological research has

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not progressed much further than Professor Willis's studies of the mid-19th century (Willis 1863).

Friaries, hospitals, and Whistones Priory (nunnery)

Worcester had two friaries: the Franciscan Friary (Greyfriars) founded in the early-mid-13th century, and the Dominican Friary (Blackfriars) founded about a century later. Limited investigations have taken place at the latter, ahead of redevelopment in the 1960s and 1980s, but the character of the redevelopment was such that few archaeological remains are likely survive in the core of the site. The Franciscan Friary occupied two precincts linked by a lane, one within the city wall (now largely occupied by Laslett's Almshouses), the other outside in what is now the Carden Street area. Neither of the Franciscans' sites has been investigated, but the absence of records of (or resulting from) major ground disturbances at either gives some cause for optimism that their archaeological deposits may be well preserved below ground (see also section 5.3).

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Excepting some very short-lived institutions (such as the Hospital of St John, which, if their locations could be identified, would be interesting targets for investigation), Worcester had two medieval hospitals, both 12th-century suburban foundations. St Oswald's in the northern suburb was founded before *c* 1200. One end of a substantial and well-appointed wing of a medieval building was found by excavation (Edwards 1992) towards the southern edge of the precinct. It was on a completely different alignment from that of the present (post-medieval) buildings, and the original internal planning of the site remains to be established.

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The Hospital of St Wulfstan (the Commandery), was founded in the Sidbury suburb before *c* 1221. The present buildings are mainly 15th-century, with some earlier fragments. Modern excavation at this site began only in 2004, with small-scale evaluation trenches, and some more extensive excavation in 2005. The results of this work, along with substantial pier bases found *c* 1840 suggest that the early layout of the precinct may have been very different; the documentary record is also of substantial changes in its constitution, function and establishment. The low-lying site, together with the substantial coverage by late medieval buildings, suggests that archaeological deposits may be exceptionally well preserved beneath, a supposition confirmed by some of the recent work.

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The Priory of Whistones was a nunnery, founded before c 1240 at the outer end of the northern suburb. Fragmentary remains of the chapel survive, but the overall planning of the site is not understood. A number of burials from the nunnery churchyard have been excavated. The house was widely known for its poverty.

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Non-Christian populations

Before their expulsion in the late 13th century, Worcester had a small Jewish quarter and communal synagogue in the eastern Copenhagen Street area, within the wealthiest part of the city (Hillaby 1990). No features have yet been identified. There is also a potential Jewish burial ground outside the northern walls of the city (suggested by the post-medieval field name 'Jew's Patch').

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Research priorities:

RP5.15 The medieval parish churches

Excavation of one or more parish church interiors must be considered a high priority. Apart from the outstanding questions of origins and pre-Conquest development, their medieval development – the chronology of architectural change (additions such as aisles, towers and new chancels), liturgical change and the use of interior space, social differentiation between churches, and the question of burials within churches – remains completely obscure. The empty sites of former churches offer particularly rewarding targets (St Clement, St Andrew, St Peter the Great, St Michael in Bedwardine).

RP5.16 St Helen's church (medieval period)

The potential of St Helen's remains absolutely outstanding, though the potential impacts of post-medieval burials, and the concrete floor of the former County Record Office, on interior floor sequences should be assessed.

RP5.17 Layout and fabric of Cathedral Priory and Cathedral

Continued repairs-related recording of the fabric of the Cathedral and its associated ranges, together with small-scale excavation, will cumulatively add to knowledge of the medieval Cathedral and its priory. Understanding of the internal planning and functioning of the priory outside of the cloister remains at a very basic level, and requires further data from excavation and geophysical survey.

RP5.18 Material culture of Cathedral Priory

The material culture of the Cathedral Priory – in terms of its behaviour as a consumer – is quite unknown outside of the documentary record. Identification and excavation of disposal zones (possibly concentrated as landfill deposits along the western, riverside, edge of the precinct) may yield new insights into at least this one aspect of the relationship between Worcester’s largest medieval institution, and its estates, and the city markets.

RP5.19 Bishops Palace

The Bishops’ Palace is, apart from the Cathedral itself, Worcester’s finest medieval building or, more accurately, group of buildings. It has never been comprehensively surveyed or analysed and there are many ambiguities in the visible fabric, that appears to date from the late 12th century on. Whether it should be regarded as a complete and free-standing building complex in its own right, or whether it in reality it comprised successive chamber-blocks and a chapel associated with a nearby ground-floor hall (as at Wells and elsewhere) remains to be established.

RP5.20 Greyfriars

Excavation of the Franciscan Friary (the extramural precinct is the more susceptible to redevelopment) to determine the scale on which the institution was conceived, its planning, layout, extent and development.

RP5.21 The medieval hospitals, and Whistones Priory

Excavation is required to establish the changing physical character of St Wulfstan’s Hospital (the Commandery), to compare with the constitutional changes in the institution that are evident in the documentary record. It has been suggested that a substantial aisled infirmary hall may lie behind the present late medieval buildings. Further work at St Oswald’s Hospital may be able to contextualise the medieval building found by excavation in the early 1990s and reconstruct the plan of the medieval ranges. Further work at Whistones Priory may be able to establish how its domestic ranges were planned, the scale on which the site was conceived, the level of investment in the establishment through the Middle Ages and the material culture of its inhabitants.

RP5.22 The non-Christian population in the medieval period

The architecture and material culture of the medieval Jewish

community, including houses, ritual sites and cemetery, remain at the moment outside the archaeological record.

5.9 Defence

There have been two significant developments in the study of the military archaeology of medieval Worcester since Philip Barker identified investigation of the city wall as an urgent priority in the late 1960s (Barker 1969). The first was the intensive excavation and recording programme on the eastern side of the city that preceded construction of the City Walls Road in the mid 1970s. The conclusions were published in articles by Julian Bennett and Clive Beardsmore in Carver's 1980 *Medieval Worcester* volume. The second has been a much more recent and gradual process: the beginning of the investigation of Worcester Castle. Finally, the *Worcester City Defences Conservation Management Plan* has brought together a digest of around 200 archaeological recording events on the defensive circuits.

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Barker himself began the systematic field investigation of the archaeology of the medieval city defences with his excavation across the city ditch at Bowling Green Terrace (Barker 1969, 102-4) This was to be rapidly followed by further excavation of the extramural ditch, the recording and analysis of the standing masonry of the wall itself as it was exposed, and excavations on and within the wall at Friars Gate, Union Street (Wills 1980) and at Sidbury (Hirst 1980). The defensive sequence that these interventions helped define began with the construction of a pre-13th-century earth rampart (first identified in Shearer's excavation at Sidbury in 1959), replaced in the later 13th or 14th century by the city wall, which was later subject to some rebuilding, including repairs with salvaged stonework. This sequence was challenged by the investigators of the Friar Street multiplex cinema site, who suggested that the earth rampart post-dated, rather than pre-dated, the medieval city wall. A more recent evaluation at 4-5 Cornmarket appears to support the interpretation that the earth rampart was indeed an immediate precursor of the city wall, and the debate remains open.

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However, the number and intensity of investigations along the eastern perimeter have not been matched on the other sides of the city. On the north side, excavations have taken place at three points west of the Foregate along the line of the ditch, and its profile, its history of scouring-out up to the time of the

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two ditches on an alignment consistent with that of the castle perimeter before it was levelled by the Cathedral Priory reclaiming land taken in the 1060s. Excavations on the King's School site have also begun to explore the buried deposits associated with the castle, though the very small scale of the work means that a clear understanding of the depositional history of the site, and of the internal plan of the castle, remain a very long way off.

The medieval city defences saw action on a number of occasions, though principally before the walls themselves were built. Documentary evidence attests to the construction of siegeworks during the wars of Stephen and Matilda in the 12th century. Three sites have been mentioned, at Henwick Hill, Green Hill and Bath Road. No sites have been investigated in these areas and the location of the siegeworks remains uncertain.

Research priorities:

RP5.23 Northern medieval defensive sequence

Further excavation immediately within the northern city wall to establish the origins and development of the defences in this area, including the existence (or not) of a pre-wall rampart comparable to that investigated at numerous points along the eastern side.

RP5.24 Development of the medieval riverside

Excavation of sites along the course of the riverside leg of the city wall, to establish its exact line and to examine its depositional impact. Was it terraced into the slope or built-out from it, with landfill behind? How permeable was the wall – either for movement of goods at the Quay, or for individual householders (eg on Newport Street) needing river access? River-edge deposits may be a major source of dumped artefactual material from the medieval city.

RP5.25 Understanding the development of the castle

Continued excavation of the castle, to establish its basic internal geography and its structural history from the late 1060s to 1215. Further excavation of the southern defences to establish a complete sequence and identify any earlier structures (pre-Roman to pre-Conquest) re-used by the castle. The geophysical survey findings of ditches crossing College Green should be checked by excavation and, if possible, dated – via its relationship with the pre-Conquest monastic cemetery if not by direct artefactual means.

RP 5.26 The eastern medieval rampart and wall

Investigation of a larger area of rampart and wall, to provide a more definitive indication of the relationship between the two features and between the defences and earlier deposits.

RP 5.33 Location and character of medieval siegeworks

The identification of remains associated with the documented siegeworks on Henwick Hill, Green Hill and Bath Road.

6 The post-medieval and modern periods

6.1 Introduction

The post-medieval archaeology of Worcester is probably the least well developed of any period, save for the prehistoric. In large part this is a function of the application of resources elsewhere (ie to earlier periods) and has little to do with the lack of preservation of deposits of this period. The Deansway excavations for example, could, as before, dominate the discussion of this period, but a cut-off date of c 1600 applied to the post-excavation programme ensured that much evidence for the 16th to 18th centuries remains in archive form (Dalwood and Edwards 2004). This is unfortunate, because the steadily increasing volume of surviving documentation from the corporation, the Church, and private individuals, potentially allows many mutually-illuminating comparisons to be drawn between the historical record and the archaeological record.

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The 16th century also produced the first substantial generation of domestic buildings to survive to the present day. As a consequence, for the first time there is the potential for comparison between the archaeological remains of buildings and their associated material culture with the documentary record of their owners/builders and contemporary inventories that describe their houses and how they were used. The comparative analysis of standing buildings and contemporary documentation has been pursued in depth by Hughes (1990); some comparative analysis of contemporary documentation and excavated archaeological remains has taken place, largely in the context of the Deansway project through the historical studies by Chris Currie (2004). Dyer (1981) included Worcester in his survey of regional trends in urban housing apparent from contemporary documentation, particularly probate inventories, and for this he was able to draw upon his much wider early-modern social history, *The City of Worcester in the sixteenth century* (1973), a work full of implications for archaeological research.

The study of the industrialisation of Worcester from the 18th century has largely been directed towards the products of the first porcelain manufactories, notably via the work of Henry and John Sandon. Although the role of other industries (in particular those related to food or other agricultural products) in the post-medieval development of the city has been widely

acknowledged, they have been little studied

A more general social and economic history of the rebuilding of the city in this period has been developed by Whitehead (1989).

Research priority:

RP6.16 Archaeology and documentary sources

A more rigorous and engaged approach is required to the interrelationship between archaeological and documentary evidence, both for large archaeological projects and strategically (ie research into blocks of properties), especially in areas where development pressure, often consisting of multiple small-scale developments, is anticipated. Sources to be used should include eg probate inventories.

6.2 Urban settlement and population

Population trends become much clearer in this period, principally because of the availability of parish registers from the late 1530s onwards. Demographic variables (age at death, comparative rates of christenings and burials, death rates per season) are recorded and can be factored in to account for movements in population. Between the 1560s and the 1640s the city population more or less doubled, from around 4250 to 8000. Alan Dyer sought to explain this 'revolutionary population growth' in terms of general improvements in health with associated improvements in infant mortality, women having more children over longer periods of time and, in particular, increased immigration to the city from its rural hinterland (see section 5.3; Dyer 1973). The possible archaeological dimensions of this episode in the city's history have not yet been considered. The question of the postulated 'precocious modernisation' of the housing stock and its possible implications for health and standards of living is one issue (Hughes 1990, chapter 1; see sections 5.4 and 6.3). Another, perhaps more directly relevant, is how this increase in population was accommodated. Documentary evidence suggests that the increased population was absorbed by an increasing density of settlement and some expansion of the suburbs. Back-plot developments were a recurrent feature of the first half of the 16th century, with courts and rows being built behind some of the wealthier houses. Speculative cottage building was also taking place in under-developed intramural areas like Hounds Lane, west of

Birdport, and older, larger buildings were being sub-divided between poor tenants. In the early 17th century speculative building for poor rents was a feature of the suburbs: Foregate Street was said to have been 'a slum' by the 1630s. The physical reality of such developments is largely unrecorded, though building accounts show that early 17th- century cottages on Frog Lane probably had clay floors, and that window glass was provided at this sort of social level for the first time in the mid-17th century (Hughes 1990, chapter 12). Excavation has a major role to play here, to document the physical character and durability of such housing, its density, its associated material culture and, in particular, its sanitation and associated disposal practices.

The demolition of buildings in the suburbs during the Civil War, and suburbs, and the impact of this destruction and post-war rebuilding, has yet to be tested archaeologically, though well attested in the documentary sources.

Characteristic settlement patterns in outer Worcester include so-called 'squatter' settlement along main roads. These await investigation, preferably through a broad characterisation study.

Evidence for population studies may also be sought in the city's burial grounds. These have not yet been assessed for their potential.

Research priorities:

RP6.1 Colonisation of back-plot areas and land in suburbs in the post-medieval period

Excavation of back-plot areas and suburban plots colonised by cottages in the 16th and 17th centuries, to identify factors such as durability and density of housing, associated material culture, sanitation and waste disposal practices. High priority needs to be given to areas where documentation of high quality is available to support and amplify the archaeological evidence, and to areas where buildings survive, or there is good quality photographic or illustrative evidence for former buildings.

RP6.17 Burial grounds

Identification of and research into burial grounds of high potential for the study of the population of post-medieval Worcester.

6.3 Houses and housing

The city retains a substantial stock of pre-18th-century buildings: a notable concentration in Friar Street, spreading into New Street and Sidbury; with a thin scatter of surviving, refronted, buildings throughout the city centre (see *Historic Townscape Characterisation*). These buildings, in conjunction with a substantial body of contemporary documentary evidence, mainly probate inventories, reveal a number of changes in the design and use of houses in the 16th and 17th centuries, continuing trends that are first apparent as early as the late 15th (see section 5.4). The most significant trend by far is the unusually early decline in the use of the traditional medieval open hall. In short, Worcester appears potentially to offer some of the best evidence in the country for the impact in an urban context of the so-called 'Great Rebuilding' (Hughes 1990; Dyer 1981). This, in Worcester, appears to have been a protracted and complex process with roots in the 'precocious modernisation of its housing stock in the late 15th and early 16th centuries' (Dyer 1981), after which no new houses were built with an open hall. Subsequent modernisation trends include the introduction of brick chimneys before the end of the 16th century (sometimes preceded by and not necessarily coincident with the provision of upper floors), the decline of the kitchen as a detached building, and the increasing provision of heated rooms at first-floor level (Hughes 1990, chapter 6). Related developments that have been tracked from documentary evidence include the relatively early decline of the single-cell single-storey dwelling, and the early (16th-century) common provision of cellars (Dyer 1981).

The studies that have produced these conclusions have been driven by the documentary evidence (mainly inventories) and by the study of standing buildings (Hughes) dated on stylistic grounds. A programme to secure dendrochronological dates, either from selected buildings that appear to be typologically significant, or the slow, random accumulation of dates from the buildings repair process, would allow architectural design trends to be more accurately modelled, and would make visible associations between design trends and particular sectors of society via documented owner-builders. The results of a dating programme would also give precision to our general understanding of the chronology of local rebuilding cycles, and thus allow further insights into demographic and economic trajectories and their relation to changes in building

design and use.

There is also a need for evidence from excavation in two particular directions. First, to examine excavated ground-plans of this period in order to establish recurrent patterns in the provision of hearths and fireplaces and in the uses (as far as these are accessible to archaeology) to which ground-floor rooms were put. This may go some way to redress a fundamental problem in the interpretation of probate inventories: when or how far do changes in room nomenclature reflect real changes in structure and/or in function? Secondly, the survival of buildings of this period is weighted heavily towards the upper end of the social spectrum, and the housing of the poorest members of society (apart from older sub-divided dwellings) does not seem to survive above ground. Hughes has speculated that cottages built in Hounds Lane after 1539 may be identifiable with jettied and close-studded buildings that survived into the 19th century and were photographed prior to clearance. Similarly, speculatively-built working class two-storey cottages of c 1600 survived on King Street until cleared. No examples of this type of building (with their associated material culture) have yet been excavated.

The investigation of later post-medieval housing using archaeological methods is a fairly recent phenomenon, both in Worcester and more widely. Work at Tallow Hill has included the recording of later 19th-century housing before demolition (the Beehive Inn) and evaluation and subsequently sample excavation of an early-mid 19th century working class housing area. This work was undertaken on a limited scale, and the full potential for archaeological investigation to comment on consumption patterns, household-level production activities, or social relations and the use of space within working class communities or 'outcaste' groups, has yet to be realised in Worcester.

Building application plans are a fertile source for the mid-19th century onwards, and have been used by Dunleavey (2004) to investigate the activities of individual builders and architects and their impact on the development of Worcester. There is much potential for further work on the buildings themselves, and this could be underpinned by characterisation of the suburban areas. Elsewhere (eg Kidderminster) the Freehold Land Societies, a late flowering of the Chartist movement, had a considerable impact on housing growth; it is not known whether there was similar activity in Worcester.

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The phenomenon of court housing – the progressive encroachment, generally by speculative building, on back-plot areas of ancient burgages in the city centre – remains largely outside the archaeological record (see also section 6.2). But it is also largely beyond reach of the historical sources (other than via 19th-century and later census returns), as such low-status behind-the-frontage townscape, and the activities taking place within this setting, generally escaped notice or record. An exception can be found in the Newport Street – Dolday area cleared around 1930. Photographic records of some of the buildings and courts were made by health officers prior to the clearance, and the area has recently been evaluated, revealing extensive survival of building remains representing a continuous adaptation of premises, some of early post-medieval date, into the early 20th century.

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Research priorities:

RP6.2 Dendrochronology programme for late medieval and early post-medieval buildings

Dendro-dating of standing buildings of the late 15th, 16th and 17th centuries to allow an accurate chronology of changes in building design and use. Also to examine the relationship between the chronology of rebuilding and the trajectory of the urban economy apparent from the documentary evidence. The accurate dating of buildings in the Worcestershire countryside will also in time give a clearer picture of the relationship between the city economy and that of the rural hinterland.

RP6.3 Housing of the urban poor – early post-medieval

Excavation of housing types associated with the poorer end of urban society that no longer survive above ground, together with their material culture. The King Street area can be identified as a particular priority in this regard. See also RP6.1, RP5.7.

RP6.4 Housing of the urban poor – later post-medieval

Excavation of sample areas of later post-medieval (18th and 19th-century) working-class housing, with a view to identifying their contemporary material culture and changing patterns within it, and changing patterns in the use to which urban space was put, particularly at the levels of the household, court and tenement. Identification and recording of surviving standing buildings. Use of documentary material.

RP6.18 Brick buildings

Research into the manufacture and use of bricks in the 17th century and beyond, both for whole buildings (eg Warndon Court) and structural elements (eg chimneys). Use of documentary sources to understand the organisation of the trade.

6.4 Material culture, trade and consumption

The documentary evidence from Worcester, and other provincial towns, shows that this was a period of substantial and increasingly rapid change in terms of the level and type of material culture available to citizens across the social spectrum. The documentary evidence for Worcester shows that the period of rapid population growth between c 1540 and c 1640 was also marked by a gradual but significant rise in living standards, at least as measured by consumer goods. The period was distinguished by a widening gap between the richer and the poorer residents, the former investing their increased disposable income in 'conspicuous consumption', largely on household items. Furniture, furnishings, linen, utensils, cushions ornaments, clocks, books and pictures all become commoner in the probate inventories of the top 5% of the population (Dyer 1973, 161).

The changing material culture of early post-medieval Worcester has received limited archaeological attention, with publication of pottery assemblages of this period from the Whistones Priory site (Whitehouse 1962), Newdix Court (Barton 1967) and Sidbury (Morris 1978, 1980), and the City Arcades site (Griffin *et al* 2004). The Deansway excavations produced very large domestic assemblages, but the cut-off date of c 1600 imposed on post-excavation analysis means that their very significant potential remains as yet untapped (Dalwood and Edwards 2004). Despite the identification of frequent levelling-down episodes and off-site garbage-disposal practices on the Sidbury (Carver 1980d) and Deansway sites, the potential for studying city-wide variations in material culture through the 16th, 17th and 18th centuries remains very high. And, as for earlier periods, the location and analysis of dumped domestic waste – even in secondary contexts such as communal middens, away from the households that generated it – offers a way into the study of Worcester's trading networks that are not visible from documentary evidence alone.

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Research priorities:**RP6.5 Post-medieval periods at Deansway**

Full analysis and publication of the post-medieval periods from the Deansway excavations (periods 10 and 11, 16th-18th centuries) including the finds assemblages, and linkage to the documentary evidence for individual households.

RP6.6 Post-medieval waste-disposal sites and areas

Identification and excavation of common waste-disposal zones to identify consumer products reaching the city from its hinterland and long-distance trading networks

RP6.7 Documented post-medieval households or household types

Continued search for artefactual assemblages associated with particular household types or identifiable documented households.

6.5 Industry, production and industrialisation

The archaeology of craft and industrial production in the 16th and 17th centuries remains a seriously underdeveloped subject. In part this is because of the small size of the total excavated sample, and in part because of the distribution of the sample away from areas known to be the location of the most archaeologically-visible industrial activities (eg tanning and dyeing in All Saints' parish; brick and tile making in the outer suburbs). The archaeological record so far does not at all reflect the documentary record showing 16th-century Worcester to have been a 'highly industrialised' city – at least in Tudor terms (Dyer 1973). The manufacturing and finishing of cloth accounted for 40% of the city tradesmen who left wills before 1590, rising to 50% thereafter. The sector was dominated by the 'independent artisan of moderate means' with production mostly at the level of the individual household; capital-intensive large-scale production was, as in the medieval period, rare (Dyer 1973). The most significant and fundamental shift of the city economy in the 18th century – cloth manufacturing declining and the gloving industry taking its place (basically small-scale leather-working with many allied occupations) – is, so far, not represented at all in the archaeological record. It may however gradually become apparent indirectly from the identification of archaeological evidence for the sub-division and impoverishment, or

'tenementalisation of inner city property...to accommodate the work force of this labour intensive industry' in the later 18th and early 19th centuries (Whitehead 1989, 3). Most other agricultural product related industries of the 18th century, including leather, vinegar and hop processing, are also absent from the archaeological record.

The porcelain industry began in Worcester in 1751 on the Warmstry House site. Excavation by Henry and John Sandon and others in the late 1960s and 1970s failed to find intact archaeological deposits or structures relating to the actual manufacturing process, but successfully identified waster dumps on the Severn foreshore relating to all but the very earliest years of the factory's output.

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Limited excavation and other recording has also taken place at a number of other early porcelain manufacturing sites, notably Grainger's works (active 1801-1902) in the Pheasant Street area (Sandon and Sandon 1989), which was subject to small-scale watching briefs in the 1980s, and two evaluations from 2000 on. There has so far only been minor archaeological work at Royal Worcester Porcelain's Severn Street site (the Chamberlain site, in use since the 1780s), which remains a site with great potential. Recent assessment of the buildings here has allowed the definition of the main construction phases, and more detailed recording is underway. The Hadley works, from the very end of the 19th century, was the subject of work in 2002, but virtually no remains appear to have survived.

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The coming of the Worcester and Birmingham Canal (1815) and the railway links to London and the West Midlands conurbation (1850 onwards) clearly had an impact on the spatial location of industrial activity, as well as on the types of activity carried out. These remain to be explored.

Similarly, the question of agricultural production for the growing city has been identified, but not explored. This finds its most obvious expression in the landscape of market gardening which shaped many areas of the later 19th and 20th century suburbs (in particular at St Johns and Barbourne).

Extractive industries were widespread, not only around the city (especially clay and gravel pits for the ceramic and construction industries), but also within the built-up area, where small-scale digging for gravel and clay has in many places affected the survival of medieval and earlier deposits (for instance in parts of Lowesmoor). The removal of Roman

iron slag deposits, documented from the 1640s-1650s onwards, but probably underway some time earlier, has had an obvious and direct impact on the survival of Roman deposits, in particular outside the medieval walls. Finally, digging for saltpetre (documented in the Civil War) would have been specifically targeted to the deposits present in medieval backplots. All of these extraction sites, while damaging to earlier remains, have the potential to contain contemporary waste-disposal assemblages.

Research priorities:

RP6.8 Warmstry House porcelain works

Further investigation of the Warmstry House site (within the Copenhagen Street car park): identification of any surviving deposits relating to the manufactory, and further excavation of the earliest foreshore waster dumps to identify the earliest Worcester Porcelain products.

RP6.9 Other porcelain works

Further investigation of other porcelain manufacturing sites in the city, with particular emphasis on Grainger and on the Severn Street site.

RP6.10 Other ceramics sites

Further investigation of other ceramics manufacturing sites in the city (pottery, clay tobacco pipe, brick and tile works, and ancillary sites associated with porcelain manufacture)

RP6.11 Gloves and leather industries

Identification and investigation of sites associated with the glove and leather industries.

RP6.12 Food and drink industries – trading, storage and processing

Identification and investigation of sites associated with the food and drink industries, in particular vinegar and sauce manufacture, and hop trading, storage and processing.

RP6.22 Landscapes of market gardening

Investigation of the landscapes of market gardening and their impact on suburban development.

RP6.19 Extractive industries within the built-up area – sand and gravel, clay, iron slag and saltpetre

Investigation of extractive industries, including the

phenomenon of saltpetre digging, and their impact on the survival of archaeological deposits.

RP 6.20 Industrial and land-use patterns associated with the canal and railway

The new transport routes of the 19th century transformed Worcester's industrial landscape, but there is still little understanding of this process.

6.6 Religion and the Church

The archaeological record for the early part of the period is dominated by the differential impact of the Reformation on the various Church institutions. However, as in earlier periods, their archaeology has been very unevenly explored. Least well known are the pre-18th-century parish churches, virtually untouched by excavation. Best known is the Cathedral, post-Reformation changes and repairs to the fabric having been identified and examined in various contexts (eg the nave roof: Simpson 1994). At the Reformation, the Cathedral priory buildings that were retained were allocated to the Dean and the canons; communal buildings that had no obvious role were demolished. The site of the former dormitory was colonised by domestic buildings, but this and similar processes are still known only from documentary sources and remain to be examined archaeologically – many of the post-Reformation accretions within and around the medieval buildings were demolished in the mid-19th century. A faunal deposit found in the course of excavations around the chapter house has yielded fresh insights into the diet and feasting habits of the post-Reformation canons (Thomas 2000).

Our limited knowledge of the two medieval friaries has been outlined (section 5.8). Documentary evidence of the demolition of the Blackfriars buildings and the sub-division, sale, and subsequent rebuilding of its site closely respecting the former cloister footprint have been examined in detail by Hughes and others (Hughes (ed) 1986), but excavation was able to add little, beyond confirming the cartographic and documentary evidence for the position of the former cloister. The Franciscans' precincts (intramural and extramural) are more obscure, though there is evidence that some buildings were retained on each site: a domestic hall on the former, subsequently used as a warehouse and from 1724 as a gaol, and a pest house on the latter (Hughes and Molyneux 1984,

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8-9). Neither of the Franciscans' sites has been explored archaeologically. Both city friaries had a prolonged post-mortem impact on the townscape. The Blackfriars precinct core determined the layout of the buildings that colonised it, and these remained until 1966. Very little is likely to have survived the redevelopments of the 1960s and 1980s-90s, however. The Franciscans' intramural precinct has seen successive institutional uses (gaol, almshousing) down to the present day.

The two medieval hospitals underwent different and strangely contrasting fates at the Reformation: St Oswald's retained its function as a hospital (almshouse) but lost its medieval buildings; St Wulfstan's (the Commandery) lost its function as a hospital but retained its buildings. St Oswald's avoided outright suppression in 1536 but its master leased out its buildings to a layman and the site was 'in great decay' by the 1570s; rebuilding began to a completely new plan in the 1630s. Excavation of a small sample of one of the medieval ranges showed that it was robbed, decayed and finally demolished in the 16th century and the cemetery extended over its site in the 17th (Edwards 1992). The Commandery was suppressed in 1540 and bought by a clothier, Thomas Wylde, as a private dwelling. Most of the medieval ranges were retained, and some were later extended. At least one range (the putative infirmary hall) was allowed to decay into ruin, possibly continuing a process that had begun even before the suppression.

The 17th century saw a proliferation of minor charitable institutions accommodating the elderly poor: Berkeley's Hospital (surviving), Moore's Hospital on Silver Street, Inglethorpe's Hospital west of Foregate Street, Nash's Hospital behind New Street, Shewring's Hospital on the Tything, and Wyatt's Hospital on Friar Street. Although the accommodation they offered is structurally fairly predictable (individual cottages and rows of a type probably being built contemporaneously as speculative ventures), none have been examined archaeologically. Evaluation on the site of Shewring's Hospital showed that there was only very limited survival of structures or deposits there. Collectively, these minor institutions represent a significant development in the contemporary built environment. The same period also witnessed the first purpose-built places of Non-Conformist worship – again, the beginning of a significant urban phenomenon not yet represented in the archaeological record. By 1687 the city's first post-Reformation Roman Catholic chapel had also been built off Foregate Street.

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Research priority:**RP6.13 Almshouse sites**

Excavation of a sample almshouse site, to examine its structures and changes to them, and its contemporary material culture.

6.7 Defence, and the Civil War

In this period the medieval city defences (the castle had long been of no account) underwent three distinct phases of use: a continuation of the late medieval pattern of occasional opportunistic repair (stone from the suppressed friaries was thus used from 1539) together with continued scouring of the ditch; Civil War refurbishment, mainly by additional works in earth and timber; and post-Civil War slighting and demolition. Each of these episodes is represented to varying degrees in the archaeological record.

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Late medieval or early post-medieval repair works using re-used masonry have been identified at various points on the eastern side of the city defences (eg Talbot Street: Hirst 1980, 90; the Friar Street Cinema site: Jackson *et al* 2002), and recently on the north side (1 The Butts), but are generally extremely difficult to date.

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Civil War additions to the old defences are illustrated on near-contemporary cartography (the 'City of Worcester as it stood fortified 3 September 1651' map), which shows polygonal earthwork bastions outside the gates and at intervals along the walls, a polygonal outwork at the west end of the bridge, and entrenchment lines strengthening the southern perimeter outside the redundant castle and connecting to Fort Royal overlooking the city from the south east; the former castle motte was also re-fortified. Apart from the refurbishment of the medieval defences and the construction of new outworks, the most significant aspect of the Civil War in Worcester to have a potential archaeological dimension is the demolition of the Foregate Street and Lowesmoor suburbs.

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Physical remains have been identified in a number of locations. Civil War additions and repairs to the fabric of the city wall have been identified at a number of locations (eg south of Union Street: Bennett 1980, 70). The strengthening of the wall by the addition of an earth bank behind it is known from documentary evidence and, to a limited degree, from

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excavation (eg the Friar Street Cinema site: Jackson *et al* 2002). A so-called 'last ditch' was recorded at Blackfriars, and a similar feature was noted in an evaluation at the Angel Hotel, Angel Place.

Pre-eminent among the Civil War defences are the earthworks of Fort Royal (the 'Great Sconce'); excavations in its interior and ditches in the 1960s were however singularly unsuccessful. The entrenchment lines of the southern perimeter have been excavated in one area (the King's School site: Barker 1969, 99-100), though it is also possible that deposits recorded at Prospect Place were associated with this defence line. Ditches that may have been associated with the artillery bastions shown on the 1651 map have been tentatively identified at Farrier Street (Dalwood *et al* 1994), 8-12 The Butts, 14-24 The Butts, and at St Martin's Gate.

The battle of 1651 can also be expected to find some expression in the archaeological record, but to date this has been limited to stray finds of cannonballs, and very occasional weapons.

The Cromwellian slighting of the defences after 1651 (believed to be responsible for the general reduction in height of the city wall masonry) marks the commencement of the final decline of the city wall, ended by the demolition and conservation work of the 1970s associated with the City Walls Road scheme.

During this period the city gates follow a pattern that is almost universal in the larger English towns: residential colonisation in the early post-medieval period followed by demolition in the 18th century as part of the process of clearing obstructions from the increasingly busy streets. The North Gate was repaired after the Civil War but was the first to be demolished, in 1702. Sidbury gate was rented out in 1577-81 and mostly demolished in 1768. St Martin's Gate was rented out by the 1550s and demolished in 1787. But in contrast to many other towns, no antiquarian records or drawings were made of the gates before their demolition. The sequences of construction, use, re-use and decline are known only from the documentary evidence.

Partial excavation of the city ditch at a number of locations (the east side: Bowling Green Terrace: Barker 1969, 102-103; the north side: sites along The Butts, and 16-18 Sansome Street) has disclosed different sequences. At The Butts, the earliest material in the ditch fill was late 17th-

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century, consistent with the documentary evidence for the scouring of the ditch at intervals up to the Civil War; work in the Sansome Street area produced similar results. This does not seem to have happened in the Bowling Green Terrace area, where Barker's excavation in the ditch found apparently undisturbed silting.

Research priorities:

RP6.14 Analysis of the city defences in the post-medieval period

Better analysis of the standing and buried remains of the city defences to enhance understanding of their refurbishment (especially in the Civil War), decline and colonisation by other structures.

RP6.15 The landscape of the 1651 battle

Analysis of the landscape of the battlefield is central to an understanding of the battle itself. Work should include the identification of surviving landscape features.

RP6.21 Civil War destruction

The destruction of buildings and other features in the suburbs during the Civil War is well known from documentary sources, but has not been conclusively demonstrated from archaeological evidence. Evidence of continuity or otherwise of plot boundaries at this period would be of particular interest.

6.8 Archaeology of the modern period

Both locally and more widely, it is still too early to produce a developed research-based archaeology for the modern period. Nevertheless, this field is changing rapidly, and any detailed programme put forward would almost immediately be made redundant. The archaeology of the modern period may well be the first to be reviewed, and relatively early in the lifetime of this document.

In view of this, only the most outline 'shopping list' is presented here, with no set research priorities as such. The following points should be considered:

- Public amenities and provision generally
- Industry and the workplace – especially evidence for innovative processes or building types

- Leisure and sports – cinemas, sports grounds
- Housing – public provision, slum clearance, estate development, house plans and types
- Defence – the militarised landscape of World War II; survival of remains; remains associated with other conflicts or periods

No doubt many other topics will emerge through consultation on this document.

7 Cross-period themes

7.1 Introduction

A number of themes, or problems, have recurred throughout the periods discussed above and require brief but separate discussion. The remainder are simple research questions, academic problems, applicable to many or most periods. Some at least of the research priorities identified in this section may more suitably be redistributed to period sections.

7.2 The Urbanism Question

Philip Barker began his pioneering survey of the archaeology of Worcester with the observation that 'the city's evolution...is now seen to have begun in the late bronze or early iron ages' (1969, 7). This conclusion still stands: there is evidence for permanent or semi-permanent occupation on the Worcester site over a period of around three millennia. But for how much of that period could the settlement have been described as urban?

There are three periods when the issue is in doubt: the beginning, and the end, of the Roman period (the 1st centuries BC and AD and the 4th-6th centuries AD) and the mid- to late pre-Conquest period (8th-10th centuries AD). All three periods of transition, and the question of emergent or declining urbanism in them, are of the most widespread significance and controversy.

An inevitable part of that controversy is how to define urbanism: what is a town? A simple approach is to concentrate on the principal distinguishing characteristics that make a town different to other settlements. 'A concentration of people mostly engaged in non-agricultural occupations' as a simple definition will serve to separate villages from towns in most western European historical contexts, though size clearly matters: the definition above could also be used of a monastery. A pragmatic approach was suggested by Martin Biddle in the 1970s, based on the possession by a settlement of a number of the following features: defences; planned streets; a market; a mint; legal autonomy; central-place functions; a large dense population; a diverse economy; urban-type houses or house-plots; social complexity; religious organisation; judicial functions (Biddle (ed) 1977, 100). This list has the virtue that many of the features had physical

consequences and are therefore potentially archaeologically detectable. It also allows for variations in function and in form from town to town – a characteristic of the Roman period as much as the medieval period.

Town life on the site of Worcester probably began in the years around 100 AD, but fairly certainly before the middle of the 2nd century. Already by the end of the first century occupation had spread over an area at least 600 metres north to south and perhaps 500 metres eastwards from the river. The character of the occupation towards the northern part of this area (sampled at Deansway and Farrier Street) was mainly agricultural, and the settlement in these areas was not dense, but this is not inconsistent with the picture from other, better explored and more certainly urban settlements in the region. At Sidbury, closer to the presumed centre, occupation was denser and strip-buildings of urban type had been built. The featureless expanse of metalling found at Sidbury in the early 2nd century may also have been the site of a market, for which there was rather clearer evidence in the late 3rd century. At Deansway there were also the first signs of iron working in the vicinity, though this did not become the dominant industry until much later in the 2nd century. The range of animal bone present on the site was consistent more with Romanised life-styles than with that of contemporary small rural communities, and there were a substantial number of 1st – 2nd-century coins, indicative perhaps of a growing commercial economy (Dalwood and Edwards 2004). All of these factors are indicative of a settlement that had become urban, though no one factor was decisive. The presence of 1st-century defences (evidenced from Barker's Lich Street excavations) cannot be added to the equation as their character is completely unclear: once again, the absence of evidence from the centre of Worcester is an obstacle to understanding the settlement as a whole. By the mid-2nd century, the urban character of Worcester is not really in doubt – the density of occupation, the range of functions, the range of building types, and the construction of planned streets across the Deansway sites, some 300-400 metres from the perceived centre of the settlement, all pointing firmly in this direction.

Identifying the end of town life in Roman Worcester is another matter. On the two sites investigated in the northern part of the settlement, the Deansway and Blackfriars sites, the years around 300AD appear to have marked a watershed of some kind. At Deansway, livestock were now penned where people had once lived and produced iron. The establishment of a

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small cemetery there in the 4th century shows that there was still a population nearby, living in a now shrunken settlement. But as noted already (section 3.4) this shrinkage was uneven: occupation persisted further to the north, certainly on the County Education site and possibly at Blackfriars, though there was no evidence that either was of non-agricultural character. At Sidbury too, to the south-east, a formerly occupied area and a possible market and main road had been abandoned. Local flooding may have been the cause – but is equally likely to have been the result, the consequence of the failure to maintain local infrastructure.

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In short, it is at present impossible to identify a point in time or even a time-span in which late-Roman (or sub-Roman) Worcester ceased to be urban. With the excavated sample concentrated in peripheral areas, all that can be identified is a contraction in the extent of settlement and the relinquishing of urban functions in the same areas. What went on within the defences is completely unknown. In the major towns of Wroxeter and Gloucester, particularly in the former, non-agricultural functions – marketing and probably administrative – persisted in the core areas while shops and houses were abandoned all around. Major civic buildings were demolished and cleared, but they were replaced by timber-framed structures. It could be argued that Roman Worcester was not in the same league as these major cities and that the probability that any urban functions were prolonged there into the later 5th century and beyond is thereby greatly diminished. The only evidence so far available to counter this is the slender and controversial historical evidence for the early foundation of St Helen's church, but whether even a continued ecclesiastical presence, alongside a market and administration, adds up to urbanism, is another question.

Given the paucity of archaeological evidence from Worcester, the recognition of the resumption of urban functions after the Roman period is inevitably coloured, if not led by, the documentary evidence. Worcester's status as a *city* derives from the foundation there of the Cathedral see in c 680. It was referred to as *Weogorna civitas* in 691 (Gelling 1969) and then, as now, the word 'city' (*civitas*) denoted a place of political/religious significance, but not necessarily an urban place. Two centuries later there was (or there was soon to be) a borough, with defences, a market and trading, streets, and judicial functions; these, together with the Cathedral, must constitute an urban or an urbanising place. There was also a population, which the new borough or *burh* was designed to protect, but the size and composition of this population is not

known, and there remains some uncertainty as to whether or not it was permanently resident on site.

Excavated archaeological evidence is, in contrast, limited to recognition of the defences on two or three sites (though they cannot be precisely dated), a few coin finds, and imprecisely-dateable occupation on or in the vicinity of two sites *c* 400 metres apart (Sidbury and Deansway). Strictly on archaeological evidence alone, Worcester cannot be recognised as certainly urban until after the Norman Conquest. However, neither is there any negative evidence: it remains a distinct possibility that some urban and non-ecclesiastical functions were present on the site even before the foundation of the *burh*.

7.3 Town government and infrastructure

Closely related to the question of urbanism is that of government or self-government, the provision of public infrastructure or facilities, and the regulation of town life. Archaeology can potentially contribute to each of these areas, though at present discussion is hindered by the undeveloped state of the archaeological record.

Government and public buildings have not yet been identified in Roman Worcester, though they would surely have been present. They may just possibly be represented by the fragmentary remains of masonry buildings glimpsed either side of the High Street but, as discussed earlier (section 3.4), virtually all aspects of this area of the town remain enigmatic. Apart from the provision of defences, the most promising evidence of a public authority at work in the Roman town remains the wooden water pipes running down the street found in the Sidbury excavations; this water supply may well have been part of a more extensive system, and more of it may be found in the course of future work. The agency behind the provision of new streets in the Deansway area is unknown, but is perhaps as likely to have been a private landowner/entrepreneur as a public body. The provision and maintenance of roads, bridges and drains are nevertheless the most likely works for a public body to have engaged upon. The provision of bridges, over the Severn and the Frog Brook floodplain, has already been raised as one of the more pressing research questions currently unanswerable from archaeological sources (see section 3.4). One aspect of the regulation of town life that is potentially susceptible to archaeological enquiry is that of the zoning of hazardous or noxious activities. There is, so far, no sign of this at all, iron

smelting and the dumping of waste slag apparently occurring throughout the Roman settlement. The themes which this can introduce, of waste disposal, pollution, groundwater management and flooding, all chime with modern concerns.

The archaeology of the government in the Anglo-Saxon town is, apart from the discovery and excavation of the borough defences of c 900 AD in recent years, similarly obscure. One potential exception to this may be found by further excavation on the Guildhall site. The medieval guildhall is not recorded until 1249 but it is possible that there had been such a building on the same site centuries earlier, representing the centre of the king's authority in the new *burh* or borough. After the Norman Conquest, this role would, as in other towns, have passed to the new castle, leaving the guildhall site administering commercial functions alone. There is also however one aspect of urban regulation that just might be discerned in this period. This arises from the probable origin of All Hallows' Square, below All Saints' Church, as an extramural market place, possibly a cattle market, as it was later. The cattle trade seems to have been expelled from within the defences of Anglo-Saxon towns on a regular basis, and extramural cattle markets are a widespread phenomenon, no doubt on account of space and nuisance (ie mud and slurry). This, however, for Worcester is at present a purely hypothetical development based on historical and topographical sources unsupported as yet by excavated evidence.

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For the medieval and post-medieval town, documentary evidence remains so far the only source from which the development of (for example) public quays, bridges, gaols, latrines and water supply can be studied at an appropriate level of detail. Again, archaeology can comment on the defences, but little else until the 18th century, when public buildings begin to survive to the present day.

Research priorities:

RP7.11 The late Iron Age to Roman transition

Identification of and further structured research into sites known to contain deposits of the 1st century AD.

RP7.12 The late Roman to post-Roman transition

Identification of and further structured research into sites with deposits of the 4th-6th centuries AD.

<p>RP7.13 The middle to late Saxon period and the impact of the <i>burh</i> Identification of and further structured research into sites with deposits of the 9th-10th centuries AD.</p>
<p>RP7.14 The medieval, and possibly pre-Conquest, origins of the Guildhall Further investigation of the Guildhall site, with particular regard to its medieval and possibly pre-Conquest origins.</p>
<p>RP7.15 Roman public and administrative buildings The location and analysis of Roman public and administrative buildings.</p>
<p>RP7.16 Worcester Castle and its ‘afterlife’ Further investigation of Worcester Castle and of its late and post-medieval function as a gaol.</p>
<p>RP7.17 Late medieval and early post-medieval infrastructure Investigation of the developing infrastructure of late medieval and early post-medieval Worcester: gaols, waterworks, water supply.</p>

7.4 The rural hinterland

The connections between Worcester and the surrounding countryside have, throughout recorded history, been numerous and complex. The concept of the hinterland seeks to represent the role of the countryside around the city as a source of food and fuel, raw materials for construction and manufacturing, immigrant labour, and goods and commodities for exchange and redistribution in the city's markets and shops. Conversely, it represents the city as a central place, of political and religious authority and administration, of consumption by individuals not themselves engaged in agriculture, of manufacturing and craft production, as a marketing centre, and as a place of employment, entertainment and, occasionally, as a place of refuge. Many of these relationships are potentially detectable and recoverable from archaeological evidence, and the question therefore arises, to what extent are urban-rural relationships already visible in the archaeological record, and how might such connections be explored further, to more fully define Worcester's role in relation to its rural surroundings.

One way in which to begin to discuss these issues is to begin in the early post-medieval period, when, with a vastly increased level of surviving documentation, many aspects of Worcester's pre-industrial relationship with its hinterland become visible for the first time. Records of transactions and in particular, debts, owed to or by Worcester tradesmen at the time of their deaths, reveal a complex pattern of interdependence between the city and the countryside. The general picture is that Worcester, like all towns, did not have one simple monolithic 'hinterland', it had many, overlapping and varying in extent and direction according to the commodity being exchanged. As a marketing centre, Worcester dominated a region c 25 miles east to west and c 15 miles north to south, the east-west emphasis in part reflecting its 'port-of-trade' function as a gateway centre poised between the largely pastoral zone to the west and the agrarian Midlands to the east, and in part representing competition from smaller centres. More detailed patterns are visible within and beyond this. Debts arising from cattle brought to Worcester's markets reveal a catchment area extending westwards well beyond Hereford, into Wales. Corn brought to the city came from a more confined area to the east. Certain commodities were exchanged along the north-south corridor offered by the River Severn. The Bristol port books show in the 16th century high-value goods travelling upstream (wine, soap, oils, metals, exotic groceries) and low value products (coal, firewood, bricks) travelling down. There was a partial shift in this pattern in the course of the 17th century, towards more raw materials coming upstream, and more manufactured products going down. Certain specific high-value products appear to have been traded over much more extensive areas, and the hinterland for the city's 16th-century bell-founders extended far out to remote countryside churches in the surrounding counties. The source villages for immigrants to the city formed another much smaller (c 10 to 25-mile) catchment area.

The analysis of artefacts present in the city in the 16th and 17th centuries has already begun to add to the documentary picture of Worcester's trading contacts, an example being a 17th-century pit group from Sidbury, studied by Elaine Morris (1978), that included a Hispano-Moresque plate and a Spanish glass vessel, probably representative of trade with the continent via Bristol and the Severn. There are two aspects of the immediate hinterland that should be apparent in the city in this period, but which so far are not: there should be signs of improvement in livestock resulting from contemporary agricultural innovation, but the necessary

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biometric data is simply not yet available (Nicholson and Scott 2004); there should also be an increased range of non-regional imported vegetables apparent, but similarly, the necessary botanical work on appropriate deposits has not yet been done.

For the medieval period, pottery illustrates just one aspect of Worcester's role as a consumer of goods made in its rural hinterland, but the relationship was not a static one. The beginning of the medieval period is distinguished by a change in the pattern of pottery manufacture, from a few places supplying small quantities of goods over long distances to a greater number of local production sites producing much larger volumes and transporting them over shorter distances. Higher-value items travelled further, with glazed jugs coming to the city from Bristol, Wiltshire and Buckinghamshire. Small quantities of imported French pottery are known in the city in the later 13th and 14th centuries, increasing in frequency through the 15th (Bryant 2004). Stone products also travelled long distances, grindstones and whetstones being imported from the Forest of Dean, the Pennines, Wales, and as far afield as Norway.

The archaeological record from the Deansway sites does suggest a long-term process of change taking place in the local agricultural regime between the Roman and medieval periods. Faunal assemblages from Roman deposits indicate a large proportion of cattle, followed by horse and pigs, reaching and being butchered within the settlement. By the late Saxon period, and increasingly in the medieval period, mature sheep dominate the faunal record suggestive perhaps of the importance of wool (and indirectly of the cloth industry) in the local economy. Horn cores appear in quantity in all periods, suggestive of the long-term importance of tanning and/or horn working.

In the Roman period, as in the medieval period, the bulk of pottery used in the settlement was imported from kiln sites in the Malvern Hills area, close at hand; imported products from beyond the region were far less common, though products from Oxfordshire kilns were increasingly common in the late Roman period. The range of products supplied to the Worcester settlement seems to have been slightly wider than reached rural communities, with more tablewares, flagons, amphorae and mortaria, suggestive of a more Romanised or more urbanised way of life. As in later centuries, most stone products could be supplied from nearby sources, but specialist goods could be imported from well beyond the region (eg

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Kimmeridge shale objects from Dorset). But these identifiable and retrievable pottery and stone products must of course represent but a fraction of the process of urban-rural exchange in this period: they represent just two visible aspects of the settlement as a place of consumption of imported goods. We know that the Worcester settlement was a major production centre for iron, or iron goods, but where these went is completely unknown.

Research priorities:

RP7.18 Investigation of the Roman iron industry

Further investigation of Roman ironwork in and around Worcester, with a view to identifying the output and products of the Roman iron industry (iron and/or iron objects), and their distribution.

RP7.19 Identification and excavation of domestic deposits

Further excavation within the city of well-preserved domestic deposits from all periods, to yield more, larger, sieved bone assemblages to clarify long-term changes that appear to be taking place in the character of agricultural production around the city. Waterlogged deposits should be prioritised as potential sources for the retrieval of bones of smaller species.

RP7.20 Analysis of post-medieval animal bone assemblages

Biometric data is needed from post-medieval animal bone assemblages in order to track improvements in livestock breeding/rearing in the early stages of the agrarian revolution.

RP7.21 Environmental change in Worcester's hinterland

There has been very little scientific work on environmental change taking place in the immediate hinterland. The process of floodplain alluviation is perceived as a largely post-Roman phenomenon, but it has not been deliberately investigated, despite its possible implications for floodplain-edge settlement and the exploitation of the floodplain itself. Identification of buried floodplain palaeochannels could possibly yield sources of trapped pollen and other botanical remains that could be used to analyse the vegetational history of the immediate hinterland.

RP7.22 Investigation of minor satellite settlements

There has been very little investigation of the minor satellite settlements (eg Battenhall, Warndon, Lower Wick) in the City authority area. Further investigation may yield insights into their origin (particularly for high-status centres) and subsequent development. It is not clear whether any differences should be expected between the developmental trajectories and archaeological signatures of rural sites immediately outside the city and those much further afield. Was (for example) the general late medieval trend towards pastoral, rather than agrarian, farming mitigated by a greater emphasis on victualling the city?

RP7.23 Investigation of rural sites in the Worcester hinterland

Continued investigation, particularly by excavation, of rural sites within the Worcester hinterland in order to enhance understanding of differences in the material culture and lifestyles of contemporary households in town and in the countryside.

RP7.24 Scientific analysis of ceramics

Scientific analysis of ceramics found at Worcester would provide valuable information on the location of manufacturing sites, as well as contributing to studies of distribution and use.

RP7.25 Evidence for changes in crop husbandry and production

Recovery and analysis of plant remains would provide evidence of land-use in Worcester's immediate hinterland – orchards, vegetable gardens, market gardens – and throw light on the victualling and provisioning of the city. Many important horticultural advances were made in the Worcester area and evidence may be found of these.

8 Conclusions – the potential of archaeological remains in Worcester

8.1 Introduction

In considering the overall potential of archaeological remains in Worcester, it is necessary to understand the distribution of past and current archaeological work in the city, which makes up the present archaeological record (the 'recording events' of the HER). A further consideration is a quantitative assessment of archaeological deposits across the city; this is addressed as part of the *Archaeological deposit characterisation*.

This section then goes on to consider a series of themes where Worcester can make a major contribution at a national level, and explores some ideas for sustaining the research effort.

8.2 The distribution of the excavated sample

By far the greatest proportion of the archaeological record of Worcester is derived from the commercial redevelopment process as it has affected the city in the last forty years. The general consequence is that the distribution of archaeological data closely reflects the incidence of post-World War Two rebuilding, and particularly from 1990 onwards, when the placing of archaeological conditions on planning consents became routine, following the introduction of the City's first archaeological policy and the introduction by Government of PPG16 (1990).

But the relationship of the archaeological record to the redevelopment process is more subtle and complex than a crude distribution of sites (archaeological recording events). The way that the present townscape has been formed by the partial redevelopment of earlier townscape elements has been analysed in the *Historic Townscape Characterisation* (1st draft, 2003). A variety of relationships are visible between the identified *townscape character types* – areas whose character is determined by particular types and periods of development – and the presence or absence, density and type of particular archaeological records. In simple terms, areas last redeveloped in the 1950s or 1960s will be likely to have fewer records containing information of poorer quality than those areas redeveloped since the 1990s. However, it appears that, in the latter, where archaeological information is derived from

the field evaluation process, there are frequently high-quality records of later/higher deposits but fewer of earlier/deeper deposits, or observations of the natural subsoil. Information derived from large-scale area excavations down to natural in the 1970s and 80s is of a totally different order again, and those few areas thus provided (Deansway, Sidbury, the Blackfriars) tend to dominate the record in terms of areas examined and of monuments derived from the excavation work.

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The diverse character of buried archaeological deposits (see *Archaeological deposit characterisation*, 2004), and their relationship to the incidence of redevelopment of various forms/dates, adds another major variable to the equation.

The archaeological investigation of Worcester has not however been a totally rescue-led process, responding solely to redevelopment pressure. Research excavations have also taken place. The most recent has been around the outside of the Cathedral chapter house (1995-99), and inside the chapter house (2003). A few date from the 19th century (eg excavations in 1848 at Whiteladies Priory chapel for the visit of the British Archaeological Association); most, however, were single or multiple trenches excavated at various dates between the late 1950s and early 1970s. The significance of these older recording events to the overall archaeological record is rather greater than might be supposed from their small scale and (often) poorer quality of data. In some areas, particularly the parts of the Cathedral close, the Bishop's Palace, and the Warmstry House porcelain manufactory site, there has been very little development-related archaeological work and a down-to-natural investigative trench of the 1960s may be exceptionally informative.

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A number of observations may therefore be made about the distribution of archaeological data across the city, quantitatively and qualitatively, in relation to the present townscape and the redevelopment process, and the character of the underlying deposits.

The High Street. The city's principal thoroughfare since the 10th century, and quite possibly much earlier, has a distinctive archaeological profile. Archaeological data is still weighted towards the larger redevelopment episodes of the 1950s and 1960s (the multiple High-Street stores and comprehensive redevelopments, *townscape character types 9 and 10*) that generated records from watching-briefs on excavations for large basements. Data is of correspondingly poor quality,

though extending down to the base of archaeological deposits; some observations of evidently well-stratified sequences seen in the High Street in the 1950s describe them as unstratified (Carver 1980c, 25). Intensive cellaring in this commercial core area reduces data potentially available for the frontages, even in those parts of the High Street where traditional building cover survives (*townscape character types 3 and 4*) – and further limits the availability of development-driven archaeological fieldwork. Bearing this in mind, the areas of street widening in the High Street, where deposits survive below the roadway, assume even greater importance.

The Cathedral Close. A few small research-driven excavation trenches in the 1960s were followed in the 1970s by a small number of professionally-excavated trenches of limited depth responding to the need for new service installations (eg Clarke 1980). Despite these, recent excavations in and around the chapter house, and many more small-scale interventions that have taken place since the creation of a permanent archaeological post at the Cathedral, the close in general remains relatively poorly understood, an inevitable consequence of the presence of statutorily protected townscape, architecture and archaeology.

Peripheral-intramural streets characterised by many surviving historic buildings. The presence of many listed buildings reduces opportunities for commercial redevelopment in general, and on frontages in particular. Thus the archaeological record for New Street and Friar Street (*townscape character types 1 and 2*) is dominated by field evaluations of back-plot areas destined for infilling. Substantial depths of medieval and later horticultural-type soils in back-plot locations within these areas mean that exposures of earlier strata (Roman in particular) are limited in number and area, excepting the area excavations of the 1970s at the south end of Sidbury. Excavations of structural sequences within standing listed buildings are uncommon.

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The western (riverside) margins. Clearance of sub-standard housing stock from the 1920s into the post-war years left large parts of the city stripped of building cover, weighted particularly towards the depressed commercial areas close to the river (*townscape character type 16 'urban fallow'*). Limited rebuilding for municipal schemes started almost immediately (*townscape character type 14*: eg Deansway police station), and generated no new archaeological records. The Technical College building programme of the 1950s and 60s was accompanied both by

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watching-briefs and a very limited amount of controlled excavation (eg Gelling 1958). The areas closest to the river, with the deepest depositional sequences and the highest potential for permanently-waterlogged strata, have however remained largely undeveloped down to the present day. Only from 2004 has investigation taken place of the Newport Street – Dolday area.

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These patterns impact on the available archaeological record in two important respects, one depositional, the other historical-geographical.

Depositionally, the archaeological record for Worcester is dominated by dry sequences of moderate depth. There is only limited understanding of the very deepest known sequences along the High Street because the most extensive deep excavations took place before the advent of a permanent archaeological establishment in the city capable of mounting large-scale excavations. The 1999 City Arcades site offers some (very limited) redress, but the deepest deposits there were exposed only in very small areas, and much of the High Street frontage had been cellared down to Roman levels – and these were examined in only a very small area. Nearby, very deep deposits with surviving organic content are known to exist on the south side of Fish Street, probably representing a very local perched water table, but the lower levels have not been investigated in detail. Away from the High Street, the deepest deposits have been seen or can be predicted within the occupied areas of the floodplains of the Severn and of the Frog Brook: along the riverside, and in Sidbury. These areas have scarcely been investigated at all. The riverside has certainly been subject to reclamation through landfill. This process may be suspected to have taken place in association with the construction and maintenance of public and private waterfronts and with the construction and disuse of the riverside stretch of the city wall. The bulk-dumped artefactual assemblages associated elsewhere with such sequences (eg sites in Lower Thames Street, London, or Redcliffe Street, Bristol) are therefore as yet absent from Worcester (see section 5.6). Even in the Newport Street and Dolday area this proved to be the case; although there was certainly evidence of large-scale dumping on the floodplain here, this proved to be artefactually poor (analysis underway).

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Of equal or greater importance is the additional environmental/biological data that may be derived from waterlogged or anaerobic soil conditions. Although the

archaeological record for the city contains striking examples of successful, informative, archaeological science (eg analysis of the Sidbury barrel latrine: Greig 1981; analysis of buried soils at Deansway: Macphail 2004), these are the exceptions and not the rule. It is not yet possible to write a history of the changing environment of Worcester and its immediate hinterland. Nor is it possible to comment in much detail on personal diet in different quarters of the Roman, Anglo-Saxon or medieval town, or on the importation of various foodstuffs to the town from its rural hinterland and beyond (see section 7.4). Nor is it yet possible to describe the development of the soils covering more than a small part of the town site. These are not, however, problems related solely to the lack of excavation of floodplain or other potentially waterlogged deposits: it is also a product of the very small number of scientifically-supported larger-scale excavations that have been completed through to full publication.

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Historically and geographically, the distribution of the archaeological sample of the city presents numerous problems. First and foremost is the inaccessibility of the centre: the relative lack of information from what appears to have been the core of, successively, the Roman, Saxon and medieval town. This, as explained above, is partly a consequence of the position of the Cathedral close and its protected historic buildings, and partly a consequence of the limited opportunities for development-led excavations of any scale, even outside the close boundaries. The immediately peripheral areas are better served: west of the High Street by the Deansway excavations; to the east by the Sidbury excavations of the 1970s. New data also continues to accumulate for the immediate periphery via the implementation of PPG16 on new developments at a much faster rate than it does for the core.

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The inaccessibility of riverside areas also severely limits the potential of the available evidence. Documentary evidence from the post-Conquest period clearly shows that All Saints' parish (around Newport Street and Dolday) contained much of the industrial activity present in the medieval city. In part this was geographically determined by access to running water, and the medieval pattern may well have developed in the pre-Conquest period. Only in 2004 has a major investigation begun within this zone. The lack of information from the riverside area also inhibits understanding of many aspects of the relationship of the city's development to the river. It is, for example, not possible to comment on the building or rebuilding of public quays, or of the Severn Bridge.

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Other crucial areas of the city remain, or have until recently remained, inaccessible and archaeologically enigmatic. The castle site is one. This site is important, not only because of that particular monument (which remained in use for less than a century and a half), but because the castle probably in part re-used earlier defences, of which little is known, and because the castle also masks an area of Roman activity and possibly pre-Conquest activity too. Other areas of the city that have only been addressed in the very recent past and for which there is still not much data are the medieval suburbs. The Tything has seen a number of interventions within the last five years, the excavation of a late medieval tile kiln shedding particularly valuable light on suburban functions and the northward extent of the occupied area at that date. Excavation of sites on Lowesmoor has generally been less extensive, and consequently less informative (though note the record of a medieval tile kiln from a watching brief there in 2004), and there have been no excavations on or close to the frontages of St John's known to have been built up before the end of the medieval period.

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Research priorities:

RP7.1 Identification of sites with long deposit sequences in the heart of the city

Further excavation of sites in central Worcester, in particular, along the High Street, in the Copenhagen Street – Fish Street area, and around the Cathedral Close.

RP7.2 Investigation of the Newport Street – Dolday area

Further excavation of sites in the north-west corner of the medieval city, in the Newport Street – Dolday area.

RP7.3 Investigation of the riverside zone

Further excavation of sites along the riverside zone throughout the city.

RP7.4 The South Quay

Investigation of the depositional history and composition of the South Quay.

RP7.5 Investigation of the historic suburbs

Further investigation of sites throughout the historic suburbs.

RP7.6 Investigation of the Frog Brook – stratified cultural and alluvial deposits

Identification of stratified culturally-derived deposits within the floodplain of the Frog Brook, particularly around Sidbury, and their association with alluvial deposits.

RP7.7 Palaeoenvironmental analysis

Analysis and publication of botanical and faunal remains from appropriate contexts should be given a high priority in future fieldwork.

RP7.8 Analysis of buried soils

Further scientific analysis of buried soils across the city.

RP7.9 Pre-Roman ground surfaces

Particular attention should be given to scientific analysis of the pre-Roman ground surface, where it survives.

RP7.10 'Dark earths'

Particular attention should be given to scientific analysis of 'dark earth' type late- and post-Roman soils. These should be assessed on the quality of dating evidence from within the dark earths themselves and from deposits sealing or sealed by the dark earth.

RP7.26 Unpublished material

The completion of publications for backlog sites gains in urgency given the increased pace of development in the city, and the need for precise and reliable information to be used in assessing neighbouring sites. Blackfriars and Kardonia are key sites, as well as the later periods at Deansway. There is similarly a need to expedite publication of more recent excavations such as the Magistrates Court, Castle Street.

8.3 Major research themes – how significant is Worcester?

From the period-by-period discussions preceding this section it will be evident that there is a small number of archaeological-historical issues that assume an extra or particular significance: because the resources with which they can be explored are – for whatever reason – unusually rich; and because they are issues of the widest relevance, at regional and national level, and beyond.

Romano-British industrial production and urban development

The unusual character of the Roman settlement beneath the modern city was becoming clear even in the 18th century, as Valentine Green and others reported on the repeated discovery of industrial waste products or *scoriae*. Investigations since Barker's work on Broad Street in the mid-1960s have repeatedly emphasised the central role of iron production in the economy of the Roman settlement, recording production sites as well as wastes. Additionally, city centre sites (Deansway, for example) and more peripheral sites (Castle Street Magistrates' Court) have shown that industrial production co-existed with agriculture; meanwhile just enough is known of the core of the settlement to know that other functions – defence, residential, possibly government – took place concurrently. The size of the excavated sample of Roman Worcester continues to grow annually and with it comes an increased understanding of the complex character of the place. The substantial body of data now available means that Worcester must now be regarded as a key location for the study of Romano-British industrial production and its interactions with other sectors of the contemporary economy, and its social implications. Worcester's significance in this regard is uncontested at regional level – the sample size/body of completed work being far more substantial than that available for theoretically more accessible rural sites such as *Ariconium* in Herefordshire. Arguably, therefore, for the same reasons, the city deserves consideration in this regard at national level.

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Christianity and the Roman – post-Roman transition

As a cathedral city developed on a former Roman urban settlement, Worcester has long been regarded as one amongst many English cities where the transition from Roman Britain to post-Roman and Anglo-Saxon England could potentially be studied, with particular attention to the role of the Church in the continuance or transfer of political authority and the continuance or revival of economic life. Work since the 1970s, such as Barker's excavations of post-Roman burials beneath the cathedral refectory (Barker *et al* 1974), and Steve Bassett's hypotheses regarding the early role of St Helen's (Bassett 1989) emphasise the extraordinarily high potential of Worcester as a place where these subjects can be investigated. The crucial issue then becomes: do archaeological deposits of the post-Roman centuries actually

exist in the critical areas of the city (in and around St Helen's and the cathedral close)? Given that the city centre deposit model (*Archaeological deposit characterisation*) shows deposit depths of up to c 5 metres in just these areas, the answer has to be an unqualified yes. Once again, the significance of St Helen's church has to be emphasised.

The episcopal burh and pre-Conquest urbanism

Worcester has long enjoyed a high profile amongst historians of the pre-Conquest centuries as a consequence of the unique documentation associated with the foundation of the burh, and with the management of the cathedral's estates in the following century (the 'Oswald leases'). Archaeological excavation has, since the Sidbury and Deansway excavations of the late 1970s and late 1980s, begun to add the physical dimension to this material. Additionally, a substantial amount of research and synthesis of the existing data has now taken place (Baker and Holt 2004).

Given, therefore, the demonstrable existence of deposits of the period, unique documentation and a substantial existing corpus of archaeological and other research, a strong case can now be made for regarding Worcester as one of the pre-eminent sites in England for future research on the nature of pre-Conquest urbanism.

Ceramics production and distribution

Worcester's importance for ceramic production in the late medieval and early post-medieval periods (especially tiles and bricks) gives it a national prominence, with tiles being distributed widely in the Midlands, Wales and the south-west. Similar comments may be made about the pottery industry at the same period, though production sites have not yet been identified. A Roman pottery industry has also been postulated, while the post-medieval (18th century and later) porcelain industry is well known, and the production sites are now being studied in earnest.

Town planning

Worcester has long been the focus of interest in town planning terms, both for the medieval and earlier periods (Baker *et al* 1992, Baker and Holt 2004), and for studies of the impact of the 20th century. These are themes which deserve further development and wider dissemination.

8.4 Sustaining the archaeological research effort

Archaeological research in Worcester in the recent past can be divided between two broad headings: fieldwork, meaning excavation and building recording; and library-based (desk-based) research. Other distinctions can be drawn, for example between research conducted as part of the planning process – for example, for desk-based archaeological site assessments – and ‘pure research’ whether undertaken by individuals or institutions, for academic, educational, publishing or other purposes. All have a critical role to play if knowledge of Worcester’s past is to be advanced.

Excavation and geophysical survey

Research excavation is as rare in Worcester as it is elsewhere, primarily because of the high costs invariably associated with controlled excavation and all the subsequent processes – post-excavation analysis, the conservation and curation of excavated materials, through to final publication. The heyday of research excavation in Worcester came in the later 1950s and early 1960s. During that time David Shearer and the Severn Valley Research Group investigated the line of the medieval defences with trenches in Sidbury and Severn Street, while Henry Sandon pursued his mainly ceramics-based personal research agenda with trenches in the Cathedral Close, the Bishop’s Palace precinct, and on the Warmstry Slip Porcelain Manufactory site.

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Through the later 1960s to the early 1990s, all excavations in the city were development-led until, under the direction of Chris Guy and Sally Crawford, rescue excavations around the cathedral Chapter House were extended over several seasons and transformed into a research project. Latterly, a proactive and imaginative lead has been taken by the City Council with excavations at the Commandery, based initially around requirements arising from alterations to the buildings for the provision of disabled access, but substantially extended in scope to facilitate future management decisions, to inform new interpretation at the Commandery, but above all to further an understanding of the development of the Commandery complex, its context and its precursors.

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Geophysical survey has also begun to make an important contribution to the understanding of major monuments in the city, notably in and around the cathedral close, with contractor-led projects (eg Stratascan on the charnel chapel site) and student projects (eg College Green and the castle

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defences). While geophysical survey results may, not infrequently, ultimately need to be tested by excavation to resolve ambiguities of interpretation, some results may be sufficiently clear to allow robust hypotheses to be formed that can be tested in the future.

Arguably, research excavation has a continuing, vital role to play by elucidating issues that remain intractable to development-led, PPG16-based investigation, feeding back into and further informing that process. To do this, a number of policies can be identified:

- Maintenance of active contacts and dialogue with institutions having a strong archaeological research profile and an established interest in the city, in particular local universities (University of Worcester, the University of Birmingham) and the Worcestershire County Archaeological Service
- Proactive agenda-setting. Via the publication (electronically and conventionally) of documents such as this, to guide, promote and facilitate research-based fieldwork. Also via a continuing dialogue between the local city-based research agenda and the Regional Research Frameworks process
- Proactive lead by the City Council. The successful excavation campaign at the Commandery, with its high public profile, active community participation and successful answering of otherwise intractable major research questions, should serve as a model for other 'flagship' heritage sites in City Council or other public ownership. At least two of these (the Guildhall, St Helen's Church) feature repeatedly in the foregoing sections because they are highly significant monuments for understanding the development of the city.
- Encouragement of the use of city-owned and other major monuments with substantial open spaces for use as test-beds for new geophysics technology and for student projects.

Building recording and analysis

The recording and analysis of standing historic buildings is a field of archaeological research that is still at an early stage of development in Worcester, despite pioneering work by individuals (Hughes and Molyneux 1984, for example) and a

growing corpus of work by archaeological contractors. While government planning guidance (PPG15) allows for repairs-related recording as part of the planning and Listed Building Consent processes, this sphere of activity still remains underdeveloped in the city. The following may be suggested as ways of pursuing and promoting this aspect of archaeological research:

- Continuing liaison and information exchange between archaeological and building-conservation professionals
- Production of a dedicated all-period resource assessment and research framework for the built environment
- Continuing promotion of the built heritage to community/heritage groups with an emphasis on the possibilities of individuals and groups contributing to future research

The publication of the revised list descriptions for Worcester buildings (DCMS 2001), and the more recent *Buildings of England* volume (Brooks and Pevsner 2007), which draws attention to a number of unlisted buildings, will form the key basis for future research into buildings in the city.

Archaeological desk-based assessments and conservation management plans

Desk-based assessments are routinely commissioned in advance of major redevelopment projects where existing archaeological records are inadequate for making informed planning decisions. A series of conservation management plans (CMPs) has been commissioned in recent years for major City-owned monuments: the Commandery, the Guildhall and the city defences. It is invariably the case that close attention by specialists to such monuments produces new information that, in addition to facilitating future management decisions, is directly relevant to many of the research aims set out in this document. The following may be suggested as means by which these planning and management tools can make the greatest contribution to archaeological research:

- The continuing commissioning of desk-based assessments for complex sites
- The continued commissioning of conservation

management plans for major monuments

- The continued production by the City Archaeological Officer of annual 'round-ups' of recent work in the city in conventional archaeological published media (Transactions of the Worcestershire Archaeological Society), with the aim of drawing academic attention to the existence of bodies of work that might not otherwise appear in published literature
- The preparation by archaeological contractors and consultants of summary reports to appear in published and/or electronic media, again to make the existence of recent work as widely known as possible

Characterisation

Many of the research questions relating to outer Worcester and the suburbs can best be addressed against a background of historic landscape characterisation. To be sufficiently informative this will need to be at a higher level of resolution than that underway for the county, though less detailed than the city centre characterisation studies.

University-based research (projects and theses) and other historical research

The city has received a certain amount of academic attention in recent years, in addition to fieldwork-based projects. The University of Birmingham's English medieval towns and the Church project (1989-93) resulted in a large volume of primary documentary research together with a synthesis of past archaeological fieldwork results and new topographical (urban morphology) survey. While major archaeological-historical projects with substantial independent funding occur relatively infrequently, research by individual students for theses and other projects takes place on a regular basis. The following may be suggested as ways of facilitating and directing such work:

- Continued maintenance of active contacts and dialogue with institutions and individual academics having a strong archaeological research profile and an established interest in the city, in particular local universities (University of Worcester, the University of Birmingham).
- Proactive agenda-setting. Via the publication

(electronically and conventionally) of documents such as this, to guide, promote and facilitate research-based fieldwork. Also via a continuing dialogue between the local city-based research agenda and the Regional Research Frameworks process.

- Informal 'shopping lists'. There may be a role for the production of abbreviated, informal research agendas tailored to the interests/requirements of particular groups of students, courses, and individual academics with students searching for projects. Post-excavation analysis of particular artefact types or assemblages from individual sites that cannot, for whatever reason, be dealt with within the planning archaeology context may be particularly suitable for such treatment (eg groups of material from backlog sites or assemblages left untouched by completed post-excavation projects. Such lists could be produced in liaison with archaeological contractors.

9 Bibliography

Relevant West Midlands Regional Research Framework papers are cited in section 1.3. Worcester Urban Archaeological Strategy reports are currently in draft and are cited in the text.

The bibliography is confined to published material, and 'grey literature' reports have generally not been cited in the text; these can be traced through the HER numbers given in the margins.

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