DETACHED GARDENS AND URBAN ALLOTMENTS IN ENGLISH PROVINCIAL TOWNS, 1750 TO 1950: DISTRIBUTION, ABUNDANCE AND TRANSFORMATIVE PROCESSES

by

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ABSTRACT

The distribution and extent of detached gardens in a sample of 10 English provincial towns was examined for the 18th century, through cartographic analysis and the construction of GIS-generated zones parallel to the urban fence. This revealed that detached gardens formed a distinct and abundant feature in the urban fringe, particularly within 200 metres of the built-up area. A case-study of Shrewsbury for the mid-19th century, using data from the tithe survey, showed that 728 plots were provided by 112 private landlords, two-thirds of whom owned less than 200 square metres for rent. This was largely a profit-motivated system that disintegrated as towns expanded. The question arises as to whether the statutory system of urban allotments, that replaced it, will stand up to today's demands. A longitudinal study, based on maps from 1830 to 1940, indicated that a reduction in provision was linked to booms in the house-building cycle while periods of increased provision were occasioned by national emergencies. Garden-ground provided the prime location for housing and an awareness of its morphological frame was essential for an understanding of expansion from the urban core. The concept of the urban fence was critical and its use produced an alternative way to perceive and analyse the inner fringe belt.

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CHAPTER 1. INTRODUCTION

Shrewsbury is a borough with a lengthy history, a county town that was not overtaken by industrial development in the 19th century and a pleasant place to wander and observe. This thesis started in Shrewsbury as a series of queries on Sunday afternoon walks. It was not necessary to wander far outside the town wall and beyond the river meander to realise that the history of the landscape was complex. All around were reminders of former times. The past had not been effaced to make room for later development; it was still there to be seen. What history lay behind a series of gateways leading into an area of wasteland? Why were some car-parks divided into sections by hedges? Why did a terrace of houses have their front doors opening onto a footpath? Why had a few acres of land so close to the town centre not been built on until the 1930s? And, above all, how had a strip of eight small allotments managed to survive in the town centre?

Figure 1.1 Town Wall Allotments, Shrewsbury

The narrow strip of detached gardens at the foot of the town wall are now divided into eight small plots

Those eight allotments, tight under the town wall on a south-facing site, became the focus of my attention and the start of my search for data on allotment provision. In 2010, 100,000 people in England were waiting for an allotment and the number was continuing to rise (Campbell and Campbell, 2010). Today the average waiting time is just over three years, though in some city boroughs it is much longer. Allotments are fashionable these days and pressure groups remind

their local authority that it is a statutory duty to provide plots when a demand is shown (1908 Act, see Appendix 2). There is also a growing feeling that other non-governmental providers could be involved. The National Trust, Britain's biggest landowner, has entered the allotment business and, by 2012, will have created more than 1,000 new plots in 40 locations (National Trust, 2009). There is also a web-based organisation called Landshare that puts those with spare garden-ground in touch with those who are looking for a garden (Landshare Network, 2011). Is illicit gardening on neglected public space turning out to be a public service? 'Guerrilla gardening', although the term is new, has a long history reaching back to the short-lived Diggers of 17th century England, who envisaged a society free of private property and who planted vegetables on common land (Campbell, 2009; Vann, 1965; Winstanley, 1649). Nowadays the movement is described as 'a war against neglect and scarcity of public space as a place to grow things' and some local authorities, unable to afford to revitalise every bit of barren space, are turning a blind eye to residents' attempts to improve their environment (B.B.C. Scotland, 2010; Guerrilla Gardening Community, 2011; Reynolds, 2004).

Allotments are valuable possessions. For all, they provide exercise and healthy food; and traditionally, in Britain, they have offered an opportunity to get away from the family or alternatively to find companionship. In times of poverty and strife they have provided the means to escape charitable handouts or to produce essential food. Twenty years ago, in a survey on the meaning of gardens, social scientists pointed out several personal and unusual benefits, such as the opportunity to reflect and escape from personal conflicts; the ability to take control and build up responsibility and commitment; and the facility to be creative (Francis and Hester, 1990). Two more recent surveys on the value of allotments highlight guardianship of the land, provision of a sustainable food supply, control of pesticides used in food production, carbon reduction, the fostering of community development and cohesiveness, a resource for biodiversity, access to nature and wildlife and an educational resource for children on the source of food (Campbell and Campbell, 2009; 2010). A comparison of these surveys suggests that, over the years, the basic benefits have remained, but people's values have changed. Did those who tended small gardens in the 18th century have the same benefits? What value did residents put on allotments at a time of urban expansion

in the mid- to late-19th century? Were there enough allotments to go around? Did our ancestors expect the local town authority to provide?

Little research has been done on gardens by British geographers, although there is a body of work in the Antipodes, where geographers interested in landscape-change have been studying the invasion of alien species (Halkett, 1976; Head and Muir, 2006; Zagorski et al., 2004). In Britain, urban morphologists have frequently noted the presence of allotments in the urban fringe, but have taken the issue no further. Seeking shreds of information from other disciplines, a relevant paper from a social and economic historian finally came to light in Agricultural History Review. Flavell (2003), found between 1,500 and 1,800 'small gardens' for rent around Sheffield in the 1780s and in his introduction he made the following statement:

> *'This article seeks both to fill a gap in the literature and to advance the case for Sheffield as not merely a major pioneer, but as the first town to possess large numbers of urban allotments long before the era of statutory provision. It also seeks to provoke others to challenge the claim. It might well be that other towns also had large numbers of similar gardens which are as yet unresearched or unacknowledged' (Flavell 2003, p95)*

My discovery of this statement acted as a stimulus to assemble and consider the various observations and queries aroused in my explorations of Shrewsbury. The first that came to mind were abundance and distribution. Flavell's rigorous research, based on documentary evidence, identified more than 1,000 'small gardens' around the urban core in Sheffield in the late 18th century. These areas had all been built over and Flavell had not investigated field evidence. But, as an urban geographer trained to see landscapes as a palimpsest, I suspected that I was observing vestiges of a similar landscape at the edge of Shrewsbury's urban core. Could the vestigial evidence add up to a fringe of gardens encircling the town? Sheffield's 18th century gardens formed a belt, broken to be sure, but allowances had to be made for difficult terrain. Was it possible that most towns had a fringe of gardens in the 18th century and might it be possible to find good cartographic evidence for this?

Shrewsbury had a small surviving example of detached gardens, tucked under the town wall, a good location sheltered from cold winds, with a gentle slope to the south and soil enriched with centuries of town waste. It would be interesting to discover if other towns used their town ditch or former defensive area in this

intensive way. Furthermore, conversations with plot-holders revealed that these gardens were not part of the statutory provision for the town, but were rented from a private organisation and moreover that, in the recent past, some residents had sold nearby plots that had been owned by their families for generations. Today these surviving gardens are called 'allotments' and Flavell uses the term 'allotment gardens' in the title of his paper, but there is no doubt that the Sheffield gardens and this small extant example in Shrewsbury pre-date these terms (Thorpe, 1969). If such 'small gardens'were common around English towns, did they provide a model for later allotments established by private landowners in rural areas?

Turning full circle and returning to my original observations, I began to see the housing estate, the bowling green and the carpark with fresh eyes, as gardens that had been modified over time - but not entirely transformed. Even though the land-use may have changed, other traces remained; and in a few the land-use had persisted.

Eventually all these areas of interest condensed into six groups: extent and abundance of detached gardens and urban allotments; their distribution; factors affecting their location; nature of the system of provision; age and origins; and transformative processes. These were the subjects taken forward for exploration and the result is this piece of research which focuses on landscape change through an investigation of urban allotments and detached gardens (their precursors) in the urban fringe. Throughout this study, I sought to understand townscapes close to the urban core by means of an evolutionary approach, centred first on early maps and then expanded through documentary investigation and fieldwork. The research employed Conzenian concepts of land-use modification and persistence of physical attributes through time. It used an understanding of additive and transformative processes to evaluate how the extent, location and morphological frame of detached gardens had affected later urban form.

All is now embodied in this thesis.

Chapter 2 attempts to tease out and summarise research already reported in the literature that might have a bearing on the questions being posed; and to use this to locate gaps and develop research proposals.

Chapter 3 seeks a way through the methodologies, technologies, doubts and pitfalls of the last half century to find a logical and sound way to proceed with the proposed investigation.

Chapters 4 to 7 present the findings. Chapter 4 demonstrates convincing evidence for an abundance of gardens around English provincial towns in the 18th century. Chapter 5 illustrates, in a case-study, how detached gardens changed in abundance and distribution over time. Chapter 6 identifies the character of the gardens and the details of the system that supported them before they were overtaken by urban growth in the mid- to late-19th century. Chapter 7 throws light on their modification and pursues the agents and processes of transformation.

Chapter 8 strives to bring all the findings to a logical conclusion in the light of previous work.

CHAPTER 2. BACKGROUND AND PREVIOUS RESEARCH

Although firmly based in an urban context, this study deals with land that contains no buildings. It deals with the ownership of property in the form of small plots of intensely valuable soil, which local residents have dug, improved and enjoyed. In order to focus attention on these detached gardens and allotments, the review includes contributions from three related areas: county towns and the lives of their residents; urban fringes, where town and country mingle; and expansion from the urban core. Together with allotments themselves, these form the four themes of this review.

The first is about the towns, beginning in the 18th century. This was chosen as the starting date for the research, since it lies immediately before the great agitation for allotments, which began in the 1790s. In addition to the obvious intention of reviewing what urban historians have discovered about detached gardens and urban allotments, the aims are twofold. The first is to paint a picture of the size and physical appearance of county towns as a back-drop for the investigations to be carried out on the distribution of detached gardens and expansion from the core. The second is to investigate the energy of towns, especially the characteristics of the residents and how the town functioned. The review also seeks to portray the residents, in terms of their occupations, interests, sources of information and aspirations for the town, so as to aid the understanding of the ownership and the system of provision of detached gardens, and also their value both as gardens and as an investment. Embedded within this is a review of the provision of fresh food to urban residents before the growth of fast transport networks and refrigeration.

This leads on to an examination of research on the expansion within, and from, the urban core. The aim is to build up a background to the transformation process. The review deals with the results of rapid population growth and the effects it had on the housing stock, space and environment within the built-up area. It looks at how the middle and artisan classes solved their housing needs and how this impinged on the urban fringe. It seeks information on extremely poor residents and how they were eventually housed. It deals with processes, agents, the growth

of government intervention, building types and plan-forms produced throughout the 19th century and the first half of the 20th century.

The third section of the review concentrates on the contributions of urban morphologists. Urban morphology offers a particular research perspective developed primarily by British geographers after 1950. It provides a theoretical and conceptually-rich framework through which to understand the development of urban landscapes since 1700. The first aim of this section of the review is to build up an insight into the way that urban morphologists have viewed the urban fringe, since this zone of a town was crucial for the location of detached gardens and urban allotments. For urban morphologists, the absence of buildings is not a reason to ignore a plot, since plant nurseries, tenterfields, ropewalks and allotments are all recognised as part of the urban environment. Explanations for the original colonising land-uses and hypotheses put forward for their subsequent modification are explored. The second aim of the urban morphology section of the review is to develop a thorough understanding of the evolutionary approach advocated and especially the concept of the morphological frame. The Conzenian concept of growth through accretion is reviewed and a survey carried out of the way urban morphologists have dealt with allotments in their investigations.

The last section is a substantial review of research on urban allotments and detached gardens, the central topic of this thesis. Since only limited research has been discovered on any particular aspect of this subject, the aim is to bring together minor accounts, shreds of evidence discovered in contemporary works and incidental mentions in reports of government special committees. The review also covers the history of urban allotments and examines information on early 19th century allotments established in semi-rural manufacturing regions that have, in the past, been investigated alongside rural allotments. The review also attempts to tease out the origins and attributes of the precursors of allotments in towns.

These four topics form the background to this research. The literature surveyed in this chapter is strongly interdisciplinary in character, being gathered from a wide variety of sources produced by cultural and historical geographers; urban, economic and social historians; agricultural economists, social scientists and gardeners.

Towns in the long 18th century

There are no firm start and end dates for this review of English towns, though the long 18th century, from the late Stuart period to the dawn of the Victorian Age, appears to be a useful concept. As far as possible the review concentrates on county towns, but this is not a clear-cut group since, while still retaining their administrative function, they developed in a variety of ways according to their location and regional activities. They remained market towns, centres of trade and distribution particularly for the agricultural produce of their hinterlands. Some, like Shrewsbury, were dependent on servicing an extensive hinterland, while others, like Worcester or Ipswich, had additional industrial activities (Ellis, 2001). The majority of studies were by historians, who at first displayed a general interest in population growth and urbanisation. Some, such as Armstrong for York (1974) and Newton for Exeter (1977; 1984) analysed the history of single towns. During the last decades of the 20th century there was a growing volume of research on special themes or particular aspects of county town life, such as McInnes' study of leisure in Shrewsbury (1988) or the segregation of the wealthy and poor in Wakefield (Dennis, 1984).

The pace of change

Throughout this period town-dwellers still formed a minority of the total population of England. Except for London (whose population reached 1.27 million by 1825) and the leading provincial centres of Norwich, Bristol, York, Newcastle and Exeter, towns were small, set in a countryside studded with very small villages. However, towns were expanding in both number and size, so that by the end of the century 2.5 million people, or about 30 percent of the population lived in towns with more than 2,500 inhabitants (Sheppard, 1971; Wrigley, 1990). A settlement of 2,500 residents is small by today's standards, but it was a distinctive unit in pre-industrial England (Chalklin, 1974). Growth was not even across all towns, varying with the expansion of industries, the construction of canals, the development of river, estuarine and coastal trade, the building of resorts for health and leisure and the vicissitudes of foreign policy which affected towns providing for the army and navy (Corfield, 1982). The economic and social significance of towns increased and the influence of the urban minority grew. Towns began to be recognised by their leading economic function so that

they were named dockyard and manufacturing towns, spas and holiday resorts and thoroughfare towns, in addition to the traditional market towns and ports.

Trading and market centres

Everitt (1979) believed that county towns were the heart of the community in the 18th century. County and country met here and to study them increased understanding of regional society and the relationship between the life of the county town community and that of the countryside. Greater specialisation in farming led to an increase in internal trade and a remarkable development of inland entrepôts, providing a meeting place for drovers, traders, factors, middlemen, wholesalers and wayfaring merchants. Such trading centres encouraged further developments in five areas. The first was the provision of business facilities for the negotiation of wholesale prices, the scrutiny of samples and arrangements for marketing and transportation of goods; these were largely based on urban inns, though specialist exchanges were built in some towns. The second was an expanding network of stagecoach routes, based on the ever-increasing system of turnpikes. Thirdly was the maintenance and enlargement of a vast nexus of local and long-distance carrying services. Fourthly was an increase in the number of permanent shops catering for a regional market. And last was the provision and exchange of information, through the extension of printing workshops producing leaflets and advertisements and especially the rise of provincial newspapers.

The traffic created by trade, especially the increased volume of agricultural produce, could engulf town centres, with herds of livestock, carts, wagons and pack-horses pouring onto narrow streets. Animal sales were often held on the streets rather than in traditional market places, which had been out-paced by growth. The congestion and clamour began to generate complaints as the century unfolded and polite society grew; and eventually efforts were made to house market functions in specially-built halls. The range of market structures grew, including specialist cloth halls and grain exchanges (Chalklin, 2001a; Ellis, 2001).

County town industries and the growth of specialist crafts

County towns had always housed a variety of consumer industries that changed little over the century, catering for a local market served by the local carriers' cart

network (Trinder, 2000). Some trades such as malting, brewing, milling and tanning required large specialist buildings and locations; a source of water power for grinding corn was essential and during the century urban water power was increasingly put to other uses, such as fulling cloth or hammering iron. During the 18th century the advantages of locating more specialist industries in or near a town were recognised, especially aspects dealing with marketing, finishing and distribution. Gradually industrial production began to move into urban areas, away from the countryside, even before mechanisation began and factories were established, so that towns were increasingly producing 'manufactures' for markets beyond the town's normal hinterland. Examples include hosiery in Nottingham, locks and buckles in Wolverhampton and ribbons in Coventry (Corfield, 1982; Hopkins, 1998; Prest, 1969).

Economic prosperity led to an increase in living standards and the growth of professional services. The old professions of attorney and doctor continued to expand, and new professions, such as land surveyors, accountants, printers, publishers, architects and engineers arose (Everitt, 1979). Banking also spread from the capital, so that, by 1800 there were more than 300 banks in provincial towns (Chalklin, 2001a). Highly skilled craftsmen expanded in numbers and in many county towns they formed the most numerous occupational category; in Northampton, for example, they comprised 53 percent and there were 62 separate kinds of craft workshops for a population of 6,000 (Everitt, 1979). New skills were being developed so that traditional crafts were splitting into fresh specialisms; master metal craftsmen were now described as braziers, whitesmiths, pin-makers, cutlers, pump-makers, gunsmiths, locksmiths and so on. County towns became centres of organisation and nurseries for a wide variety of crafts and skills and this structure survived well into the 19th century (Everitt, 1979).

Urban 'improvements'

At the beginning of the 18th century, most towns retained narrow streets, vernacular building types and traditional construction materials which varied according to the town's location. Timber, plasterwork and thatch were still common, but a change was in sight. Due to an abundance of capital and low interest rates, investment in urban fabric was both feasible and attractive (Chalklin, 1974). The fashion for regular, uncluttered town houses meant that parts of some

towns were transformed as new high-class terraces were constructed and old buildings provided with new façades. But often these fine buildings were just the frontages. Behind, in a maze of densely-packed dwellings around courts and in alleys and narrow streets there was piecemeal development of highly intensive settlement, often jerry-built and with no systematic provision of amenities or open spaces. Towns generally were noxious and foul from rubbish and dung in the streets, slops from scavengers' carts, midden heaps and privies, industrial and human effluent in streams and ditches, smoke from coal fires and forges and dank odours from overcrowded urban graveyards (Corfield, 1982). There was a growing feeling that the authorities, rather than the individual, should be responsible for the upgrading of facilities and this idea played out in the establishment of improvement commissions, an *ad hoc* way to provide basic amenities by means of local acts of parliament, granting powers to levy local rates for the formation of special services or the hire of contractors (Webb and Webb, 1922). Eventually there were about 400 improvement acts for provincial towns in England and, through this means, fresh water was provided, obstructions were removed, streets were widened, paved and lit, refuse collection and sewage disposal were established and a watch or police force was set up (Reed, 2000). The intentions were good, though efficiency was not always perfect. Planning was partial or incomplete and areas of the town away from the major streets were often left unimproved (Corfield, 1982).

Amenities and leisure

Funds were also channelled into refurbishing or establishing public buildings, such as guild halls, custom houses, shire halls and town halls and the range was extended so that, by 1801, all county towns had workhouses, hospitals, prisons and court houses. Institutions for the mentally ill were rare until the Lunacy Act of 1808, which precipitated the building of asylums near county towns throughout the country (Reed, 2000).

Towns were also becoming centres of culture with a small percentage of resident leisured folk, not necessarily wealthy, but interested in intellectual and humanitarian issues. Also resident in towns was a selection of professionals, merchants and prosperous shopkeepers and craftsmen forming a middle class with money for leisure activities; to these were added gentry who migrated to town at

the time of the Quarter Sessions and Assizes. Facilities, such as booksellers, coffee shops and circulating libraries, began to appear to cater for the edification and leisure needs of these upper and middling groups. The Assizes became occasions for horse racing and for every kind of county meeting, whether economic, political, charitable, scientific, social or horticultural. Outdoor activities were fashionable and every town had a bowling green and tree-lined promenades. Clubs and societies met for every purpose from drinking to debating, sometimes in inns or coffee houses and increasingly in formal venues for social gatherings and entertainment built by the town authorities or through public subscription, such as theatres, concert halls, assembly rooms, and lending libraries (Borsay, 1989; 1990; Clark and Houston, 2000; McInnes, 1988).

Compact nature of towns

Most towns displayed a nucleated form. Much of the expansion was through infill and outward growth was largely limited to compact ribbon development along main roads. Thus urban boundaries remained visible and easily identifiable as is shown on the many prospects and panoramas dating from this period, usually depicting a densely clustered settlement viewed across fields; Samuel and Nathaniel Buck depicted nearly 80 towns in this way in the middle of the 18th century (Elliott, 1987). A few old-established towns still retained their town walls and gates and some, such as Exeter, still closed the gates on Sundays and at night. But many fortifications had been destroyed after the Civil war and now gates were increasingly seen as intolerable obstacles to traffic and were removed. Walls were allowed to crumble or were even pulled down piecemeal in the course of urban improvement, as at Worcester and Newcastle-upon-Tyne (Corfield, 1982; Creighton and Higham, 2005). Occasionally, as at Chester, the walls, with their fine views, were maintained as the principal promenade (Reed, 2000).

The compact nature of towns meant that all residents lived within walking distance of the surrounding countryside and there is evidence that the urban fringe was commonly used for recreation, especially patches of open space suitable for quoits or cricket, but also river banks and even farmland (Ellis, 2001; Great Britain, 1833). The converse was also true, with the countryside penetrating into the town, with milkmaids, hay wagons, animals and farm carts a common sight. Despite the infilling as population increased, open areas still existed in many

towns. In Leicester, as late as the 19th century, half the walled area was laid out as gardens and orchards or left as open wasteland and in Newcastle, the area within the northern wall was described 'as pleasantly rural, dotted with houses of gentlemen in the midst of fields and gardens' (Ellis, 2001).

Fresh produce from the urban fringe

Cow-keeping and dairies. Little research has been found on dairy farms on the outskirts of county towns, but interesting investigations have been published on London and Liverpool (Atkins, 1977; Hill, 1956). Dyos and Wolff (1973) described a system where there was no clear-cut distinction between urban and rural life. They depicted extensive back-yard agriculture, not merely half-a-dozen hens in a coop, but also cow-stalls, sheep-folds and pig-sties, in courts, gardens, houses and cellars. Cow-keeping was especially important, since milk could go sour so easily and accordingly had to be produced within the built-up area or in the nearby fringe, so that transport time was as short as possible. Atkins (1977) showed that in 1829 there were at least 71 cowsheds within the urban area of London and this was due not only to envelopment by the expanding built-up area, but also active decisions to choose city locations. However, he demonstrated that the real control of the milk supply lay in the hands of cow-keepers using rich suburban pastures for grazing, especially to the north and west of the city, forming a narrow belt in the urban fringe. In the 18th century this fringe belt dairy farming was more intensive than in rural areas. The animals were kept indoors for six to seven months of the year and fed on a diet that included brewers' grains, a bulky waste product of low value, but expensive to cart (Mathias, 1952). Cow-keepers also imported meadow hay, root crops and green fodder from farms within a radius of 30-40 kilometres. The quality of the cattle was maintained by bringing in replacement stock from outside and replacing milking cows as soon as the milk yield fell below six to eight litres per day.

In the case of London, the intensification of dairy farming was exacerbated by the competition for land close to the capital. Cow-keeping, market gardening and brick-making were all profitable occupations, even on land about to be developed for housing. A symbiosis evolved between these semi-rural occupations: spent brickfields were commonly refilled and grassed over for re-use by cow-keepers; cow manure was sold to market gardeners, some of whom, in return grew fodder.

Most land was rented and, as the leases expired, the landlords sold to property developers, so that little was left apart from yard and cowsheds. Production continued, however, and the number of urban cowsheds reached a peak in the 1850s and 1860s. After that date a combination of pressure from the sanitary authorities, the Cattle Plague of 1865-66 and growth of the railways caused a decline in London milk production (Atkins, 1977).

Market gardens. Most of the research on market gardening as a fringe belt activity has been carried out in London, a unique city in terms of its large population at a time when the nation was still rural. No studies have been found on the provision of fresh food to other large towns, such as Norwich, or on how rapidly growing industrial towns were provisioned (Webber, 1972). For London, Bull (1956), investigating the changing landscape of rural Middlesex from 1800, noted that a belt of terrace gravels, extending 15 miles from Bow to Hampton were devoted to the production of fresh crops for the London market. His study was based on Milne's land-use map of 1800 and a contemporary account of farming practice produced by the Reverend Henry Hunter in 1811. By integrating these two sources, Bull was able to differentiate areas specialising in vegetables, soft fruits and orchard fruits. Hunter described orchards surrounded by walls, allowing Mediterranean fruit trees to be grown successfully. In the case of London, market gardening was displaced by suburban growth in the second half of the 19th century (Jahn, 1982).

These studies are reminiscent of von Thünen's model of land-use zoning and movement minimisation, the classic study on agricultural location dating from 1826 (Von Thünen, 1826; 1875). He started with a single market centre, his *isolierte Staat*, or isolated state, in which there was only one market town, surrounded by an extensive plain of farming land, uniform in its physical characteristics. This was served by only one mode of transportation and inhabited by farmers supplying the central town and having no difficulty in adjusting the use of resources to any economic condition that might evolve. Von Thünen's analysis produced a ring formation, based on three factors: the distance of farms from the market, prices received by farmers for their products and land rent. The first two had a simple relationship: the price obtained was equal to the price at the market minus shipping costs. Since transportation costs increased with distance

from the market, the value for a given unit of commodity was greater if the farmer lived nearer. The third factor, land rent, was defined as the return from the investment in the land, based on differential advantages or disadvantages of transport costs because of distance to the market. Von Thünen described seven concentric rings, whose characteristics have been summarised by Grotewald (1959). The inner ones were very narrow and represented intensive farming and forests. The former was used for the production of milk and vegetables, the fertility being maintained by manure from the cattle kept in cowsheds and from stables in the town centre. Forest was an essential land-use activity at the time, with a strong demand for timber and firewood. These gave way to a broad band of increasingly extensive agriculture and ranching and eventually to the waste beyond.

This model was remarkable for its day, but suffered from extensive simplification, such as the transport costs being exactly proportional to distance and the maximising of profit by all farmers, with automatic adjustment of crops to the need of the central market. In von Thünen's analysis, each farmer took his own produce to market by horse and wagon and was therefore directly concerned to minimise his own movements. The shift of transport to independent companies has undermined the minimisation logic and has led to the dominance of the overall movement-system rather than that of the individual producer (Haggett et al., 1977). There is little doubt that technical inventions, cheap fuels and the scale of economies have reduced the relative costs of transport in overall production costs (Chisholm, 1962).

Expansion from the urban core and suburban development

Much of the early research on the growth of suburbia was based on London suburbs and the industrial towns of the north and Midlands that were expanding rapidly with the growth of industry (Carr, 1982; Dyos, 1961; Jahn, 1982; Springett, 1982; Thompson, 1982; Treen, 1982). Some attention was also paid to pleasure towns like Leamington Spa (Lloyd, 1977) and county towns such as Exeter (Newton, 1977), concentrating more on the middle classes. Little has been written on county and provincial towns with low rates of industrial growth and slower urban expansion, though some of the general findings, such as the methods

of financing developments and the role of small building companies, would have been relevant and much of the legislation must have been applicable.

Social problems

Tarn (1969; 1973) described the social problems produced by too many people living too close together without adequate supplies of the basic necessities of life. The residential areas he analysed included not only new working-class housing run up by speculative builders near factories, but also shoddy housing erected in over-occupied old courts, with little natural light and inadequate privies. For example, in 1842, Boot and Shoe Yard in Leeds contained 34 houses, where 340 people regularly lived, with up to twice as many at particular times when itinerant labourers came into town (Burnett, 1978). The air, water and the streets were polluted. Disease spread and drunkenness, vagrancy, crime and vice were commonly reported. Many contemporary reports of medical officers or sanitary inspectors illustrate that such conditions were widespread. In Wolverhampton, for example:

> *"The high price of building land and a principle of convenience has occasioned almost every portion of the yards…to be closely built upon… A dense population is therefore congregated in these places…In the formation of these buildings…everything has been sacrificed to secure a large pecuniary return; they are often of the worst construction, and in immediate contact with extensive receptacles of manure and rubbish…and many have only one privy…for…several families."* (Dehane, 1840, quoted in Shaw, 1979).

Escape of the middle classes

Dehane's quotation suggests that, for the middle classes, there was a positive side to this overcrowding and the 'large pecuniary return' enabled some to move into healthier conditions, with more light, better air and in a more peaceful setting: a new home, altogether more elegant with modern conveniences to match their rising expectations. Transport was also improving. Turnpike commissions had brought considerable improvements and light cabs and private carriages were able to move more freely, so that it was now possible to drive or ride to work (Treen, 1982). Researchers agree that such moves meant that the middle classes could live according to their strong moral and religious beliefs, uninterrupted by the working classes (Simpson, 1977; Thompson, 1977). By the late 18$^{th.}$ and early 19$^{th.}$ centuries, the well-to-do and more adventuresome were already moving out to ornate villas in attractive villages and favoured locations, undeterred by the daily ride or drive to work, though it was largely after 1840 that the mass

movement into villa estates began. In the meantime, middle class families moved shorter distances into classical terraces at the edge of the old built-up area (Burnett, 1978; Newton, 1977).

People in the market for an individual plot or newly built house soon learned how to judge the site. Salubrious weather was a basic requirement and sites west of the town brought clear fresh air in the prevailing westerlies (Simpson, 1977). Sites on higher ground had a clear advantage over badly-drained land (Edwards, 1977). For York, Armstrong (1974) showed clear differences in social status and death rates between well-drained and poorly-drained wards. Aspect was also a consideration with south-facing slopes attracting the best developments (Tarn, 1977). Human factors were also of considerable importance, especially exclusivity (Thompson, 1982). Proximity to a church was a popular inducement, Simpson (1977) describing churches as 'the great middle class cultural centres of the day'. The journey time to the town was sometimes crucial since, in provincial towns, middle class residents often returned home for lunch (Simpson, 1977). Extensive views or at least views of well laid out grounds were also desirable.

Housing for the working class

All this was a far cry from the conditions endured in towns by the working class suffering from grinding poverty, ill health, disease, dirt, inadequate water supply, non-existent drainage and rubbish removal. The evils were exposed and the crisis recognised between 1830 and 1840 when there were outbreaks of cholera and typhoid. Reports from the Poor Law Board (1842) and the Royal Commission on the Health of Towns (1845) led to the Public Health Act (1848), limited in scope but raising public awareness and a growing feeling of guilt (Tarn, 1973). Four major questions were raised. Who should provide housing for the working class? How should the finances be managed? How should the building be controlled? What standard of accommodation should be established?

It was assumed that sufficient houses for the working classes would be provided by market forces, supplemented by enlightened employers and philanthropic bodies. Employer housing was generally of a higher standard than that provided by speculative builders because it was designed to retain an industrious labour force and did not necessarily need to show a normal rate of return on the capital.

But it did not house more than a few thousand workers (Burnett, 1978). The movement did however provide examples of what could be achieved, as did the attempts by philanthropic organisations, dating from the 1840s. Such philanthropy was limited, however, since it aimed to attract commercial investment whilst limiting its profits to 5 percent per annum. The Society for Improving the Conditions of the Labouring Classes (which took over the Labourers' Friend Society) aimed to build a limited number of houses as models for commercial builders to imitate – 'cottages that combined comfort with economy' (Tarn, 1973).

One form of provision was based on self-help, using a building club or society in which groups of working men in safe employment pooled their capital, and often their labour too, to build themselves houses. Turns were decided by a ballot and once all the members had a house, the society was terminated. These clubs were common in the West Midlands, Leeds and the Potteries, where there was a strong tradition of mutual societies (Burnett, 1978). By the middle of the 19th century, permanent building societies were being established for example the Woolwich Equitable in 1847 and the Leeds Permanent in 1848. They did not usually build houses, but paid a dividend on shareholders' investments and made loans available to those wishing to buy a house on mortgage. These were used mainly by artisans, clerks and shopkeepers with secure jobs and became an important route to home ownership in the late 19th century, though numbers remained low. Rowntree (1902) found that only six percent of York's working class in 1900 was housed by this means. Also common in the middle of the 19th century were freehold land societies which bought land for the development of housing estates on which purchasers of the plots could have houses built. The Society would lay out plots, build roads and supply the major services and then open the plots to a ballot or auction. The scheme was particularly welcome to small speculating builders (Dyos, 1961).

The quality of speculative building frequently did not match up to the models provided by philanthropic societies. Most small-scale builders were probably doing an honest job at a price the market allowed and there was no reason for them to be concerned over proper ventilation, water supplies or sewerage unless a local authority compelled them. The housing movement was frustrated

throughout the 19th century. The rate-paying electorate resisted reform if financial implications were adverse and central government had a deep-seated unwillingness to enact legislation which might interfere with rights of the individual, especially property rights. A series of acts was passed dealing with drainage, sewage, ventilation, paving and street width and in 1877 the Local Government Board issued a set of model by-laws for guidance. But throughout the century, health and housing legislation was watered down and then made permissive rather than mandatory (Tarn, 1969). However, gradually public health reforms spread and standards of speculative building improved, resulting in a townscape of straight streets of terraced by-law housing. They were mainly bought by individuals and organisations investing in private property and then rented out (Chalklin, 1974). Of all the dwellings available before the First World War, ninety percent were rented (Merret and Gray, 1982).

Housing the poor

Nothing managed to solve the problem of housing the poor – the unemployed, sick, casual workers and widows - who made up one-third of the population by the end of the century and who could not afford to enter the speculative market or pay for model dwellings. Public opinion began to favour local authority intervention, since sufficient expertise had been built up and local government had become effective enough for the formulation and execution of a true housing policy. At the end of the First World War, there was an acute housing shortage and the Government stepped in, producing several thorough and imaginative reports and acts. A simple neo-Georgian cottage style in low density housing estates was approved and adopted widely by local authorities. This period of council house construction was of major importance (Burnett, 1978; Whitehand, 1992).

Housing shortages and residential booms after the First World War

By the 1930s, private house-building was also in a boom, peaking in 1935. Becker (1951) calculated that 4,200,000 dwellings were constructed in England and Wales between the two World Wars. They formed broad zones of spacious loosely-connected estates, dominated by semi-detached houses and short terraces all with gardens. They were largely built on agricultural land, bought by large-scale speculative builders able to acquire sites of sufficient size to benefit from

economies of scale (Carr, 1982). These estates enveloped the 19th century towns and left them virtually intact. They contained few services or sources of employment and depended on buses and electric trains to reach the town centre.

At the end of the Second World War, there was yet again a desperate shortage of houses. Residential house building had been at a virtual standstill for over six years and half a million houses had been destroyed (Cherry, 1988). The Government gave priority to subsidised local authority housing and by 1953 over one million houses had been built. They then turned their attention to sub-standard housing and, between 1955 and 1974, one and a half million dwellings in Britain were demolished (Cherry, 1976), being replaced by modern-style housing estates in the urban fringe or flats in the town centre. Private house building resumed the outward spread, but in a more orderly manner than in the pre-war period, constrained by the establishment of green belts around major cities and by development control established by local authorities as a result of the Town and Country Planning Act, 1947. The shortage of green-field sites, the designation of conservation areas, the reduction in household size and changing aspirations led to the refocusing of attention on existing residential areas. Streets that had escaped complete redevelopment by local authorities were now refurbished and many gardens were redeveloped in a piecemeal fashion (Whitehand and Carr, 2001).

Urban morphology literature

Growth from the urban core – the fringe belt concept

Morphological research on urban fringe belts in the UK dates from Conzen's seminal work on Alnwick (1960). He observed that roughly concentric belts developed around an urban core. They were morphologically distinct, with varied plot sizes, low building density and a coarse block/street pattern. He surmised that this was due to a cyclical process of resurgence and stagnation. At a time of stagnation, land-users needing large and cheap sites were able to occupy places immediately beyond the urban edge. At first the urban fringe elements did not form a belt, but just spread out into the hinterland. However, in the next resurgence, they were an obstacle to renewed advance and compact and organised residential development jumped over them, eventually sealing them in. These belts (named 'inner' by Conzen) were more striking than those developed later,

because they had several centuries to grow during a fairly static pre-industrial phase lasting until the mid-19th century. Most outstanding were those in towns with a wall which acted as a fixation line (Conzen, 1969, pp 40 and 58). The proximal plots were intimately related to this line. The distal or outer plots, colonised by land-uses other than agriculture such as scattered residences and new institutions, belonged functionally to the fringe belt, but were not in contact with it. They eventually formed the middle or outer fringe belt (Conzen, 1969).

In his analyses, Conzen was looking for evolutionary processes and, in so doing, he developed a vocabulary to define precisely the processes he proposed and these were brought together in his 1978 paper (Conzen, 1978). He described two phases of development. The first he designated as the *expansion phase* operating before the fringe belt was hemmed in and comprising three processes: the *accumulation* of additional elements; *repletion*, or the filling in of existing plots; and *adaptation* of plots, with different fringe belt elements moving on to old sites. The *consolidation phase* followed. At this stage the fringe belt was almost sealed, though often patches of agricultural land remained and the three processes of accumulation, repletion and adaptation intensified. *Functional segregation* started as kindred land-uses were attracted to existing uses (Conzen, 1962; 1978).

For post-industrial periods, Whitehand interpreted concentric fringe belts in terms of the costs of transport and land linked with the building cycle, reinforcing the fundamental underlying importance of cyclical forces (Whitehand, 1972a; 1972b). He put forward the hypothesis that repeated cycles of booms and slumps were likely to result in a series of alternating zones characterised by different proportions of institutions and housing. He tested this in West Glasgow with a rural-to-urban land conversion model, which roughly produced a band of loose-grained institutional plots succeeded by a belt of close-grained residential development. In 1981, Whitehand showed that, during slumps in house-building, other types of low intensity land-use made relatively large contributions and, in a long time series, it could be shown that such uses as public parks and golf-courses were the product of slumps in residential construction (Whitehand, 1981c).

The process of accretion

Conzen used the word ‘accretion’ to describe additions to the built-up area, outside the original kernel, but often contiguous with it (Conzen, 1960). He saw

them in a fringe belt context, but distinct from fringe belt plots. They were often associated with antecedent arterial roads or field lanes, developing on the frontages of these roads, on one side or both. They had usually grown without unified design, forming ribbon developments outside the urban core. They frequently formed the basis for the growth of other contiguous residential accretions, which eventually absorbed them. Other accretions were planned as a purposeful arrangement of buildings, plots and roads, opening up back land. They had an inherent organisation and tendency towards compactness and so were distinct from fringe belt plots. These accretions were built within the frame of an earlier field pattern and it appeared that inherited irregular field patterns were adhered to, due to the organisational scale predominant in the Victorian and Edwardian period (Conzen, 1978; Ward, 1962). Small builders, with limited credit were most numerous and so building operations advanced field by field. Often small estates formed a mosaic pattern, accessed through a single residential street or based on limited grids independent of one another. This led to poor inter-connections, since links across old field boundaries tended to be crooked, forming a 'discordant development' (Conzen, 1978). Ward (1962) described this in Leeds, where rectilinear terraces were increased or reduced in length to fit the former field boundaries, and end houses were distorted in shape to fit into the corners of irregular shaped holdings.

Importance of the morphological frame

Ward's illustration from Leeds (1962) is an example of Conzen's concept of the morphological frame, a basic tenet of his work (Conzen, 1960; Ward, 1962). He described antecedent plan features, particularly during the process in which rural land was converted into urban use, as exerting a morphological influence on subsequent development on the same site. Field lanes became dwelling streets of newly built-up areas and field boundaries were used to define the actual limits of later plan-units; thus new development moulded its shape to a pre-existing outline. Conzen called this process morphological conformity. Residual features were passed down through successive generations of society, often over very lengthy periods and through several land-use changes (Whitehand, 2001).

Plot adaptation and modification in fringe belts

The modification of fringe belt plots and the perpetuation of fringe belts long after

they ceased to be at the urban edge have formed a second major area for hypothesis (Whitehand, 1977; 1981a; 1981b; 1981c). The roles of economic fluctuations, innovation and the relevance of the economics of location were all pursued in the 1970s (Whitehand, 1974) Rent theory in combination with building cycles became a major line of investigation (Barke, 1976; Whitehand, 1972a) and it was shown that institutions not only remained in existence for lengthy periods, but also that some expanded into adjoining areas, rather than being replaced by housing in a subsequent building boom. Whitehand suggested that these increases in bid-rent were related to more capital being invested in the sites as they became well-established (Whitehand, 1972b). Several studies on the changes undergone in fringe belts after their initial establishment were carried out in the 1970s and they showed that there was often a succession of similar uses on the same site and, since land values rose through time, each new use tended to be more intensive than its predecessor (Barke, 1976; Whitehand, 1974). Whitehand related this to the value of assets built up on a site and the compatibility of the local environment that could be passed on to a related land-use. Barke (1976), in his study of the sequence of land-uses in Falkirk, found considerable variations in the susceptibility to change. He noted that certain types of change were associated with continuity of ownership, especially where the owner was the local authority, citing cases of public open space being used for community buildings.

Agents of transformation

Fringe belts can arise from very different decision-making processes. Some result from formal planning, such as a defence zone outside a town wall, but more are products of a large number of resolutions about individual sites. Often those involved had no knowledge of one another and could have had no inkling that their decisions would combine to form a fringe belt. Whitehand (2001) suggested several factors that might have had a common effect on decision-makers, such as a slump in house-building or the mutual attraction between land-uses or the lack of alternative sites.

The succession of land-uses on a fringe belt plot has also shown that the original rent theory approach was not sufficient. In 1972, Whitehand had hinted at this when he used the example of the decision of an organisation to relocate a sports field on cheaper land at the urban fringe (Whitehand, 1972b). Barke had also

recorded similar decision-making in the case of the local authority in Falkirk (Barke, 1976). In 1978, Slater added a further dimension by examining family life cycles in relation to the creation, modification and redevelopment of 19th. century ornamental villas (Slater, 1978). Marriage was significant since it was the trigger for the addition of new villas; death provided many opportunities for change of owner, renovation of the buildings, extension of the grounds, change of use and even redevelopment of the plot. Slater found that land ownership and national economic fluctuations were basic factors in the decision-making process, but family relationships and wider friendship and business links also played an important role.

Treatment of allotments and gardens in fringe belt literature

From the early development of the fringe belt concept by Conzen in 1960, particular land-uses dependent on the qualities of the land itself have frequently been included amongst the colonising elements. Amongst them were allotments, market gardens and plant nurseries, all using the soil itself and requiring minimum building coverage. Although broadly agricultural, they were urban-dependent and a product of town growth, set up in response to the needs of town-dwellers (Hadfield, 1960). Other fringe belt features, such as ropewalks, bleachfields, cemeteries, sports grounds and golf courses also produced plots with small amounts of substantial buildings. Many are still apparent as vegetated plots today (Whitehand and Morton, 2003).

Conzen (1960) described an inner fringe belt of considerable width for Alnwick, but found no extant evidence for gardens or allotments. In the intermediate and outer fringe belts he found firm evidence of both allotments and plant nurseries. On maps as early as 1827 (Wood), nurseries were indicated on the well-drained light soils to the south-east of the town and, on the tithe maps of 1846, nurseries and allotments were shown in the distal sections of the inner fringe, soon to be part of what Conzen designated as an emerging intermediate fringe belt. Conzen's evidence took allotments back only to the 1840s. They were mentioned in a report to the General Board of Health (Rawlinson, 1850, page 50). Conzen remarked *"Allotments and nurseries are closely related with urban fringe belts. In Alnwick the tradition of allotments in proximity to the town has been sustained by the Dukes of Northumberland since 1847."* Conzen, 1969, page 115).

Allotments continued to be mapped, and occasionally roughly dated, by many researchers, including Whitehand for Tyneside (1967) and Barke for Falkirk (1974; 1976). Barke found that allotments were the most important coloniser of the area he designated as the inner fringe belt, comprising 46 percent of the area devoted to fringe belt features. He calculated that allotments were the land-use type most likely to change over time. Many were adapted for small scale industry and warehousing use, with some used for community buildings orientated to the town centre. By 1961 only 4 percent of the original fringe belt area in Falkirk contained allotments. In his middle and outer fringe belts, only 0.5 percent of the plots were colonised originally by allotments and by 1960 there were none (Barke, 1974).

Vegetated plots in general have been the subject of recent research on the recycling of urban land, which found that such plots made up more than half of the fringe belt area in the Edwardian fringe belt in Birmingham in 1995 (Whitehand and Morton, 2003; 2004). In 1995 twenty-five of the 116 entirely vegetated plots were allotments. Whitehand and Morton noted that Birmingham City Council, realising that allotments were common in the fringe belt area and comparatively rare within the residential areas, had developed a policy to redistribute allotments more evenly. Several allotments were included in Whitehand and Morton's sample for systematic detailed investigation of pressure for change and 'embeddedness'. They found that allotments were particularly vulnerable to redevelopment if they were leasehold with most shareholders non-local. On the other hand, if most of the gardeners were local, there was no interest in selling. In recent years public interest has provided a strong argument for maintaining all remaining public open spaces, though arguments over the meaning of 'public' have confused the issue, leading to the contention that it is acceptable to redevelop allotments in private ownership, while those owned by the City Council are safe from redevelopment.

Von der Dollen (1990), investigating persistence and change of the fringe's land-uses in Cologne and Bonn, was the only researcher of the fringe belt concept to identify gardens, as distinct from allotments, as a fringe belt element. He listed them as a feature of early modern times. He also described farms, part of the

Stadtdorfer, located in the immediate vicinity of the wall or near the town gate. In his table of persistence and change for Bonn, he identified them moving out to the new contact zone.

Carter (1995), in his study of Aberystwyth, made a general statement that, for small remote towns in a period before effective transportation, the provision of food was a distinct fringe belt use. He clearly had perishable products such as milk or fresh vegetables in mind, but he did not follow this up in a detailed study. Other studies on market gardening (Bull, 1956) and suburban dairy farming (Atkins, 1977; Dyos and Wolff, 1973; Hill, 1956; Mathias, 1952) supported Carter's claim, but none of these studies included areas of private gardens or allotments.

Land devoted to allotments and detached gardens

An attempt has been made to provide a substantial review of the urban version of allotments, since there is no published counterpart to the thorough investigations reported for their rural equivalent (Archer, 1997; Burchardt, 2002; Thorpe, 1969). The study of urban allotments does not fit neatly into any one discipline. Historical geographers have occasionally noted them, generally as a side issue in papers devoted to plan analysis of medieval or Early Modern English towns, but generally geographers' interests in gardens have lain elsewhere, in particular with reference to ecology (Head and Muir, 2006; Zagorski et al., 2004). Slater (2002) was an exception, with his description of Birmingham's guinea gardens, but his book (on Edgbaston) was essentially a local history. The authors of town histories did not show great interest in gardens, though occasionally a mention slipped in. For example Deering, in his discussion of Nottingham's town wall, wrote:

> *"From this postern… a bridge went over the Town Ditch, which Place, though now filled up as well as the whole ditch between this and Chapel Bar, bears… the Name Boston-Bridge, a corruption of Postern Bridge. The Ditch itself is now converted into Kitchen Gardens, and is called at this Time Butt-Dyke, from some neighbouring Butts…" (Deering, 1751) quoted on p.9 of Gray 1953.*

In the last decade local residents in a handful of towns have been active in researching the history of their local equivalent of Birmingham's guinea gardens and these have been reported on websites and recognised by English Heritage (Lambert, 1994). Garden historians have, on the whole, ignored humble gardens,

with a few exceptions, reported below, but allotment holders and allotment associations have produced a number of books with historical sections, especially dealing with the legislation. Most other information has been garnered from economic and agrarian historians.

The allotment movement and rural allotments

In the early 19th century there was no clarity over the term 'allotment'. A compound term such as 'ground allotted as gardens' was used, or just as often 'field gardens', 'garden ground', 'cottage gardens' or 'potato grounds'. By the middle of the century a definition of the term 'allotment' was beginning to emerge. Often early descriptions were imprecise and usually socially-orientated, such as:

> *"Areas of land, often at a considerable distance from the village, provided by individuals or public bodies as acts of charity, on which the labouring poor might supplement their income by cultivation or stock-keeping in their spare time"* (1850, quoted in Thorpe, 1969, page 7, section 21) .

By the 1922 Allotment Act, the term 'allotment garden' had come into use and was defined as:

> *"An allotment not exceeding forty poles in extent which is wholly or mainly cultivated by the occupier for the production of vegetables or fruit crops for consumption by himself or his family."* (From the 1922 and 1950 Acts, quoted in Thorpe, 1969, page 21, Section 53).

Burchardt's suggestion dealt with the appearance, but not the use made of an allotment garden:

> *"A plot of land, not attached to a house, in a field divided into similar plots, surrounded by a common external fence but without internal partitions"* (Burchardt, 2002) .

This definition stressed the collective dimension as well as the individual plot but, interestingly, it excluded Birmingham's guinea gardens which were separated by hedges. The first allotments matching these definitions were probably established by Thomas Estcourt in about 1795 at Long Newnton in Wiltshire and Shipton Moyne in Gloucestershire, but there is no real evidence that the allotment movement had a single point of origin (Thorpe, 1969).

The early allotment movement was a rural issue, rising from anxiety about the growing group of country folk who had emerged from the great land reforms of the enclosure movement with no entitlement to land or grazing rights and were

facing dire poverty. Arguments and counter-arguments were raised and were debated by parliament, but the provision of allotments was erratic and spasmodic before 1830. Early acts of parliament produced only a small expansion of allotments, but vigorous national organisations, such as the Labourer's Friend Society, were highly effective in the middle decades of the 19th century and there was a great surge of interest and provision. On the whole, allotment acts appear to have played only a small part, though Royal Commissions and Select Committees drew attention to the problems and possibilities and were influential (Burchardt, 2002).

Economic and agrarian historians have produced detailed and varied analyses of the allotment movement and the rural allotments which developed. Burchardt (2002) compiled a database of information on allotments, mainly from primary sources, such as reports from the Society for Improving the Conditions of the Labouring Poor, evidence to the Royal Commission on the Poor Laws (Great Britain, 1834), and the report on the Employment of Women and Children in Agriculture (Great Britain, 1843a). The final database comprised 1,971 records from 1,641 different allotment sites for the years 1795 to 1873. He excluded potato grounds and ambiguities and, drawing on a wide range of sources, he believed his database to be quite representative, even though it covered less than half of the sites known to exist. However, as Burchardt explained, the entries were totally dependent on surviving evidence, which was far from perfect.

Provision of 'rural' allotments around towns

From the point of view of allotment sites located on the outskirts of towns and cities, Burchardt's database provided some interesting material. Despite the allotment movement's intention to provide for the rural poor, it appears to have also encouraged provision in small towns, which at this time were still well integrated with the surrounding countryside. There were many examples in Burchardt's database of small towns with allotments, such as Spalding, Saffron Walden, Chelmsford and Morpeth. One example was a site established at Wells in 1824, by George Law, Bishop of Bath and Wells, an influential devotee of the allotment movement. The site occupied just over 40 hectares (100 acres), more

than six times the national average, subdivided into 400 to 500 individual plots (Burchardt, 2002). A letter from Joseph Emery, an apothecary in Wells who had a house in the middle of the gardens, included the following postscript:

> *"We humbly call upon all who have time and means to come and see us. They shall find a John Bull hearty welcome. The garden is half a mile, a delightful walk, from the residence of the bishop and the town hall of Wells."* (published in the Farmer's Magazine in 1837).

The East Midland framework knitters were an interesting example of the overlap of industrial villages and small towns. George Culley, an assistant commissioner providing evidence for the Royal Commission on the Employment of Children, Young Persons and Women in Agriculture (Great Britain, 1867-68), writing on Derbyshire, found a great demand for allotments amongst industrial workers:

> *"Allotments of land are provided near many of the towns and mining villages, and are greatly prized by the miners and mechanics. The Duke of Rutland, for instance, provides allotments of 40 poles each in the neighbourhood of Ilkeston, which are in great demand amongst the colliers and framework knitters."* (Royal Commission on the Employment of Children, Young Persons and Women in Agriculture, 1867-68, xiii, p.120. 40 poles is ¼ acre or about 0.1 hectares).

In fact, in Leicestershire, Derbyshire and Nottinghamshire, framework knitters made up the majority of allotment tenants. The local branch of the Labourer's Friend Society had the word 'artisan' in its title and allotments were established in Nottingham and Leicester as well as smaller towns and villages.

Urban allotments in the legislation

Little attention was given to urban poverty, though some small towns took advantage of the 1819 Act (see Appendix 2). By 1890, when the new Board of Agriculture looked at country-wide provision, with the aim of developing further sites, they noted that often allotments were around cities and not in rural areas. Since then, most allotment developments have been urban, reflecting the changing social structure and shifting political attitudes. The Allotment Acts passed between 1907 and 1925 formed the basis of the modern allotment system, introducing the concept of small allotment gardens (under 40 perches, which is ¼ acre or 0.1 hectares) for the production of fruit and vegetables and making provision for allotment sites to be considered in town planning schemes (see Appendix 2). Nowadays, allotment gardening is seen as an urban leisure activity (Thorpe et al., 1977).

Landlords and tenants

The allotment database (Burchardt, 2002) gave details of the types of people and organisations that were involved in letting allotments. Peers of the realm were among the first and they were influential in persuading others to set up allotment sites, particularly in counties where previously there were none. The aristocracy had large acreages of land and could afford to experiment with schemes and provision. The database suggested that 19 percent of plots were let by peers. A larger proportion, perhaps 32 percent, was provided by other landowners, mainly gentry. Tenant farmers provided very few, certainly no more than three percent, but clergy were important, especially before 1830 (about 18 percent). Parish vestries were enabled through legislation to set up and let out allotments, but they provided only seven percent. Charities rarely let out land as allotments and only accounted for four percent. Allotment societies, mainly working at village level, provided 10 percent of allotments in the 19th century.

There has been much analysis of the reasons for letting out land as allotments, varying from the political, such as mitigating rural unrest and reducing out-migration; to the moral, including enforcing behavioural change through setting conditions such as church attendance or avoiding crime. The motive could have been entirely to improve the well-being of tenants but is just as likely to have been the means of producing a profit, especially for hard-up clergymen. There is little doubt that, by the second part of the 19th century, it was expected as a social responsibility of landowners towards their parishes and had to be done to maintain or achieve social approval. Most did not see it as charity, but insisted on 'fair' rates (Archer, 1997; Burchardt, 2002).

Even though the allotment legislation and reports from official enquiries focused on the needs of agricultural labourers, many occupations were represented on allotments. From his database, Burchardt (2002) provided evidence of the occupations of tenants from 55 sites, only four of which were entirely agricultural. Occupations included fishermen, college servants (Oxford), artisans/mechanics, cloth workers, shoemakers, bricklayers, masons, miners, general labourers and many others. Allotments were particularly important to domestic outworkers and, in areas where they were concentrated, they often out-numbered agricultural workers: they included the woollen cloth district around Trowbridge, Bradford-

on-Avon and Frome in Wiltshire and Somerset; the Gloucestershire cloth district around Stroud; the framework knitting area in the East Midlands; the shoemaking area of Northamptonshire; and the ironwork district (especially nail making) of North Worcestershire and South Staffordshire.

Waiting lists for allotments were often long and tenants were prepared to pay high rents; evidence to the Select Committee on the Labouring Poor (Great Britain, 1843b) revealed that labourers were ready to pay the equivalent of £8 per acre (£20 per hectare) and were prepared to walk long distances – the average was ¾ mile, but up to five miles each way was reported. The main benefit to tenants was an increased material living standard, but researchers have also identified less tangible benefits, such as a source of hope, increased contentment and peace, mental stimulus and self respect.

Chalet gardens of mainland Europe

In several countries of north-west Europe there has long been a tradition of chalet gardens, which are different from British allotments since continental town dwellers often sleep there on weekends and during the school summer holidays (Thorpe, 1969). The Thorpe Committee reported that, in the Netherlands, North Germany, Denmark and Sweden, the maximum size of the chalet was rarely more than ten percent of the plot area. These garden plots were designed for the urban working class and were rented individually by landowners who might be private individuals, the municipality or a cooperative gardening association. Originally they were provided for families to supplement their basic food, but they have since become fashionable as leisure gardens as well as for the production of fresh fruit and vegetables. The local authorities have administered them happily for many years, alongside allotments, and most have encouraged their use. However, in recent years, conflicts have arisen with planning authorities, for example in the Netherlands, where attempts have been made to include leisure gardens within the law relating to camping sites, to ensure the provision of basic facilities (Hardy and Ward, 2004).

In Britain, the only buildings on allotments are tool sheds and greenhouses, with pigeon lofts allowed in some parts of the country. Sleeping on an allotment would certainly be against the regulations of an allotment association, even

though allotments today are thought of more in amenity terms than in the past. In fact, the Thorpe Committee recommended that the name 'allotment' should be changed to 'leisure garden' (Thorpe, 1969). In some ways, the chalet gardens of mainland Europe seem more like the plotlands of the British countryside that emerged in the first half of the 20th century. In Europe the planning authorities seem to have encouraged them, but here they were considered a desecration of the countryside and local authorities made great efforts to control such individual initiatives (Hardy and Ward, 2004).

The precursors of allotments

Birmingham's guinea gardens and other extant examples

Urban allotments have an interesting precursor, detached gardens, described by Thorpe (1969) and Slater (2002) and known as 'Guinea Gardens' in Birmingham and named as 'small gardens' on Pigott Smith's map of 1824-25. Contemporary accounts date back to the early 19th century (Drake, 1825; Langford, 1868; Loudon, 1836) and research suggests that they were in existence as early as 1731 on land adjacent to the city core (Thorpe et al., 1977). These dates suggest that they pre-dated the allotment movement and continued in existence at the same time as rural field allotments. They were abundant, continuing to increase in numbers until about 1830; but from that date the landowners began to sell the land for urban expansion and by 1886 only three sites were still in existence. In the late 20th century, they were still being acquired by neighbouring plot owners to be used for playing fields and sports' clubs. In 2002, only Westbourne Road Gardens remained, with 87 plots and this has been designated as a Grade II Garden by English Heritage (Slater, 2002).

In Birmingham, the land belonged to well known local families and the plots were owned in much the same way as leasehold houses. Once purchased, they became treasured possessions, passed down through the generations (Poole, 2006). The tenants were craftsmen, artisans, traders, businessmen and shopkeepers and, since rents were sometimes as high as one guinea a year, these gardens required a considerable financial outlay and must have been considered a valuable asset. Security of tenure was assured by the leasing conditions and hence the owners constructed summerhouses, pavilions, rustic arbours, paths and glasshouses. Although the gardens were highly decorative, they were also functional and most

families devoted one third to vegetables, including asparagus. Fruit trees were popular and many gardens resembled a miniature orchard. In 1831, J. C. Loudon, the renowned gardener and writer, visited Birmingham and later wrote:

> *"The detached town gardens are situated in the suburbs of towns, generally collected together, and separated by hedges. There are upwards of two thousand such gardens in the neighbourhood of Birmingham… In one of these gardens, occupied by Mr Clarke, chemist and druggist, we found a selection of hardy shrubs and plants which quite astonished us."* (Loudon, 1836). (Quoted in Boniface, 1987).

Demand for the gardens was high and they were generally sold by auction, following a local press advertisement:

> *"To be sold by auction – a remarkable choice garden …situated in the Avenue, leading from the Deritend Brewery to Vaughton's Hole, is well-stocked with fruit trees selected with the greatest care and judgement…having gained first prize at the Annual Show of Fruit, abounding in choice flowers and shrubs and abundance of vegetables, a capital brick summerhouse and a well always supplied with water. The whole enclosed in a remarkably strong double fence, the soil is in high condition, and in no probability of ever being disturbed for building." (Aris's Gazette, 1816).*

Nineteenth century accounts, writing of the period 1810-20, concluded that gardening was

> *"…highly beneficial to the inhabitants, promoting exercise and relaxation… and that …it was a hobby with the working Birmingham man and the cultivation of flowers was carried to great perfection by him." (Langford, 1868).*

In 1833 the Select Committee on Public Walks commented favourably on the gardens and noted that it was a regular custom for families to spend evenings and Sundays there. Sometimes summerhouses were fitted with a cast iron 'tortoise' stove, in addition to the well with a hand pump (Poole, 2006).

In the past two decades, similar areas of surviving detached gardens have been identified in other English towns and historical research has been carried out mainly by local amateur historians. In Nottingham there are three sites at Hunger Hill, Stonepit Coppice and Gorseyclose, together making up 29.49 hectares and comprising 677 plots today, the largest detached town gardens in Britain (Nottingham Renewal Trust, 2007; St Ann's Allotments, 2010). These gardens, enclosed by high hedges of privet, hawthorn and holly and entered through a timber door, have summerhouses and lean-to glasshouses. It seems likely that they roughly retain the layout decided in the 1830s and 1840s, when the local authority changed the use of the land to gardens. Originally this land had belonged

to the Hospital of St John and the Chantry of St Mary and had been granted to the Corporation of Nottingham in 1551. The Corporation had enclosed it in 1604 and rented it out for rough grazing for 200 years (English Heritage, 2010; St Ann's Allotments, 2010).

In Warwick are the Hill Close Victorian Gardens, which were originally pasture and were divided into garden plots from about 1845. A section of the site was lost to development, but 16 hedged plots remain, with restored summerhouses and reconstructed plantings. The Hill Close Garden Trust has carried out research on former freeholders and tenants and this information is available in an interpretation centre which is open to the public at weekends (Hill Close Gardens, 2011; Hodgetts, 1994).

Coventry is the fourth town with extant detached gardens. The Stoney Road Allotments belong to Coventry City Council and are located just 0.75 km south of the city centre. The site lay within Cheylesmore Park which was situated outside the city wall. It had been in royal hands from the 14th century, but had always been leased with conditions that the poor of Coventry should use the pastures. Eventually after 1819, it was gradually divided into small gardens and paddocks and, by 1870, it was noted that there was a great number of small gardens, *'...all well cultivated and much sought after in consequence of their easy distance and pleasant situation'* (Poole, 1870). Today the remnants of the early gardens form a small section of a large allotment site, separated from them by a service path and a hedge. They are hedged and interestingly, hedged plots continued to be created until 1913, while at the same time conventional plots (without internal fences) were being created adjacent to the railway (Stoney Road Allotments, 2010).

These three detached garden sites, in addition to Westbourne Road Town Gardens in Birmingham, have been added to the Register of Parks and Gardens of Special Historic Interest by English Heritage (English Heritage, 2010), having been investigated and shown to be of historical value in a theme study (Lambert, 1994).

Other historical records on detached gardens

The history of town gardens has only recently come under scrutiny, and as yet there is only a small body of evidence of gardens detached from the house. One

description is given by Uglow (2005). She stated that, from about 1730, wealthy folk in London began to buy flower gardens on the edge of the city, with summerhouses in place and water laid on. Many were laid out on formal lines with rows of pots and straight box-edged borders filled with special flowers. Those with strong scents, such as Myrtle, mignonette, damask roses and honeysuckle were often planted to disguise the city smells. Uglow described them as 'precious places' and claimed that they were cherished even more as the 18th century progressed as a contrast to the new landscape style that was radically changing country estates. There were also accounts of orchards in London, laid out by citizens outside the city wall, dating from Tudor times; they are described as beautiful and spacious and important for recreation (Eburne and Taylor, 2006).

There is no reason to believe that such gardens were solely a London fashion and, indeed, it seems likely that they were feature of many provincial towns. Harding and Taigel (1996) reported descriptions of a journey undertaken in 1635, when pleasant gardens, orchards and cherry grounds were seen outside the eastern wall of Southampton (Wickham Legg, 1936). They also found evidence of plots laid out as pleasure grounds on 18th century maps of Bath (1776), Wolverhampton (1750) and Norwich (1789). In York, the former garden-ground of the Greyfriars precinct within the city wall had been converted to pleasure gardens with summerhouses that overlooked the River Ouse and adjoined the New Walk. Further evidence for detached, individually-owned pleasure gardens came from diaries. In Bury St Edmunds, the banker James Oakes leased a piece of land across the street from his home, which he laid out with paths and shrubs for the family to take the air (Lenny, 1822), while in Norwich Robert Fitch, the antiquarian, bought several acres some distance along Dereham Road where he planted trees and laid out walks, so that his children had space to play and his family grounds to enjoy; in 1904 he gave the ground to the city and it is now a public park (Harding and Taigel, 1996).

Pleasure gardens were often combined with fruit and vegetable grounds, and many groups of gardens served this dual purpose well into the 19th century, including Birmingham's guinea gardens discussed above. Brown and Osborne (2003) reported on seven sets of detached gardens recently discovered in west Cambridge, 110 gardens in all. The earliest date established was 1830, when

there was a flurry of horticultural activity in Cambridge. All but one were taken for urban development by the turn of the 20th century, and the last one survived until 1925. The gardeners spanned the social spectrum from college servants to senior academics and the gardens varied from purely pleasure to simply vegetables. St John's College owned the Madingley Road site and their archives furnished details of 11 prosperous tradesmen who were tenants in 1886 and who paid an annual rent of about £7 each in 1883. The six gardens at Drake's Spring were less ornate and cheaper to rent, at just over £4 per year in 1889; one tenant was a shoemaker. Holy Sepulchre Gardens and Barton Road Gardens were in the gift of two separate churches and the Old Grange Farm Gardens were in the gift of Trinity College. They were used by Trinity College servants and later St John's College (which owned the land) took them back and leased them to 20 college servants at a rate of £1 each per year in 1866. Grange Road Gardens occupied a 2 acre site and were set up in the 1850s and tenanted by academics. The plots were large on either side of a nine foot central pathway and may have been established with an eye to future building permission. Lastly, Paradise Gardens on Grantchester Street, belonged to Sidney Sussex College and were shown on maps as early as 1830. Five of these sites had formal designs and seem to have been dedicated to fruit and flowers rather than vegetables. Most had summerhouses and many had glasshouses and frames. Brown and Osborne felt that they were a transitional feature, an opportunistic use of land that would one day be built on.

In one other case, flowers seemed to be the main product of working men's plots, though it is not clear whether they were a commercial crop. Constantine (1981), researching amateur gardening in east London in the 19th century, found the following account of working men's cultivation of flowers in the Horticultural Magazine of 1852:

> *"Those who look upon the thousands of houses which now cover the space that used to boast of the gaudy tulip-beds of hundreds of working men, would scarcely think it possible to have made so great a change. There are many small gardens, even now, in the Mile End Road…which are doomed at no short distance of time to give place to brick and mortar dwellings…Unless something be done to provide the mechanic with means of indulging the practice of floriculture, he will have recourse to the public-house and the skittle-ground, far less healthy amusements*." (Horticultural Magazine 1852, Quoted in Constantine, 1981).

Harding and Taigel (1996) suggested that garden-ground on the outskirts of towns was an economic necessity in the 18th century, divided into plots for families (as small as 0.03 hectares or $^{1}/_{12}$ acre) and larger plots for commercial use as orchards, nurseries or market gardens. This arrangement worked well as towns remained stable but, as they began to expand in the late 18th century, land prices rose too high for the ground to be devoted to growing vegetables. Town populations were increasing, too, and concern arose particularly over the health (and efficiency) of factory workers. Contemporary notions linked efficiency to health, and health to both diet and ability to resist the alehouse. In 1797 it was proposed that in towns a garden should be allotted to workers, *'in almost every situation, in order to provide a greater quantity of food at times when they and their children would otherwise be unemployed'* (Society for Bettering the Conditions and Increasing the Comforts of the Poor, 1797-1818). These proposals bore some fruit and some urban landlords changed the use of land in their control, as in the case of a Derbyshire charity whose trustees divided up a former nursery to let as gardens to poor people (Commission on Charities, 1819). Such measures were helpful, but inadequate to fulfil the demands of an expanding work-force and industrialists began to recognise a responsibility beyond the provision of housing. Matthew Boulton in Birmingham created some of the earliest 'worker allotments' in Handsworth in 1801. They measured 0.05 hectares ($^{1}/_{8}$ acre) and were enthusiastically received (Cheshire, 1801). This example was followed by several factory owners in other industrial towns.

One such town was Sheffield, where Dr William Buchan wrote in his book 'Domestic Medicine':

> *"It may seem romantic to recommend gardening to manufacturers in great towns; but observation proves that the plan is very practicable. In the town of Sheffield in Yorkshire where the great iron manufacture is carried on, there is hardly a journeyman cutler who does not possess a piece of ground which he cultivates as a garden. This practice has many salutary effects. It not only induces these people to take exercise without doors, but also to eat many greens, roots etc of their own growth, which they would never think of purchasing."* (Quotation from Buchan, 1810, p.144).

Flavell (2003) provided firm evidence for Sheffield, describing 'workers' gardens en masse'. His evidence, from manorial lease books, illustrated the increasing provision during the 18th century. Gosling's Plan of Sheffield (1736) showed at least 200 on three sites. There were also freehold parcels of land, bought as

investments by industrialists, merchants, factors, attorneys and others, that were divided up and let as allotments to cutlers, button makers, miners, bricklayers, shoemakers and other workers or craftsmen, until such a time as they were sold on for building land. Flavell estimated that there were between 1,500 and 1,800 gardens by the 1780s, comprising 36.4 hectares (90 acres). He pointed out that this large number of allotments, in proportion to the population, was much greater than yet recorded for any other towns in the 18th century.

Thorpe et al. (1977) made a firm distinction between the guinea garden and its successor, the allotment, believing there to be little similarity in either function or appearance. Their research suggested that guinea gardens had provided recreation for artisan and middle class families living nearby and were cultivated as both ornamental and productive gardens. Urban allotments, they felt, arose out of their rural counterpart, providing non-agricultural labourers (many of whom had only recently moved into the town) with the opportunity to supplement their wages by providing fruit and vegetables for their families. They were introduced into urban areas from the early 19th century and existed alongside guinea gardens for at least 50 years. Thorpe et al. considered that the two systems were so different in character and clientele that neither seems to have exerted much influence on the other.

Issues raised by the literature review

This review has discerned that historians have generally painted a particular picture of the 18th century town that has not included references to gardens in the urban fringe. Indeed land-uses outside the urban core have been largely ignored, except in relation to recreation. Horse-racing, carriage-outings and bowling were all described for those with time and enough leisure; swimming, walking and ball games were mentioned for those with limited opportunity. Gardening was not raised as a hobby and mentions of excursions to pleasure gardens referred to public facilities rather than private flower gardens. All other references to the urban fringe were connected to cow-keeping and commercial crop-growing. Instead, urban historians have provided a picture of an over-crowded, cluttered and dirty environment and have analysed the ways that town residents eventually imposed some control on the situation. This picture of a community active in business, politics and leisure provides an informative background for this thesis.

These are the people with an eye on the location of property and its future value, should development takes place. At the same time, all residents need food for survival, and the information on available sources is currently limited to cow-keepers and farmers' markets. This gap in our knowledge, especially of the domestic supply of vegetables and fruit, is one that could be filled by a deeper examination of detached gardens and urban allotments.

Historians and geographers have published comprehensive research on the spread of urban housing in the 19th and 20th centuries, concentrating particularly on the role of transport, the sale and purchase of land, financing residential building schemes, characteristics of the house builders, social divisions and architectural form. Interestingly, the research on land ownership and types of tenancy brought no mention of detached gardens, perhaps as a result of the archived documentation available and the choice of cities to be studied. The research included some notable work on pre-urban field and lane patterns, but little interest was shown in previous land-use. There appeared to be an assumption that the land was 'empty', mainly parkland or fields, and the researchers concentrated on what was to *be* developed there, rather than the transformation of what *was* there before. This has produced a gap in our understanding of what happened immediately beyond the urban fence. Research on original colonising land-uses and subsequent land-use change should rectify this. To this end, the analysis of the processes and agents involved, the organisation of finances, the scale of building work and the effect of legislation on the form of urban estates and housing types are all relevant background knowledge. They will provide a firm basis for a study of transformative processes.

Urban morphologists have provided broad conceptual ideas to explain the ways in which land-use, temporal change, urban expansion and plan-form go together in repeatable ways that provide a model for urban development in the 19th and 20th centuries. Allotments have been identified as an important colonising land-use of the urban fringe and recognised as a stage in the transition to other land-uses. However, urban morphologists have not investigated this further to expose how and why garden-ground is transformed to other land-uses through time. Nevertheless, the research of urban morphologists on other fringe belt land-uses provides a model for further research on land-use changes in the fringe. By

building on such research, it should be possible to investigate in some detail, the processes in action at the very edge of the urban core.

In the last decade, social and garden historians have recognised that detached gardens occurred in 18th and 19th century towns. Local amateur historians have produced excellent information on the age and characteristics of a handful of specific sites and some comparisons have been made between surviving areas of detached garden. Nevertheless, academic research is limited to a few sociological and general studies and one detailed study of the 'small gardens' of a particular town, so that the body of information on detached gardens and urban allotments remains small. It is dependent on descriptions from diaries and travel documents and statements made in government reports whose main topic lay elsewhere. However, gathered all together, these studies provide a scaffold, albeit rather scanty, from which to work. By combining information from these disparate sources, the beginnings of a picture start to emerge.

Currently the four strands considered in this review remain unconnected. Garden historians, who have established a toehold in research on detached gardens, have made only the faintest of connections with research on suburban development in the 18th to 20th centuries. Urban historians, working on the expansion of towns, have shown no familiarity with the concepts of urban morphology, especially the analysis of fringe belt plots, and thus have not recognised that allotments and gardens might be an intermediate land-use between agriculture and housing. Urban morphologists themselves, although aware of allotments as a colonising land-use in the urban fringe, have failed to pursue this aspect in their own research. Social historians, researching the ways that urban communities function, have not considered the domestic production of food and certainly have not looked beyond the urban fence. It should be possible, in a study of land-use change at the edge of the urban core, to fill a gap in our understanding and bring together the research of these four disciplines.

Objectives of this thesis

This review has raised the notion of a deep-seated tradition of detached gardens in England, but has revealed only a small body of research. As a result, the extent, abundance and distribution of detached gardens and urban allotments in England

remain unclear. Their characteristics, origins and the chronology of their development are unknown. The questions, raised originally through observation and preliminary cartographic exploration in Shrewsbury, have been deepened rather than answered. Indeed, the review has crystallised the areas of interest into the following objectives:

1. To investigate whether detached gardens were common initial colonisers of the urban fringe before the end of the 18th century and to calculate how and why their abundance changed through time.
2. To study the distribution of detached gardens and urban allotments within and around the urban core and to consider how and why this changed over time.
3. To relate detached gardens and urban allotments to soil and other physical features and also to man-made structures such as town walls and other fringe belt land-uses.
4. To analyse how the system of providing detached gardens operated and to explore characteristics of the landowners and tenants and attributes of the plots.
5. To seek information on the age and origin of detached gardens and to consider their relationship to rural allotments.
6. To investigate land-use succession on detached garden and urban allotment plots, and examine the processes of transformation and the agents involved; and also to study examples of persistence and to assemble information on the effect of the morphological frame on later urban form.

CHAPTER 3. METHODOLOGY

The six objectives listed at the end of the last chapter are all concerned with the development of physical landscapes. They are related to a distinct type of land-use in a particular location that affects the way the land-use changes over time. Urban historians, historical geographers and urban morphologists have been active in related areas of research and, in the first section of this chapter, these disciplines are examined in terms of their chosen methodologies and the types of output produced. Examples that might be copied or adapted are discussed. Cartography and Geographical Information Systems are also discussed and their methodologies, advantages and limitations assessed. In the second section of the chapter a selection is made of the methodologies that seem most appropriate for a study of land-use change and the plans for the investigation are outlined.

Critical perspectives on methods from historical geography

Reconstructing past geographies

There are many examples of empirical studies of land-use change, most dating from the first half of the 20th century, before the days of quantification, relevance, positivism and post-modernism (Bennett and Wilson, 2003; Haggett, 1965). The traditional approach was based on the identification and explanation of various features of society, economy and landscape in terms of their spatial variation and the context was one of intuitive notions rather than explicitly stated theory (Butlin, 1982; Williams, 2003). Darby was the leader in the field with his long-term study of the historical geography of England; he pinpointed a starting moment on the time-line (Domesday Survey 1086) and reconstructed the past landscape (Darby, 1936). Many studies followed, based on the same techniques and using a multitude of sources, such as the Lay Subsidies of 1334, the census returns from 1801 onwards, the tithe apportionments from the 1840s, inventories, crop returns and factory inspectors' reports. Since the material was not explicitly geographical, the necessary spatial dimension had to be built into and from. the data and thus the new arrangement of the statistics yielded fresh information on the distribution of population and land-use (Prince, 1992). Thus, past geographies were reconstructed for a particular period in time, a method named the *cross section approach*.

By the 1960s more attention was being paid to the inductive derivation of theoretical principles, with formal statements of hypotheses and the assumptions on which they were derived (Carter, 1956; Thomas, 1961; Wrigley, 1966). For example, David Harvey, in a supplementary note to his essay reproduced in 'Geographical interpretations of geographical sources' (Baker et al., 1970) remarked that it was *'... intuitively satisfying to understand how, an agricultural community worked and changed its whole style of living over an extended time period'* but that he felt, on looking back, that his study lacked a framework to pin his thoughts together in a coherent fashion and needed more thought on spatial interactions and cumulative causation (Baker et al., 1970; Harvey, 1963). The construction of models of the assumptions, hypotheses and logic that connected them seemed appropriate and Harvey went on to develop models of spatial patterns in human geography (1967) before turning to a Marxist framework for his later research in the 1970s and 1980s (Harvey, 1985).

Identification and interpretation of geographical change

Researchers have long argued that to truly understand the world, one must understand change through both time and space. Langton (1972) argued this clearly, claiming that rather than simply comparing isolated snapshots that are assumed to be in equilibrium, researchers should be able to study how processes operated through time *'cutting across a successive series of synchronic pictures of the system'*.
Increasingly, cross-section studies appeared too static, lacking the preceding economic and social conditions that gave rise to them (Williams, 2003) and soon a second approach was introduced, the study of geographical change described as *through-time* or *longitudinal study*. In 'A new historical geography of England', Darby described these two approaches as horizontal and vertical and he interleaved cross-sectional studies with chapters of historical narrative, that traced changes through intervening periods (Darby, 1973). But in practice, the line between the two approaches was artificial. Although some cross sections could relate to a single year, many were concerned with a wider span of time, during which time some changes were inevitably happening and, if the time period was very short, it was necessary to go beyond it for analysis and explanation. Similarly a study of change between two cross sections was unsatisfactory if change was not seen as a continuous process (Baker et al., 1970).

Space-time

The discussions on time and space have continued and have recently spilled over into GIS as described below. Massey (1999) presented a strong argument for the need among geographers for a full understanding of space-time, arguing that we need to be able to understand time to tell the story of how an individual place grew, and to understand space to understand the complexity of the way different places developed. Only by having multiple routes through space and time can the full complexity of the world be understood. Unfortunately, the complexity of handling data's three components simultaneously has usually led to researchers either simplifying space to preserve temporal detail, or simplifying time to preserve spatial detail. Cliff and Haggett (1996) summarised this by saying *'If we are to preserve a consistent time series, we need to sacrifice (through amalgamation) a great deal of temporal detail. Conversely, if we wish to retain the maximum amount of spatial detail then we can only have short and broken time series'* (Cliff and Haggett, 1996).

Behavioural approaches to the study of geographical change

In the 1970s there was a stimulus, partly emanating from other disciplines such as sociology, anthropology and philosophy, to reconstruct historical communities with a greater sensitivity to the role of human agencies, both individuals and collective bodies (Baker, 1975; Billinge, 1982; Gregory, 1976). Through such studies, the context in which social transactions were effected and social resources drawn upon were related more closely with the clientele who were managing change (Billinge, 1982). In urban studies, Whitehand noted that such theories as bid-rent and building cycle did not provide the whole answer to questions of colonisation of the urban fringe and that greater attention should be paid to agents of change (Whitehand, 1972a). This was followed by more detailed analysis by Slater (1978) whose method is discussed below.

Relict landscapes

Another approach to understanding past humanised landscapes was through the mapping of relict features, encouraged by the availability of air photographs (Baker and Harley, 1973; Glasscock, 1992). Most studies were of rural features, such as the Norfolk Broads, ridge and furrow, moated settlements and medieval villages (Beresford and Hurst, 1971; Emery, 1962; Lambert et al., 1960; Mead, 1954), but urban morphology also used a relict landscape approach, as in Ward's investigation of the pre-urban cadastre of field boundaries in Leeds (Ward, 1962).

Further aspects included the investigation of relict features of the industrial revolution and the study of vernacular architecture (Buchanan, 1972; Clifton-Taylor, 1962).

Critical perspectives on methods from urban morphology

An evolutionary approach using maps

For the last half century, the study of the morphology of towns in Britain has been influenced by the empirical approach of Conzen (Whitehand, 1981a). Whilst agreeing that plan, building fabric and land utilisation were all independent aspects of the geographical reality of the townscape, Conzen claimed priority for the town-plan on the grounds that it formed the inescapable framework for the other man-made features and provided the physical link between these on the one hand and the physical site as well as the town's past existence on the other. He defined 'town-plan' in terms of three elements: streets, plots and buildings; and, when combined they formed into unique combinations that he called 'plan units'. In his town-plan analyses, Conzen analysed not only the urban core, but also the urban fringe (Conzen, 1960).

Conzen rejected a retrogressive approach, stating that it was not possible to understand processes by looking at relics; instead he adopted an evolutionary viewpoint in the belief that features that had been removed were as important as those that survived (Conzen, 1960). He employed a cartographic method, using a series of maps to analyse townscape evolution. For instance, in his study of Newcastle he scrutinised plans dated 1723, 1746, 1770 and 1830. The first Ordnance Survey plan of 1858-59 at a scale of 1:2,500 was pivotal and he used this to map street systems, street blocks and block plans within the town walls and also in the extra-mural zone. Later revisions of O.S. plans were scrutinised to show accretions, amalgamations and transformations (Conzen, 1962). There are clearly analogies here with the cross-sectional methodologies of the Darby school, but with maps providing the cross-sectional data.

Lilley refined and clarified Conzen's method of plan analysis in his study of medieval Coventry (Lilley, 2002). He suggested that a study of urban form not only provided a way of mapping the various stages that together created an urban

landscape, but also that it helped to unravel the complex processes that shaped processes as far back as the Middle Ages. By using plan analysis, based on a 1:2,500 O.S. map, he produced a spatial context within which to place fragmentary evidence from property records and archaeological excavations; this enabled evidence from different areas of a town to be compared and interpreted. Lilley outlined four stages in this process: creating a map of plot boundaries, defining plan units, integrating historical material and finally interpreting the changing form of the medieval urban landscape, noting not only accretions, but also internal transformative changes. He brought together evidence that the use of 19th century cartographic sources was a valid technique for the derivation of data on plot boundaries, which have been shown to be enduring features in the urban landscape (Ottaway, 1992; Schofield and Vince, 1994).

The study of fringe belt development

Conzen devised the explanatory terms *resurgence* and *stagnation* to describe the process of growth in the urban fringe and the development of roughly concentric land-use zones. He deduced that, in a time of stagnation when the urban edge was not advancing significantly, land-uses seeking large and cheap sites were able to occupy places immediately beyond the urban edge. Once started, this fringe belt was an obstacle to renewed residential advance through accretion and, in the next resurgence, it was leap-frogged by residential development (Conzen, 1960).

In his analyses, Conzen was looking for evolutionary processes and, in so doing, developed a vocabulary to define precisely the processes he proposed and these were brought together in his 1978 paper (Conzen, 1978). He described two phases of development. The first he designated as the *expansion phase* operating before the fringe belt was hemmed in and comprising three processes: the *accumulation* of additional elements; *repletion*, or the filling in of existing plots; and *adaptation* of plots, with different fringe belt elements moving on to old sites. The *consolidation phase* followed. At this stage the fringe belt was almost sealed, though often patches of agricultural land remained and the three processes of accumulation, repletion and adaptation intensified. *Functional segregation* started as kindred land-uses were attracted (Conzen, 1962; 1978). Conzen did not search for any underlying drivers that were causing the cyclical nature of the development he described, though he mentioned population fluctuations, changed

economic conditions and the introduction of innovations. These mechanisms were all to come to the fore in research published in the 1970s. Whitehand made the first move in 1972 when he combined the deductive approach of urban rent theory with his interest in land-use at the urban fringe to test his model of alternating belts of housing and new institutional development (Whitehand, 1972a; 1972b).

The study of transformative processes

The investigation of changes that fringe belts undergo once encompassed in the urban area has been a fertile area of study. Whitehand (1972a) continued his deductive approach, using his bid-rent model to demonstrate site succession through a study of institutions in West Glasgow. Adding to it the theory of building cycles (Parry Lewis, 1965), Whitehand studied the progression of uses on individual plots, graphing losses and gains to housing over time and comparing them with the local building cycle (Whitehand, 1972a; 1974).

Barke investigated land-use succession in the fringe belts of Falkirk, using a cross sectional approach to indicate the percentages of different types of land-uses that were initial colonisers and those that occupied the fringe belts in 1961 (Barke, 1974). He then brought in a time variable, integrating bid-rent theory and house-building cycles with his findings on land–use succession in Falkirk (Barke, 1976). He explored the idea that different plots might be viewed differently by potential developers, so that an element of bias might be present in deciding sequential use. To test his hypothesis, Barke first produced a transition probability matrix for seven major uses and then divided Falkirk into broad concentric zones and calculated the proportion of each original land-use for each zone. He then looked at the modification of plots and graphed two types of changes: loss of fringe belt plots to residential building; and additional on-site building investment by existing fringe belt land-uses.

The decision-making process

Within the morphogenetic tradition, Conzen and early researchers based their work on inductive inferences from observed patterns of change, rather than from examining the underlying decision-making process. More recently, concentrated work has been done in this area and several sources have proved successful. First

was the use of building applications, submitted to local authorities for new buildings and alterations from the mid-19th century until 1947, which often provided dates, plans, sites, owners, architects and sometimes more. These can be a useful source, where they are still available, but often need to be supplemented by a study of the minutes and correspondence of local authorities and other public and institutional bodies. Field-work is also usually necessary (Aspinall and Whitehand, 1980).

In 1978 Slater produced evidence that family decisions were an important contributory factor. Land ownership and national economic fluctuations were basic factors in the decision-making process, but family relationships and wider friendship and business links also played an important role. Slater also produced evidence of the close relationship between the creation, modification and redevelopment of individual villas and significant stages in the life-cycle of occupants (Slater, 1978). Such painstaking research required scrutiny not only of legal or other official documents, but also of extensive private archival material; Slater looked at deeds, plans and private correspondence, teasing out the significance of kinship, business and societal links for the knowledge about availability of land and also for the provision of finance through private banks, personal mortgage loans, family loans and gifts.

Critical perspectives on methods using cartographical analysis

Maps as a storage mechanism

Prior to about 1970, the map was considered a storage mechanism for spatial data and a medium of communication; it was an end result in itself and not really concerned with the user (Robinson et al., 1977). As such, maps could provide a source of data to reconstruct both the physical and human environment of a specific date in the same way as the lay subsidies or censuses (Delano-Smith and Kain, 1999; Kain and Delano-Smith, 2003). Many studies used maps to reconstruct past land-uses. Dudley Stamp considered that the tithe mapping and apportionment was the first accurate record in England and Wales and compared it with results from the Land Utilisation Survey of the 1930s (Stamp, 1962). This was followed by many detailed studies of land-use change, such as Bull's work on

the market gardening belt of south-west Middlesex (Bull, 1956). Tithe surveys, together with O.S. maps and air photos, also contributed to research on the anthropogenic origin of the Norfolk Broads (Lambert et al., 1960) and on landownership, occupation and changes in field and farm boundaries (Copock, 1958). The use of maps for plot analysis has been described above and a further particular instance in urban geography and planning was the concept of the urban fence. In 1969, Pryor re-stated the definition as the inner boundary of the urban fringe and explained how it was delineated cartographically by drawing a line joining the continuously built-up areas of a town (Pryor, 1969). These geographers and others using maps as a source of data for wider research, have considered maps as a scaled representation of measurable geographical facts (Cosgrove, 2008). They have, in good faith, extracted data from the face of the map, decoded the conventional signs and imported the data into their geographical studies (Kain and Delano-Smith, 2003).

Maps as social constructions

In the last few decades the uncertainties and complexities of mapping have been raised. Harley (1968; 1988; 1990) warned that maps were not simple reflections of the real world, but needed decoding as social documents. He focused on the quality and accountability of the data by developing a tripartite model based on the production process, the intentions of the cartographer and an analysis of the views of contemporary users. Production process encompassed the well-known rules for the technical production of maps and the lesser known rules for the 'cultural production' of maps. In relation to the intentions of the cartographer, Harley described 'internal power' embedded in the map text itself by the cartographer and 'external power' exercised by map patrons, such as monarchs, ministers and the state, for their own ends (Crampton, 2001). In terms of interpreting the maps by users, he considered maps as texts, socially constructed with contradictions and fragmentations, able to be interpreted in multiple ways and not traceable back to one person. Alternatively, maps were claimed as a vehicle of resistance, and this approach led to reading maps for signs of either oppression or liberation, Harley's binary model of power or protest (Matless, 1999; Pinder, 1996). Wood (1992), on the other hand, concentrated on the value of maps rather than on the problems. Acknowledging that maps were not mere reproductions of the real world, he saw them as representing the characteristics of

past generations, social constructions that brought past worlds into the present: *'knowledge of the map is knowledge of the world from which it emerges'* (Wood, 1992).

Cosgrove (1999) explained the uncertainties in terms of how a map-maker took the measure of the place he was mapping and how this could be influenced by spiritual, political or moral issues. Also the procedures of cartography were variable, even though many practices were common, and there were four basic practices that might lead to later complications for interpretation: scale, framing, selection of content and coding or semiotics. Thus scale could be enlarged or reduced, so that the form and the significance of phenomena were altered as was their relationship to other phenomena (Corner, 1999). Similarly, where the frame was drawn was fundamental since it separated the contents from the outside and suggested a unity and totality within the contained space, thus leading to the possibility that the map was being used as a territorial device. Selection of content was also a divisive procedure; thematic maps were by nature biased, but topographic maps were not impartial either, since certain phenomena could be selected or highlighted, others removed and yet others completely ignored. Lastly the symbols chosen, consisting of geometrical, graphical, numerical and alphabetical images could be used in combinations that might lead to bias.

Urban maps through time

Cosgrove (2008) expressed the idea that urban space and cartographic space were intimately related since the map often preceded the physical presence of the city or served to regulate and coordinate its continued existence. Maps and plans have been used to design extensions or reconstructions or to record and determine countless aspects of urban life and citizenship, such as the spread of cholera or social and ethnic status.

Early town maps were often silhouettes, though bird's eye views replaced them in popularity, picturing a coherent community. These maps were often decorated with cartouches and the printed text would honour the depth of history, the nobility of the citizens, the wealth of merchants and the beauty of the buildings. The goal of the map maker was celebration rather than analysis. This type of map dominated European town mapping into the 18th century, giving a traditional

vision of a city as a self-governing community, with cartographic emphasis on civic harmony, identity, community and dignity within a confined urban space (Cosgrove, 2008). From the 18th to the mid 19th century, town maps became simpler, more legible with less decoration, surveyed with carefully calibrated instruments and printed from fine-line copper engraving or later lithography. By the middle of the 19th century, surveyed urban plans had become base maps for the emerging science of urban statistics. The use of these base maps enabled a town to be regulated, for example by plotting cholera or poverty or other urban ills or for improvements such as laying water pipes or planning cemeteries or clearing crowded districts. Today, towns are increasingly complex and dynamic, but current visual technologies provide the opportunity for shaping and recording urban experiences.

British Ordnance Survey maps: the 1:2,500 series

The Ordnance Survey Act was passed in 1841, though the Ordnance Survey had already been in existence for about 50 years. In the 1850s it was decided to publish at a scale of 1:2,500 and by 1890, the first edition was more or less complete. It was based on a county grid and was surveyed at a scale of 1:1,250 and then reduced by half. The aim was to depict the permanent features of the man-made landscape at ground level, complying with a rule that features had to cover 8 square metres to be shown, though there were some exceptions, as for small buildings in detached positions. The maps showed fences and hedges and each parcel of land was numbered; its area was calculated from the map and this value was printed on the sheet. Thus this series was an important tool for conveyancing and land registration. Within the boundaries laid out, it was tolerably accurate, though, as with all maps, some errors crept in during the surveying and map production processes (Harley and Phillip, 1964).

Revisions were originally planned for every 20 years. The first revision was started in 1891 and completed in 1913. The second was started in 1904 and the third in 1911, but neither was completed because of wartime conditions and the later period of austerity and retrenchment. In 1918, a Select Committee decided that a 40 year cycle was adequate for revision in rural areas and between the wars revision was largely reduced to urban areas that were undergoing rapid change (Harley and Phillip, 1964). In 1938 the Davidson Committee decided that new

maps should be published on a national grid and in 1969 metric maps were introduced. Revision is now on a continuous basis, with the aim of recording change in the landscape as it occurs. The series is available on-line.

Geographic visualisation models of multiple perspectives

Harley's publications emphasised the importance of multiple perspectives and multiple maps, rather than the communication model that identifies a single optimal map, communicating simply the ideas and knowledge of the cartographer to the map user. To achieve multiple meanings and a multiplicity of viewpoints, the idea of geographic visualisation has been developed. This overturns the communication model by promoting exploration rather than presentation, contingency rather than finality (Crampton, 2001). One of the primary objectives of geographic visualisation is to find spatial patterns in the data, which is what maps have always tried to do. But now there are additional capabilities provided by interactive mapping software, which allows rotation of the data in three dimensions, adding or stripping away data layers during data exploration or querying the map interactively (MacEachren, 1992).

Harley's statement (1968) on the reliability, function and context of early maps (his *on, about* and *of* maps) have all been incorporated into the analysis and design of a conceptual model that proposes to use historical evidence in digital town-plans and the virtual reconstruction of cities (Heuvel, 2006). So far digital mapping has focused on technical reliability rather than on functional and contextual aspects of evidence such as the quality and accountability of the data, the relationship between objectivity and subjectivity of interpretations and the appropriateness of the resources. However, models are now being developed that will allow a user to move the cursor over a digital map to receive information in a pop-up about the underlying historical resources in relation to their original function and context. Researchers will be able to assess the suitability of the data in their work and also annotate the map with their own insights.

Critical perspectives on methods using GIS

Since 1990, a number of disciplines, amongst them planning, geography and archaeology, have developed or adapted computer programmes to process and analyse spatial information. The main characteristic of such GIS systems is the

ability to combine attribute data (as in a database) with spatial data (location coordinates) for every element in the database (Gregory, 2005). Thus, the core idea is to represent features that are, or were, on the earth's surface by abstracting them into a layer, giving them co-ordinates and attaching this to information in the dataset. This combination opens up a whole range of possibilities that neither a database nor a computer mapping system could handle on their own. This new technology not only makes time-consuming operations easier, quicker and sometimes more accurate, but it also allows the integration of data from several databases and can answer specific location queries. It not only produces visually attractive results, but the map becomes part of the research process through which spatial relationships can be explored through a process of visualisation. It is also an analytical tool through which it is possible to analyse data that, in their original form, contained no direct spatial references. It allows the complexity of the data to be handled without undesirable simplification of the data.

Examples of cross sectional studies of integrated data

In the past decade, historians and historical geographers have explored ways to use GIS to enhance their research methods, especially when quantitative data were available for analysis. They have revised old studies and challenged former conclusions, tackled questions that previously seemed impossible to resolve and asked completely new questions (Gregory and Healey, 2007). An example of a land-use study for a single point in time was Pearson and Collier's research on land ownership and agricultural productivity in the mid 19th century for a parish in Wales (Pearson and Collier, 1998). They combined environmental data (soils, slope, aspect, altitude) with historical statistics from the census and tithe apportionment, building up a detailed reconstruction of the various factors affecting productivity. Their statistical analysis showed that, while many of the variations in agricultural productivity could be explained by the physical characteristics of the fields, owners and tenants could both have a significant impact on this. In particular, tenants seemed to have had a bigger impact than owners. Another early example of the use of GIS in the spatial analysis of statistical data for an incident at one date, is Cliff and Haggett's study of the cholera epidemic in London in 1849 (Cliff and Haggett, 1996). They integrated data from a variety of sources via overlays detailing water sources and poor drainage, through which they divided London into four areas. They calculated the

death rate from cholera in each of the areas and explored the results through bar charts and basic statistics, revealing clear patterns.

Managing attributes, time and space

It has always been difficult to manage simultaneously the three aspects of data – attributes, time and space - and researchers usually had to simplify one in order to perform any analyses. Time is poorly integrated into GIS systems, but researchers have invented ways of managing complex space-time datasets. A good early example was the atlas of the great Irish famine (Kennedy et al., 1999) which used census data to show demographic changes resulting from the famine. A sequence of maps was produced for the four census dates, based on the census administrative areas, showing changes over time in the distribution of such variables as housing conditions and the use of the Irish language. Another example is Cunfer's revision of data and analysis on the dust storms in the Great Plains in the 1930s (Cunfer, 2002; 2005). By covering a longer time period and a larger area than the previous county studies, Cunfer showed that evidence of the causation of dust storms by poor agricultural practice was not convincing and that prolonged drought in the mid-1930s was a more significant factor. This method proved effective for a limited number of dates and for instances where changed occurred at clearly defined times between periods of relative stability.

Managing changes in administrative areas

More complex systems, for example where administrative boundaries changed, were more problematic, but new techniques have been developed which allow data to be re-cast from one administrative area to another. In 2001, Gregory and colleagues wanted to compare three quantitative indicators of poverty, infant mortality, overcrowded housing and unemployment as they changed, in England and Wales, from the late 19th to the late 20th centuries. They had four time periods and their problem was different reporting units for the different datasets and also changed local authority boundaries. They overcame the problem by interpolating all the data onto the least spatially detailed unit. Despite the loss of some data and some errors, the method allowed a consistent time-series to be generated so that the changing pattern of inequality over time could be studied at a consistent geographical scale (Gregory et al., 2001). Dorling et al. (2000) used similar area interpolation in the comparison of poverty in late Victorian London as measured

by Charles Booth, with mortality patterns for 1991, even though Booth's areas were very different from the modern wards. They showed that the most poverty-stricken parts of London a century ago still had the highest rates of mortality from many diseases in 1991. They argued that the characteristics of an area remained constant over time and that area types were closely associated with the mortality characteristics of their inhabitants.

GIS in urban morphology

GIS has also been used in urban morphology and its use is growing. One of the earliest projects was the reconstruction of the 15th century town-plan of Carpi, in Italy, based on cadastral data of 1472 and which was then compared with the oldest reliable town map of 1893 (Bocchi and Lugli, 1988). In the case of Carpi, a database of the cadastral information was already available but, in other cases, historical maps from different periods formed the major levels of information which were added as layers (Muratori, 1959). In all these studies, town-plan analysis formed the basis and in most cases it was derived from the first accurately surveyed map as described by Conzen (Conzen, 1962).

Another case-study is that of Groningen in the Netherlands, in which two town-plans that initially were difficult to compare were merged and used to answer a long-debated question, the location of the new market set up in the 17th century. It was also used to analyse the influence of the fortifications on urban form (Koster, 1998). More recently Lilley et al. have described research in Winchelsea, in which they combined the use of a Global Positioning System (GPS) and Geographical Information Systems (GIS), to study medieval built form (Lilley et al., 2005). This paper offered a working method for using spatial technologies to build upon existing methods of town-plan analysis and metrological analysis.

Qualitative data

There have also been some attempts to work with qualitative data, but the role of GIS has yet to be fully developed. There are several examples of GIS being used as a structuring and retrieval tool, as in the International Dunhuang Project, an electronic archive of over 100,000 documents, document fragments and artefacts from sites along the Silk Road (Gregory, 2005). Another example is the Salem Witch Trials Documentary Archive and Transcription Project, which has enabled

additional exploration and analysis to be carried out. Three hundred people mentioned in the court documents have been placed into households and, through a series of characteristics attached to them in the database, a picture of land ownership and property disputes has been assembled that has changed the traditional view of the trials (Gregory, 2005).

Choice of method

From the collection of methods, approaches and limitations accumulated above, an approach had to be devised making best use of the type of data available on detached gardens and urban allotments, in an attempt to chart, clarify and account for landscape change. The nature and purpose of urban allotments and gardens determined their location in the fringes of towns. They were produced through intensive manual labour and their study required an awareness of the culture and economy of the community. Their changing extent, abundance and distribution through time were significant in the investigation; the processes that drove the transformation were of particular interest.

To facilitate the choice of methods, the six objectives summarised at the end of Chapter 2 were re-formed into four research questions, each one suitable for one or more specific investigative techniques. These research topics were:

- The location of detached gardens in 18th century English provincial towns (a nation-wide survey)
- The development of detached gardens and urban allotments through time (a case-study)
- The characteristics of detached gardens in a single town in the mid-19th century (a case-study)
- The transformative processes at work on detached garden and urban allotment sites and the effect of these processes on later urban form (a case-study).

Collecting the data

Cartographic basis

The review of methodologies showed that many sources of historical data had been successfully used by geographers seeking to understand landscape change. Following preliminary research on several possible sources of information on the

distribution of urban allotments and detached gardens through time, a decision was reached to concentrate on maps, which were likely to provide the most accurate picture of the location of gardens and through which comparison with later maps could be facilitated (Delano-Smith and Kain, 1999). Other sources were not dismissed entirely. Engravings and paintings could provide supportive evidence (Barley, 1974) and gazetteers occasionally contained useful additional material and could be accessed by town name on the internet, where full text was available (Vision of Britain). Likewise, even though many town histories seem to have been written to a standard format, occasional references were found, usually in relation to another subject, as in Deering (1751) in a description of Nottingham's city wall (Gross, 1966; Shaw, 1982).

Bearing in mind that maps were drawn for a particular purpose and only features appropriate to that purpose might be symbolised, the key question arose as to whether detached gardens were likely to be depicted at all. Cosgrove (2008) suggested that most early urban maps were celebratory, depicting renowned history, beautiful buildings and important citizens. However, preliminary research showed that an unexpectedly large number also included some symbolisation for gardens and the question was raised as to whether gardens and orchards around a town might have been perceived as a source of civic pride and hence mapped. The cartographical literature warned against complacency and so attention was also paid to locations where other detached gardens might have been excluded, hidden for instance behind buildings and hence out of street-sight. Other issues to be aware of were scale and the coverage of the map. The maps used are discussed at the beginning of each results chapter and all are listed in a separate section of the references.

Cross-sectional and longitudinal analyses

The use of maps led to a cross sectional approach which, for many years, has provided a sound and well-tested methodology for the study of landscapes that have been strongly affected by human activity (Williams, 2003). This was combined with a longitudinal study, based on a series of cross sections, as was done for Ireland using census returns (Kennedy et al., 1999). This approach has also been used successfully in evolutionary investigations in urban morphology, usually based on cross sections from a series of maps (Conzen, 1978). The

problem of comparison of several cross sections without adequate knowledge of events between them was reduced in two ways. First the period between the maps was kept to a maximum of 30 years and secondly, a historic narrative was built up through archival research of economic and social conditions.

Sampling

It was clear that sampling would be necessary in several places in this research, most notably in the selection of provincial towns for the national study. This sample used the English historic counties as a base, the counties being stratified into eight regions, so that a wide distribution could be obtained. The intention was to use a sample of 16, but the collection of relevant data from 18th century town maps and its transcription onto digital maps proved time-consuming and hence the sample was reduced to ten. The choice was limited by the coverage of town maps drafted in the 18th century, which was not evenly distributed across England. The selection was further restricted by the scarcity of maps of a sufficiently large scale and by the presence or absence of some method of symbolising gardens. The problems encountered are described and illustrated at the beginning of Chapter 4. In relation to the sample of maps for the case-study of Shrewsbury, the choice was constrained by the dates of the Tithe Survey (1845-50) and the publication of the First Edition of the O.S. 1:2,500 sheets and its revisions (Harley and Phillip, 1964). Details of the maps used are given at the beginning of Chapter 5.

For the case-study of Shrewsbury, further sampling became necessary in the study of transformative processes, due to the large number of very small, scattered garden sites measuring less than 0.2 hectares, most of which had been identified close to the urban fence in 1845. It proved difficult and time-consuming to locate them on either modern O.S. plans or in the current townscape and the exercise to plot their current use was abandoned. This still left 87 garden and allotment sites, which covered 92 percent of the area of detached gardens, and these formed the basis of the analysis. Yet further sampling was necessary for the study of detailed transformative processes, due to the size of the database, and the 87 garden sites were reduced to 15, which allowed time for the study of sale papers, wills, newspapers, photographic collections and other archived documents. Several ways of taking this sample were considered and eventually a wedge-shaped sector

of the town was chosen, followed by checks that all types of transformative processes were included. Maps and further information to illustrate the sampling strategy are presented in the introductory sections of Chapter 7.

Fieldwork

Finally was employed, particularly with reference to the end results of transformative processes. This formed one of the last stages of the research and was carried out once the historic maps had been superimposed on modern versions (see below). Each of the 15 garden sites was visited. The periphery of the former gardens was validated through observation, and few problems were encountered. To build up familiarity with each site, all roads and any accessible back lanes were walked, so that the rear of properties could be checked. Notes were made and photographs taken. Interested residents provided anecdotal information that in some cases provided leads to documentation. Particular notice was taken of everyday objects such as walls and hedges, old buildings and gateways that might be tangible evidence of the adaptive response to the pre-existing morphological frame.

Storing and manipulating the data

Three datasets were compiled to provide storage, manipulation and easy access to the information. The first two were produced in an ArcGIS system which provided the location coordinates for every entry in the databases. This spatial basis was the pivotal feature and to it were added a number of fields describing other attributes.

- **The national survey of 18th century towns**. The purpose was to analyse the abundance and distribution of detached gardens in each of the ten samples, in and around the urban core. Hence the dataset also included the area of the gardens, distance from the urban fence (by means of 'buffer zones' – see description below), distances from the town gate and the nearest road and information about location in relation to the town wall and the urban fence. An additional column was added for notes. The total number of entries in this database was 674. The sample below in Table 3.1 is from Hereford.

Table 3.1 Example of national database. Excerpt from Hereford

ID	LOCATION	CATEGORY G Garden O Orchard P Public	TYPE 1 No buildings 2 Shed etc 3 Middle of block	AREA (SQUARE METRES)	DISTANCE FROM MAJOR ROAD (metres)	DISTANCE FROM TOWN GATE (metres)	AGAINST WALL	IN CONTACT WITH URBAN FENCE	BUFFER ZONE
15	Row Lane	G	1	1,658	107	198	no	yes	uf-100
22	Barton Lane	O	2	5,006	1	316	no	no	200-300

Table 3.2 Example of Shrewsbury database. Excerpt from Institutions in 1882

ID	NAME	FUNCTION	SOURCE MAP	SOURCE DOCS.	INITIAL DATE	DEVTS.	NOTES	AREA (SQUARE METRES)
5101	Cemetery	Burial	12	Francis	1856		First General Cemetery, all denominations	82,256
5102	Counties Lunatic Asylum	Medical	12	VCH	1845-7	See 5301	Still small. For 'pauper lunatics'	59,902
5103	Water Works	Utilities	12	Trinder	1877		Replacement of 1827 pumping house	642
5105	Barracks	Military	12	Trinder	1876-78			30,396
5106	County Gaol	Judicial	12	Trinder	1793	See 5001	Rebuilt in 1878	9,915

Table 3.3 Example of database of attributes of detached gardens. Excerpt from Coleham Township

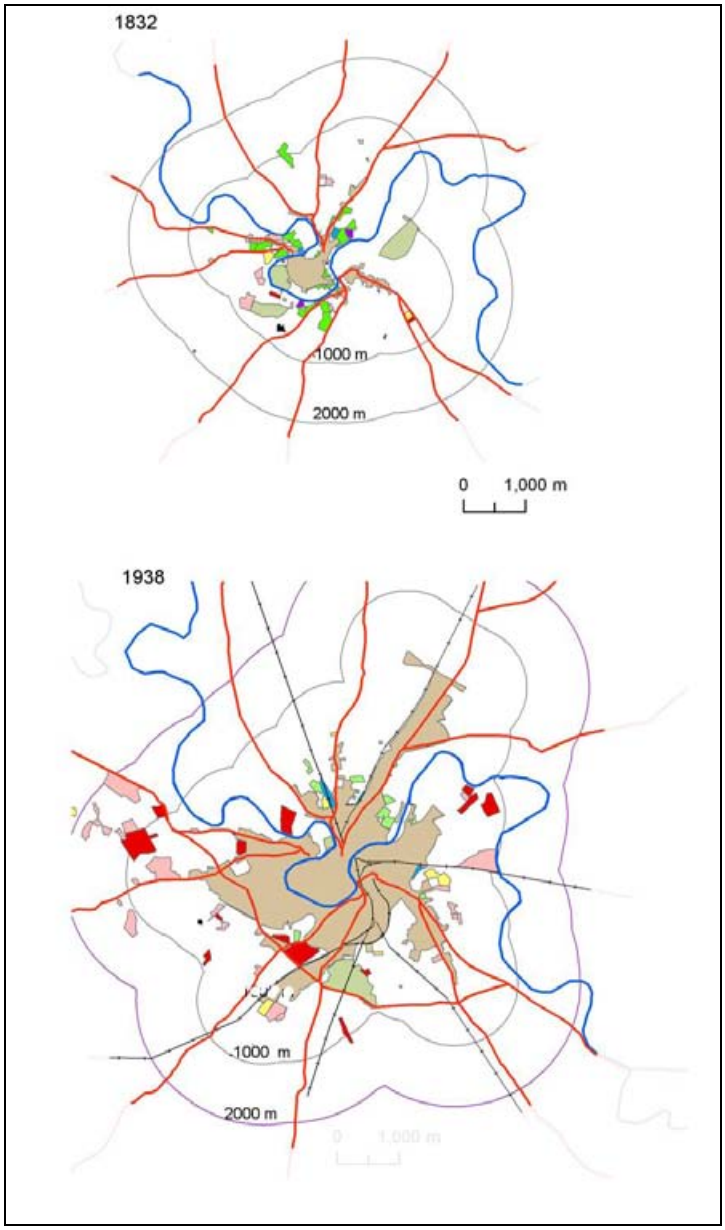
FIELD NUMBER	LANDLORD	OCCUPIER	ACREAGE IN ROODS AND PERCHES	VALUE £.s.d
117	Charles Oliver	Himself	20p	1/11
34	Rev Edward Owen	Edward Parker	38p	2/6
121	Robert Phillips	John William Towers	1r 0p	3/2
11	George Jonathon Scott	Thomas Lloyd	14p	11d
209	David Evans	Himself & tenants	1r 10p	3/0
97	Charles Hatton	Tenant	6p	7d

- **Shrewsbury database**. In addition to the basic elements included in the national database, this dataset was designed to cover landscape change through a longitudinal study based on six cross sections; so additional columns were introduced to establish the date the features first appeared. The gardens and allotments were completely re-mapped for each of the six cross sections, thus enabling the visualisation and analysis of plot expansion and contraction. Thus, the database had six parts, one for each cross section. The temporal aspects of the database required particular attention and the problems and solutions are dealt with in the methods section at the beginning of Chapter 5. The database also held information on other land-uses in the urban fringe, which were categorised into nine additional groups, a detailed breakdown of which is given in Chapter 5. The classification of fringe belt elements generally proved adequate; most of the questions that arose were due to the differences in urban planning and life-style over a period of 100 years. The total number of entries in this database was 1,431. It is illustrated in Table 3.2, which is an excerpt from the 1882 cross section for institutions.

- **Database for attributes of detached gardens.** This database contained the information for the 728 individual detached plots in use as gardens in Shrewsbury at the time of the Tithe Survey (1845-50). The basic information on the distribution of garden sites for this date was also included in the Shrewsbury database, but this additional material was maintained separately in an Excel spreadsheet. This was on account of the rich extra data only for this one cross section. The dataset had six sections, one for each of the townships and the fields included name of landowner, name of tenant, area of plot and value of plot. Table 3.3 illustrates a sample from Coleham Township. More information on the source of material and the information stored is provided in Chapter 6.

The spatial foundation, provided by the ArcGIS program, enabled the linkage of a description to a site, the measurement of distances and areas and the comparison of distributions for different dates. The in-built system for constructing buffer zones simplified the analysis of distributions and densities - the exercise carried out to determine the best option for the initial baseline is described below.

Figure 3.1 The fringe belt features of Shrewsbury for 1832 and 1938, at the same scale



The output from the GIS program was also used for depicting results in the form of maps, graphs and tables. Since all features, whether drawn as polygons or polylines, were allocated spatial coordinates by the ArcGIS program, the scale of the maps in comparative analysis was not an issue. The only problem arose in depiction on paper, since Shrewsbury expanded considerably between 1832 and 1938 and the same scale could not be used for maps for all six dates, without losing important detail, as illustrated in Figure 3.1, which shows the town at the same scale for the two dates that bounded the research. A decision was made to print each map at the largest scale possible for the page size. This is demonstrated,

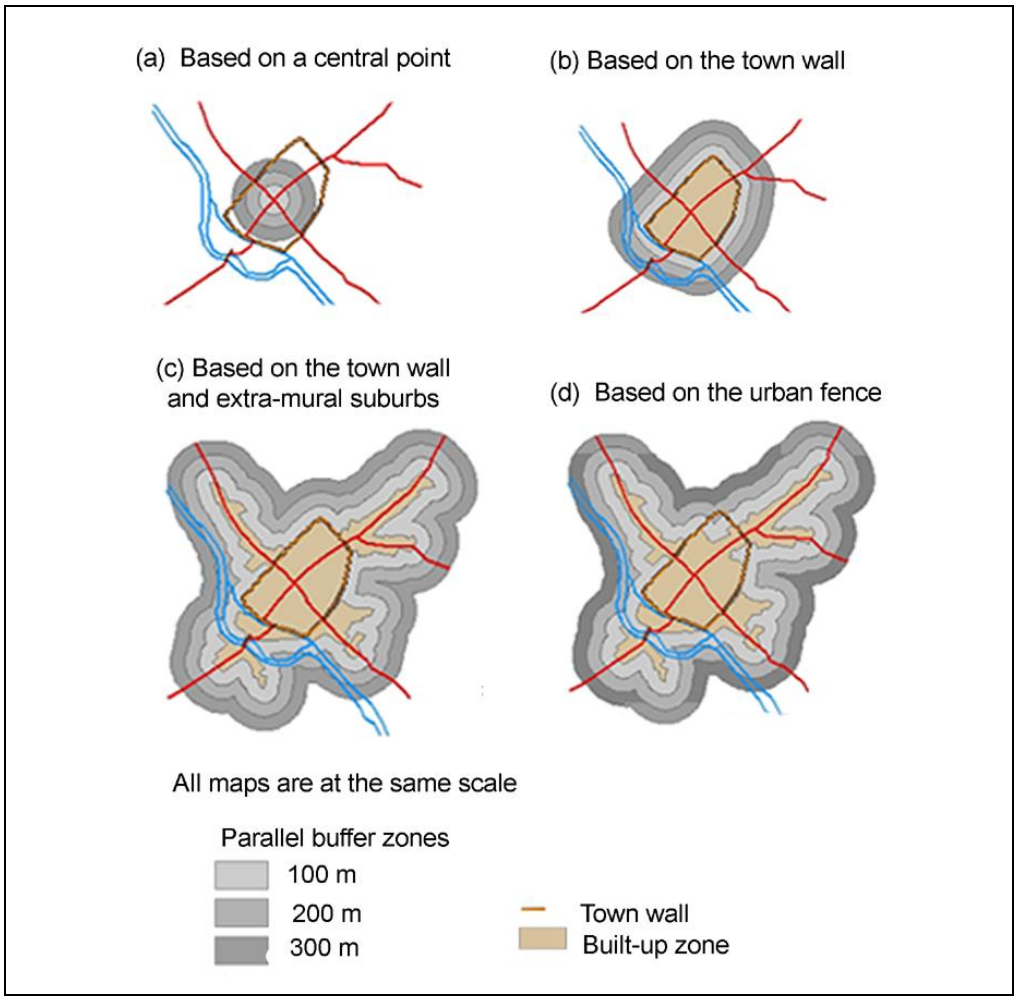
for example in the mapping of fringe belts: Figure 5.10 for 1832 (page 130) is approximately double the scale of Figure 5.38 for 1938 (page 163).

Analysing the data

Use of parallel zones

In order to describe accurately the distribution and extent of detached gardens in relation to the built-up area, in terms of distance or percentage area covered, it was necessary to construct a series of zones of equal distance around the urban core, in which measurements could be made. Four methods for determining the zones were examined: choosing a central point in the urban core and drawing concentric circles; taking the town wall as the urban edge and drawing lines parallel to it; taking the town wall and extra-mural suburbs together as the urban core and drawing lines parallel to the edge; and delineating the urban fence (which ignores the town wall) as the boundary of the continuously built-up area (Pryor, 1969) and drawing zones parallel to its edge (Fig. 3.2).

Figure 3.2 The design of buffer zones. Exeter as an example



An experiment was conducted, using ArcGIS to construct such buffer zones so as to determine the specific patterns produced by each. Exeter in 1744 (based on the Rocque map) was used as the example. The results are shown in Figure 3.2 in which the four maps are at the same scale and the buffer zones of the same width. Example (a), based on a central point in the urban core, was clearly inadequate, since it ignored the shape of the built-up area. Example (b), based on the town wall, was attractive since the wall was such an obvious feature. However examples (c) and (d) demonstrated that the wall should really be ignored since the city was much more extensive. These two examples generated similar buffer zones, but the final decision was to go with the urban fence option, since this took into account areas within the wall that were not built on.

Superimposition of layers of spatial data

A second technique for analysis, again using a GIS programme, was the superimposition of layers of spatial data to allow comparisons of distributions for different dates. All the 18th century town-plans and several maps of Shrewsbury were published before the foundation of the Ordnance Survey in 1791 and the introduction of a country-wide triangulation in 1858 (Harley and Phillip, 1964; Oliver, 1993). Some of the cartographers were renowned for accuracy and attention to detail, but others appeared to have been a little more rough-and-ready with their draughtsmanship, so that scale and accuracy varied (Elliott, 1987). To standardise results and make comparisons possible, all information collected from the original plans was re-mapped digitally onto O.S. County Series 1:2,500 maps, downloaded from Edina , which delivers the Landmark historic map collection (Historic Digimap) to Tertiary Education. The 1:2,500 Series is particularly suitable for land-use transformation studies outside the urban core, since all permanent fences are shown and individual plots are numbered. Also, since the historical maps available in digital form have been 'cookie-cut' to the present-day National Grid, layers produced on historical maps can be superimposed on current maps.

In summary

These are the research methods that were chosen as being most appropriate for: the project

- An evolutionary approach to land-use change in towns, as developed by urban morphologists for the urban fringe
- The collection of empirical data using maps to produce a series of cross sections
- The use of GIS layers to study changes in the abundance and distribution patterns of detached gardens and urban allotments through time
- Archival research for the longitudinal analysis, to investigate social and economic change between cross sections; also to investigate agents of change and transformative processes
- Sampling to select towns for the national survey and detached gardens for the study of transformative processes
- The use of GIS buffers (parallel zones) to analyse abundance and distribution
- Fieldwork to validate transformative processes and to collect evidence of relict features from the pre-existing morphological frame

Each of the four constituent studies of the project required a different group of the research methods. Hence a decision was made to include specific details of the techniques and routines employed and problems encountered at the beginning of each results chapter, where they would be most meaningful. These are listed below.

Chapter 4	Selection of the sample towns
Nation-wide survey of 18th century towns	Interpretation of the symbology of 18th century maps
	Transferring data into ArcGIS
	Delineating the urban fence
Chapter 5	Classification of fringe elements
Detached gardens and urban allotments through time	

Chapter 6 *Characteristics of detached gardens in mid-19th century*	Use of tithe maps and schedules
Chapter 7 *Transformative processes*	Overlay of historic maps onto modern maps. Fieldwork Archival research using a wide selection of documents.

A decision was made to limit the research to English towns and it was carried out in the order of the chapters, as laid out above. The nation-wide survey produced a wide knowledge of detached gardens in the urban fringe in the 18th century. The findings formed a base for a detailed investigation in a case-study. This included both an analysis of detached gardens through time and also an examination of the traditional system of provision. It culminated in a thorough study of transformative processes in a sample of detached garden and urban allotment sites.

CHAPTER 4. DETACHED GARDENS IN 18TH CENTURY TOWNS

This chapter describes one strand of the research: the study of detached gardens in the urban core and urban fringe of English provincial towns before 1790. The question under investigation was whether detached gardens were commonly occurring initial colonisers of the urban fringe before the allotment movement introduced the notion of field gardens in the last decade of the 18th century. The key aspect of the research was to identify these gardens, which contained no substantial buildings and were detached from a residence. They included kitchen gardens, pleasure gardens and orchards, though the difference was not always made clear by the cartographers. It was not the intention to examine the ownership of plots, nor to discover whether the gardens were used commercially or privately. The major objectives were to map such detached gardens, to describe their distribution in relation to the urban fence and to calculate their extent in a sample of towns.

The research involved the investigation of a sample of ten English provincial towns: Canterbury, Chester, Colchester, Exeter, Hereford, Ipswich, Lancaster, Newcastle-upon-Tyne and Nottingham. It was based on 18th century large-scale maps of these towns, and the design of the sampling framework and the successes and pitfalls of using this cartographic approach are described in the methods section of this chapter. The delineation of the built-up area was fundamental to the exploration of this subject and the process evolved for plotting the urban fence is also described here. Throughout the research, ArcGIS was used as a tool for mapping and analysis; the basic techniques are also outlined here. Through the use of these methods, a consistency of approach and reliability of measurements were achieved.

The data, for each town in turn, are presented first in the results section, in a text box format and without analysis. The statistics for each town are accompanied by two maps, placed together. The top one illustrates the major physical and human features affecting the distribution of the detached gardens. The lower one depicts the parallel buffer zones used in the calculation of the abundance.

The second section of the results comprises a synthesis of the data from all ten towns, in which major statistics are brought forward to illustrate common elements and causal factors, in a systematic manner. Information is amalgamated into tables and graphs, based on particular pieces of evidence, such as the location of detached gardens beneath the town wall or the density of garden-ground in a particular zone. This in turn leads into the final section, in which both the methodology and the key findings are briefly discussed and summarised into conclusions.

Method

A cartographic approach

The mapping of the distribution of detached gardens and the delineation of the built-up area were fundamental to this research. Thus a cartographic approach was selected and 18th century town plans, occasionally supplemented by documentary research, provided the primary information. These data were used to prepare further maps drafted in a geographical information system (GIS), with concentric zones depicted, and areas and distances measured accurately. This transfer of data into a GIS, using a consistent map series as a basis, also brought standardisation and allowed comparison between the towns.

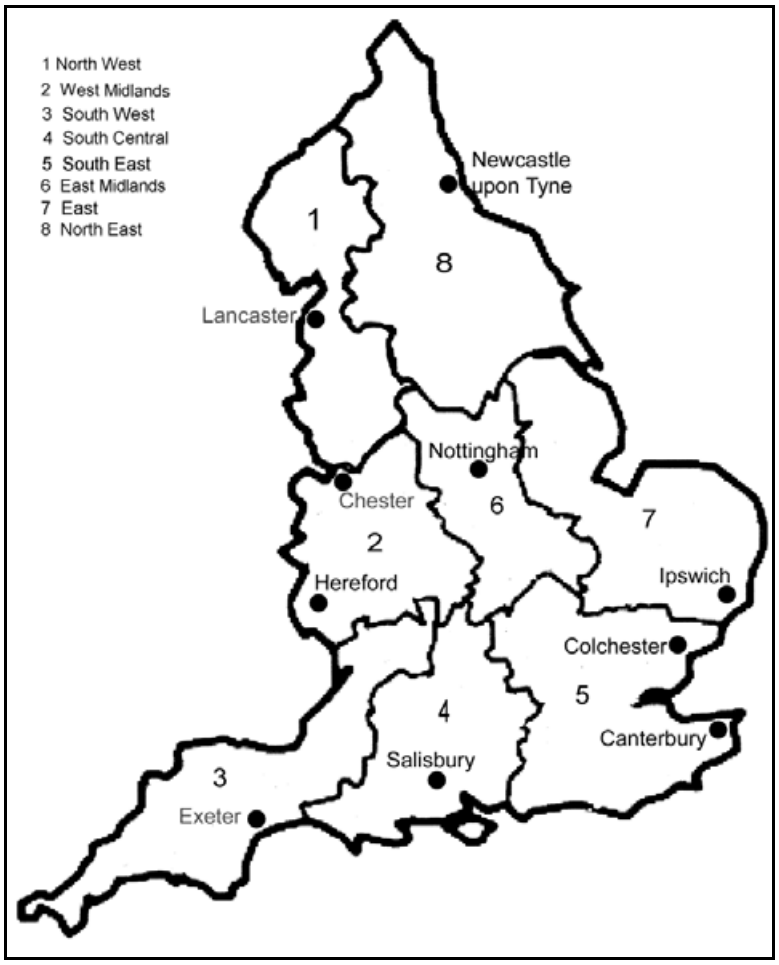
Selecting the sample

A sample of ten English stand-alone towns was selected, as described in Chapter 3 (page 58). Research was carried out in the British Library map collection, and the King's Topographical Collection, compiled for King George III between 1760 and 1820, proved to be a fertile source (Barber, 2004). In order to make the selection, many maps were checked. Most county towns had general plans at a large enough scale for clusters of gardens to be marked and, in many cases, the map-makers chose to include them, often using special symbols. However, absence did not necessarily mean that gardens did not exist, since the map-maker might have had a different motive, many maps being produced for a specific purpose or to show a particular feature. In these cases gardens and orchards might have been considered irrelevant or unworthy of inclusion.

The criteria for selection of maps were wide-ranging. The scale of the map was important, since as much detail as possible was needed. The extent of the

coverage outside the built-up area was crucial; one to two kilometres was ideal so that the fringes of the town were included. Practical problems were legion: fragility of maps, sheer size of some of the map sheets, the need for acetate sheets to protect rare maps. Fortunately, photographs on microfiche were available for some of the selected maps and it was possible to make photocopies from these, as a substitute for tracing.

Figure 4.1 The selected towns and regions based on Historic Counties of England



Problems of interpretation

The maps were first published over a period of 45 years, ranging from 1744 to 1789. There is no cartographic study of English 18th century town maps and keys to the symbols are rare (Delano-Smith and Kain, 1999). There appears to be no acknowledged set of symbols widely employed to depict land-use and, although there is some repetition, each cartographer seems to have made his own decisions. Colours were rare on these maps (Nottingham and Newcastle-upon-Tyne were

exceptions), so colour shading, as employed in 1800 by Milne in his Land Use Map of London (Bull, 1956) was unavailable. Several map-makers used variations on the 'conventional signs' which were later designated by Dawson for the tithe apportionment maps in 1836 (Kain and Prince, 1985). The comparison in Table 4.2, in which the maps are presented in date order, reveals some of the ways that cartographers dealt with the issue.

Table 4.1 Towns and maps selected

REGION	TOWN	MAPS SELECTED, Date, Surveyor or Cartographer, Title and British Library Shelf Mark
North West	Lancaster	Stephen MacKreth 1778. A plan of the town of Lancaster, humbly dedicated to the nobility, clergy, gentry and merchants of the County and Town of Lancaster. [Maps * 3165.(25.)]
	Chester	S Weston 1789. Survey of the City of Chester. [Maps K.Top.9.5]
West Midlands	Hereford	Isaac Taylor 1757. A Plan of the City of Hereford [Maps*3165.(25.)]
South West	Exeter	John Rocque 1744. A plan of the City of Exeter with nine views of the principal buildings in the margin. [Maps K.Top.11.68.2 TAB]
South Central	Salisbury	W Naish 1751. The City of Salisbury with the adjacent close, church and river. [Maps K.Top.43.37]
South East	Colchester	T Sparrow 1767. Actual survey of the antient Town and Borough of Colchester in the County of Essex. [Maps K.Top.13.13.]
	Canterbury	John Andrews and Matthew Wren 1768. A plan of the City of Canterbury, published by Dury and Herbert. [Maps K.Top.16.34.]
East Midlands	Nottingham	John Badder and Thomas Peat 1744. A plan of the town of Nottingham from an accurate survey. [Maps K.Top.33.32.]
East	Ipswich	Joseph Pennington 1778. A map of the town of Ipswich in which the streets, buildings, yards etc are drawn from an actual survey. [Maps K.Top.39.21.1.]
North East	Newcastle - upon -Tyne	Isaac Thompson 1746. A coloured plan of Newcastle upon Tyne. [Maps K.Top.32.52.]

Table 4.2 Comparison of symbology on chosen maps

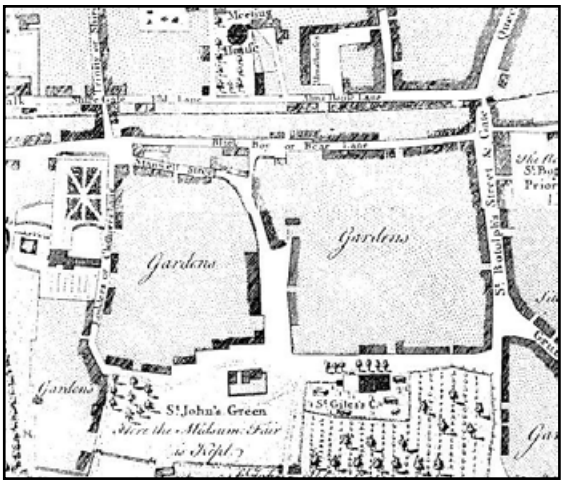
Town (Map-maker)	Date	Symbols			Boundaries		
		Gardens	Orchards	Pleasure Parks/Walks	Multiple plots on field site	Plots within a field	Plots within an urban block
Exeter (John Rocque)	1744	A variety of symbols. Neat squares with dotted or pecked lines. Occasional lines of bushes, or trees	Trees with shadows to east, in straight lines	Avenues of trees	Single lines or hedges	Paths, delineated by dotted lines for plot boundaries	Not differentiated, except in open areas, as round the cathedral, where there are paths and single lines
Nottingham (John Badder & Thomas Peat)	1744	Neat squares formed of dots in rows, of different intensities. Occasionally alternating with trees in rows	Trees with shadows to east, generally in straight lines	Rows of trees	Hedges	Hedges most common. Sometimes simple lines	Mainly hedges, sometimes single lines
Newcastle-upon-Tyne (Isaac Thompson)	1746	Small trees in straight lines. Outside wall often marked 'Gardens'.Beneath wall, parallel dotted lines	Trees, larger than in gardens	Rows of trees	Single lines, occasionally with trees	Paths sometimes delineated by edges of blocks	Single lines or paths
Salisbury (William Naish)	1751	The letter i	The letter i	Avenues of trees. Layout of gardens and paths	Single lines	Single lines	Single lines
Hereford (Isaac Taylor)	1757	Dotted lines to show edges. Little detail. Occasional trees	Trees with shadows to east, in straight lines	Rows or avenues of trees	Hedges, comprising closely-spaced irregular dots	Single lines, hedges or paths.	Dotted lines, rather indistinct.
Colchester (T Sparrow)	1767	Fine stipple and word 'Gardens'	Trees with shadows to east, in straight lines	Lines of trees. Footrpaths. Dark stipple for flower beds	Hedges with bushes and occasional trees	Not differentiated	Not differentiated
Canterbury John Andrews & Matthew Wren)	1768	Neat squares with all-over pattern of squiggles	Trees with shadows to east, in straight lines	Avenues of trees. Paths. Rough stipple (lawns?)	Hedges or single lines	Paths delineated by plot boundaries	Paths delineated by plot boundaries
Ipswich (Joseph Pennington)	1778	Parallel strips of dark squiggles and white with dots (bushes?). Some with rows of trees	Trees with shadows to east, in straight lines	Rows of trees. Path layout. Dark squiggles for flower beds (or shrubbery?)	Single lines or hedges	Paths delineated by edges of strips	Single lines and occasionally hedges
Lancaster (Stephen MacKreth)	1778	Neat squares formed of dots in rows, of different intensities. Some darker with squiggles	Trees with right-hand side shaded, in straight lines	Avenues of trees	Hedges or single lines	Paths delineated by edges of blocks	Dotted lines, single lines or paths dividing the blocks
Chester (S Weston)	1789	Dots in lines. (representing bushes or plants) Occasional trees added	Trees with shadows to east, in straight lines	Avenues of trees. Layout depicted by path layout	Hedges, with bushes and occasional trees	Single lines or paths (spaces with line on either side)	Thin lines

A second problem for cartographers was the complexity of gardens in the built-up area, especially in the centre of large blocks lined with buildings on all sides. Some showed the inside of blocks as garden-ground, but undifferentiated into plots. Others plotted the pattern of gardens and some drew thicker lines as if to separate out detached plots. The two extremes are illustrated in the map excerpts in Figure 4.2 (a) and (b). Except in rare cases, it proved difficult to differentiate between plots that were attached to the surrounding buildings and those that were independent of them and therefore most had to be excluded from the mapping exercises and consequent analysis.

Figure 4.2 Land-use in the centre of blocks

a) Undifferentiated garden-ground on Sparrow's Colchester map of 1767

[BL Maps K.Top.16.34.]



b) Garden plots within an urban block on Badder and Peat's Nottingham map of 1744

[BL Maps K.Top.33.32]

Transferring the data into ArcGIS

Following detailed scrutiny of the 18th century maps, the following data were extracted: major physical features, such as rivers and coastline; town wall or major fortifications; town gates and bridges; major roads; gardens, categorised into detached gardens, orchards and public pleasure grounds; the built-up area. They were then plotted as layers onto digital maps, which were downloaded for each town in the manner described above in Chapter 3 (page 61). The O.S. 1st Edition 1:2,500 maps, the first accurately surveyed maps that covered all counties in England, were used in every case as the base maps (Harley and Phillip, 1964).

The data were input manually using the vector system, and the information in the attribute tables was typed in using the keyboard. The techniques employed were very simple, detached gardens and major features (as listed above) being plotted as digital polygons or polylines (Ormsby et al., 2004). Monotony was the greatest problem, likely to cause error-prone data, so checks were carried out, for both entity errors and attribute errors, at frequent intervals during the data inputting process (DeMers, 2005). The task was started with the expectation of some difficulties in reconciling plot boundaries from 18th century maps with the more accurately drafted ones on the late 19th century O.S. maps, but this fear proved unfounded. Sometimes plots were misshapen or a little out of scale, so that adjustments had to be made but, by and large, few subjective decisions had to be made.

Analysing the data

A pattern of analysis was evolved that was used consistently for all ten towns. The distribution of gardens was assessed first by meticulous examination of the maps, particularly in relation to the features listed above. The definition of the built-up area was key, as described in Chapter 3 (page 63), and the urban fence had to be carefully plotted, since the shape of the buffer zones was dependent on it. Pryor, in his study of Melbourne, noted several problems in defining the urban fence cartographically: parkland and vacant plots were found even in older built-up areas; suburban ribbon development meant that land between the roads was excluded; leap-frog development occurred; and a physical boundary such as a river, or even a planning boundary, meant that there might be no fringe in terms of inter-penetration of land-uses (Pryor, 1969). Pryor proposed several practical

solutions to help in the actual plotting of the urban fence and these were followed and are included in the table below. However, his solutions for Melbourne were not adequate for dealing with the castles, ferry crossings and town walls of 18th century England and other 'rules' were duly added as urban fences for the ten 18th century towns (and later the 6 stages of development of Shrewsbury) were delineated, as shown in Table 4.3.

Table 4.3 Rules for delineation of the urban fence

The urban fence is drawn to enclose buildings and their attached plots.
Development is included if it is <150 metres away and there are at least 8 occupied plots in close proximity. If these criteria are not met, then the development is an 'urban pocket' or 'dispersed'. This gets over the leapfrog effect.
If there is a river or administrative boundary that stops development, simply use that feature as the urban fence.
Rivers can be crossed on bridges and ferries.
A town wall can be ignored since it does not necessarily delineate the built-up zone and may form a barrier. The urban fence can cross it if the distance between developments is <150 metres on either side.
Rivers and railway lines can form similar barriers and the same rule applies as for town walls.
Fringe belt elements (as defined in Table 5.2) are excluded from the built-up area unless they are surrounded on two sides by urban development.
Castles and keeps, cathedral closes and bishops' palaces are included within the urban fence, even though they may contain considerable open space.
Factories and schools are included within the built-up zone if they are built as planned development together with a housing estate.

Distances were measured using polylines in the ArcGIS program and the areas of the built-up zone, the walled town and detached gardens were calculated using the in-built facilities of the GIS. Further investigation of both distribution and abundance employed five buffer zones which were drawn at 100 metre intervals parallel with the urban fence, in accordance with the method explained in Chapter 3 (page 61). Thus, three major study areas were created: the area within the wall; the built-up zone which was the area enclosed by the urban fence; and the 500 metre zone, made up of five 100 metre buffer zones parallel with the urban fence.

The GIS attribute tables were exported to Microsoft Excel for amalgamation and additional analysis, including: the areal extent of detached gardens at the base of

the town wall and in contact with the urban fence; the abundance of detached gardens in each buffer zone; the proportion of detached gardens in the three study areas; the ratio of detached gardens and the built-up zone; the area of detached garden per resident; and distances from major roads and town gates.

Results: data for each town

The data are presented first for individual towns in alphabetical order, in a series of text boxes and figures (Boxes 4.1 to 4.10 and Figures 4.3 to 4.12). To understand fully these brief town summaries, it is necessary to appreciate that 18th century map-makers were not working to a common standard. Some cartographers mapped individual detached gardens in great detail; others simply mapped the perimeter fence around a garden-ground site that almost certainly would have been divided internally into individual plots. Hence the number of detached gardens has not been used as a viable statistic. Instead, the extent, presented in hectares, has been used as the basic measurement. The word 'abundance' has been used throughout as a substitute for 'areal extent'.

In addition to the information on the distribution of detached gardens, other data were extracted from the original maps, based on their possible relevance to the abundance and distribution. Particular attention was paid to town walls and other major linear fortifications, because of evidence that they had acted as fixation lines, marking the traditional stationary fringe of an ancient town and providing a barrier to development. Even after subsequent growth (and this study is based on towns in the mid- to late 18th century) there was evidence that town walls, even when degraded, continued to exert an influence on the intra-mural and proximal extra-mural fringe belts (Conzen, 1960). In addition since, by the 18th century, the built-up area was never coincident with the walled area, particular attention was given to accurate delineation of the urban fence, the edge of the continuously built-up area of each town. The statistics illustrating the influence of these two features form a major section of the ten brief summaries.

Box 4.1 Canterbury in 1768

Approx population (Chalklin, 2001b)	9,000
Area within the wall	56.9 ha
Built-up area (enclosed by urban fence)	75.2 ha (53.6% located within wall)
Extra-mural suburbs (46.4% of built-up area)	Ribbon development from town gates along major roads to SW (450 m), NW (513 m) and NE (520 m). In S and SE, suburban development in block on 4 major roads & road parallel to town ditch.
Built-up area within the wall	40.3 ha (70.8% of walled area)
Open area within the wall	16.6 ha (29.2% of walled area, largely along the R. Stour, which isolated a large area in NW

Abundance of detached gardens
53 garden-ground sites were identified, but map symbols and detail did not allow identification of individual plots.

Breakdown by buffer zones

Zones	Area of zones (ha)	Area of gardens (ha)	% of zone	% of all detached gardens
Built-up area	75.2	3.2	4.2	7.1
Urban fence -100m	81.1	26.6	32.8	58.7
100-200m	72.7	7.9	10.8	17.4
200-300m	75.9	4.2	5.5	9.3
300-400m	80.8	2.9	3.6	6.4
400-500m	85.6	0.5	0.6	1.1
Total study area	471.3	45.3	9.6	

Features affecting the distribution of detached gardens

Physical features
Braided section of River Stour was largely filled with gardens and orchards, especially within the wall; the exception was ribbon development along the road to north-west gate. Orchards also stretched along north bank of northern branch of river, away from the major roads.

Wall, ditch, fortifications

Detached gardens	No.	Area (ha)	
Within the wall	19	10.4	Wall appears to have had little influence; 3 small sites against wall in otherwise built-up area
Beneath wall and in town ditch	6	2.4	Strip 20 m wide, broken by entrances to town and occasional buildings. Total length 1049 metres.

Urban Fence

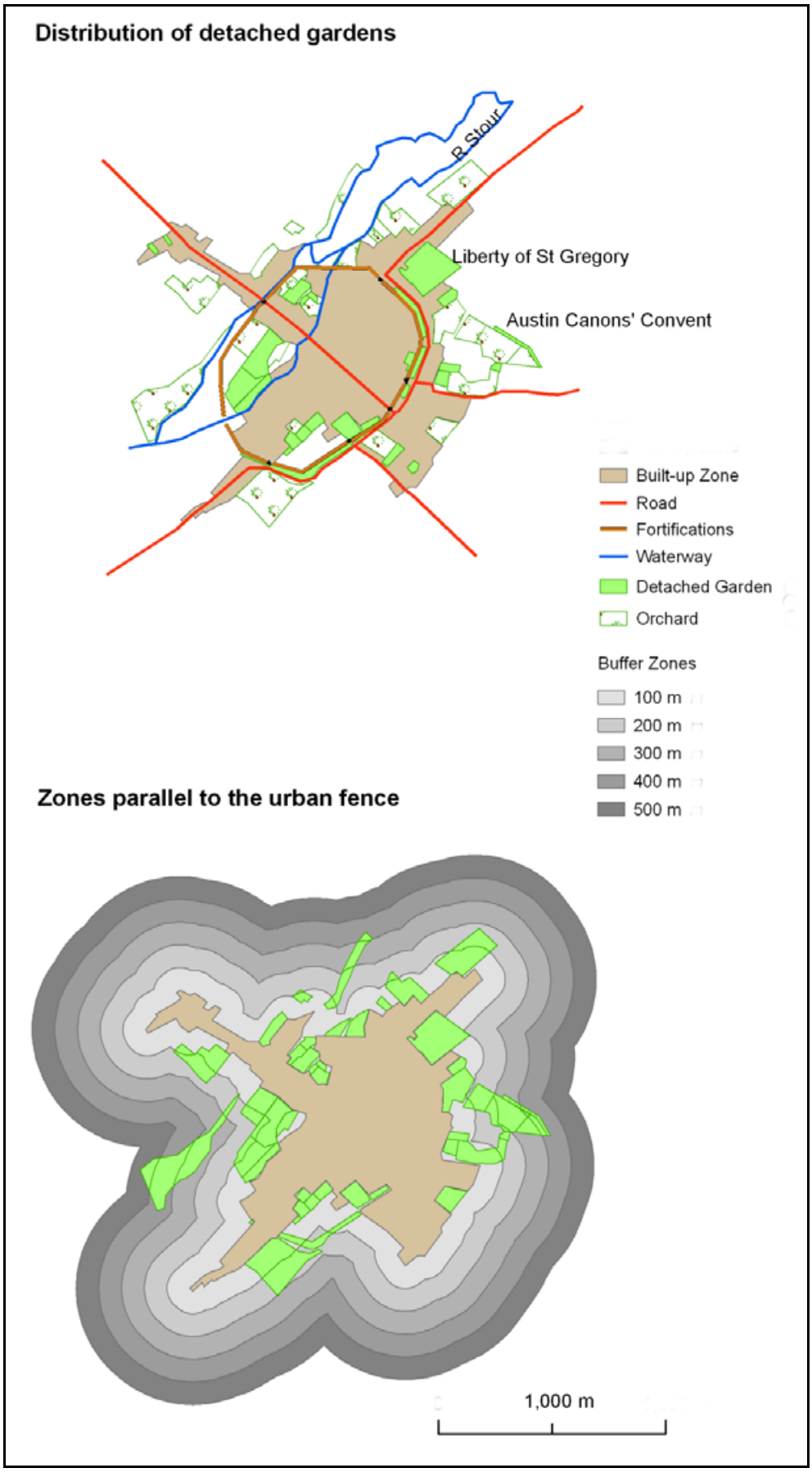
Detached gardens	No.	Area (ha)	
Within the urban fence	11	3.2	Mainly within the wall. Small, averaging 0.27 ha.
In contact with the urban fence	43	32.0	100% of sites used for ground crops were in contact. 61.5% of orchard sites also had a contact point.

Distances from major roads and town gates

Average distance from main road	Gardens: 66m; Orchards: 128m
% of sites with frontage on main road	25.7
Max distance of a garden from town gate	739m, measured along roads and tracks, but falling within the 200m buffer zone.

Other fringe belt features
Two plots stand out: the Liberty of St Gregory, entirely covered by gardens, measuring 3.3 hectares; and an area labelled 'St Austin's Monastry' (probably a convent of Austin canons), with many orchards and also a bowling green.

Figure 4.3 Canterbury in 1768



Box 4.2 Chester in 1789

Approx population (Chalklin, 2001b; Everitt, 1979)	13,000 in 1750; 15,000 in 1801
Area within the wall	51.7 ha
Built-up area (enclosed by urban fence)	72.3 ha
Extra-mural suburbs (36.5 % of built-up area)	26.4 ha. Ribbon development on Upper Northgate St (391m), over Dee Bridge (709m) and Foregate St (461m). Several N-S streets parallel with E wall; 2 streets from Water Gate to R Dee (300m).
Built-up area within the wall	45.9 ha (88.8 % of walled area)
Open area within the wall	5.8 ha (11.2 % of walled area); blocks in NE and NW and Nuns' Gardens in SW.

Abundance of detached gardens

79 garden-ground sites were identified, some at individual plot level.

Breakdown by buffer zones

Zones	Area of zones (ha)	Area of gardens (ha)	% of zone	% of all detached gardens
Built-up area	72.3	1.3	1.8	7.0
Urban fence -100m	78.3	12.3	15.7	64.6
100-200m	63.2	2.2	3.6	11.7
200-300m	64.4	1.1	1.8	6.1
300-400m	67.0	0.9	1.4	5.0
400-500m	72.6	1.1	1.6	5.6
Total study area	417.8	19.0	4.6	

Features affecting the distribution of detached gardens

Physical features

Dominated by estuarine Dee, with salt flats. To west and south of Water Gate, silted area devoid of gardens, laid out as racecourse (Roodee).

Wall, ditch and fortifications

Detached gardens	No.	Area (ha)	Notes
Within the wall	5	3.9	Some in centre of urban blocks; most in 'Nuns' Gardens', divided internally into many plots. Most located between Roman and Norman walls, on sites of former religious houses.
Beneath wall and in town ditch	4	1.8	All faced east, southernmost one was public garden, part of public walk area near R Dee.

Urban Fence

Detached gardens	No.	Area (ha)	Notes
Within the urban fence	4.0	1.0	All in centre of urban blocks & mainly within wall. Some open spaces not designated since boundaries not clear.
In contact with the urban fence	44.0	11.9	55.7% had at least 1 side in contact; many more were multi-plot sites tucked into urban fence. Most orchards well outside urban fence on road to E.

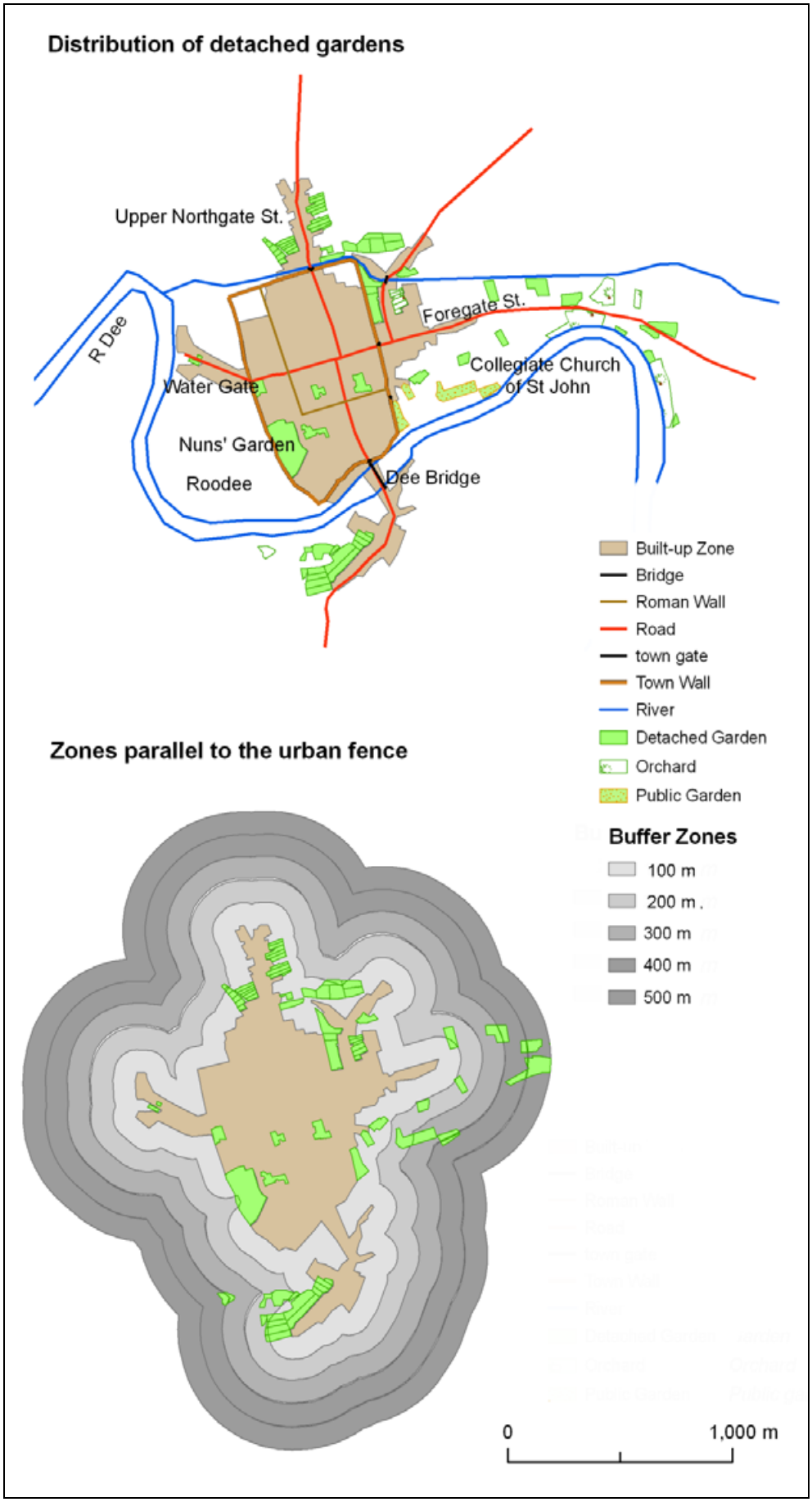
Distances from major roads and town gates

Average distance from main road	Gardens: 59m; Orchards: 100m
% of sites with frontage on main road	22.0
Max distance of a garden from town gate	Gardens: 610m; Orchards: 1139m

Other fringe belt features

Strong link between religious house sites & detached gardens in intra-mural (Benedictine Abbey of St Mary [Nuns' Gardens in 18th C] & St Werburgh's Abbey [cathedral with land converted into close & palace gardens] both within urban fence). Rope walk parallel with N. wall. In extra-mural, religious houses became ornamental gardens, bowling green and public walks. The racecourse was on the salt flats.

Figure 4.4 Chester in 1789



Box 4.3 Colchester in 1767

Approx population (Everitt, 1979)	1700: 8,000-9,000. 1801: 11,500
Area within the wall	47.8 ha
Built-up area (enclosed by urban fence)	48.5 ha (63.5% located within wall)
Extra-mural suburbs (36.5 % of built-up area)	17.7 ha. Small suburbs on London Rd (442 m) and North Gate and Mill (244m). Long tentacles to E (808m) and SE towards harbour (901m), but sparsely developed
Built-up area within the wall	30.6 ha (63.9% of walled area)
Open area within the wall	17.2 ha. (36.1% of walled area). 3 blocks of pasture in N, sloping down to R Colne. 3 large garden-ground sites.

Abundance of detached gardens
28 garden-ground sites identified, but symbols did not allow identification of individual plots.

Breakdown by buffer zones

Zones	Area of zones (ha)	Area of gardens (ha)	% of zone	% of all detached gardens
Built-up area	46.6	0.5	1.1	0.9
Urban fence -100m	87.9	37.9	43.1	68.7
100-200m	76.6	13.5	17.6	24.4
200-300m	74.8	3.1	4.1	5.6
300-400m	77.0	0.2	0.2	0.4
400-500m	81.8	0.0	0.0	0.0
Total study area	446.7	55.2	12.4	

Features affecting the distribution of detached gardens

Physical features
River Colne flows close to north wall and then turn south and widens at port. Flood plain not built on or used for gardens, except near 2 bridges. Gardens on river terraces.

Wall, ditch and fortifications

Detached gardens	No.	Area (ha)	
Within the wall	6	10.8	All in contact with wall, but wall not necessarily most important factor in location
Beneath wall and in town ditch	5	4	In north and east where no skirting road

Urban Fence

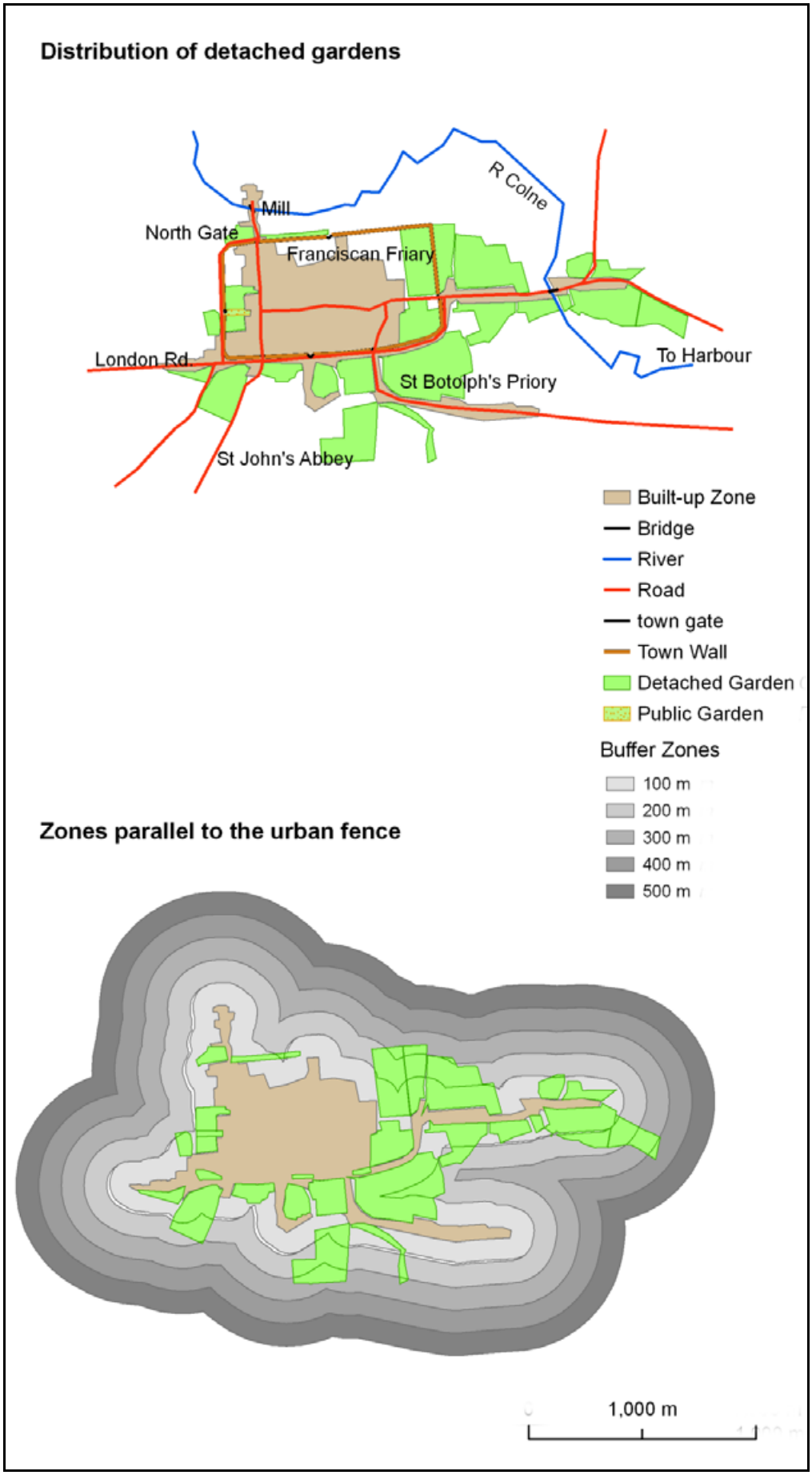
Detached gardens	No.	Area (ha)	
Within the urban fence	2.0	0.5	Cartographer did not investigate middle of urban blocks; therefore impossible to see if land was detached or attached to neighbouring houses
In contact with the urban fence	29.0	48.3	81.8% had one edge in contact, but note that many sites were large and individual plots undifferentiated

Distances from major roads and town gates

Average distance from main road	16 m
% of sites with frontage on main road	30.0%
Max distance of a garden from town gate	922m to east of town in 300-400m zone

Other fringe belt features
Tenterfields on flood plain meadows to N and SE, including one within wall.
Sites of religious houses, Franciscan Friary in intra-mural; St John's Abbey and St Botolph's Priory in extra-mural, all with detached gardens.

Figure 4.5 Colchester in 1767



Box 4.4 Exeter in 1744

Approx population (Everitt, 1979)	16,000 in 1750
Area within the wall	37.9 ha
Built-up area (enclosed by urban fence)	75.9 ha (47.1% located within the wall)
Extra-mural suburbs (52.9 % of built-up area)	Ribbon development to NW (783m), NE (759m) SE on 2 London roads (362 & 349m), SW over Exe Bridge (514m). Also industrial development & wharves in valley of R Exe.
Built-up area within the wall	35.8 ha (94.4%)
Open area within the wall	2.1 ha (5.6%) around Rougemont Castle and small block in NE.

Abundance of detached gardens

90 garden-ground sites were identified, including many individual plots. but Rocque did not investigate the centre of urban blocks, so this is likely to be a minimum figure.

Breakdown by buffer zones

Zones	Area of zones (ha)	Area of gardens (ha)	% of zone	% of all detached gardens
Built-up area	75.9	0.3	0.4	1.3
Urban fence -100m	93.6	17.4	18.6	78.0
100-200m	8.4	3.4	4.2	15.2
200-300m	81.2	0.8	1.0	3.6
300-400m	84.1	0.5	0.5	2.2
400-500m	88.7	0.0	0.0	0.0
Total study area	504.9	22.3	4.4	

Features affecting the distribution of detached gardens

Physical features

A steep drop to the NW to the Bell Brook and flood-plain and marsh along valley of R Exe reduced possibilities for gardens. Most were located in gentle hills to E and SE. and over the Exe Bridge to the SW.

Wall, ditch and fortifications

Detached gardens	No.	Area (ha)	Notes
Within the wall	8	2.1	Wall appears to have had little influence
Beneath wall and in town ditch	37	2.4	Especially beneath S & E walls, strip broken by gate and houses near gate. Smaller plots N of gate on NW wall. Northern Hay was public park. Southern Hay also, but located beyond town ditch.

Urban Fence

Detached gardens	No.	Area (ha)	Notes
Within the urban fence	5	0.3	Open areas within urban fence (centre of urban blocks and ground attached to major buildings such as cathedral & castle) were not designated as garden-ground.
In contact with the urban fence	72	17.1	91.3% had at least 1edge in contact

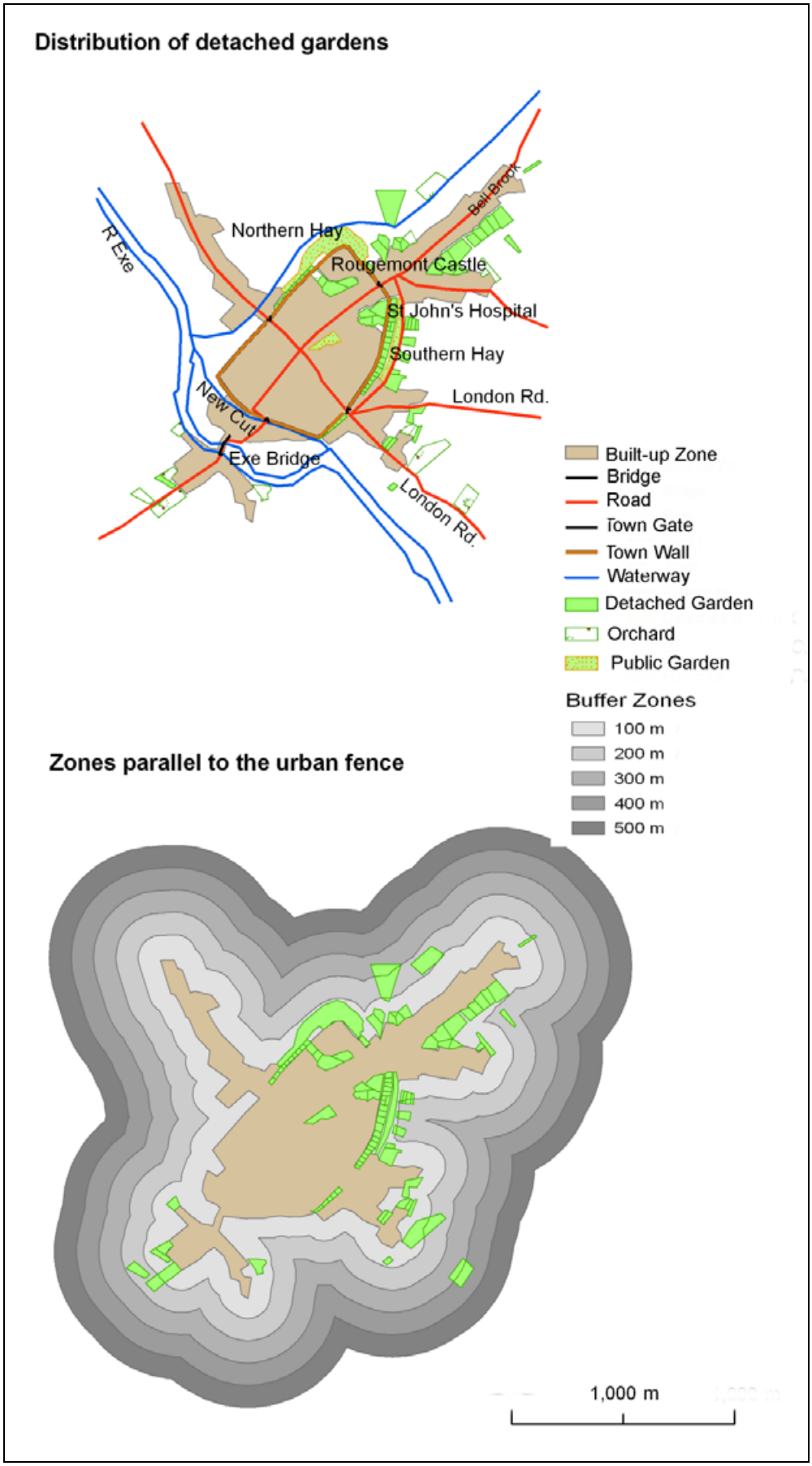
Distances from major roads and town gates

Average distance from main road	Gardens: 67m; Orchards: 85m
% of sites with frontage on main road	15.5
Average distance of a garden from town gate	329m

Other fringe belt features

In intra-mural, St John's Hospital, once a priory, was location for several detached gardens. No sign of gardens on sites of religious houses in extra-mural fringe. Institutions included City Hospital, workhouse and partly completed City & County Hospital. Industrial development on river and especially New Cut. 8 tenterfields. 2 bowling greens and public walks.

Figure 4.6 Exeter in 1744



Box 4.5 Hereford in 1757

Approx population (Lobel, 1969)	1757: 5,592; 1801: 6,828
Area within the wall	39.5 ha
Built-up area (enclosed by urban fence)	47.2 ha (72.5% located within the wall)
Extra-mural suburbs (27.5 % of built-up area)	13 ha. Ribbon development from 6 gates especially to NW (393m); on 3 roads to N and E, development for less than 200; furthest over Wye Bridge (618m)
Built-up area within the wall	34.2 ha (86.6% of walled area)
Open area within the wall	5.3 ha (13.4%), mainly in block in NW

Abundance of detached gardens
92 garden-ground sites were identified,

Breakdown by buffer zones

Zones	Area of zones (ha)	Area of gardens (ha)	% of zone	% of all detached gardens
Built-up area	47.1	1.3	2.7	4.4
Urban fence -100m	66.1	23.9	36.2	81.0
100-200m	59.5	3.8	6.3	12.8
200-300m	62.8	0.5	0.7	1.6
300-400m	66.8	0.1	0.1	0.2
400-500m	71.8	0.0	0.0	0.0
Total study area	374.1	29.5	7.9	

Features affecting the distribution of detached gardens

Physical features
Undulating lowlands with rich soils on Old Red Sandstone provided excellent conditions for gardens. R. Wye was fordable and did not form a barrier, so gardens continued south of river.

Wall, ditch and fortifications

Detached gardens	No.	Area (ha)	Notes
Within the wall	5	4.6	No clear relationship with wall itself
Beneath wall and in town ditch	5	1.6	Symbology not certain. Appears to be one long garden, broken by town gates and town moat near castle. Possibly public garden, planted with trees.

Urban Fence

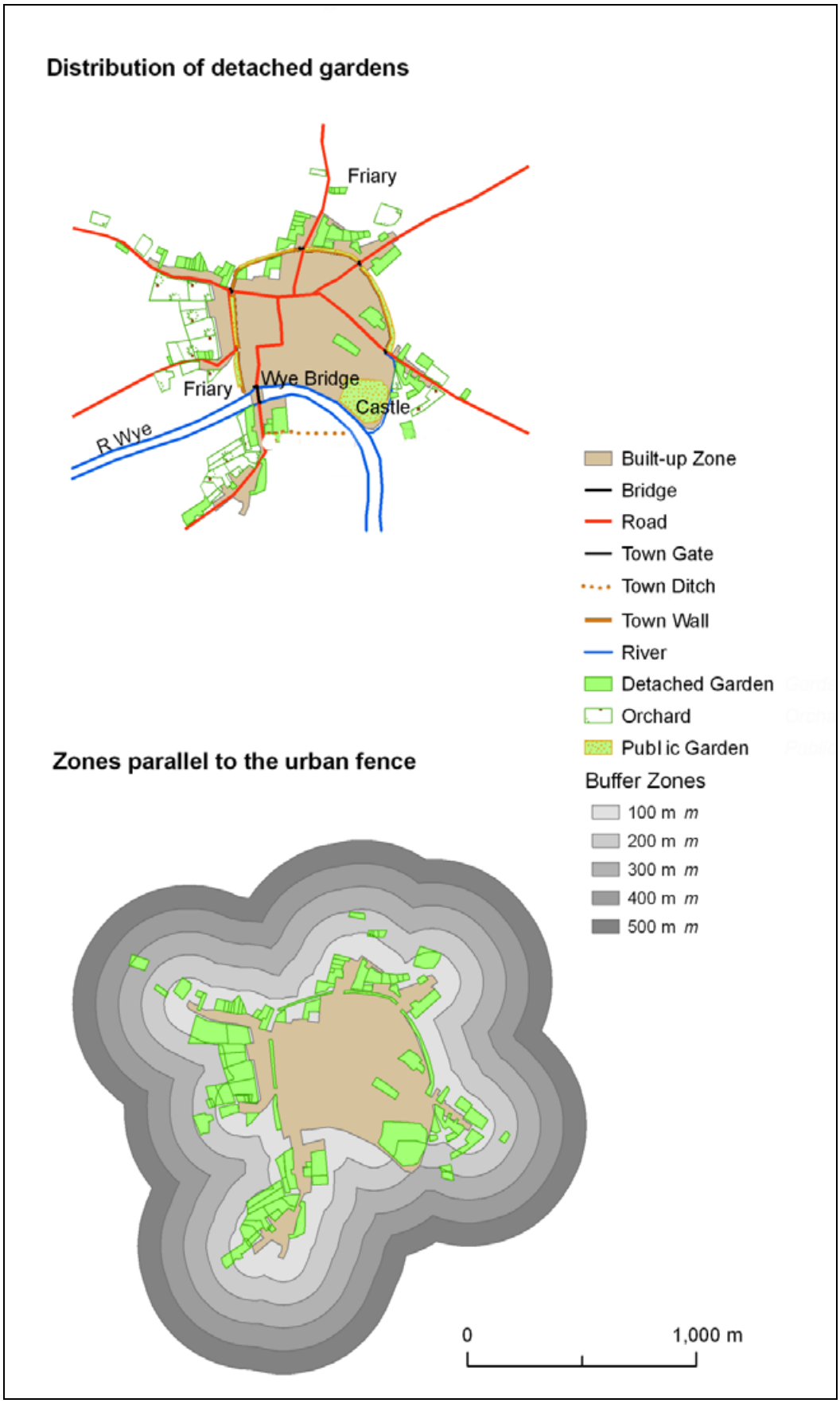
Detached gardens	No.	Area (ha)	Notes
Within the urban fence	3	1.3	All these were also within the wall
In contact with the urban fence	66	23.0	71.7% had at least 1 edge in contact

Distances from major roads and town gates

Average distance from main road	Gardens 91m; Orchards: 45m, reversal of usual picture, but orchards more likely to be further from town gates
% of sites with frontage on main road	22.1. To W orchards filled space between 2 major roads. In N and NE gardens almost filled space between 2 major roads
Average distance of a garden from town gate	Gardens: 142m. Orchards: 316m

Other fringe belt features
3 religious houses in extra-mural still open land, largely meadows, but some with gardens. Bowling green in intra-mural. Tenterfield beneath wall near river. Institutions, such as infirmary, lunatic asylum and county gaol, not yet built.

Figure 4.7 Hereford in 1757



Box 4.6 Ipswich in 1778

Approx population (Everitt, 1979)	1700: 8,000-9,000; 1801: 10,900
Area within the wall	48.6 ha
Built-up area (enclosed by urban fence)	73.7 ha (56.3% located within wall)
Extra-mural suburbs (43.7 % of built-up area)	Stretched 680m downstream to harbour; also over Orwell Bridge in ribbon development
Built-up area within the wall	41.5 ha (85.3% of walled area)
Open area within the wall	7.1 ha (14.7% of walled area): detached gardens in centre of urban blocks in W; empty land near R Gilroy.

Abundance of detached gardens
73 garden-ground sites were identified.

Breakdown by buffer zones

Zones	Area of zones (ha)	Area of gardens (ha)	% of zone	% of all detached gardens
Built-up area	73.7	3.0	4.1	9.9
Urban fence -100m	68.0	16.7	24.6	55.3
100-200m	65.4	8.8	13.4	29.2
200-300m	68.8	1.7	2.5	5.6
300-400m	71.4	0.0	0.0	0.0
400-500m	76.3	0.0	0.0	0.0
Total study area	423.6	30.2	7.1	

Features affecting the distribution of detached gardens
Physical features
Dominant physical feature was R Orwell, widening rapidly to become tidal. Bridge led to S bank where considerable gardens. Tributary, R Gilroy, to W with large gardens on E bank.

Wall, ditch and fortifications

Detached gardens	No.	Area (ha)	Notes
Within the wall	11	3.0	Rampart had little influence. Most detached gardens in centre of urban blocks.
Beneath wall and in town ditch	3	1.8	One section in NW, where gardens stretched between 90 and 159m over what must have been the ditch. In SW, where may never have been wall, many gardens close to the built-up area.

Urban Fence

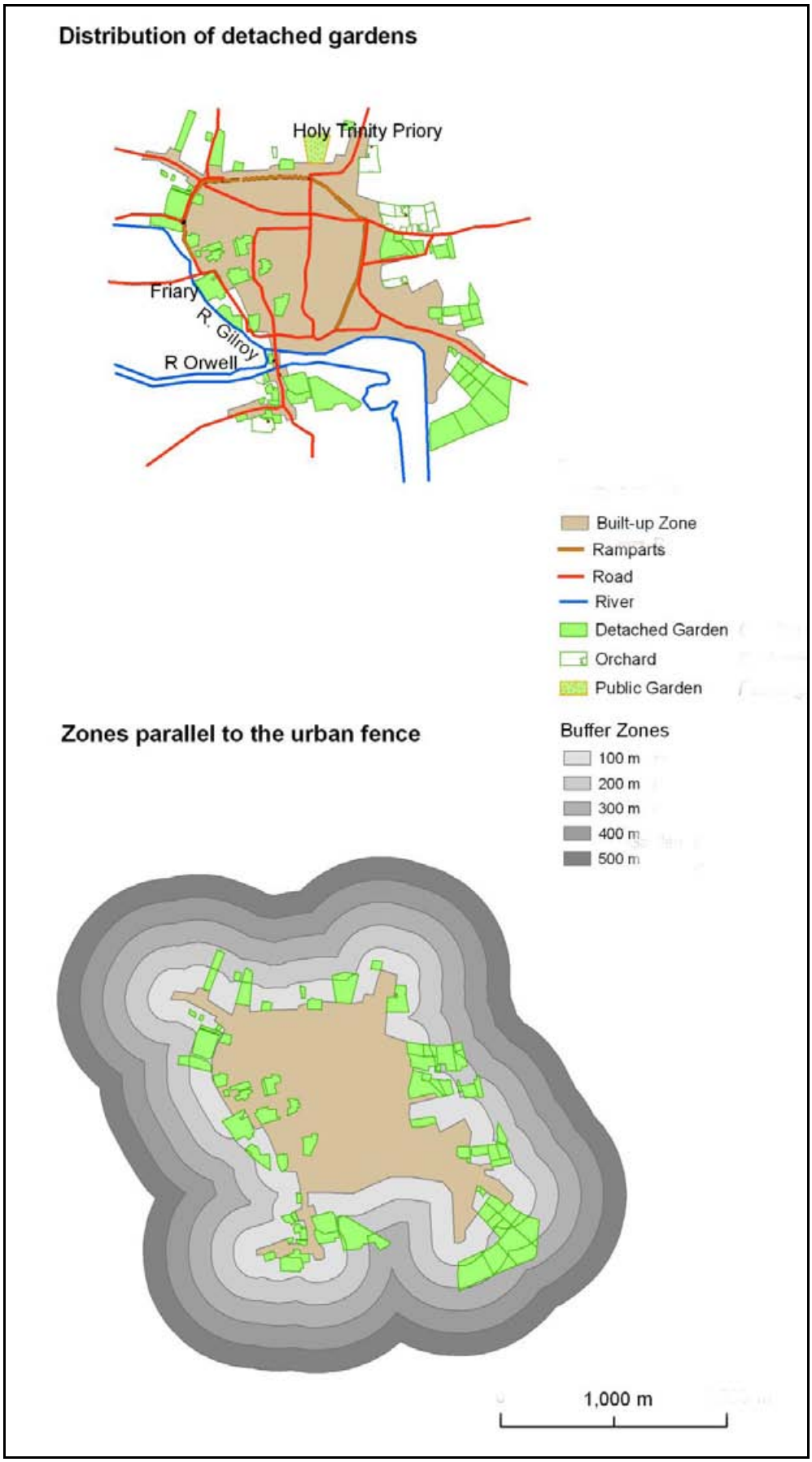
Detached gardens	No.	Area (ha)	Notes
Within the urban fence	11	3.0	All within ramparts (see table above).
In contact with the urban fence	46	16.8	61.6%. See Figure 4.6 - several large garden sites with one contact edge were divided into plots that stretched as far as 300 m from the contact point.

Distances from major roads and town gates

Average distance from main road	Gardens: 47m; Orchards: 59m.
% of sites with frontage on main road	21.3
Max distance of a garden from town gate	Gates no longer apparent on 1778 map

Other fringe belt features
Friary on E bank of R Gilroy totally covered with detached gardens and bowling green. Christ Church to N (Holy Trinity Priory) had ornamental gardens and bowling green. Workhouse located S of Orwell Bridge. Series of tenterfields at junction of Orwell and Gilroy. Shipyards on both sides of R Orwell.

Figure 4.8 Ipswich in 1778



Box 4.7 Lancaster in 1778

Approx population (Penny, 1981)	1785: 8,580
Area within the wall	No wall; strongly fortified castle in NW
Built-up area (enclosed by urban fence)	41.1 ha. Backbone was triangle formed by Penny St, Church St and Back Lane.
Extra-mural suburbs	No wall, but tentacles of development stretched NW along St George's Quay, on 2 roads to E (277 m) and to S (120 m)
Built-up area within the wall	n/a
Open area within the wall	n/a

Abundance of detached gardens

49 garden-ground sites were identified,

Breakdown by buffer zones

Zones	Area of zones (ha)	Area of gardens (ha)	% of zone	% of all detached gardens
Built-up area	41.1	0.6	1.5	6.2
Urban fence -100m	40.1	8.2	20.5	83.6
100-200m	36.6	0.6	1.6	6.2
200-300m	43.7	0.2	0.4	2.0
300-400m	42.3	0.1	0.3	1.0
400-500m	45.8	0.1	0.3	1.0
Total study area	249.6	9.8	3.9	

Features affecting the distribution of detached gardens

Physical features
R. Lune formed strong boundary to N; traces of abandoned meander and salt flats. Low hills to W and S provided most suitable locations for gardens.

Wall, ditch and fortifications
Not applicable

Urban Fence

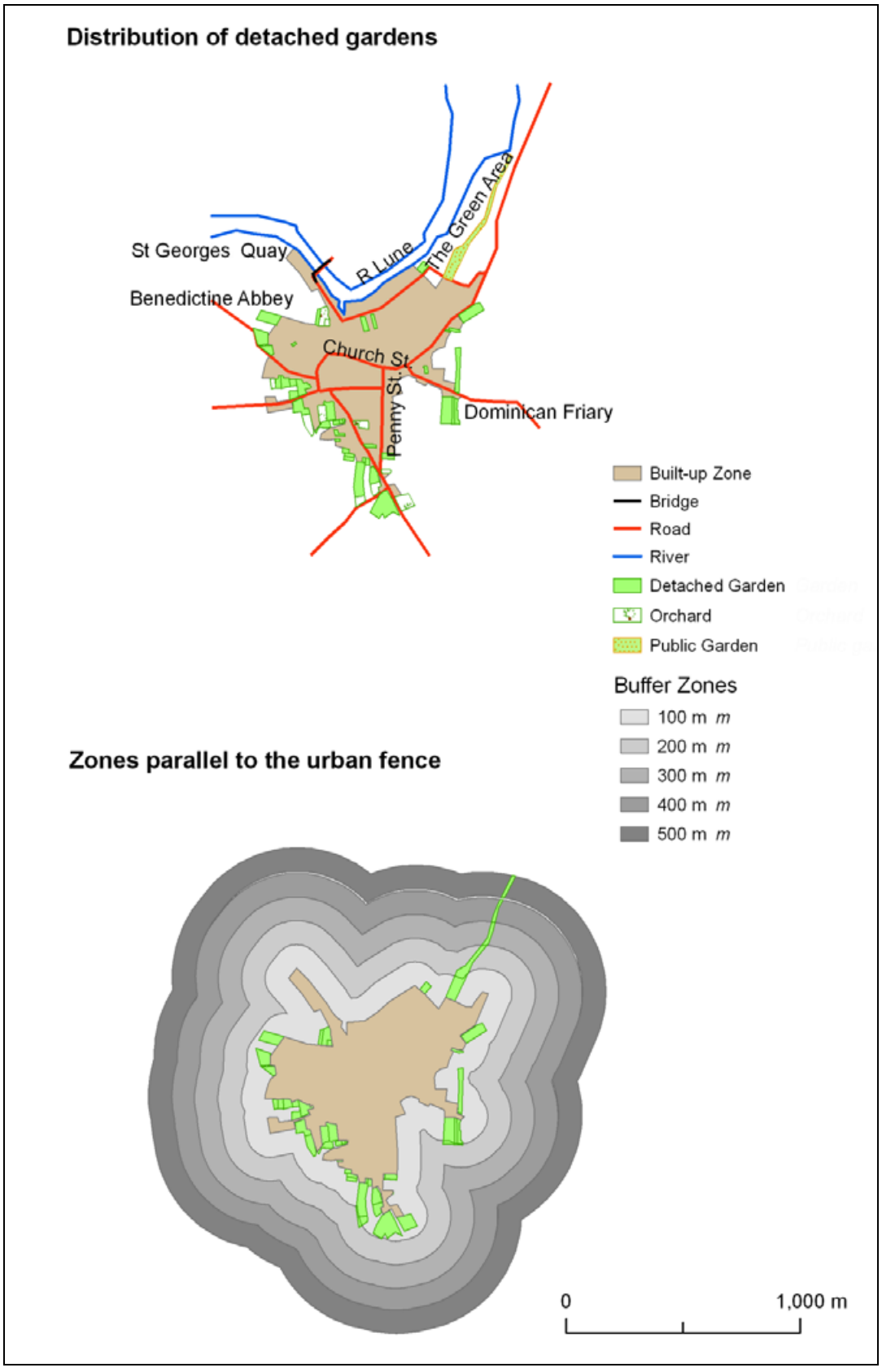
Detached gardens	No.	Area (ha)	Notes
Within the urban fence	8	0.6	All very small
In contact with the urban fence	47	9.7	96% had at least one edge in contact

Distances from major roads

Average distance from main road	24m.
% of sites with frontage on main road	42.9. Where road to S forked, a large garden site filled the space

Other fringe belt features
N of castle, on foreshore, was site of Benedictine Abbey, partly open space and partly gardens in 1778. To E was 'The Fryerage', precinct of former Dominican Friary, open space in 1778, with gardens immediately beyond it, but not part of the precinct. Industrial installations included quays and wood yards on the R Lune and 5 rope walks, 4 of which were associated with strips of detached gardens.

Figure 4.9 Lancaster in 1778



Box 4.8 Newcastle-upon-Tyne in 1746

Approx population (Everitt, 1979)	1750: 29,000
Area within the wall	62.8 ha
Built-up area (enclosed by urban fence)	74.5 ha (75.6% located within wall)
Extra-mural suburbs (24.4 % of built-up area)	18.2 ha. Development along R Tyne, 400m to E and W. Ribbon development to N in 2 tongues that joined after 500m. Tyne Bridge to S, leading to Gateshead in County Durham.
Built-up area within the wall	56.3 ha (89.6% of walled area)
Open area within the wall	6.5 ha (10.4%). 4 empty blocks of land: The Nuns, Black Fryers, Spital Fields & Carling Croft)

Abundance of detached gardens

31 garden-ground sites identified. No differentiation between gardens and orchards and no individual plots within the sites.

Breakdown by buffer zones

Zones	Area of zones (ha)	Area of gardens (ha)	% of zone	% of all detached gardens
Built-up area	74.5	0.0	0.0	0.0
Urban fence -100m	58.2	21.7	37.3	50.9
100-200m	53.2	13.1	24.6	30.8
200-300m	51.4	6.7	13.0	15.7
300-400m	53.9	1.1	2.1	2.6
400-500m	57.5	0.0	0.0	0.0
Total study area	348.7	42.6	12.2	

Features affecting the distribution of detached gardens

Physical features

River Tyne, wide and tidal, was main physical feature. Newcastle built on N. bank on land rising up to plateau on Coal Measure sandstones. Margin of plateau deeply dissected. Steep valleys (denes) have isolated areas along spurs even within walled area (Conzen, 1962). These were mainly colonised by medieval religious houses and remained open areas in 1746. Skinner Burn and Pandon Burn outside town wall, to W. and E., associated with detached gardens. Large garden sites to the north of the town were located on the gentler slopes of the plateau.

Wall, ditch and fortifications

Detached gardens	No.	Area (ha)	Notes
Within the wall	0	0.0	None identified.
Beneath wall and in town ditch	3	1.9	Stretched 644m beneath SW wall and 160m beneath NW wall, S of Gallow Gate.

Urban Fence

Detached gardens	No.	Area (ha)	Notes
Within the urban fence	0	0.0	
In contact with the urban fence	21	31.6	67.7% had at least one edge in contact, especially N of town, though the garden-ground often stretched some distance, in one case as much as 400m.

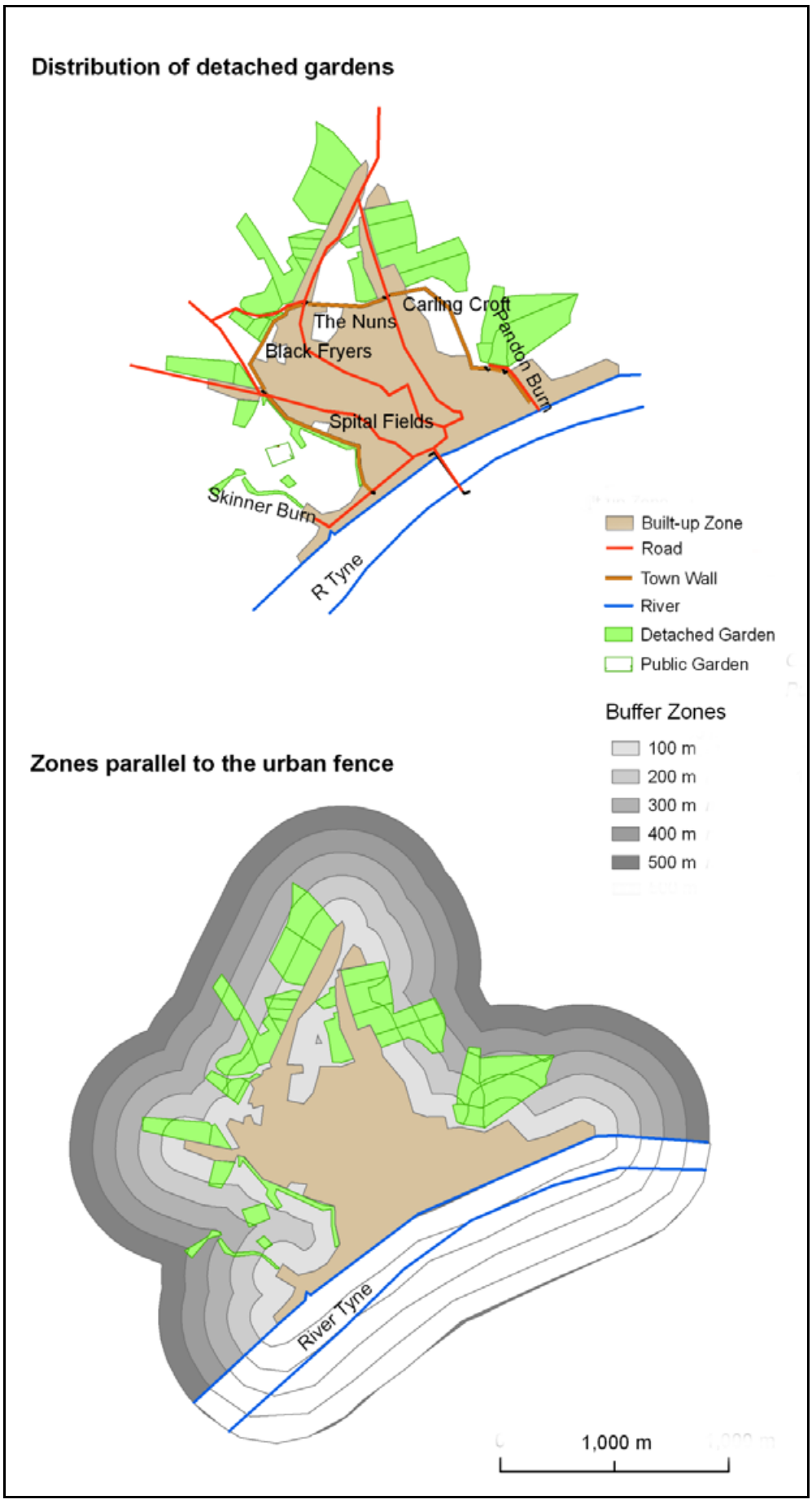
Distances from major roads and town gates

Average distance from main road	61m
% of sites with frontage on main road	16%
Average distance of a garden from town gate	207m

Other fringe belt features

Sites of religious house in intra-mural fringe. Bowling green in extra-mural fringe to N. Shipyards and quayside installations along River Tyne.

Figure 4.10 Newcastle-upon-Tyne in 1746



Box 4.9 Nottingham in 1744

Approx population (Lobel, 1969)	1740: 10,300
Area within the wall	52.0 ha
Built-up area (enclosed by urban fence)	55.0 ha (73.4% located within wall).
Extra-mural suburbs (26.6% of built-up area)	14.6 ha. Development along line of N wall as far as 100m, and to S beneath river cliff on to valley of R Leen. Little ribbon development, except on Derby Rd (132m).
Built-up area within the wall	40.5 ha (77.8% of walled area).
Open area within the wall	11.5 ha (22.2% of the walled area). Open areas near wall in W and S. Blocks to SW of market had detached plots within. Even some empty plots in Anglian burh.

Abundance of detached gardens

112 garden-ground sites were identified.

Breakdown by buffer zones

Zones	Area of zones (ha)	Area of gardens (ha)	% of zone	% of all detached gardens
Built-up area	55.0	3.2	5.9	20.4
Urban fence -100m	41.1	11.4	27.6	72.6
100-200m	43.5	0.9	2.0	5.7
200-300m	48.9	0.2	0.3	1.3
300-400m	54.8	0.0	0.0	0.0
400-500m	60.9	0.0	0.0	0.0
Total study area	304.2	15.7	5.1	

Features affecting the distribution of detached gardens

Physical features

Built on the high land of the Bunter Sandstone, which terminates abruptly in a river-cut cliff about 2 miles long, running E to W. To the W was castle built on a sheer cliff, dropping 40 m to flood plain of the R Leen. Immediately to the E of the town, the Leen is joined by the Beck, with its marshy flood plain. These valley floors were used extensively for detached gardens and orchards; there were at least 40 garden sites there, including 5 large orchards.

Wall, ditch and fortifications

Detached gardens	No.	Area (ha)	Notes
Within the wall	43	5.2	Especially in W, N of castle, where many abutted the wall. Here wall forms strong boundary with no gardens outside.
Beneath wall and in town ditch	0	0.0	Wall appears to have had little impact in the extra-mural fringe

Urban Fence

Detached gardens	No.	Area (ha)	Notes
Within the urban fence	33	3.2	More than ¾ were also within wall
In contact with the urban fence	68	10.6	60.2% were in contact. Exceptions were largely on Leen valley floor. N edge of built-up area almost devoid of detached gardens, probably due to common fields

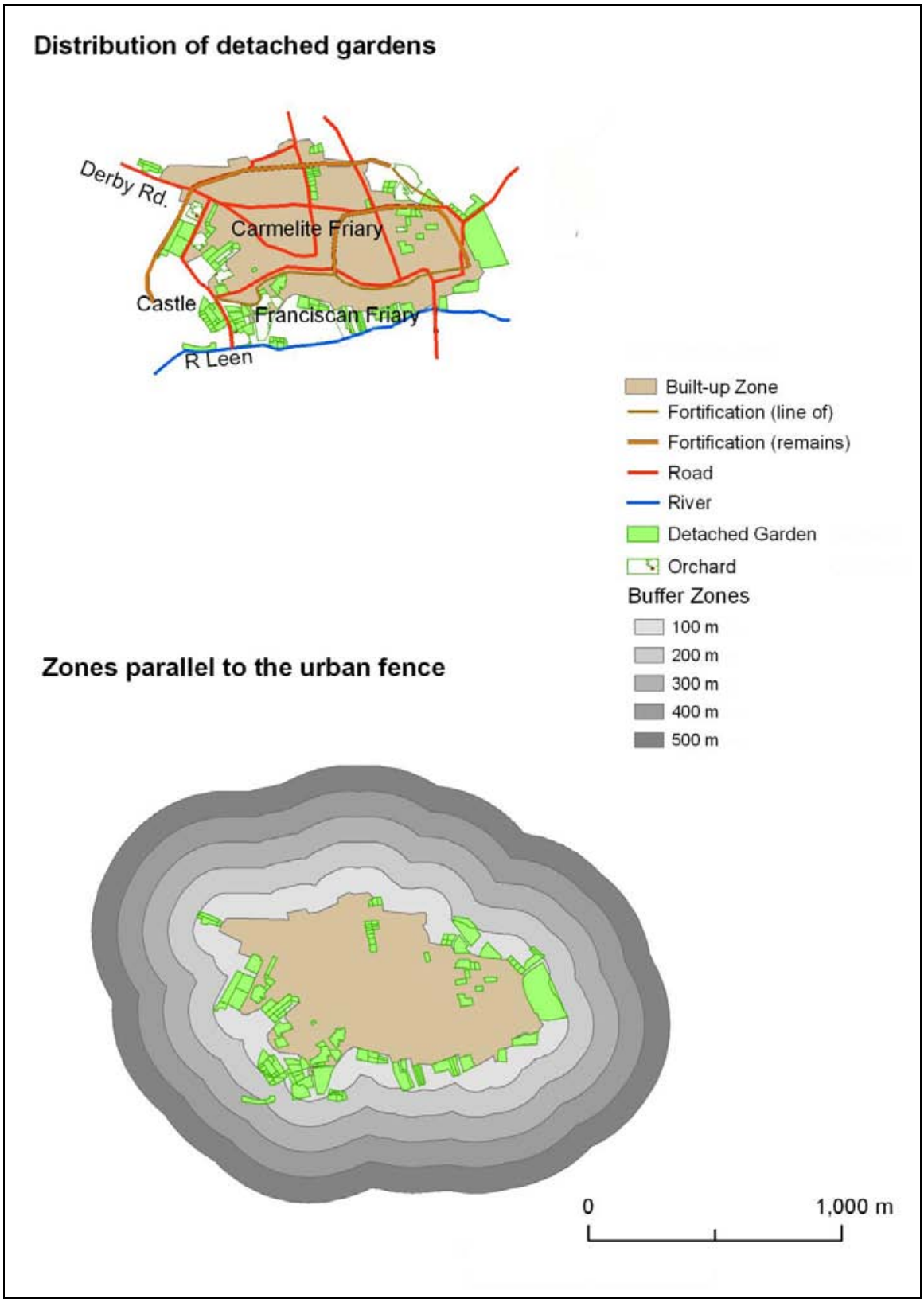
Distances from major roads and town gates

Average distance from main road	71m
% of sites with frontage on main road	Only 8%, mainly on roads on meadows to E.
Max. distance of a garden from town gate	130m along Derby Rd.

Other fringe belt features

Site of Carmelite Friary, S of Market Place & Franciscan Friary precinct in extra-mural fringe in valley of R Leen still contained gardens. 3 bowling greens, spa with public walks. Tenterfields in valley of Leen; also tanneries and quays.

Figure 4.11 Nottingham in 1744



Box 4.10 Salisbury in 1751

Approx population (Chalklin, 2001b; Everitt, 1979)	1700: 6,000; 1801: 7,700
Area within the wall	51.7 ha
Built-up area (enclosed by urban fence)	72.3 ha (63.5% located within wall)
Extra-mural suburbs (36.5 % of built-up area)	26.4 ha. Small extensions to N and S over bridge; extra-mural development along road skirting wall to E. Ribbon development to W beyond Fisherton Bridge (483m)
Built-up area within the wall	45.9 ha (88.8%), including spacious grounds within cathedral precinct
Open area within the wall	5.8 ha (11.2% of walled area) in NE corner of wall.

Abundance of detached gardens
66 garden-ground sites were identified.

Breakdown by buffer zones

Zones	Area of zones (ha)	Area of gardens (ha)	% of zone	% of all detached gardens
Built-up area	79.6	1.8	2.2	8.1
Urban fence -100m	64.3	14.8	23.0	67.0
100-200m	62.3	4.4	7.0	19.9
200-300m	64.7	0.6	1.0	2.7
300-400m	67.7	0.4	0.6	1.8
400-500m	72.8	0.1	0.2	0.5
Total study area	411.4	22.1	5.4	

Features affecting the distribution of detached gardens

Physical features
R. Avon and R. Wylye join to W. of town and flow E. to form a southern boundary. Area was originally marshy, with regular grid of drainage ditches, some following junction of alluvium and gravels. Land immediately to W of river, especially the tracts near the junction of Avon and Wylye, was devoted to gardens, broken only by ribbon development on road to W.

Wall, ditch and fortifications

Detached gardens	No.	Area (ha)	Notes
Within the wall	5	2.9	All located near the ditch or river.
Beneath wall and in town ditch	3	4.3	1 block along N ditch, stretching out for 220m.

Urban Fence

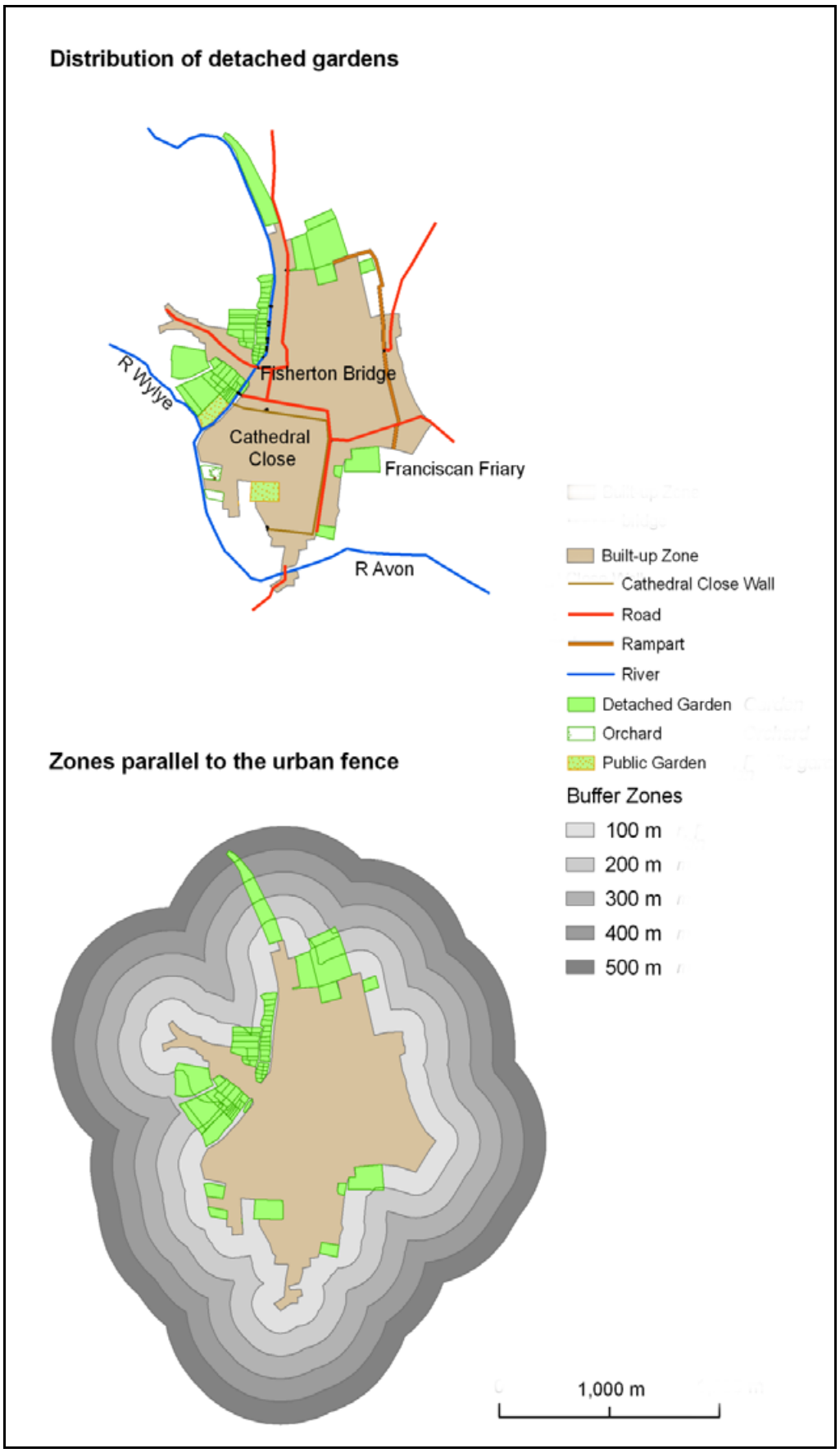
Detached gardens	No.	Area (ha)	Notes
Within the urban fence	2	1.8	One was ornamental gardens next to bowling green.
In contact with the urban fence	47	17.7	71.2% had at least 1 edge in contact. Included were plots along R Avon, connected to built-up area by 8 footbridges.

Distances from major roads and town gates

Average distance from main road	71m
% of sites with frontage on main road	Only 6.9%. More front onto river
Average distance of a garden from town gate	127m

Other fringe belt features
In extra-mural fringe, east of cathedral precinct wall was site of Franciscan Friary, still containing gardens. 2 bowling greens, one within built-up area, other on river terrace west of town. Fulling mills and 2 tenterfields.

Figure 4.12 Salisbury in 1751



Results: synthesis of data on distribution and abundance

In this section the data gathered from the ten towns are reorganised and brought together to establish a systematic overview of the abundance and distribution of detached gardens. Information is presented in tables and graphs and there are several referrals to the distribution maps (Figures. 4.3 to 4.12) which are not reproduced again. The major findings are presented in terms of the various measured elements and discussion is kept to a minimum at this point. First, basic information on all ten towns is presented in comparative terms. This is followed by sections on abundance and distribution of detached gardens. Finally, data on other fringe belt features that shared the outskirts of 18th century towns are brought together.

The selected towns

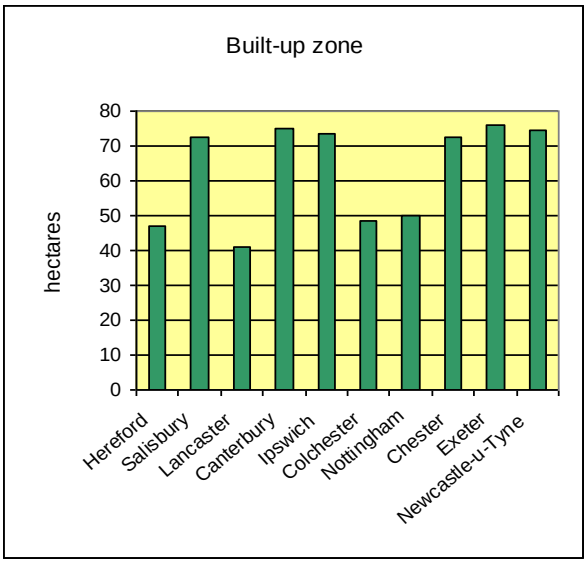
The ten towns selected for the study are listed in Table 4.4. Basic information is assembled here, chosen as possible influential factors in the exploration of the abundance and distribution of detached gardens. For example, the number of residents might be related to the abundance of detached gardens. Similarly, the extent of the built-up area and the amount of open land within the wall and within easy distance of residents' homes might be related to the distribution of detached gardens. These are some of the factors that will be considered in this section of the chapter.

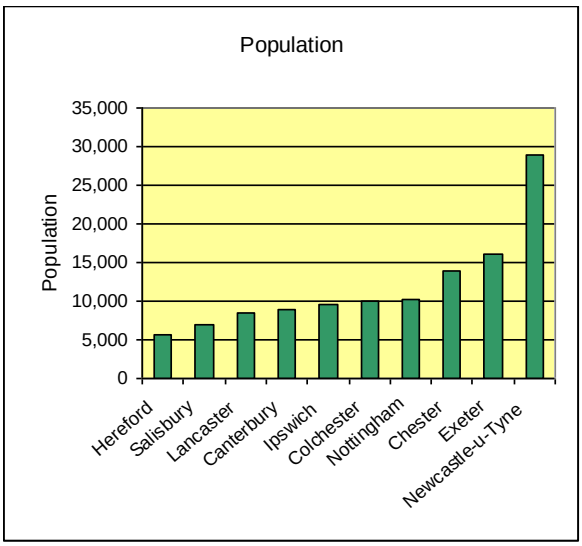
Table 4.4 Synthesis of data. Size and areas

Town	Approximate Population	Areas in ha. (% of built-up area)			Open land within wall in ha. (% within wall)
		Built-up zone	Built-up zone within wall	Built-up zone outside wall	
Canterbury	9,000	75.2	40.3 (53.6)	34.9 (46.4)	16.6 (29.2)
Chester	14,000	72.3	45.9 (63.5)	26.4 (36.5)	5.8 (11.2)
Colchester	10,000	48.5	30.6 (63.0)	17.9 (37.0)	17.2 (36.1)
Exeter	16,000	75.9	35.8 (47.2)	40.1 (52.8)	2.1 (5.6)
Hereford	5,600	47.2	34.2 (72.5)	13.0 (27.5)	5.3 (13.4)
Ipswich	9,500	73.7	41.5 (56.3)	32.2 (43.7)	7.1 (14.7)
Lancaster	8,500	41.1	n/a	n/a	n/a
Newcastle-u-Tyne	29,000	74.5	56.2 (75.5)	18.3 (24.5)	6.5 (10.4)
Nottingham	10,300	50.0	40.4 (73.4)	9.6 (26.6)	11.5 (22.2)
Salisbury	7,000	72.3	45.9 (63.5)	26.4 (36.5)	5.8 (11.2)
AVERAGES			63.10%	36.90%	15.90%

All the towns were stand-alone, with distinct boundaries and rural hinterlands. Seven were county towns of the historic English counties, the exceptions being Canterbury, Newcastle-upon-Tyne and Salisbury. All were located on rivers and five stood on estuaries. Six of the ten towns had a population between 5,000 and 10,000, but there seems to be no relationship between size of population and area of built-up zone (Figure 4.13). Newcastle-upon-Tyne was by far the largest in terms of population, yet its built-up area was much the same as Canterbury's which had less than a third of the population. The smallest town in the study in terms of population was Hereford, with 5,600 residents; yet Lancaster, with a third more people, was smaller in area.

Figure 4.13 Synthesis of data: comparison of population and built-up zones of towns in study





Particular attention was paid to town walls because of their fixation line attributes. Lancaster was the only town entirely without a wall or other linear fortification, though the castle was strongly fortified (Penny, 1981). Nottingham's early

medieval wall had become very degraded by the middle of the 18th century and the southern side may never have been constructed, since the river cliff, rising abruptly to a height of 15 metres, may have been an adequate defence (Gray, 1953). Ipswich's early medieval or Anglo-Saxon ramparts may not have been replaced with stone and the south-western section near the River Gilroy was never completed (Platt, 1979). Salisbury's fortification was never more than a ditch, though the cathedral precinct was walled (Hart, 1957; Royal Commission on Historic Monuments (England), 1980). The other six towns had walls in good condition and the town gates were still in use.

All had open space within the wall (Table 4.4). Some open land was located on floodable river terraces (Canterbury) or steep sided ravines (Newcastle-upon-Tyne). In other places the open land had been previously colonised, especially by medieval religious houses but, subsequent to the Dissolution in the mid-16th century, lay empty, for example the Franciscan Friary in Colchester and the Benedictine Priory of St Mary in Chester (Figures. 4.4 & 4.2). On average this open land covered 8.7 hectares, though the range was from 17.2 hectares (for Colchester) to 2.1 hectares (for Exeter).

On average, 36.9 percent of the built-up area of the nine walled towns (excluding Lancaster) lay outside the walls (Table 4.4). For most of the towns, it comprised development based on the town gates and bridge heads. Ribbon development along the major access routes was the commonest form of suburb, though several of the towns had suburban development along roads skirting a section of the wall.

Abundance of detached gardens

A glance at the distribution maps in the first section of this chapter will confirm that detached gardens were a prominent feature in all ten towns (Figures 4.3 to 4.12). On average, there were 24.5 square metres of garden-ground per resident, with the figures indicating a range from 11.6 to 55.2 (Table 4.4). This table contains many approximations; for example the population has been estimated in several cases. However, it provides an indication of the scale of provision. This table may also illustrate one of the quandaries outlined in the methodology - there was no way of differentiating garden-ground for family use from that for commercial enterprises. This may account for the high figures for Hereford and

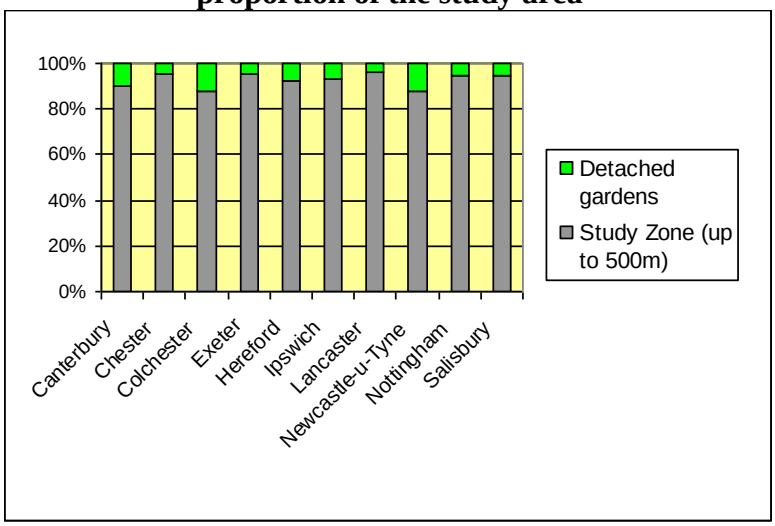
Canterbury, which are fruit growing regions. It does, however, leave a question mark over Colchester which has the highest provision per resident according to the measured data.

Table 4.5 Synthesis of data. Area of detached garden/resident

TOWN	POPULATION	AREA OF DETACHED GARDENS (ha)	m2/RESIDENT
Canterbury	9,000	45.2	50.2
Chester	14,000	19.0	13.6
Colchester	10,000	55.2	55.2
Exeter	16,000	22.3	14.0
Hereford	5,600	29.5	52.7
Ipswich	9,500	30.2	31.8
Lancaster	8,500	9.9	11.6
Newcastle-u-Tyne	29,000	42.6	14.7
Nottingham	10,300	15.6	15.2
Salisbury	7,000	22.1	31.6
TOTALS/AVERAGE	118,900	291.6	24.5

Taking the total study area, that is the ten built-up areas plus 500 metre buffer zones, 7.4 percent comprised detached gardens. Figure 4.14 portrays the situation for individual towns, with Colchester and Newcastle-upon-Tyne the highest at 12.4 and 12.2 percent and Lancaster the lowest at 3.9 percent. The raw data are also presented here in Table 4.6 since these statistics can be a little misleading. Exeter, for example, had only 4.4 percent of the study area under detached gardens and yet it fell midway in the list for the area of detached gardens (22.3 hectares). This is because the built-up area was large (75.9 hectares – the largest in the study) and hence the 500 metre zone was also very extensive.

Figure 4.14 Synthesis of data. Detached gardens as a proportion of the study area

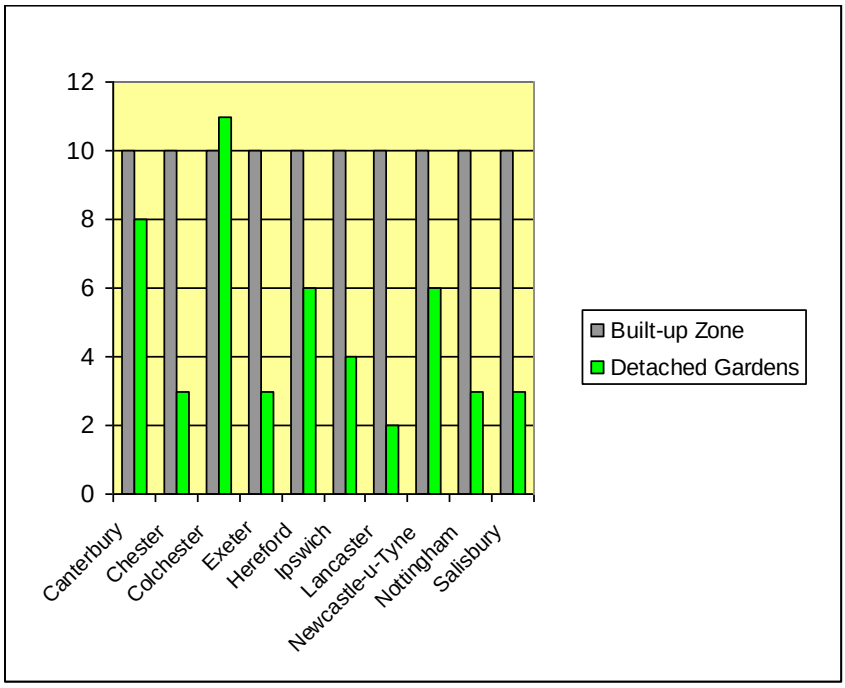


A more meaningful statistic may be the ratio of the area of detached gardens to that of the built-up zone, which is shown in the extreme right column of this table and illustrated in Figure 4.15. On average, the detached gardens occupied an area approximately half as large as the built-up area. Colchester was an exception with the area of gardens larger than the built-up area. Lancaster was the lowest, with its detached gardens occupying only one fifth the area of the built-up zone.

Table 4.6 Synthesis of data. Detached gardens expressed as a proportion of the whole study area and compared with the built-up zone

TOWN	AREA UNDER STUDY (built-up zone + 500 m) (ha)	AREA OF BUILT-UP ZONE (ha)	AREA OF DETACHED GARDENS (ha)	% OF AREA UNDER STUDY	COMPARISON (areas of built-up zone with detached gardens)
Canterbury	471.3	75.2	45.2	9.6	10 / 6.0
Chester	417.8	72.3	19.0	4.6	10 / 2.6
Colchester	446.6	48.5	55.2	12.4	10 / 11.3
Exeter	504.9	75.9	22.3	4.4	10 / 2.9
Hereford	374.1	47.2	29.5	7.9	10 / 6.2
Ipswich	423.7	73.7	30.2	7.1	10 / 4.1
Lancaster	249.6	41.1	9.9	3.9	10 / 2.4
Newcastle-u-Tyne	348.7	74.5	42.6	12.2	10 / 5.7
Nottingham	304.3	50.0	15.6	5.1	10 / 3.1
Salisbury	411.4	72.3	22.1	5.4	10 / 3.1
TOTALS	3952.0	630.7	291.6	7.4	10 / 4.6

Figure 4.15 Synthesis of data Ratio of detached gardens and built-up zones (by area)



The most useful picture emerges from analysis of the data for the five 100 metre buffer zones (Figures. 4.16 and 4.17). Figure 4.16 illustrates the proportion of each zone occupied by detached gardens, showing clearly the importance of proximity to the urban fence. Overall, 62 percent of all detached gardens were found in the zone between the urban fence and 100 metres. A further 23 percent were located in the zone between 100 and 200 metres and 5 percent were within the built-up zone itself. Hence 90 percent of all detached gardens were located within this central area. The remaining 10 percent showed a rapid decline with distance. This pattern was true for all ten towns (Table 4.7) and only in Chester were there any detached gardens beyond the 500 metre line.

Figure 4.16 Synthesis of data Detached gardens as a percentage of zones, by area

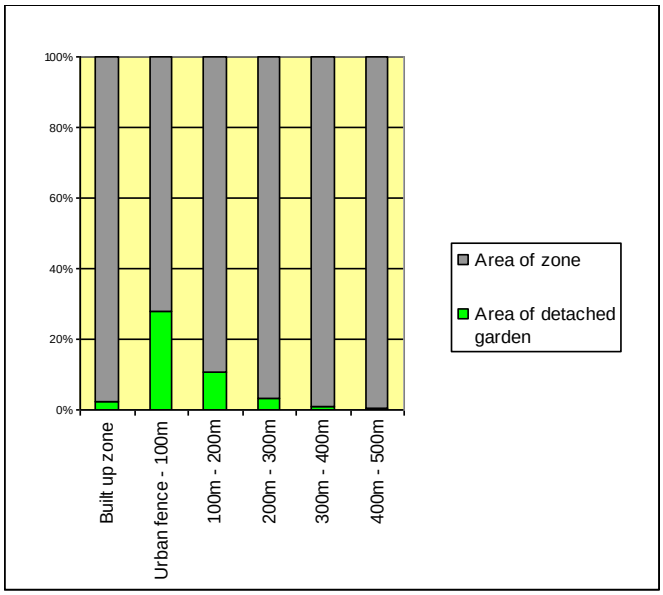


Figure 4.17 Synthesis of data Detached gardens broken down by zones

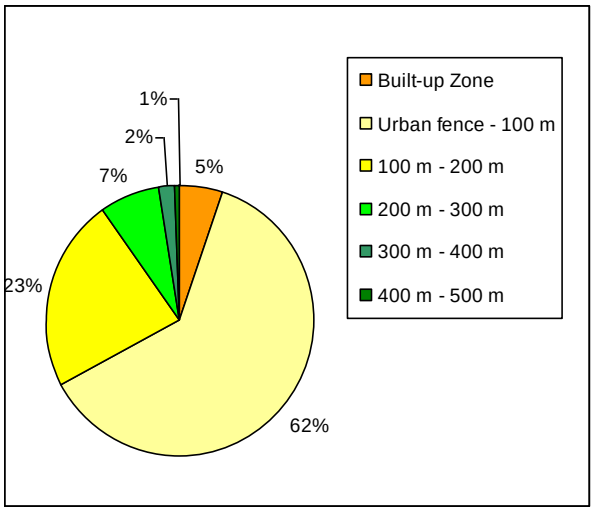


Table 4.7 Synthesis of data. Abundance: areas of detached gardens by zones (ha)

TOWN	BUILT-UP ZONE	URBAN FENCE -100 m	100 m - 200 m	200 m - 300 m	300 m - 400 m	400 m - 500 m
Canterbury	3.2	26.6	7.9	4.2	2.9	0.5
Chester	1.3	12.3	2.2	1.1	0.9	1.1
Colchester	0.5	37.9	13.5	3.1	0.2	0.0
Exeter	0.3	17.4	3.4	0.8	0.5	0.0
Hereford	1.3	23.9	3.8	0.5	0.1	0.0
Ipswich	3.0	16.7	8.8	1.7	0.0	0.0
Lancaster	0.6	8.2	0.6	0.2	0.1	0.1
Newcastle-u-Tyne	0.0	21.7	13.1	6.7	1.1	0.0
Nottingham	3.2	11.4	0.9	0.2	0.0	0.0
Salisbury	1.8	14.8	4.4	0.6	0.4	0.1
Total areas of detached gardens	15.2	190.9	58.6	19.1	6.2	1.8
Total areas of zones	630.7	678.7	552.1	571.9	665.8	713.8
% of zone	2.4	28.1	10.6	3.3	0.9	0.3

Features affecting the distribution of detached gardens

Soil and other physical features In regions of gentle hills and good soils, there were few extremes to influence the detailed location of detached gardens. Hereford's hinterland, for example, comprises undulating lowland, with rich soils on Old Red Sandstone, providing excellent farmland which was equally good for gardens and orchards (Lobel, 1969). The result was an encirclement of gardens. In some places, perhaps where northern latitudes, moorland or thin soils reduced fertility, small rivers and streams provided the best location for a strip of gardens on fertile alluvial soils or well-drained gravel terraces, as in Newcastle-upon-Tyne, where the Pandon Burn and Skinner Burn were used in this way. Ipswich, too, had gardens along the River Gilroy, but elsewhere as on the River Colne in Colchester the wide flood plain was kept free of gardens and maintained as water meadows. On the other hand in Salisbury, a low-lying town sited at the junction of the Rivers Wylye and Avon, and criss-crossed with drainage ditches, the vast majority of detached gardens were sited on the west bank of the Avon, close to the riverside, stretching back onto the terraces. Elsewhere estuarine conditions produced poor quality soil or salt marsh that repelled the formation of gardens, as in Chester or Lancaster.

Wall, ditch and fortifications Nine towns were used in this analysis, since Lancaster had no wall or ditch. In eight of the nine towns, gardens occurred on

the narrow strip of land between the base of the wall and the town ditch or skirting road or within the ditch itself (Table 4.8). The gardens covered 20.2 hectares of land in this location. Surprisingly, this phenomenon occurred even where ditches or earth ramparts were the only fortifications, suggesting that the boundary of the urban core, whether walled and gated or just banked up as a rampart and ditch, acted as a strong fixation line. Nottingham was an apparent exception, though the evidence is not clear, partly because of uncertainty about the line of the wall in the north-east. Perhaps the Nottingham case can be used to reveal some of the reasons for the presence or lack of sub-mural gardens. The early medieval wall enclosed a large area for such a small population (52 hectares for 1,447 tax-paying residents in 1377) and large open spaces were still available for gardens within the wall in the 18th century, especially in the west and north-east. At the same time there were well-documented problems of expansion over the northern section of the wall, due to the intransigent views of the burgesses regarding enclosure of the open fields (Gray, 1953).

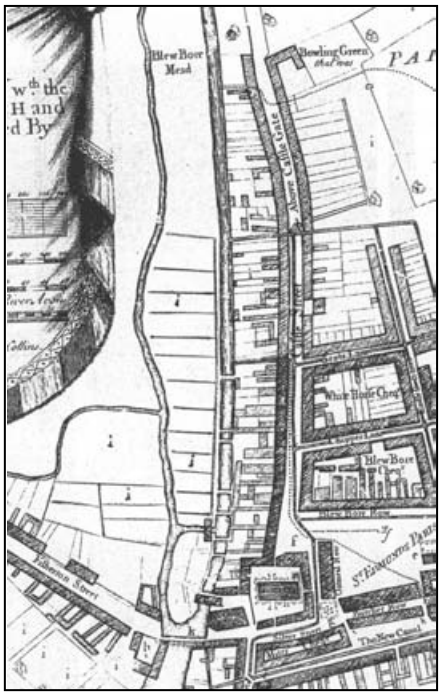
Table 4.8 Synthesis of data. Detached gardens at base of wall

TOWN	NUMBER	AREA (ha)	% OF ALL DETACHED GARDENS
Canterbury	6	2.4	5.3
Chester	4	1.8	9.5
Colchester	5	4.0	7.2
Exeter	38	2.4	10.7
Hereford	5	1.6	5.4
Ipswich	3	1.8	6.0
Lancaster	n/a		
Newcastle-u-Tyne	3	1.9	4.5
Nottingham	0	0.0	0.0
Salisbury	3	4.3	19.5
TOTAL	67	20.2	6.9

The high figure for Salisbury (Table 4.8) needs explanation. In towns where the town defences ended at a river, as in Ipswich, Newcastle-upon-Tyne, Hereford and Salisbury, the river was taken as the town boundary. Only in the case of Salisbury was the river lined with detached gardens; hence these appeared in the statistics as being in contact with the town boundary. The 1751 map of Salisbury shows seven footbridges in the section of the River Avon north of the Fisherton Bridge, providing access to this major strip of detached gardens (Figure.4.18). Salisbury also demonstrates another occasional feature: garden-ground that spread out beyond the line of the ditch for as much as 250 metres. This was the case in

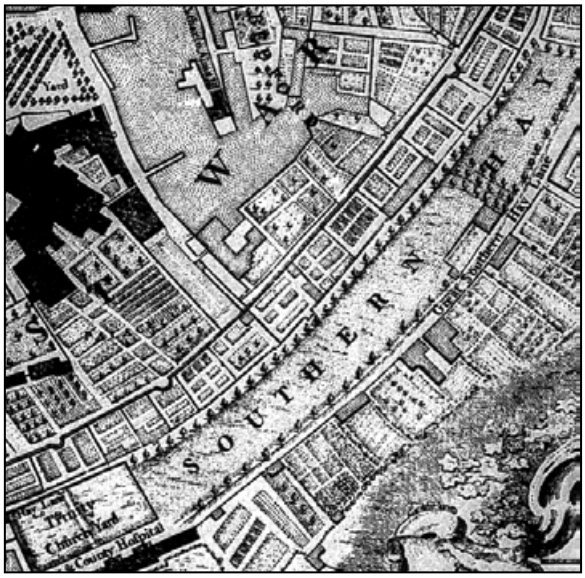
north Salisbury, north-east Colchester and north-west Newcastle-upon-Tyne (Figures. 4.5, 4.10 and 4.12).

Figure 4.18. Extract from Naish's map of Salisbury,1751



Most cartographers did not depict the division of this sub-mural garden-ground into individual plots, but it seems likely that it was divided up. Evidence comes from the Rocque map of Exeter,which shows 38 plots, varying in size from 274 to 1,329 square metres, but mostly in the range of 450 to 550 square metres.

Figure 4.19. Extract from Rocque's map of Exeter, 1744

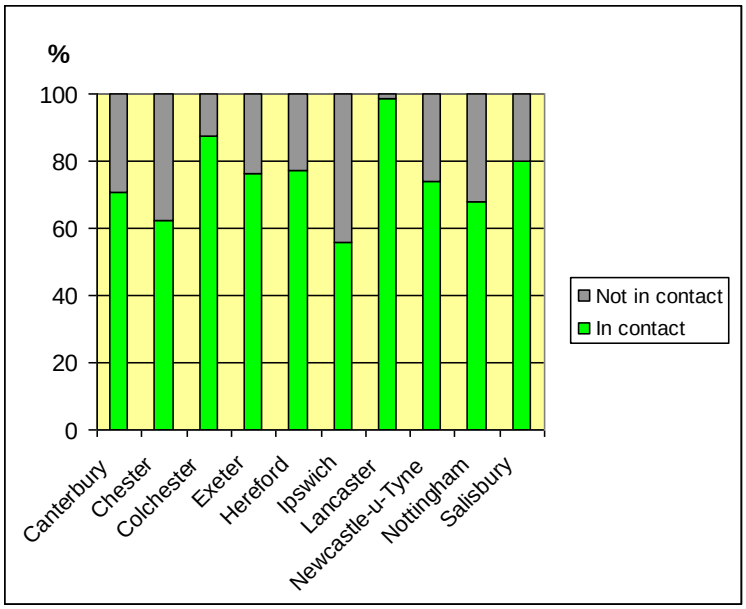


In some towns, the sub-mural area was transformed into public gardens, by the planting of trees. In Exeter this took place in 1612, when Northern Hay was extended and levelled and laid out as a pleasant walk (Hoskins, 1960). In Hereford, an almost continuous garden strip beneath the wall was depicted in

1757 as trees (distinct from orchards) and this has been interpreted as a public amenity area. Although a distinctive feature in walled towns, the sub-mural detached gardens were statistically a small proportion of the total area of detached gardens, comprising only 6.9 percent on average.

Urban fence Proximity to the urban fence was a major factor in the location of garden-ground (Figure. 4.20). 74.9 percent of detached gardens, by area, had at least one side in contact with the urban fence, so that they appeared to be nested within it, forming a broken ring of gardens around the built-up area.

Figure 4.20 Synthesis of data Percentage of detached gardens in contact with the urban fence



There were three major exceptions where the ring was broken, and this was due mainly to physical factors. The northern edge of Nottingham was constrained by the presence of two open fields. In Chester, an infertile area of salt flats lay beyond the western town wall. In Exeter, the land fell steeply to the Bell Brook to the west of the wall. In other cases, as in Newcastle-upon-Tyne and Lancaster, wide tidal rivers formed the boundary with the urban fence. These examples are illustrated on the distribution maps (Figures. 4.4, 4.6, 4.10 and 4.11).

Figure 4.20 illustrates the data for all garden-ground whether used for orchards or ground crops. When separated out, even higher figures are revealed for plots used

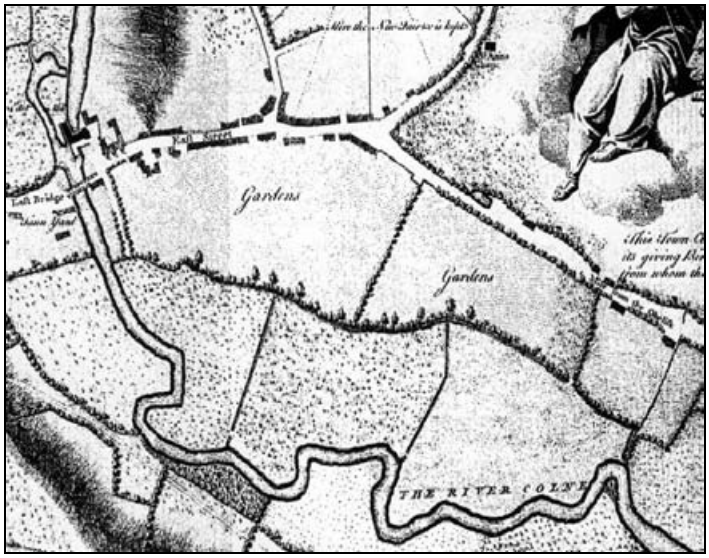
for ground crops: in Canterbury, for example, 100 percent were in contact with the urban fence, while Exeter had 91.3 percent.

Unfortunately the data suffer from poor information because some cartographers did not map individual plot boundaries in sufficient detail. In these cases, the whole site was designated as being in contact with the urban fence, even though the furthest sections might be 200 metres away and probably tenanted by different families; Colchester was an example of this. On the other hand, where there was differentiation of individual plots, as in Ipswich, many of the plots were not actually in contact with the urban fence, although they formed part of a garden-ground site tucked into it. Despite these discrepancies, the individual distribution maps (Figures. 4.2 to 4.12) provide an overall picture of a circle of gardens in close contact with the built-up zone. This is the strongest relationship found.

Distances from major roads and town gates 107 detached gardens, 20 percent of those outside the urban fence, fronted directly onto a major road. The average distance from a major road was 58 metres, this distance being largely due to the roads being lined with buildings in a ribbon development, with the detached gardens located behind. Hence it is difficult to determine whether it was the road or the urban fence that was the important factor in the location of garden-ground.

In several cases, the gardens continued along the road beyond the urban fence, as in south-eastern Ipswich and north of Salisbury. In Colchester, on the road eastwards to Brightlingsea, fields labelled as gardens stretched well beyond the ribbon development and those lined with buildings along the road edge also had gardens behind (Figure. 4.21). This raised the issue of which came first: gardens or buildings? In this instance, it looked as though buildings may have been erected on former garden-ground, but more evidence, such as a sequence of good maps, is needed. Further evidence that the location of gardens was linked to the road network comes from the towns where detached gardens filled the space between two diverging roads as in south-west Colchester (Figure. 4.5) and south Lancaster (Figure. 4.9) or between two parallel roads as in the area west of Hereford (Figure. 4.7).

Figure 4.21. Extract from Sparrow's map of Colchester, 1767



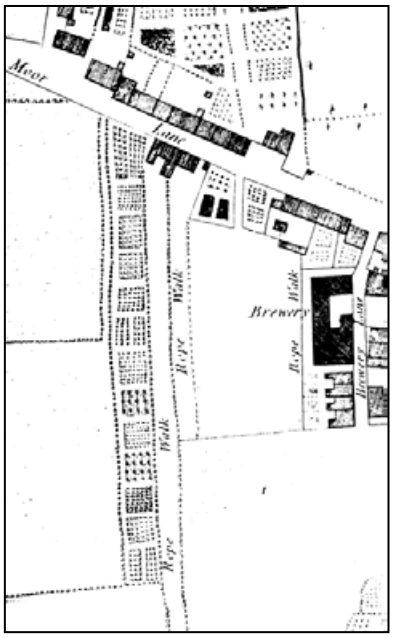
Data were gathered on the shortest distance between garden-ground and town gates, measured along roads and tracks. Most distances were in the region of 200 to 350 metres, as in Newcastle (average 207 metres) and Exeter (average 329 metres); but the furthest gardens could be quite a distance, as in Canterbury, where one garden was measured at 739 metres, even though it fell within the 100-200 metre buffer zone. The greatest distance for a garden was in Colchester, where one was located 922 metres east of the town gate. On the whole, gardens were closer to the town than orchards, but every variation appeared in the data. The evidence for a link between detached gardens and town gates was not convincing and no further analysis was carried out.

Other fringe belt features

In several towns the detached gardens were side-by-side with tenterfields. Colchester had several tenterfields just outside the wall on the meadows of the River Colne and even one within the wall. In Exeter, eight tenterfields occupied sites in the extra-mural fringe. Ropewalks were another feature of local manufacturing industry which were frequently seen. In Chester one was located within the wall, while Lancaster had five, of which four had strips of detached gardens alongside (Figure. 4.22). Other industrial installations had colonised the fringe belt, especially in harbours. Newcastle was an important port, with 800 metres of quayside with attendant installations. Chester and Lancaster both had

small wharves with several cranes and wood yards. In Exeter industry had developed along the New Cut and Ipswich had shipyards on both sides of the River Orwell.

Figure 4.22. Extract from MacKreth's map of Lancaster, 1778



Recreation was also catered for in the fringe belt. Bowling greens abounded in every urban fringe, generally next to ornamental gardens. Sometimes, as in Hereford, Salisbury and Colchester, they were located within the wall. Public walks were a common feature, along the walls themselves, as in Exeter and Hereford, or along riversides as in Chester. Lancaster had the Ladies' Walk, stretching 500 metres northwards from the urban fence alongside the River Lune in the 'Green Area'. Chester had its racecourse, the Roodee, laid out on the salt flats and accessed by the Water Gate. In Nottingham a spa had been established around a spring near the River Leen.

Above all, the sites of former religious houses were distinctive in the urban fringe, with a distribution usually related to the town wall, both in the intra-mural and extra-mural areas. Some had been re-colonised with buildings and were within the urban fence. Others were still open land or had been replaced with functions requiring few buildings. Many contained detached gardens. Chester provided good examples of intra-mural sites. The whole of the western side of the walled town had been occupied by religious houses: Franciscan Friars, Dominican Friars and, in the south-western corner, the Dominican Priory of St Mary with extensive land, still called Nuns' Gardens in the 18th century. St Werburgh's Abbey was

located within the Roman wall and in the 14th century its land covered one sixth of the area within the wall (Sylvester and Nulty, 1958). It became the cathedral, its lands being converted into cathedral close and palace garden, though some open pasture still survived in the north-west corner of the wall, marked by Weston in 1789 with a rough pasture symbol. Canterbury had good examples of extra-mural sites, as depicted on Figure. 4.23, where the lands of the Augustinian Convent illustrate a situation frequently occurring around 18th century towns.

Figure 4.23 Extract from Doidge's map of Canterbury, 1752

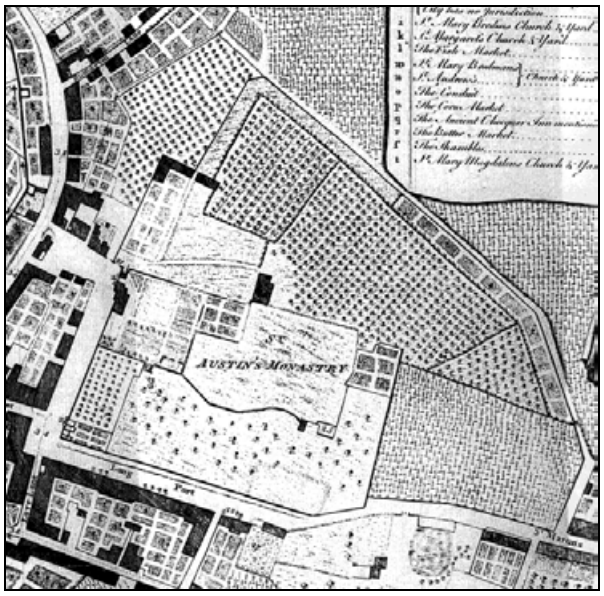


Table 4.9 Synthesis of data. Detached gardens on sites of former religious houses

TOWNS	NO.OF SITES IDENTIFIED	AREA OF DETACHED GARDENS (ha)
Canterbury	2	9.6
Chester	4	3.1
Colchester	3	20.2
Exeter	1	1.0
Hereford	3	0.2
Ipswich	2	2.3
Lancaster	2	0.0
Newcastle-u-Tyne	3	0.0
Nottingham	2	1.9
Salisbury	1	1.5
TOTAL	20	39.8

Table 4.9 is a compilation of the larger sites of former religious houses in the fringes of the sample towns, based on cartographic evidence, but there were many more chapels, shrines, small priories and hospitals, whose sites were still distinctive in the 18th century. Of the 20 sites listed in Table 4.9, 18 were wholly or partially covered with detached gardens. They contained 13.6 percent of the detached gardens in the study area.

Discussion and Conclusions

In this final section, the key findings of the survey, on both distribution and abundance of detached gardens, are extracted and discussed to enable conclusions to be reached. The limitations and successes of the methodology are then assessed.

Abundance of detached gardens

The fundamental finding is that detached gardens were a common feature in and around 18th century towns in England. The towns in the study had, on average, 29.2 hectares of detached gardens at the date of the cross section. The gardens took many forms: individual plots within urban blocks, strips along linear features, and fields divided into rectangular plots. In addition there were formal pleasure gardens and promenades.

An attempt was made to link the area of detached gardens to the number of residents. The towns in the study were stand-alone towns in England, with distinct boundaries. Seven had populations between 5,000 and 10,000, while two were a little higher in the region of 15,000. Newcastle-upon-Tyne stood out with a population of 29,000. A rough estimate, dividing the total population by the total area of detached gardens, led to a calculation that there were, on average, 24.5 square metres of detached garden per person. This figure should be used only as an indication, since there was a wide range between the towns, from 11.6 to 55.2 square metres, and many approximations were used in compiling the data.

Another hypothesis, based on the differing densities of the built-up areas, proposed that tightly-packed towns had more gardens in the fringes. Two of the towns with a similar built-up area, Newcastle-upon-Tyne and Ipswich, were compared. Newcastle-upon-Tyne was much more densely populated, with 29,000

residents, while Ipswich's population was only 9,500. Newcastle's area of detached gardens was 42.6 hectares, but Ipswich's was 30.2, giving Ipswich a larger area of gardens per resident (31.8 square metres) than Newcastle (14.7 square metres). It was clear that other considerations needed to be taken into account and this hypothesis was not pursued further.

Calculations were also carried out to investigate a possible relationship between the area of garden-ground and that of the built-up area. It was found that, on average, detached gardens occupied half as large an area as the built-up area. Although statistically sound, based on precise measurements of both the garden-ground and the built-up area, there seems little likelihood of a causal relationship and no hypothesis was developed.

Distribution of the detached gardens

Two statistics stand out. First, more than 90 percent of detached gardens (by area) were located within the built-up zone itself or within 200 metres of its edge; within this area, the first buffer zone stretching for 100 metres was paramount, with 65 percent of all the detached gardens. Beyond that, the number of gardens reduced very quickly and it was rare to find a garden beyond 500 metres.

Secondly, the urban fence had the strongest relationship with the distribution of detached gardens. The evidence was exceptionally strong: 75 percent of detached gardens, by area, had at least one side in contact with the urban fence. This resulted in a broken ring of gardens, nested into the urban fence and following the tentacles of the suburban development.

Since the urban fence was associated with ribbon development along major access routes, many of the detached gardens appeared to be connected with the road network. The evidence is confusing, but there is some indication that garden-ground sites extended along roads beyond the edge of the town and also filled up spaces between parallel roads or where roads forked.

The concentration of detached gardens within 200 metres of the urban fence is reminiscent of von Thünen's first zone in his *Isolierte Stadt* (Von Thünen, 1826). He hypothesised a zone 0.1 – 0.6 kilometres wide used for the production of milk

and vegetables and where fertility was maintained by manure from the cattle kept in cow sheds and from stables in the town centre. The major reason for the existence of the zone was the state of technology at the time, especially slow transport and no refrigeration. Since transport costs were negligible, the only pertinent factor was that the investment in the land was substantial – a high land rent. In terms of the ten case studies presented in this chapter, it is not known whether any of the detached gardens were commercial concerns, though the division of fields into such small plots suggests that they were intended for family sustenance. If this were the case, von Thünen's equation was probably not applicable since its constituents, such as production expenses and market price of goods, were not relevant (Grotewold, 1959). This is not to imply that detached gardens so close to the urban fence were not of great value economically, both to the owners who could command high rents and to the gardeners who had quick access to their plots. Gardening is intensive work which adds great value to the plot and the availability of detached gardens so close to residents' homes must have been a valuable resource.

The figure of 5.2 percent of detached gardens occurring within the built-up zone may represent an under-measurement, due to deficiencies in the original mapping by 18th century cartographers. The vast majority of detached gardens within the urban fence were also within the town wall and a problem arose with detailed mapping of urban blocks. Those cartographers who looked into what lay behind the buildings lining the street usually came up with some interesting plot boundaries but, in most cases, the map-makers presented insufficient detail so that detached gardens could not be confidently identified and were not included in the analysis.

Additional features affecting location

The towns were purposefully chosen to cover a range of locations in England and hence were inevitably exposed to a range of climatic and physical conditions that must have affected both the quality of the soils and gardening practices. Therefore, within the primary distribution concepts discussed above, there lay a second level of influences that affected the detailed location of detached gardens. Clearly the quality of the soil was of prime importance for gardens which were used so intensively year after year. Residents knew how to make the best of local soil in

order to maintain its fertility and maximise the crops, whether they were on heavy clays (Colchester), warm, nutritious soils (Hereford) or thin acid soils (Newcastle-upon-Tyne). For each town, individual rationalisations can be raised to explain the distribution of garden-ground sites in relation to local slopes, geology, aspect and soil and it is difficult to justify more than general statements. Locally, comparisons are of major importance. For example, if hill slopes on the chalk provide thin, infertile soils, then stream terraces, even though they may periodically flood, are a better option.

The town wall provided the location for a group of detached gardens which formed a distinctive feature, making up almost 7 percent of the total area of detached gardens. They occurred even where stone walls were missing and where ditches or earth ramparts were the only fortification. They were laid out on the narrow strip of land between the base of the wall and ditch or skirting road, or even occasionally within the ditch itself or crossing the ditch to continue outwards for up to 200 metres. It is assumed that these gardens were not ancient since this was a defensive zone in previous centuries, which had to be kept open. However, in the middle years of the 18th century (when the ten maps were published) most town walls in England had lost their defensive role and some were no longer even being maintained (Creighton and Higham, 2005). The suburban area outside the wall, although making up one third of the built-up zone, was still confined to narrow tentacles along the major roads and had not grown extensively.

The maps portrayed a sub-mural strip with very few buildings. One suggestion from the literature is that this was an area of very disturbed sub-soil, which reduced its stability and suitability for permanent buildings. An additional hypothesis is that the 18th century, lying between the era when town fortifications were needed and the period of rapid town expansion in the mid-19th century, may have provided a short window of opportunity for colonisation of the immediate sub-mural strip of land by an activity a little more permanent than grazing. By the middle of the 19th century, the opportunity was lost as more vigorous urban expansion took over.

An important factor for the siting of gardens in this location was that the wall produced a micro-climate, conducive to vegetable growing, sheltering the gardens

from cold winds and intensifying the sun's warmth. Newcastle's long strip of gardens along the south-west wall certainly fitted this explanation, but there were also many sub-mural gardens along north or north-east walls, as in Exeter, Chester or Canterbury, which might have been blasted by northerly winds and shaded from the sun. Perhaps the fertility of the soil, produced by the accumulation of a town's rubbish over centuries was equally important. And, of course, the simple explanation is that such plots were on the nearest open land to resident's homes in the urban core and perhaps ease of access over-rode other considerations.

Other fringe belt features

Of all the fringe belt features that shared the outskirts of 18th century towns with detached gardens, three were prominent. First were tenterfields, usually sited close to the urban core in similar locations to, or even interspersed with, detached gardens. Second, ropewalks were generally near the urban fence in locations where sufficient flat land was available. They frequently formed parallel strips with detached gardens. Thirdly, bowling greens usually formed part of an area of formal public gardens, with avenues of trees and land laid out as promenades.

Above all, the sites of former religious houses were distinctive and many were related to garden-ground, in both the intra-mural and extra-mural fringe. Almost 14 percent of all detached gardens were on the sites of former friaries and abbeys. Monasteries and friaries are known to have had gardens and it is possible that their cultivation was continued by the new owners after the Dissolution in the mid-16th century. If this were the case, some of the gardens might have been under constant cultivation for two centuries. However, the information to hand is based purely on a mid-18th century cross section, and further archival research is needed to establish a hypothesis on this subject.

The methodology

The aim of this section of the research was to build up a wide knowledge of detached gardens in English provincial towns in the 18th century. Hence care was taken to select towns from different parts of England, and the country was divided into eight regions based on the historic counties. Identifying suitable maps, scrutinising the contents and transferring the information proved very time-consuming and the number of towns eventually surveyed was reduced to ten. It

remains questionable as to whether such a small number of towns can be used to make firm assertions about a national picture. However, enough similarities were discovered to allow positive statements.

The methods chosen for this investigation proved reliable, providing the means for consistent measurement that in turn enabled sound synthesis and analysis. There were two key elements. The first was the concept of the urban fence to define the built-up zone. This concept, in its original form devised in the 1960s, allowed a line to be drawn that enclosed the continuously built-up area. Pryor (1969), in his paper on Melbourne, provided a practical model and this was followed successfully, with a number of adaptations for 18th century England. The second was the ability to transfer data from a range of 18th century maps onto digital maps. Thus information at different scales, with different symbols (Table 4.2), and portrayed with differing skills, were transformed by the transferral of information onto Ordnance Survey 1:2,500 First Edition maps available in digital form. The exercise was a little arduous, but produced a database of digitised maps which, by using the functions available in ArcGIS, enabled accurate measurements of distance and area. There were two possible pitfalls in the methodology: the scarcity of good-enough 18th century maps; and the need for interpretation of the symbology. In each case, rules were devised, so that a degree of confidence in its accuracy was imposed on the exercise.

This exploration of detached gardens in 18th century towns has produced new and reliable data. The findings on abundance form a basis for a detailed investigation of detached gardens through time, especially the period of urban expansion in the late 19th century. The research on distribution provides accurate locational information, providing a foundation for the exploration of changes in relation to the urban fence and other fringe belt features. To follow up these ideas, a case-study was designed and Shrewsbury, the county town of Shropshire, was chosen.

CHAPTER 5. DETACHED GARDENS & URBAN ALLOTMENTS IN SHREWSBURY THROUGH TIME

This chapter builds on the results of the nation-wide survey of detached gardens around English towns in the 18th century, reported in Chapter 4, using them in a detailed case-study. The aim is to provide a description and commentary on the changing abundance and distribution of detached gardens and garden-ground in a stand-alone English town in the 19th and early 20th centuries. A longitudinal study, based on a series of cross-sections, was chosen for the methodology. The cross sectional data were derived principally from maps, with additional information from appropriate trade directories. Shrewsbury, the county town of Shropshire, was chosen as a typical provincial town that had not been overtaken by rapid industrial development.

The chapter starts with an introductory section that places Shrewsbury in its social, economic and physical context. This overview provides the setting for the whole case-study and forms the background for the three subsequent chapters which describe and analyse the findings (Chapters 5, 6 and 7). This is followed by a section describing the selection of maps, the study areas established and the mapping of fringe belt features.

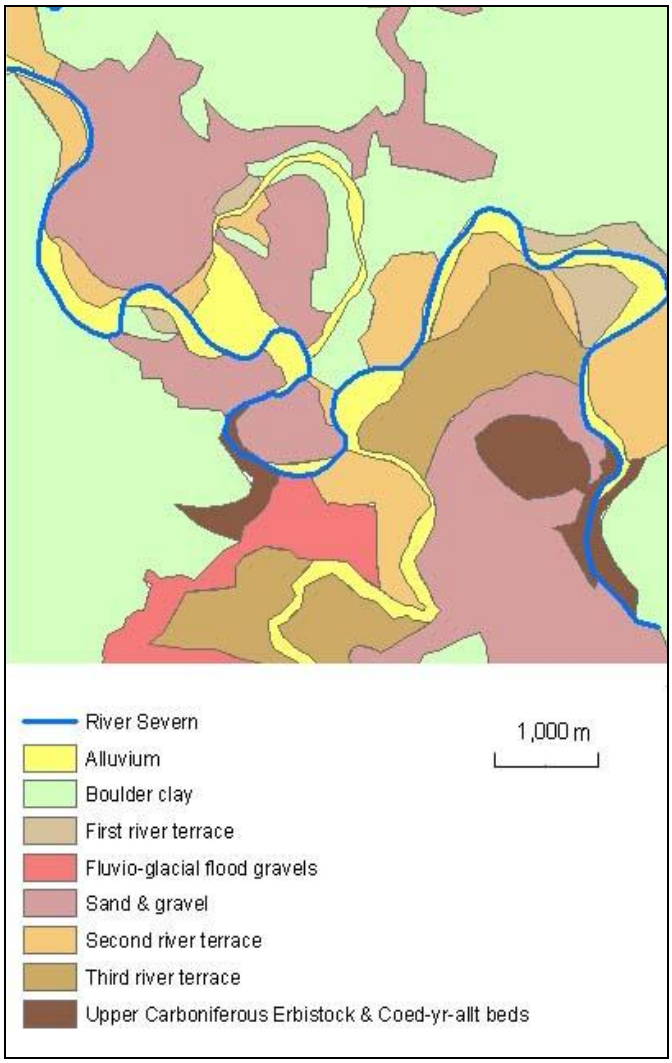
The results portion of the chapter is divided into six parts, one for each of the cross-sections. First the social and economic context for Shrewsbury and the national picture of allotments are summarised in text boxes. Then the major findings are presented in the form of a map, showing both the distribution and the abundance of detached gardens in relation to the urban fence and a series of buffer zones. Data drawn from this map are discussed in the text and illustrated with graphs. Finally, each cross-section finishes with a map and brief description demonstrating detached gardens as one element among many fringe belt features.

The final section gathers together information from the cross sections to produce a narrative through time. A synthesis of the data on changing abundance, varying provision and shifting distribution provides themes that lead to the conclusions.

The context

Shrewsbury stands alone and dominates the demography of the county, with a current population of about 75,000 out of a total of 290,000. The county is rural and largely agricultural, dotted with small market towns. Shrewsbury's hinterland has always been wider than the county, spreading into central Wales and the town acts as a sub-regional centre for services and shopping.

Figure 5.1 Drift geology of the Shrewsbury area



The major physical feature of the Shrewsbury area is the River Severn, flowing in wide meanders, across a surface geology of morainic deposits of sands, gravels and clays. The physical topography is flat or undulating, with occasional kettle holes and gravel ridges and clear evidence of former river channels, with peat deposits in some sections (Figure 5.1). The resulting soils provide a basis for mixed farming, in a clement climatic area lying for the most part below 200

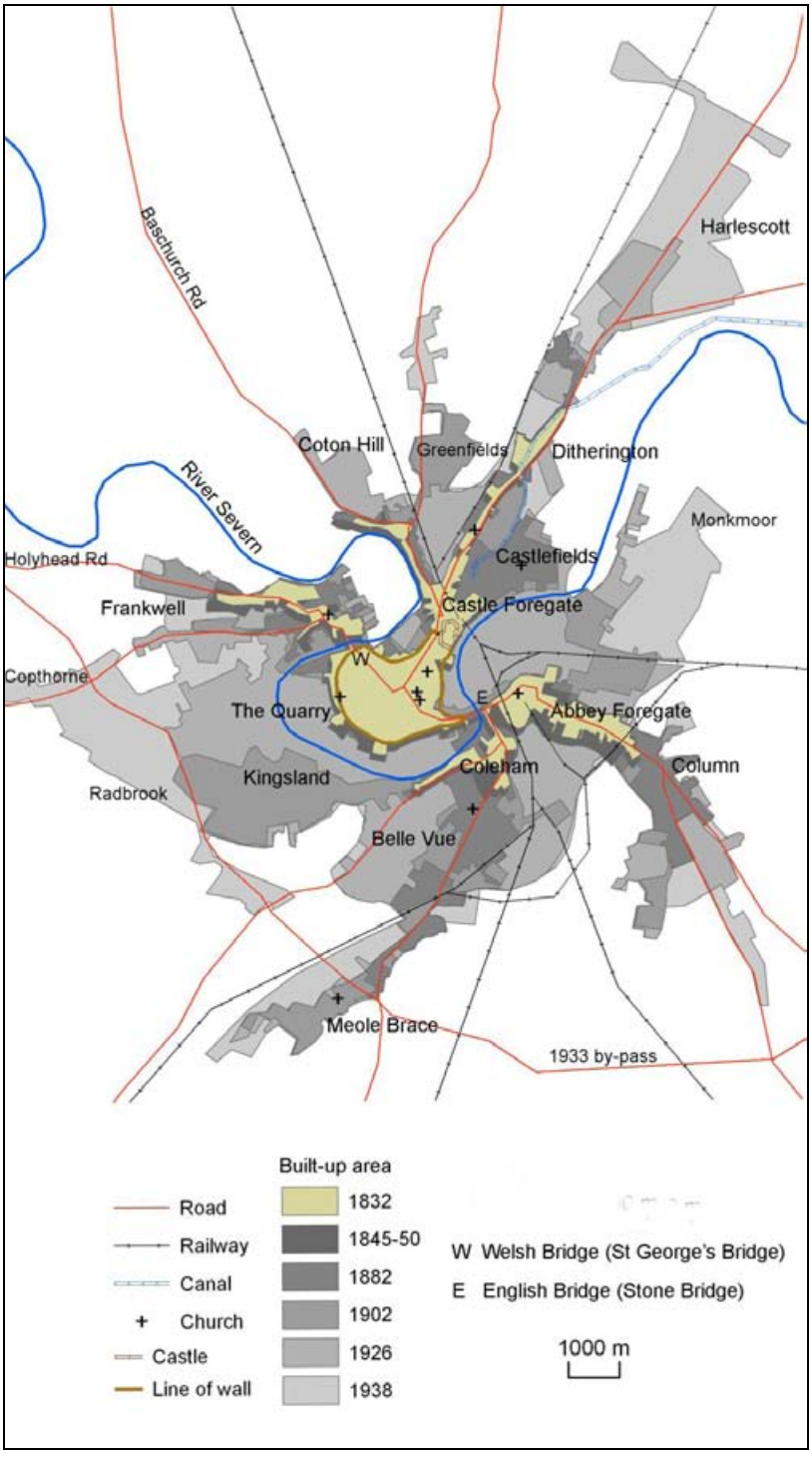
metres above sea level. Soils vary from heavy clay to free-draining sands, most of which seem to have been acceptable for gardens, especially with the addition of manure. Shrewsbury town centre itself is located within a tight meander of the River Severn, which measures 860 metres from neck to furthest extremity. Even within the meander core there is some relief, with river cliffs, flood plains, two hills and kettle holes (Pannett and Morey, 1976).

Scholars have patched together evidence of a Saxon presence within the meander core: two monastic-minster churches dating from the 8th century, a royal charter of 901, a mint in the 10th century and excavated rubbish dumps and latrine pits from an area not much smaller than the known medieval town (Baker, 2010; Evason, 1984). The Normans secured the town with a castle in the neck of the meander and built the Benedictine Abbey of St Peter and St Paul on the east bank of the river. By 1121 two bridges had replaced the fords. By 1200 most of the current town centre streets were already in existence, as were the suburbs of Frankwell (over St George's Bridge), Coton Hill and Castle Foregate (through the neck of the meander) and Coleham and Abbey Foregate (over the Stone Bridge) (Figure 5.2). Disaster struck in 1215 when Llewellyn the Great easily captured the town and castle; this precipitated the construction of the wall, started in 1220 and largely completed by 1242 (Owen and Blakeway, 1825). By 1334, Shrewsbury was ranked the seventh wealthiest provincial town in England (Baker, 2003).

In the middle of the 16th century Shrewsbury was undergoing an economic boom and an expanding population. The Drapers' Company dominated business, buying unfinished cloth from Wales, arranging for it to be sheared and finished in Shrewsbury and then delivering it on to London for sale. By the 1620s they had a monopoly of the marketing of Welsh cloth and Shrewsbury was, to all intents and purposes, the regional capital of mid-Wales, controlling the structure of rural industry from the Marches to Cardigan Bay (Higgins, 1997). Before the 18th century, the economy began to shift away from manufacturing towards service industries and Shrewsbury took on a role as a 'Gentry Town' (Clark, 1984; McInnes, 1988). With the establishment of turnpikes, it became a hub in the transport system and developed as an important 18th and 19th century posting town, with special emphasis on the route between London and Ireland via Holyhead (Trinder, 2006). From the 18th century there had been attempts to establish textile,

metal and engineering factories, but they were generally short-lived and today Shrewsbury is mainly dependent on providing governmental, professional and retail services for the surrounding area. Its history and the built environment also encourage tourism. The main inner suburbs and major features are shown on Figure 5.2, which also shows the growth of the built-up zone from 1832 to 1938.

Figure 5.2 Shrewsbury from 1830 to 1940



Method

Maps at a scale of at least 6":1 mile (1: 10,560) were identified and checked for accuracy. In particular, details of plot boundaries were examined. The attributes and problems of various Ordnance Survey editions and revisions were considered (Harley and Phillip, 1964; Oliver, 1993) and a series was chosen to cover the period from about 1830 to approximately 1940 (Table 5.1). This time-span represented outward growth of the town from the pre-industrial period when Shrewsbury was still largely confined within the town wall, through the time of more rapid growth of housing and institutions in mid-Victorian and Edwardian times to the outbreak of the Second World War. It also embraced the major period of allotment legislation (see Appendix 2).

Table 5.1 Shrewsbury: maps used to identify the location of detached gardens and other fringe elements through time

DATE OF SURVEY OR REVISION	DATE OF PUBLICATION	DESCRIPTION	SCALE
1832	1832	Map of the Borough of Shrewsbury as extended and settled by Act of Parliament, July 15th 1832 (Hitchcock)	1:10,560
Mid-19th century	1843-50	Tithe maps and apportionments. 2 for Holy Cross; 6 for St Alkmund; 3 for St Julian; 6 for St Mary. Interpretation assisted by Foxall's Field Name Maps, based on the tithe maps and standardised to the same scale	1:10,560
1879-80	1882	O.S. County Series First Edition, Shropshire, Sheet XXXIV.1 - XXXIV.16	1:2,500
1900-01	1902	1st Revision of O.S. County Series First Edition, Shropshire, Sheet XXXIV.1 – XXXIV.16	1:2,500
1925	1926	2nd Revision of O.S. County Series First Edition, Shropshire, Sheet XXXIV.1 – XXXIV.16	1:2,500
1938	1965	O.S. Provisional Edition, published on National Grid, SJ40NW & NE; SJ41SW, SE, NW & NE;SJ50NW; SJ51SW & NW.	1:10,560

The six selected maps (Table 5.1) were scrutinised for evidence of detached gardens, garden-ground and other fringe belt features. ArcGIS was used to prepare two maps for each date, one illustrating the distribution and abundance of detached gardens in relation to buffer zones and the other showing all fringe belt features. The O.S. County Series First Edition 1:2,500 map made an excellent base map for the digital mapping of fringe features from the 1832 Hitchcock map, the tithe survey maps and the 1882 map itself (Harley and Phillip, 1964). Later

revisions of this map, published in 1902 and 1926, and also the 1965 Provisional 1:10,650 Edition, were used for the 20th century dates. The system used for downloading maps from the Landmark historic map collection and for producing digital maps was used at every stage of the research and is detailed in Chapter 3 (page 61) and Chapter 4 (page 72). Problems encountered and devices developed are dealt with there and will not be repeated here.

Mapping for this section of the research produced a large quantity of data, since individual fringe belt features were mapped for each of the six dates. They were grouped by function into the nine layers summarised in Table 5.2 (transport had two layers); eventually, for the six maps, 54 layers were produced. Fringe features still in existence were re-mapped on the successive map so that the full pattern of fringe features could be seen together as a snapshot for each of the dates.

Table 5.2 Classification of fringe elements

PRIMARY FRINGE USE	WHAT IS INCLUDED	SUB-CATEGORIES
Manufacturing Industry	Mills, factories, malthouses, timber yards, rope walks, tanneries. Include service industries if they are manufacturing something, e.g. gas, electricity	Food/drink, consumer, metal, engineering, textile, construction, utility, service
Extractive Industry	Quarries, clay pits, gravel pits. Include brick kilns because almost always made on spot from local clays	Sand/gravel extraction, clay extraction, hard rock quarrying, coal mining
Transport and Warehousing	Turnpikes, canals, railways Quays, marshalling yards, warehouses, toll gates and houses, pedestrian ferries	Water transport, road transport, rail transport, ferries, wharves & warehouses, sidings and sheds, stations, toll houses and gates
Recreation	Public open spaces, sports grounds, fairgrounds, 'specialist' inns, racecourses, tea houses, water sports	Parks & recreation grounds ball games, target sports, water sports, venues (drinking, partying), horse/rural sports
Institutions	Friaries, churches, cemeteries, schools, workhouses, almshouses, hospitals, cattle markets, commercial fairgrounds, public baths, barracks. Include services such as sewage works and waterworks	Burial commercial, educational, judicial, medical, military public health/welfare religious
Villas	Detached with garden or estate, many named on 6" maps	
Plant Nurseries	Plant nurseries, seedsmen	
Detached Gardens and Allotments	Detached gardens, allotments, patches, orchards	

The abundance and distribution of detached gardens were investigated using a consistent pattern of analysis for the six dates. The analysis employed three major study areas:

- the **built-up zone** which was the area enclosed by the urban fence;
- the **500 metre zone**, made up of the built-up zone plus five buffer zones, parallel with the urban fence, each 100 metres wide;
- the **1,000 metre fringe**, measured from the urban fence and so-called since it contained the vast majority of the fringe features.

The data from the GIS attribute tables were exported to Excel for additional analysis and graphing, including:

- total area of detached gardens/allotments at each date
- area of detached gardens/allotments as a percentage of all fringe belt uses at each date
- size of each allotment site (where a site is a group of contiguous allotments)
- size of the plots within a site
- location in relation to urban core and five buffer zones
- access in relation to bridges and ferries
- changes in the location of detached gardens/allotments with suburban residential development
- relationship of new allotments to housing developments in 20th century.

The relationship of detached gardens to other fringe features was also analysed, including the relative amounts of the fringe belt taken up by each element and how the proportions changed through time. In addition to the six basic maps, additional documentary sources were perused and field work carried out to furnish explanations for the findings. Pre-19th century maps, notably the Burghley map of 1570, John Speed's plan of 1610 and John Rocque's map of 1746 were scrutinised for the inner fringe area, but unfortunately they did not extend out far beyond the wall. Additional 19th century maps were also examined (Wood, 1838; Tisdale, 1875). All cartographic sources are listed in a separate section of the References.

Box 5.1 Shrewsbury in context, 1832

Population 40,480 (1831 census)

Built-up area:

- Total area within the urban fence: 76.4 hectares. A very tight area within the line of the town wall and ribbon development along the major access routes (Figure 5.2). .
- Built-up area in the meander core 32.8 hectares. Except for small sections, the town wall was extremely degraded; John Speed, annotated the north-west section as "*The towne wall built upon with houses*" (*Shropshire Described*, 1610, SA. CO1). Elsewhere, development on or beyond the wall did not extend far, since the low areas within the meander were in frequent danger of flooding.
- Remaining built-up area made up of three major tentacle-like suburbs: Frankwell squeezing across the Welsh Bridge and then stretching for 845m; Abbey Foregate stretching for 1,144m. beyond the English Bridge and with an extension up the river at Coleham Head for 765m.; and Castle Foregate stretching for 1,511m. northwards beyond the neck of the meander, again with an extension upstream at Coton Hill for 765m (Figure 5.2). Comparison with the Speed map of 1610 and the Rocque map of 1746 suggests that this ribbon development had extended by only a hundred metres or so beyond its medieval limits, largely through the building of villas in spacious grounds to the east and west and by the development of manufacturing industry to the north.

Access and economic life

- A good turnpike system had been established between 1725 and 1835.
- The Shrewsbury Canal had been built to the East Shropshire Coalfield in 1797 and linked to the national waterways network soon after Hitchcock made his map. There was an area of warehousing and service industry around its terminus (Trinder, 2006).
- There were still two old-established quays on the river at Mardol and Frankwell and a further small wharf downstream (Union Wharf Company, established in the 1820s). Despite the construction of the new towpath to Ironbridge in 1809, river transport was highly uncertain because of marked differences in river levels. Goods to and from Bristol and Gloucester still passing through the port in 1832 (Trinder, 2005).
- William Hazledine's iron foundry in Coleham was still a major employer. The lead foundry was under development, but there were two small brass foundries and a steel mill.
- The Ditherington and Castlefields flax mills were in full production, producing thread for clothing and footwear; the attempts at setting up calico and linen weaving was foundering.
- Otherwise the industry was small scale: tanneries, skinners, roperies, tarpaulin production, flour milling and breweries (Pigot, 1829).

Social and daily life

- Many of the county aristocracy and gentry had built town houses in Shrewsbury and, together with the growing professional families and prosperous tradesmen, produced a demand for consumer wares and entertainment (Borsay, 1989; Evason and Marsh, 1984). Tradesmen were manufacturing firearms, time-pieces, wigs and coaches to order and specialist retailers were selling china, barometers and port (Higgins, 1997; McInnes, 1988).
- Coffee houses were abundant and hotels and inns provided for assemblies, lectures and theatrical productions. The new racecourse had just opened in 1832 and there were several parks and fashionable walks (Shrewsbury and Atcham Borough Council, 2005; Stamper, 1996). By 1840 35 bankers, land agents and lawyers served wealthy residents (Tibnam, 1828).
- The Salop Infirmary, completed in 1830 with money raised by public subscription, was located in a prominent position high above the river. Two other institutions, the gaol and the workhouse, were both housed in handsome buildings in high positions in the inner urban fringe.

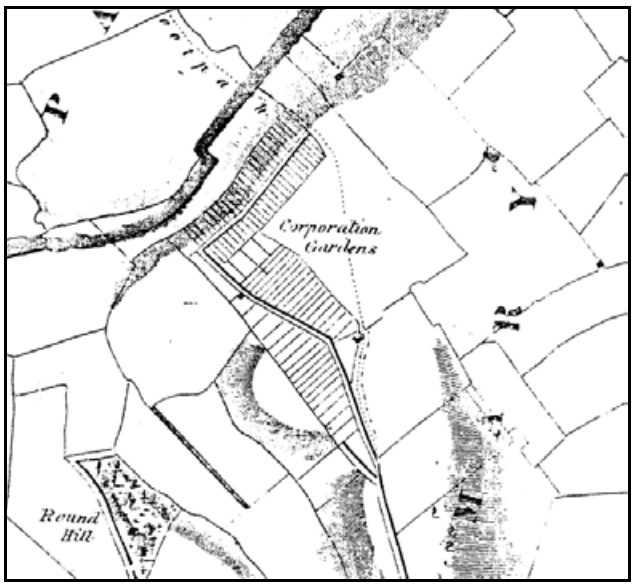
Box 5.2 Allotments nationally – the situation in 1832

By 1830 the allotment movement had been active for some 40 years (see survey of allotment provision in Chapter 2 and Appendix 2). The provision of plots of land for the poor was seen as an essentially rural issue, with the aim of relieving the deep poverty of landless labourers. There was a widespread belief that such help should be an act of private charity and attempts at legislation had largely failed. Four acts, limited in scope, had been passed; in 1782 to enable guardians of the poor to enclose up to ten acres near the poor house for the benefit of the poor, but with no suggestion that it should be allotted to individuals; in 1819 the Select Vestry Act empowered parish wardens to let up to 20 acres of parish land to individuals; in 1831 the amount was increased to 50 acres; in 1832 a further Act allowed fuel allotments to be broken down for individual cultivation. The result was erratic. None of this legislation was directed at towns, but parish wardens could have used it to establish allotments near urban areas; for example there are records of a scheme in operation in Saffron Walden (Thorpe, 1969).

Source of data

Hitchcock produced his map of the Borough of Shrewsbury in October1832 to show the boundaries of the borough as extended and settled by Act of Parliament on July 15th 1832 (Hitchcock, SA 4756/1/20). Hitchcock was a land surveyor and his map clearly picked out the physical topography by means of hachuring, detailing stream valleys and former courses of the River Severn.

Figure 5.3 Shrewsbury in 1832. Extract from Hitchcock's map



At a scale of 6" to a mile, field boundaries were clearly demarcated, including those divided into small plots with access footpaths (Figure 5.3). Within the

urban area Hitchcock appeared less interested, not surveying beyond the house frontages, so that some important data were missing. For instance, the street grid was coarse within the south-western section of the walled town and there was ample room for detached garden plots within the blocks. This was certainly indicated in the Burghley map of 1570 (Burghley, SA 3790/451) and the Rocque map of 1746 (Rocque, BL. Maps K.Top.36.17). Elsewhere within the meander but outside the town wall, Hitchcock did include some small fields on the flood plain and first terrace.

Abundance and distribution of detached gardens

There were seven major sites of detached garden: Copthorne Road, Mountfields, New Street, Luciefelde, Coleham/Belle Vue, Castlefields and Castle Foregate (Figure 5.5). They were located on both sandy and clay soils, but boulder clay seems to have been chosen in particular spots, such as on Castle Foregate, and this site was later used for brick making. The main danger, and a good reason for not making gardens on rich fluvial silt, is likely to have been the flooding. Most years the river over-topped its banks and a massive peak of 20.5 metres was recorded in 1795, though peaks of less than 18 metres were more usual (Figure 5.4). Thus the low areas within the Frankwell meander and the Gay Meadow on the right bank downstream of the English Bridge were left as meadows.

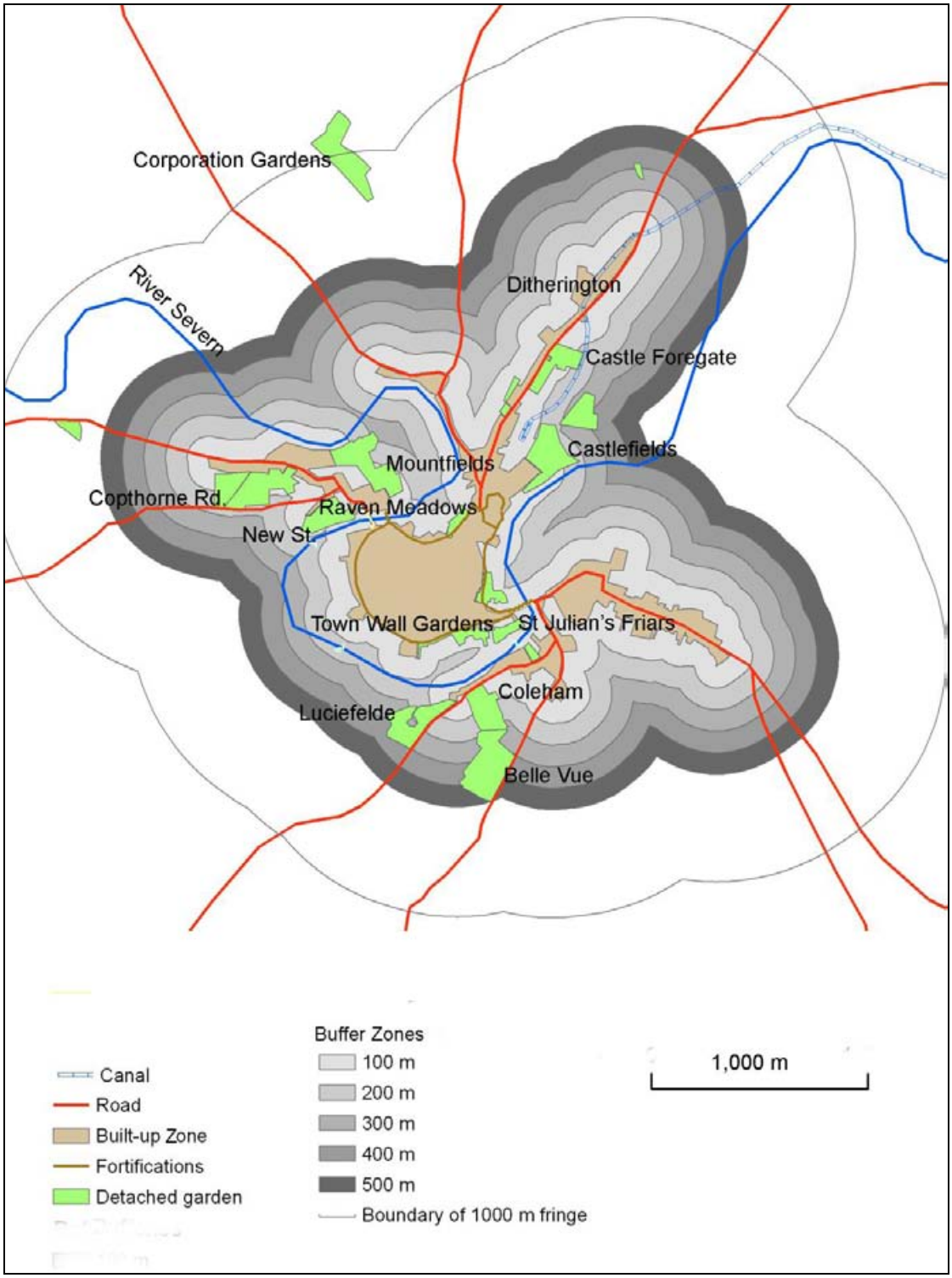
Figure 5.4 Shrewsbury. Frankwell Meadows flooded in 2004

A common occurrence in Shrewsbury, where the river over-tops its banks most years

For the most part, the detached gardens near the river were higher than the annual floods, as for example on New Street and St Julian's Friars. An exception was Corporation Gardens, to the north of the town, where there were 90 small plots on

the first terrace above the old river bed. This cut-off meander flooded regularly and the flood waters must have been a hazard, though no doubt adding to the fertility by the deposition of silt. It was one of a few outlying sites of garden-ground, located at 1,000 metres from the urban fence (Figure 5.5).

Figure 5.5 Shrewsbury in 1832. Distribution and abundance of detached gardens



The 500 metre study area, divided into five buffer zones, was used to investigate the abundance of detached gardens in relation to the built-up zone. The vast majority of garden sites lay within this zone, including a series of fields to the south of the river, extending from Coleham to Belle Vue, and stretching continuously across all five buffer zones (Figure 5.5). In the 500 metre zone were located 33.8 hectares of detached gardens, comprising 5 percent of the area and 2.8 percent of the fringe (out to 1,000 metres beyond the urban fence). 54.4 percent of the detached gardens, by area, were located in the first buffer zone, within 100 metres of the urban fence. There was a marked drop in the area of detached gardens in the second zone (100 to 200 metres) and then a steady decline, well-illustrated in Figure 5.6. The ratio of the area of the built-up zone to detached gardens was 10:4.4 (Figure 5.7).

Figure 5.6 Shrewsbury in 1832. Detached gardens by zones

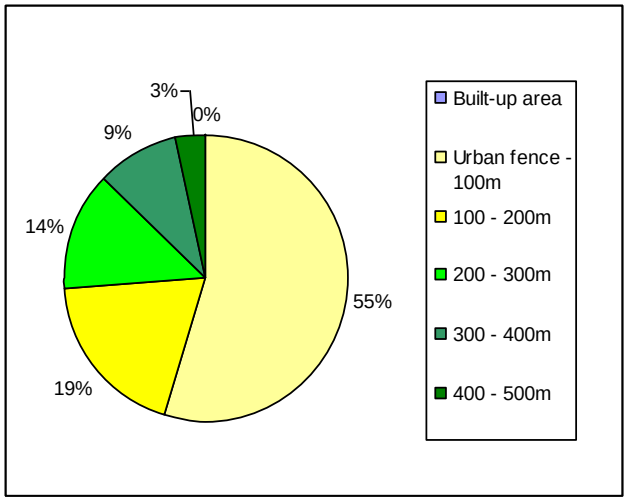


Figure 5.7 Shrewsbury in 1832. Ratio of detached garden to built-up zone

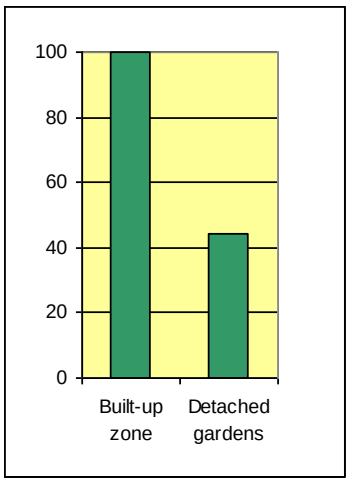
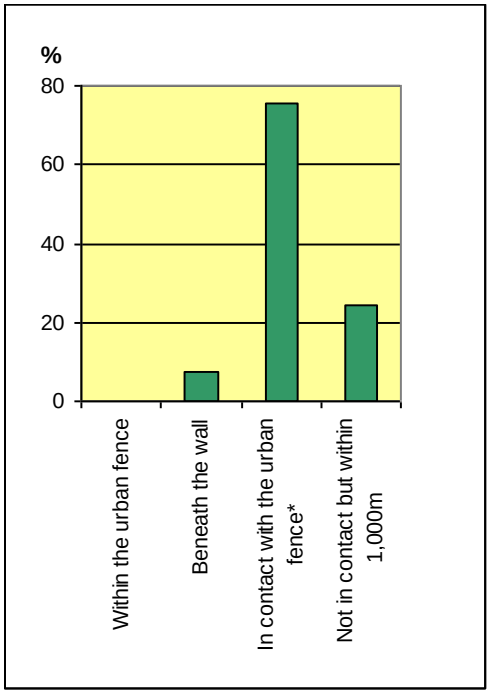


Figure 5.8 illustrates the distribution of gardens in relation to the wall and the urban fence. There are no detached gardens shown within the urban fence but this might have been due to the shortcomings of the original map. The largest column in this figure, encompassing more than three quarters of the garden sites, represents those in contact with the urban fence. Amongst these were included the detached gardens immediately outside the wall which, for much of its length was coincident with the urban fence in 1832. Much of the wall had been constructed part way up the river cliffs, so that some of these detached gardens were on steep slopes that required terracing. There were three major sites: at the back of the Raven Meadows, west of the castle; beneath the southern section of the town wall (Figure 5.9); and on the river cliff facing eastwards. In total they made up 7.3 percent of the detached gardens.

Figure 5.8 Shrewsbury in 1832. Detached gardens in relation to town wall and urban fence



** The percentages add up to more than 100 because this column also includes detached gardens beneath the wall.*

Figure 5.9 Shrewsbury. Detached gardens beneath the town wall (Town Walls section)

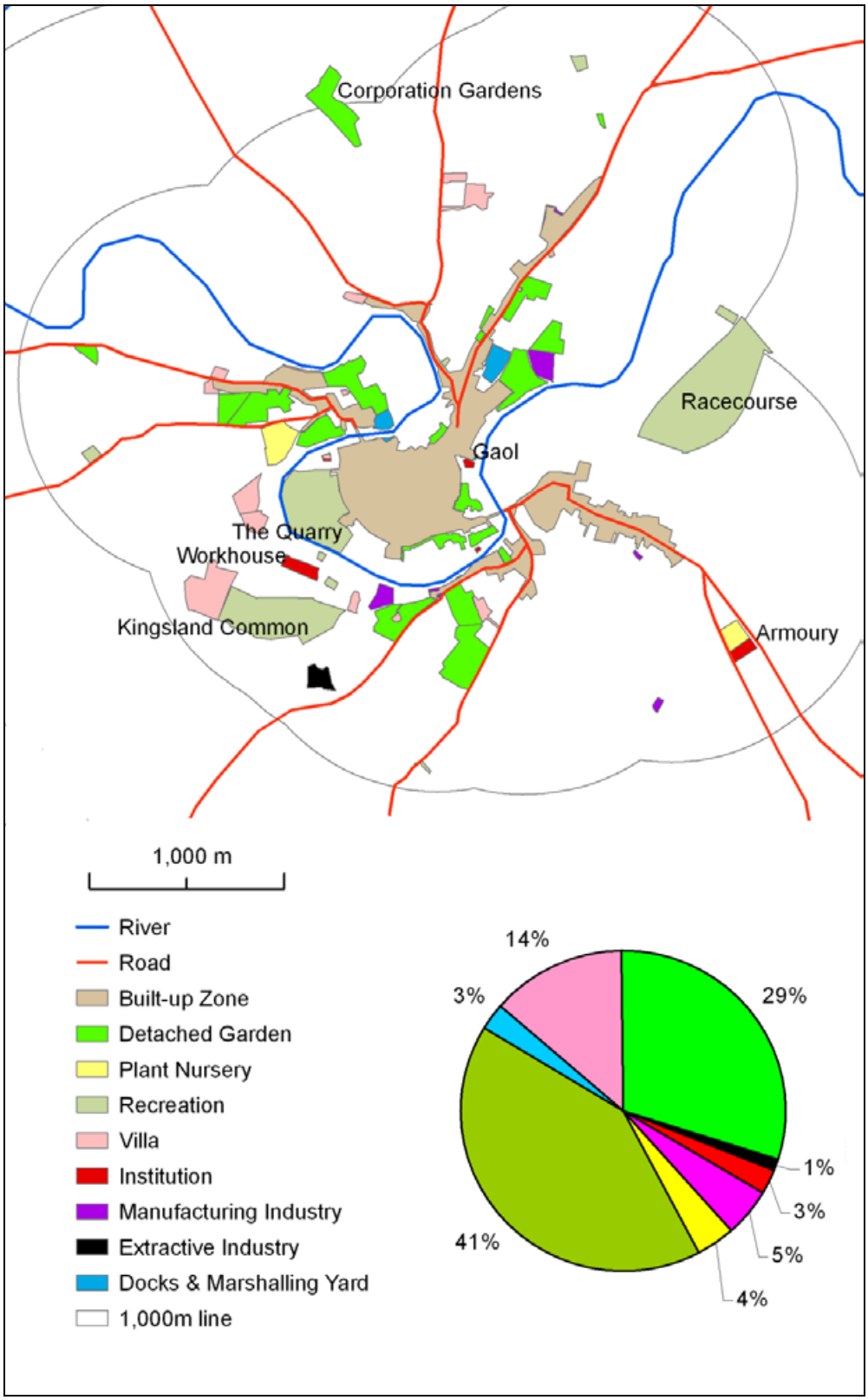
The gardens are located in the former defensive ditch. This section of the town wall was dug into the natural slope above the flood plain, forming a terrace or retaining wall.

Other fringe features

Within Shrewsbury's fringe were many other features typical of fringe belts and these are shown in Figure 5.10. The fringe 'boundary' has been drawn at 1,000 metres, since the vast majority of the fringe features in 1832 were located within 1,000 metres of the urban fence. The detached gardens and garden-ground sites stand out, as do the three large areas dedicated to recreation: the new racecourse (established in 1832), the Quarry (park) and Kingsland Common still containing guild arbours and used for the annual Corpus Christi procession and show (Peele, 1980). As yet, there were few institutions; the 18th century workhouse and gaol were located in the intra-mural, close to the town centre and the Armoury out to the south-east. Villas with their own small estates were appearing, especially to the west of the town and these included two located outside the 1,000 metre zone: Copthorne (late 18th century) and Radbrook (before 1830). Except for these two estates, all fringe features were located within the 1,000 metre fringe and, taken altogether, they made up 9.2 percent of the fringe area.

The pie graph in Figure 5.10 gives a breakdown of the total area covered by all fringe features, based on the percentage for each category. In terms of actual space covered, recreation was the largest user of the urban fringe taking up 46.7 hectares, with detached gardens second at 33.8 hectares and villas third at 15.2 hectares.

Figure 5.10 Shrewsbury's fringe in 1832



Box 5.3 Shrewsbury in context, 1845-50

Population. 43,818 (1851 census). This shows a growth of a little over 3,000 in twenty years, an increase of 7.6 percent.

Built-up area

- In total, 87.9 hectares lay within the urban fence
- This was an increase of only 11.5 hectares
- The growth expanded Abbey Foregate through infill, lengthened the tentacles on the roads to Holyhead and Baschurch and expanded the urban area from Coleham to Belle Vue on the Meole Brace road (Figure 5.2).

Access and economic life

- In 1850, some goods were still carried by water, with six companies advertising their services from warehouses on both the river wharves and the canal basin (Pigot, 1829). Most of the barge traffic would cease by the 1860s and the Union Wharf had already foundered (Trinder, 2005).
- The railway had just arrived at the time of the tithe survey, the line to Chester opening in1848 and that to Birmingham the following year.
- The arrival of the railway stimulated omnibus services to the suburbs, though most villa owners arrived at their place of business by private coach or on horseback (Trinder, 2006).
- Road transport remained important and Shrewsbury was a hub for distribution to rural areas (Evason and Marsh, 1984). Sixty-one carriers were active, basing their services on inns in the town centre and Castle Foregate (Pigot, 1849). The stage coach services remained until the 1860s (Evason, 1984).
- The attempts to establish textile and metal industries were beginning to look less than viable by this time. The Ditherington flax mill was still producing well, but the Castlefields flax mill had closed. Hazledine's iron foundry had lost its vigour after the death of its owner, though Burr's lead foundry was flourishing, producing red, sheet and pig lead. There were three iron and brass foundries of local significance, seven millers, three breweries and 29 maltsters.
- The building trade was beginning to increase, with seven brick-makers and seven timber dealers (Slater, 1850).

Social and daily life

- Commerce continued paramount. A cheese and butter market had been established at Circus Place near the Welsh Bridge and a large monthly market in a new hall near the station, in addition to weekly markets in the Square. Negotiations were in hand to purchase land for a cattle market on Raven Meadows.
- The wealthy families from the county continued to flock to Shrewsbury, especially at the time of the Assizes and the horse races.
- New public buildings had been erected in the Square, including a theatre, assembly room, billiard room and 'an exceedingly handsome news room', as well as the post office and stamp office (Slater, 1850).
- Subscribers continued to take the air in carriages, on horseback or on foot on Kingsland Common, partly enclosed for this purpose. Prosperous tradesmen and new professionals began to construct villas on enclosed land around the Common.
- Other new public institutions included the water works and public baths at Coton Hill. The Counties Lunatic Asylum, located well outside the town to the west beyond the Borough boundary, was started in 1845 as an asylum for pauper lunatics (Tibnam, 1828; Victoria History of Shropshire, 1979).

Box 5.4 Allotments nationally – the situation in 1845-50

There were no further allotment acts in the years between 1832 and 1850. Rural poverty continued and individual landowners and clergy made provision, some with altruistic intentions, others because of peer pressure, or to reduce the cost of poor relief, or in an attempt to improve the morality of the labouring classes. Agitation continued at national level and a Select Committee on the Labouring Poor (Allotments of Land) was established. It reported in 1843 that the optimum size for a plot was less than half an acre, so that a man could cultivate it in his leisure moments and not neglect his paid employment (Thorpe, 1969). Allotments remained a rural rather than an urban issue.

Source of data

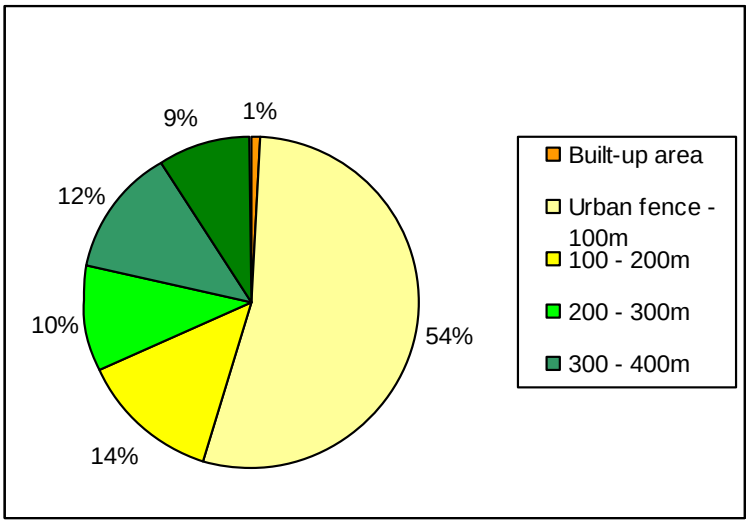
The data for the second map were derived from the tithe maps and apportionments, the surveying for which was carried out between 1845 and 1850. This survey provided a wealth of information since most mapping was done at a scale of 6":1 mile, with occasional larger maps covering detailed sections. The purpose of the survey ensured that the size of the plots and their agricultural use were accurately measured and entered into the schedules. On the maps, individual plots or fields divided into small gardens were numbered (Figure 5.11). This produced rich information on the presence and location of small plots and individual gardens that had not been differentiated on earlier maps which had been produced for a different purpose. Unfortunately the area within the town wall was not included in the tithe apportionment survey.

Figure 5.11 Shrewsbury. Example of tithe map used for the 1845-50 cross-section (extract from Castle Foregate Township)

Abundance and distribution of detached gardens

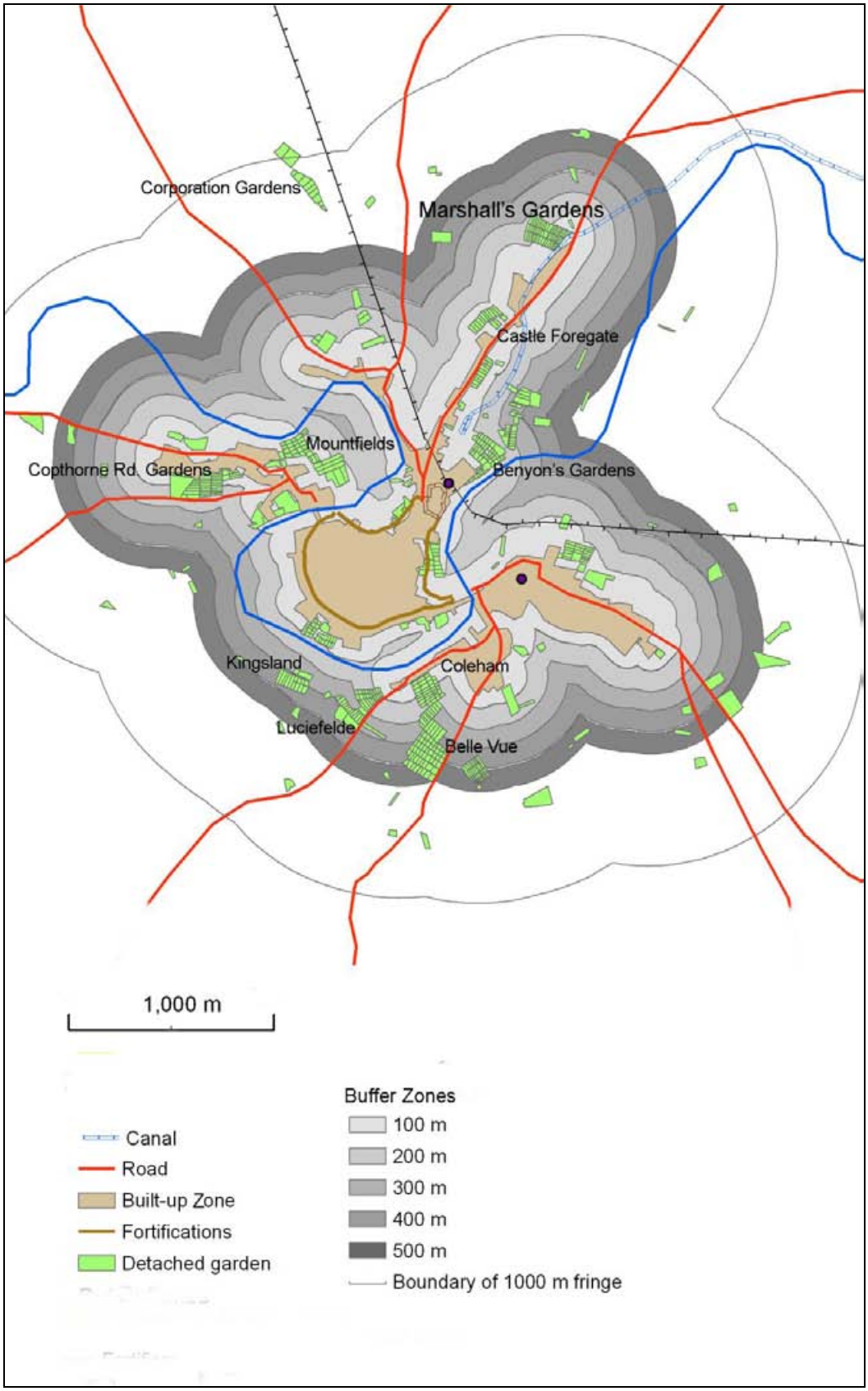
Figure 5.13 shows the abundance and distribution of detached gardens in relation to major physical and human features and to the five buffer zones. The detached gardens comprised 48.1 hectares, an apparent increase of about 30 percent on the 1832 figure. Undoubtedly some were new, for example the 51 plots established by Marshall & Co, at their Ditherington flax mill, but other major sites of garden-ground had changed little. The most likely explanation is that the richness of the data has allowed additional scattered and small sites to be recognised and mapped (Figure 5.13).

Figure 5.12 Shrewsbury in 1845-50. Detached gardens by zones



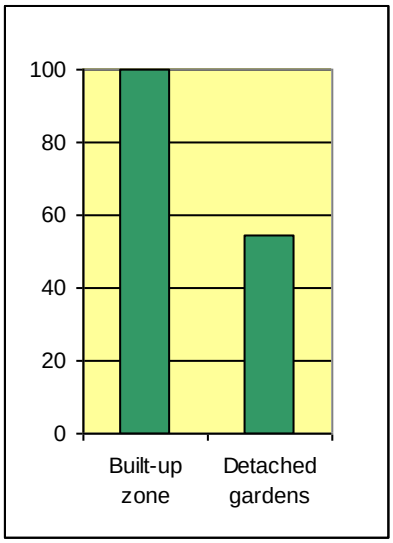
The data presented in Figure 5.12 show a more consistent density of detached gardens throughout the four zones beyond 100 metres, compared with the rapid fall-off in garden density shown in Figure 5.6 for 1832. In fact the abundance of gardens was fairly even in the four outer zones, varying from 9.2 to 13.7 percent. The area within 100 metres had remained fairly constant and close contact with the urban fence still remained an important factor in the location of detached gardens, 56 percent lying within or contiguous with it, though this percentage had decreased by 25 percent since 1832. Again the difference in these data may be partly due to the richer data source for 1845-50, which has allowed identification of scattered plots and small sites.

Figure 5.13 Shrewsbury in 1845-50. Distribution and abundance of detached gardens



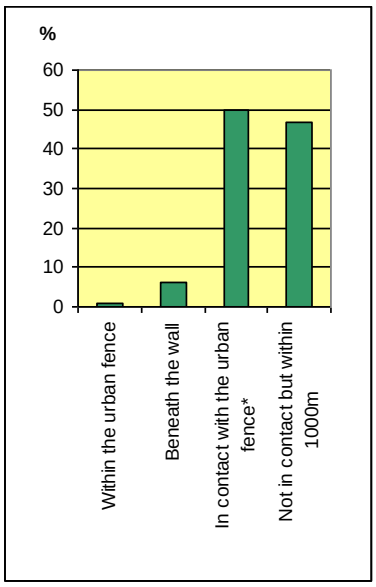
In the zone between 500 and 1,000 metres there was a scatter of gardens, including the sizable Corporation Gardens in the north. Detached gardens in 1845-50 represented 6.9 percent of the 500 metre zone and 4.1 percent of the 1,000 metre fringe. The ratio of the area of the built-up zone to detached gardens was 10:5.5, again larger than in 1832, an increase of 10 percent (Figure 5.14).

Figure 5.14 Shrewsbury in 1845-50. Ratio of detached gardens to built-up zone



The detached gardens seen in 1832 were still largely in place. Those immediately outside the wall had hardly changed, representing 6 percent of the detached gardens and covering 3.3 hectares, a slight increase probably due to better data (Figure 5.15). The main reduction was on Castle Foregate, where excavations for brick clay had overtaken some of the garden plots. Elsewhere five of the major garden-ground sites remained unchanged in area: Mountfields, Copthorne Rd, Luciefelde, Coleham/Belle Vue and Castlefields (Figure 5.13). Notable new plots included 33 on the riverside within the meander, in an area very prone to flooding; it seems unlikely that Hitchcock would have missed the division of these three fields in 1832, since he noted others in a neighbouring field. Other additions on this map included small sites behind or within the built-up area on Abbey Foregate, south of Coleham, north of Coton Hill and in Kingsland; it is possible that these were already in existence in 1832.

Figure 5.15 Shrewsbury in 1845-50. Detached gardens in relation to wall and urban fence



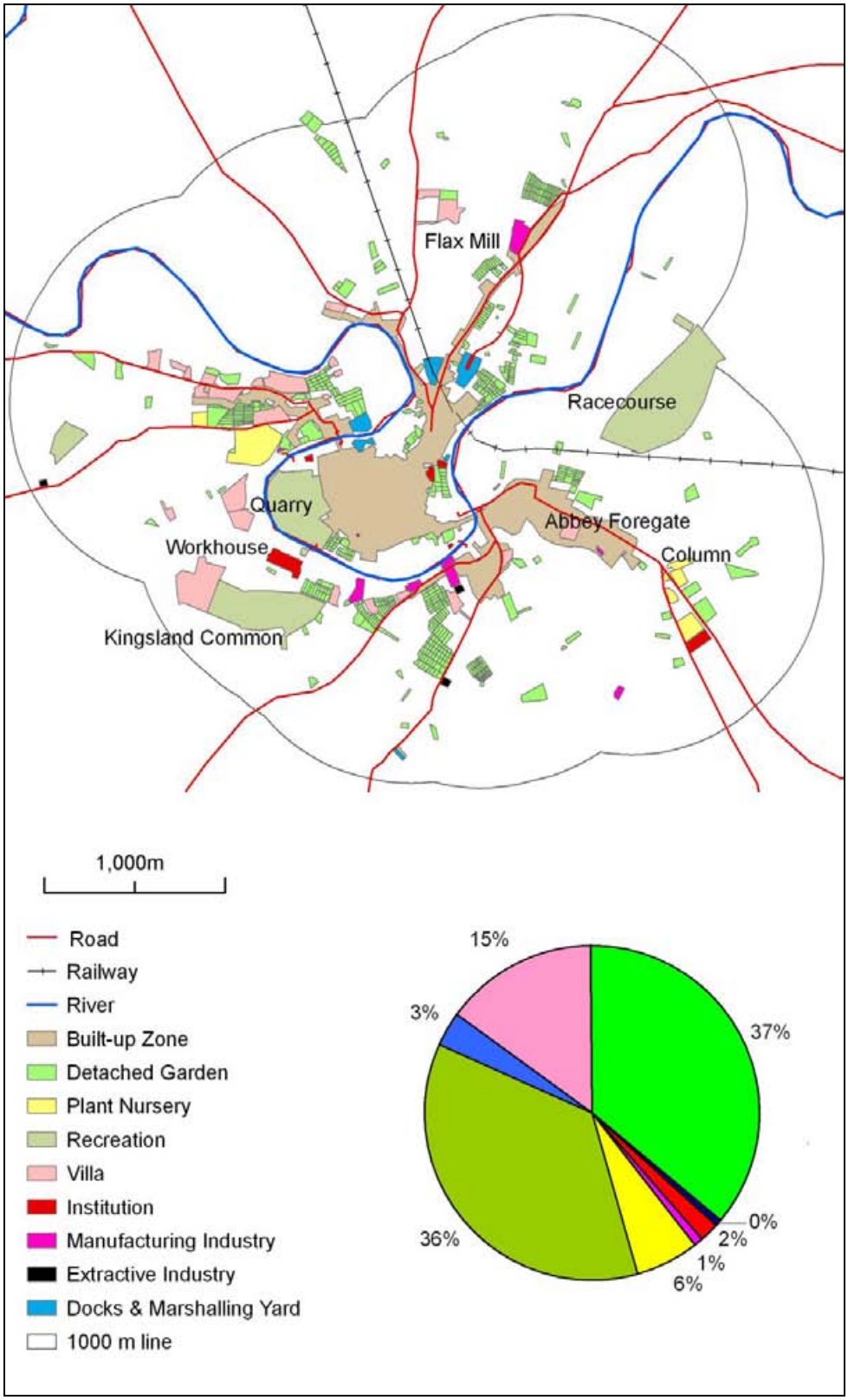
** The percentages add up to more than 100 because this column also includes detached gardens beneath the wall.*

Other fringe features

As far as the urban fringe was concerned, little had changed since 1832, except for the increase in detached gardens (Figure 5.16). There were a few more villas, scattered along the roads radiating out from the town, but generally more modest than those built earlier in the century. Those to the west of the town and river were still outside the 1,000 metre fringe, possibly acting as a nucleus, attracting further villa development. The district around the Column at the end of Abbey Foregate was popular with those who wanted large gardens close to the town and a 'new' area was incipient on the more accessible parts of the river terraces in the large meander downstream of Shrewsbury, where occasional imposing houses had been built or were under construction on plots away from the main roads. Beyond these, well outside the 1,000 metre fringe, was Belvidere, a cottage *ornée*, in the Swiss style built on the river bank in the 1840s (Bagshaw, 1851). The fringe features covered 10.7 percent of the 1,000 metre fringe.

The breakdown by categories of fringe users, shown in the pie graph in Figure 5.16, indicates that villas covered 20 hectares, which retained them in third position. There was an additional plant nursery and an area of marshalling yards for the new railway. In terms of area, recreation and detached gardens occupied equal amounts of the fringe at 48 hectares each.

Figure 5.16 Shrewsbury's fringe in 1845-50



Box 5.5 Shrewsbury in context, 1882

Population. 51,146, a growth of just over 7,000 in 30 years, an increase of 14.3 percent.

Built-up area

- Now covered 170 hectares, an increase of 82.1 hectares since 1845-50, almost doubling the area within the urban fence (Figure 5.2).
- The major expansion was in five areas (Figure 5.19), each with different characteristics. Castlefields, in the neck of the meander, replaced gardens and was developed as an estate by the Shrewsbury Freehold Land Society, with sturdy lower middle-class housing extending north-eastwards. Northwards beyond the Ditherington flax mill was a mixture of working-class housing and industrial development. In Mountfields (Frankwell), a mixture of terraces and detached houses replaced gardens in a piecemeal manner. Southwards in Belle Vue development extended along the road to Meole Brace, largely skirting the large area of garden-ground. Lastly the area east of the town along the London and Wenlock Roads, near the Column, had become the most fashionable place to build since 1850: Nearwell (1850) was built by a solicitor/banker; Woodland (1864) by an industrialist; a dozen others were owned by solicitors, wealthy widows and prosperous tradesmen (Trinder, 2006). This formed a leafy residential area within the urban fence.

Access and economic life

- River transport had ceased. The canal was reduced to bringing coal to the town.
- Shrewsbury had become a railway hub, a crossroad for north-south & east-west lines. Two major railway companies, the London & North Western and the Great Western dominated. Omnibuses linked the station with hotels and nine operators offered cabs for hire (Crocker, 1883).
- Little had changed with regard to the transport of goods to and from the rural hinterland which was still largely by carriers. Sixty still advertised their services, based on inns in the town centre and Castle Foregate (Kelly, 1879).
- The Birmingham-based Midland Railway Carriage and Wagon Company had opened its factory near the abbey in 1877 and by 1881 employed 300 men. It was exporting railway carriages to New Zealand, South Australia and India (Trinder, 2006).
- Other industry had changed little. The lead foundry was making shot in a new tower. The flax mill was still producing yarn, with several hundred employees; and Corbett's agricultural engineering business was prospering at the Perseverance Iron Works (Kelly, 1879). Otherwise industry comprised traditional market town trades of milling, tanning, malting and brewing.

Social and daily life

- Shrewsbury had continued to develop its commercial role. The new cattle market had opened late in 1850, sited within the meander, with the new Smithfield Road, leading from the railway station to the Welsh Bridge. A new large general market had also been constructed in the centre of the old town in 1867-69.
- Joseph Della Porta had opened his wholesale and retail business, importing foreign merchandise, jewellery and sewing machines; eventually this would become the first department store. There were 15 booksellers, 5 silk mercers, 3 gun and rifle manufacturers and 3 carriage and coach builders (Mercer and Crocker, 1877).
- Shrewsbury's provision of professional services for town and county residents continued to expand, with the number and variety increasing. Twenty-four solicitors, 19 surgeons and 12 land agents were listed in the directories.
- Shrewsbury Corporation and the Urban Sanitary Authority also employed many professionals, such as medical officers of health, public analysts, surveyors, engineers and auditors (Kelly, 1885).

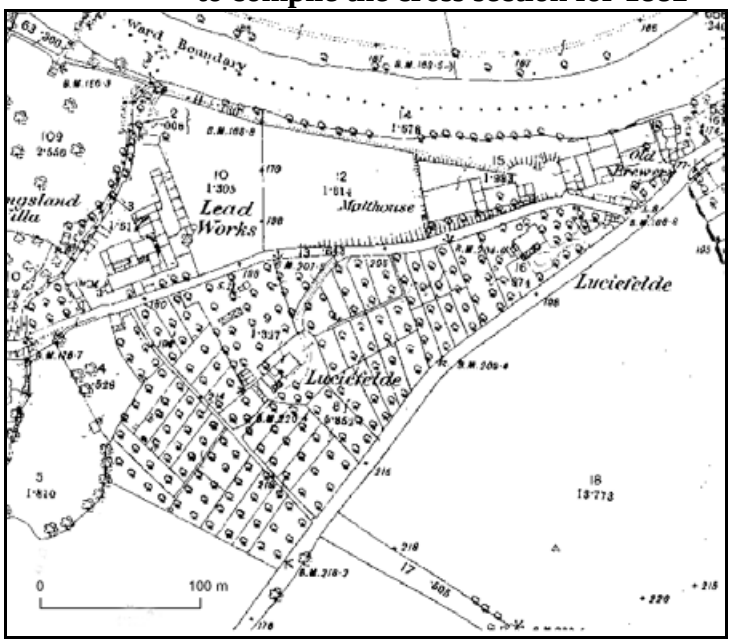
Box 5.6 Allotments nationally – the situation in 1882

The organised allotment movement declined after 1845 and Parliament paid no significant attention to the allotment issue for 20 years (Burchardt, 2002). However, although state intervention had basically failed, the number of allotments continued to grow and it appeared that private initiative was adequate. Many landowners established rural allotments, and some industrialists, too, were providing for their workers in towns, for example Titus Salt for his mill workers in Saltaire (Burnett, 1978). In 1869, allotments became a hot political issue for the first time when statistics appeared showing how little of the enclosed land had been assigned to the poor. A flurry of Acts followed in 1873 and 1876, compelling Enclosure Commissioners to set aside land for the poor, though there was no directive to divide it up into garden units. These were followed in 1882 by the Allotment Extension Act which required trustees of land for the poor to let it as allotments (Thorpe, 1969).

Source of data

The data for the third cross section came from the O.S. 1st edition 1:2,500 plan, which was surveyed in 1879-80 and published in 1882. The terms 'allotment' and 'garden-ground' were still not in general use and no sites were named. The scale and detail of mapping fortunately allowed the identification of sites (Figure 5.17) and these were compared with the tithe maps which had been used to compile the snapshot for 1845-50. Where neighbouring urban properties had not changed and plot boundaries remained identical, it was assumed they were still being used as gardens and they were included.

Figure 5.17 Shrewsbury. Extract from O.S. 1st Edition 1:2,500 map used to compile the cross section for 1882



This extract from XXXIV-10-15 shows the Luciefelde estate, just outside the meander. The bush symbols and access tracks usually indicated gardens, though not named as such.

Abundance and distribution of detached gardens

In 1882, there were 36.2 hectares of detached gardens around Shrewsbury, a reduction from the high of 1845-50 and nearer the 1832 level of 33.8 hectares (Figure 5.19). A comparison of Figure 5.19 with Figure 5.13 (for 1845-50) illustrates that one major difference was the apparent disappearance of the small scattered plots, an indication that lack of detailed data was one likely cause for the drop. On the other hand there were also clear examples of residential development replacing detached gardens in a systematic manner, as in Castlefields. Marshall's gardens at the Ditherington Flax Mill had been reduced in size, though the field had not been re-developed. Copthorne Road Gardens had been cut into two, Mountfields was becoming patchy and the large area of detached gardens between Coleham and Belle Vue was beginning to look vulnerable to residential development. There were no new major sites established.

Figure 5.18 clearly shows that detached gardens dominated the 100 metre zone; 77 percent of detached gardens were here. Beyond 100 metres, gardens were not abundant and were evenly spread throughout the zones as far as 400 metres from the urban fence. The ratio of areas of the built-up zone to detached gardens was 10:2.1, much lower than at earlier dates (Figure 5.20). The area of the built-up zone had expanded rapidly, although the population growth was not great. Figure 5.19 illustrates that some garden sites were isolated within the new built-up areas – they comprised 6 percent of all detached gardens by area.

Figure 5.18 Shrewsbury in 1882. Detached gardens by zones

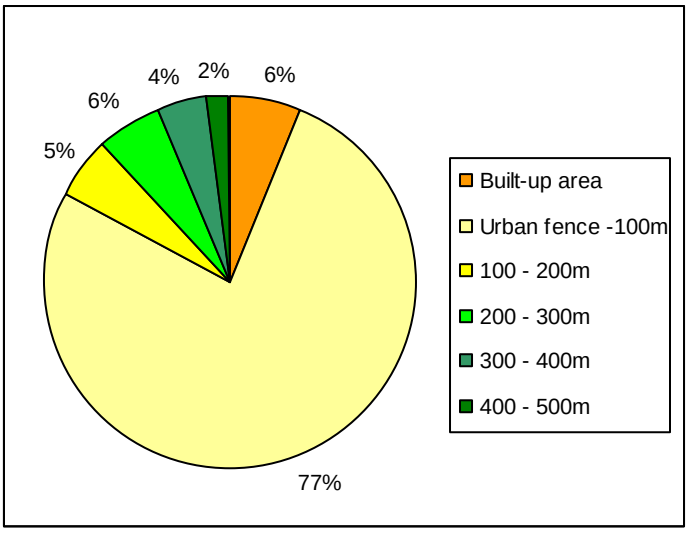


Figure 5.19 Shrewsbury in 1882. Distribution and abundance of detached gardens

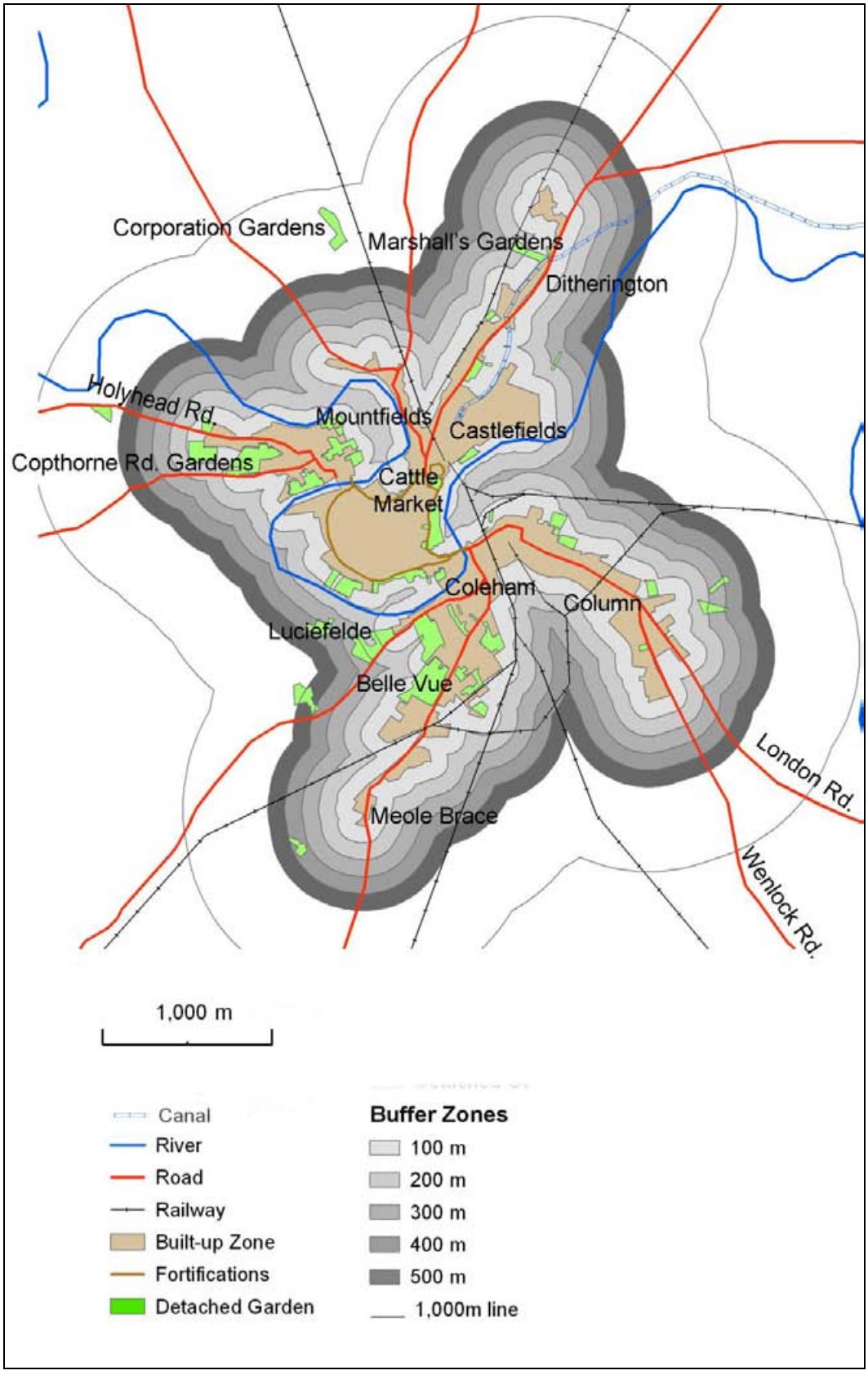
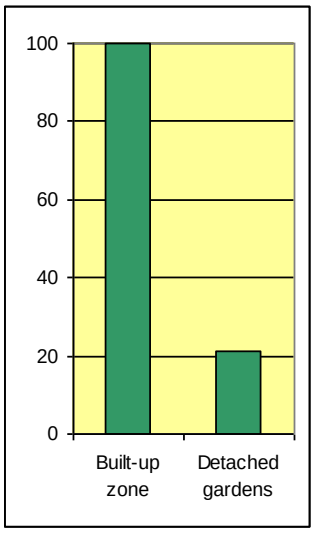
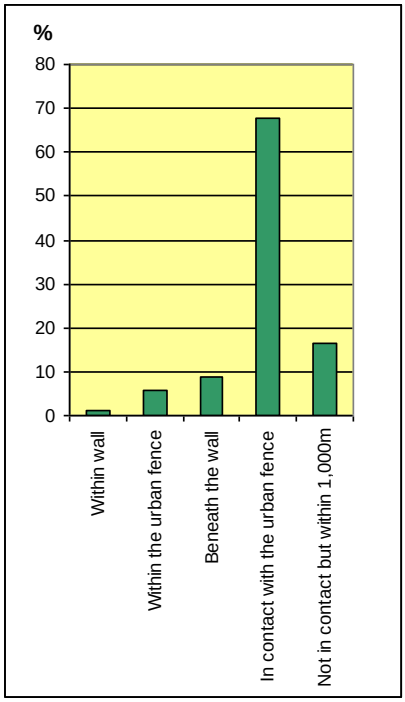


Figure 5.20 Shrewsbury in 1882. Ratio of detached gardens to built-up zone



The detached gardens beneath the wall or immediately outside the line of the wall had changed little, remaining at 3.5 hectares, despite the new cattle market being located close to the detached gardens in Raven Meadows and the demise of the Union Wharf Company that had previously owned the plots beneath the eastern section of the wall (Trinder, 2005). 83.6 percent of all detached gardens, by area, were within or in contact with the urban fence (Figure 5.21).

Figure 5.21 Shrewsbury in 1882. Detached gardens in relation to wall and urban fence (%)



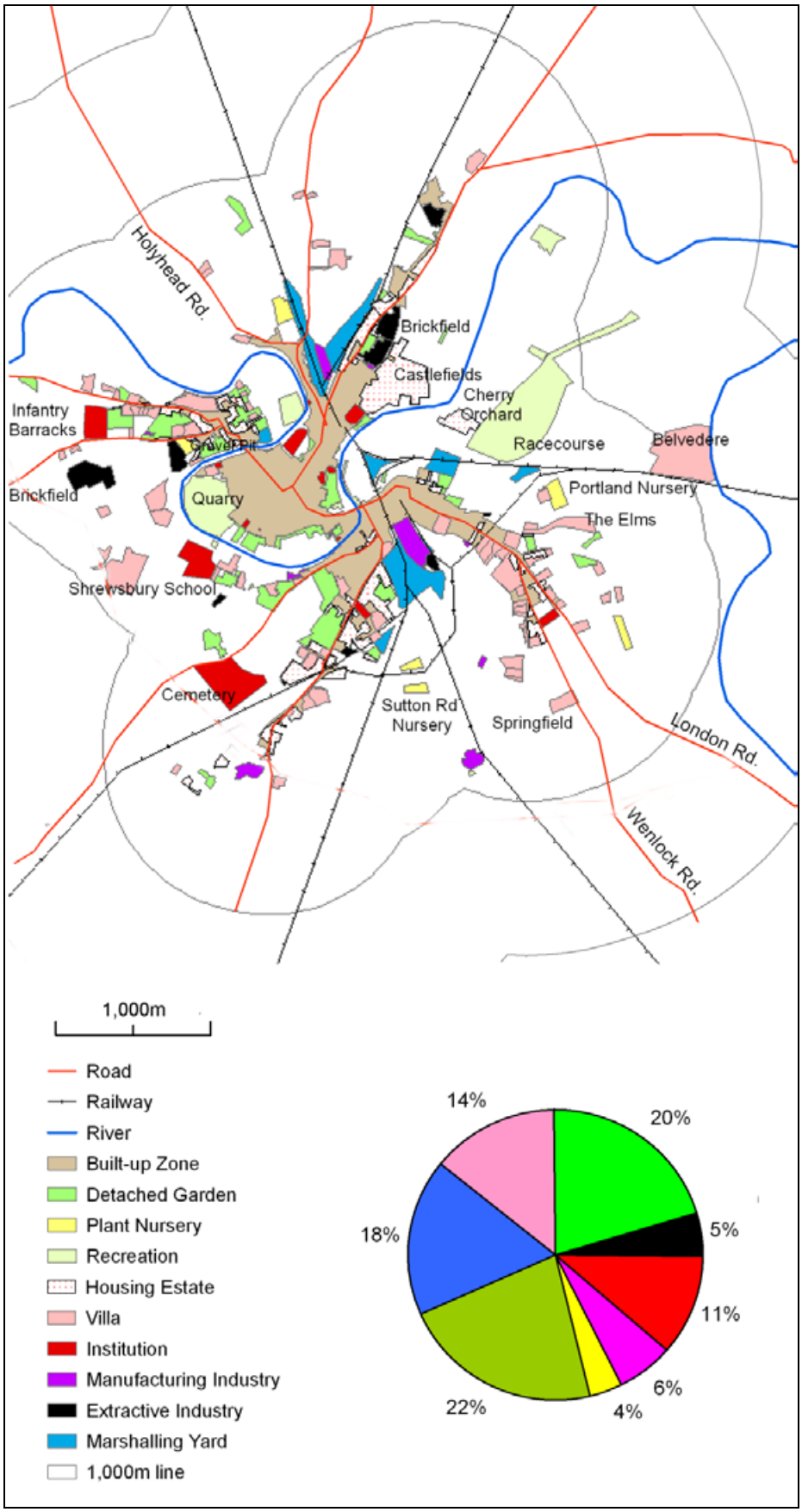
Other fringe features

Looking more widely at the distribution of detached gardens in relation to other features in the urban fringe, the salient feature was that they were becoming hemmed in, though not yet embedded in the built-up area. One of the main causes was the growth of transport-related features, with several railway companies developing sidings, depots, carriage and engine sheds, which by now occupied 33.9 hectares. Brickfields were common, serving the burgeoning construction industry. Two of the largest are marked on Figure 5.22: the one in the west had its own railway track built to Kingsland, where a new estate had been surveyed. New institutions in the urban fringe included Shrewsbury School, which moved from the town centre to the former workhouse (originally built in 1760 as the Foundling Hospital) in Kingsland in 1880, the year the Kingsland Toll Bridge was built. Other new institutions were the Infantry Barracks on Copthorne Road (1876-78) and the General Cemetery, established in 1856 following a public health enquiry and an Improvement Act in 1855. Out to the west, more than 1,000 metres from the urban fence, was the Counties Lunatic Asylum, founded in 1845 outside the borough boundaries; its great expansion was still a few years away (Morris, 2006).

Residential development also played a part in this hemming in of gardens, as large houses were built along Abbey Foregate, Holyhead, London and Wenlock Roads, the major access routes. This expanded the urban fence, reduced the empty space between the main roads and filled up the inner part of the fringe. Forty-eight villas, large enough to be individually named on the O.S. 1882 1:2,500 plan, had been constructed. Despite the apparent building boom, the urban fence had moved little in a westerly direction, so that the large early villas were still beyond the 1,000 metre line. In the 1,000 metre fringe area, designated fringe features occupied 11.5 per cent of the area, slightly more than in 1845-50.

Data on the fringe categories are brought together in the pie graph in Figure 5.22, which reveals a much more even division of land in the fringe between the various users than in previous years. Recreation and detached gardens were still the major users, at 41.7 hectares and 38.9 hectares. A small proportion of the detached gardens had been overtaken by urban growth, so that they had been translated to a location within the urban fringe.

Figure 5.22 Shrewsbury's fringe in 1882



Box 5.7 Shrewsbury in context, 1902

Population 52,181, an increase of only 1,035 in 20 years. In fact the population had declined slightly during the 1880s and was only just beginning to recover.

Built-up area

- Increased by 111.5 hectares and now covered 281.5 hectares, an expansion of 65.6% since 1882.
- Building activity was intense, especially in the residential sector, with retailers and professionals moving from above their shops and offices to the suburbs, though the shuts and courts were still unsanitary and over-crowded with working class families. 818 new houses were agreed in the 10 years from 1894 to 1904, reaching a peak in 1901-02 (Shrewsbury Borough Corporation, 1894-1904).
- Vacant plots in Mountfields, Coleham and Belle Vue were filled in and early housing estates were joined to the main urban area. The spacious plots on the former Shrewsbury show ground on Kingsland Common were beginning to fill up with individually designed detached houses, displaying every kind of high Victorian embellishment.

Access and economic life

- Although railways made no positive contribution to suburban growth, there were many passenger vehicles in the town by 1902. Transport facilities demonstrated the changing technology. There were still 11 livery stables and the Raven Hotel was licensed to hire dog carts, hansoms, 4-wheelers, wagonettes and ball carriages. There were still 64 carriers operating from town centre inns out to the rural areas. At the same time, the local directory published a large advertisement for motor bicycles, trailers and motor cars for sale or hire (Wilding, 1903).
- There was little industrial development to match the great building activity. The Midland Railway Carriage and Wagon Works continued to provide employment, but the flax mill and metal foundries had closed. Corbett's Perseverance Iron Works in Castle Foregate, continued to manufacture and export agricultural machinery, but no new industry had been attracted to the town.
- Shrewsbury remained a centre of a large agricultural region and was chosen as the permanent home for the West Midland Agricultural Showground, which was set up on a wide river terrace upstream of the town.

Social and daily life

- The borough and county administrative functions had continued to increase, providing well-paid office employment. There were 27 corporate officers in the borough, varying from coroners through financial clerks to electrical engineers (Kelly, 1900).
- The town was healthier now that the new sewer had been laid and the sewage works established downstream at Monkmoor (Shrewsbury Chronicle, 1896; 1899; 1901b). There was also an improved water supply (Butt, undated), the town centre churchyards were no longer used for burials (Francis, 2006) and an isolation hospital had been established at Underdale (Figure 5.33).
- Scores of clubs and associations provided for leisure time, as did the Music Hall complex, seating almost 1,000 for stage plays and concerts and also holding balls, dinners and conferences. Horse race meetings had stopped in the 1880s, but the former racecourse was still under recreational use for other sports and leisure activities.

Box 5.8 Allotments nationally – the situation in 1902

Despite landed interests that opposed the idea of compulsory national legislation, an Allotment Act was passed in 1887. It compelled local (sanitary) authorities to provide allotments where a demand was known to exist, this being indicated when four or more local inhabitants applied for land. By 1890, county councils had to have a standing committee on allotments and four years later there was further improvement when parish councils were established with powers to provide allotments (Poole, 2006). A survey in 1900, based on Oxfordshire but almost certainly true for other counties, demonstrated that more than half the allotments in existence had been provided without the necessity for public action (Thorpe, 1969).

Source of data

The first revision of the O.S. 1st edition 25" to one mile map provided the data for the fourth map. It was revised in 1900/01 and published in 1902. Once again garden-ground sites were not labelled. They were identified through plot size, the bush symbol, access footways and reference to the maps for 1882 and 1845-50.

Abundance and distribution of detached gardens

Detached gardens and garden-ground had advanced little since 1882. No new sites had been established and two of the old sites, at Mountfields and Coleham/BelleVue had been severely reduced and replaced with housing (Figure 5.24). The area covered by detached gardens reached an all-time low of 26.2 hectares. The ratio of the built-up area to the area of detached gardens was 10:0.9 (Figure 5.23).

Figure 5.23 Shrewsbury in 1902. Ratio of detached gardens to built-up zone

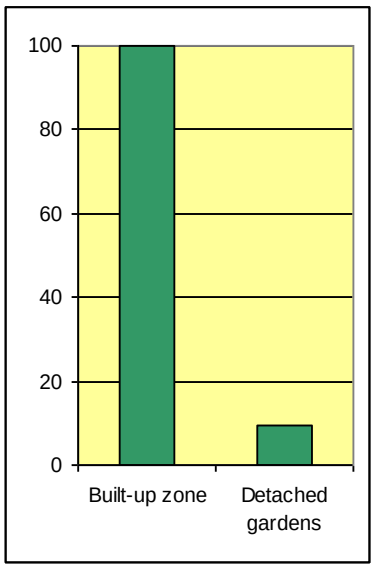
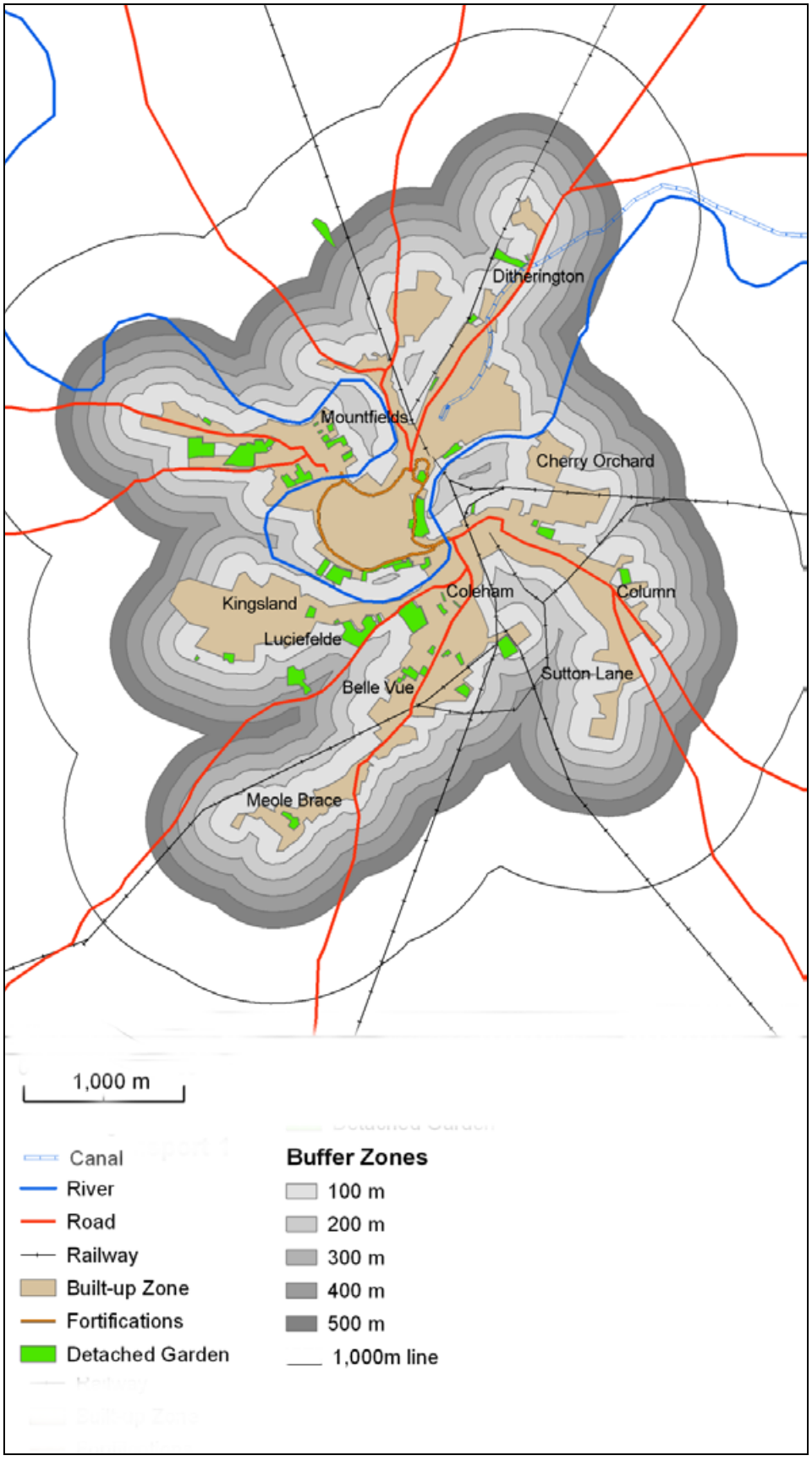


Figure 5.24 Shrewsbury in 1902. Distribution and abundance of detached gardens



The area within 100 metres of the urban fence remained the most popular location for detached gardens (Figure 5.25). Figure 5.26 highlights the great increase in the area of garden plots located within the urban fence, 19 percent of all detached gardens by area, a phenomenon perhaps due to the rapid development of the inner suburbs, mainly through house-building, which took place concurrently in several locations. These sealed-in gardens, together with those within 100 metres of the urban fence, made up 90 percent of all detached gardens. The detached gardens beneath the wall had changed little in area, though they made up a larger proportion of the whole (Figure 5.26). The decline in the proportion of detached gardens in contact with the urban fence (down to 60.6 percent) was due to the number being enclosed by residential development.

Figure 5.25 Shrewsbury in 1902. Detached gardens by zones

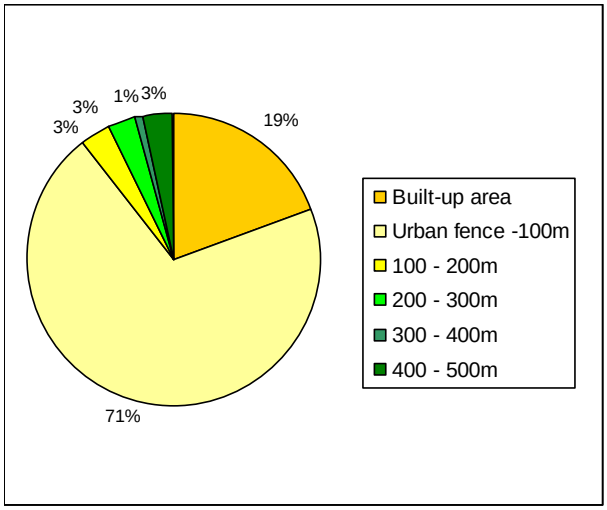
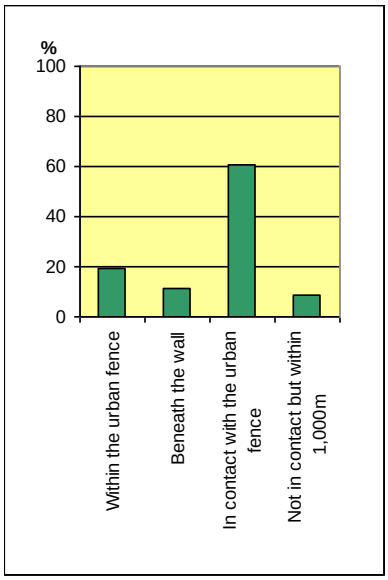


Figure 5.26 Shrewsbury in 1902. Detached gardens in relation to wall and urban fence

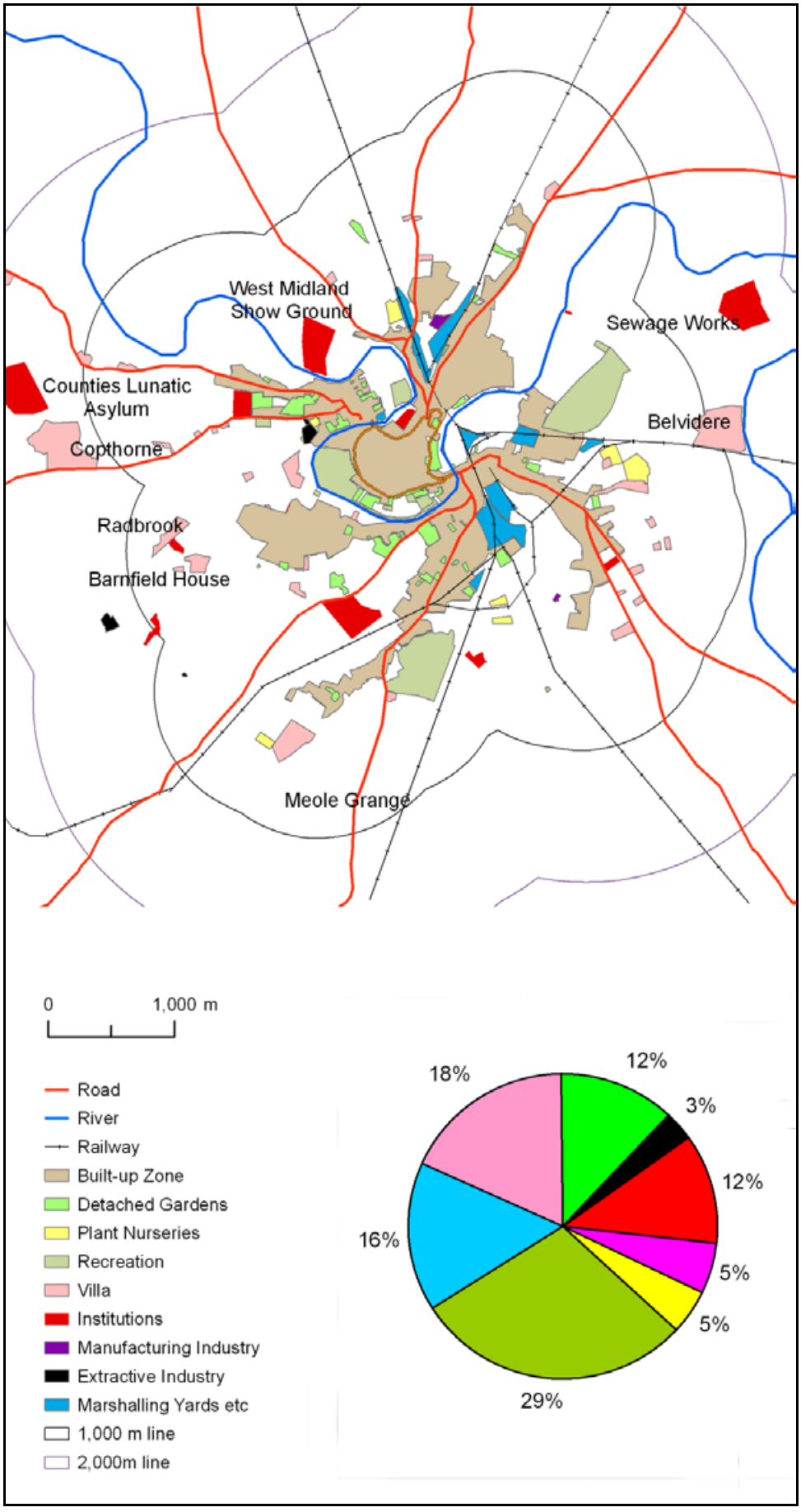


Other fringe features

The fringe feature map (Figure 5.27) gives an overall impression of little change in the previous 20 years, despite the building boom. However, there were three new large additions to the fringe: the sewage works opened in 1900 at Monkmoor in the large meander to the east of Shrewsbury; the West Midland Show Ground, laid out upstream of the town in 1897; and the Shrewsbury Golf Course established in 1891. Other than these, additions to the fringe were individually small. The main feature was the marked difference in the urban fence as the built-up area expanded to subsume many inner fringe belt features, which were either modified or sealed in. The 1,000 metre line, defining the outer edge of the fringe, had in turn spread out in every direction, but still had not encompassed the Counties Lunatic Asylum or the villa at Copthorne, though some of the early villas in the west were now included. The proportion of the fringe area occupied by fringe features remained at 11 percent.

The pie graph in Figure 5.27 illustrates that, by this point, detached gardens had assumed a minor position in the fringe for the first time, at 26.2 hectares. They occupied only 12 percent of the area covered by fringe feature. Recreation remained the major user (61.9 hectares), followed by villas (38.9 hectares) and marshalling yards (33.9 hectares) (Figure 5.27).

Figure 5.27 Shrewsbury's fringe in 1902



Box 5.9 Shrewsbury in context, 1926

Population. Between 55,000 and 57,000.

Built-up area

- Shrewsbury now covered 531.5 hectares, a massive increase of 246.4 hectares within the urban fence: this represented a growth of 86% in 24 years (Figure 5.2).
- Even so, the outward spread of the town was not great, but its form was much denser and less tentacle-like. In 1902 there had still been semi-rural wedges dotted with fringe features between the ribbon development along the major roads. Only a small housing development was needed to seal them in within the urban fence.
- Such development occurred in the first decade of the 20th century, notably by two residential developments: the completion of the high class Kingsland estate which was now joined to Frankwell; and the infilling of the space between the two roads to the south-west in Belle Vue with middle class housing (Figure 5.2).

Access and economic life

- Motor cabs had been introduced in the town in 1911 and motor buses just before the First World War. Routes were extended in the 1920s to the extremities of the growing town at Harlescott, Meole Village, Greenfields and Monkmoor Aerodrome (Shrewsbury Chronicle, 1929) (Figure 5.2). In 1925 there were 24 motor or motor-cycle agents and garages in the town, in addition to the 20 cycle agents.
- Shrewsbury's major employer, the Carriage and Wagon Works, closed in 1912, but in 1915 the Sentinel Wagon Works was moved from Glasgow to Harlescott, its main product being steam wagons. This company built houses for its workers. Its arrival established the northern corridor as an industrial and working-class area, with the town's first council estate built here in 1914-15.
- When the OS map was being revised in 1925, Chatwood was in the process of opening a factory in Harlescott to make safes and they also built company houses.
- During the First World War the Royal Flying Corps built a road transport depot in north Shrewsbury, with houses for married staff. It also established an airfield in the meander core below the town. In the 1920s, 2 hangars and the runway still remained. Domestic quarters had been adapted for housing and the women's hostel was turned into an isolation hospital in 1923 (Trinder, 2006).

Social and daily life

- In addition to doctors, solicitors and surveyors, Shrewsbury had large numbers of civil servants in the borough's Guildhall and the county's Shirehall. There were also central government offices such as the Ministry of Labour & Pensions and Inland Revenue, as well as the Prison, now part of the national network.
- The county education committee was running technical and art schools as well as secondary schools within the town.
- By 1926, two grocery chains, Morris & Co. and the Co-operative Society had, between them, nine grocery stores in the suburbs and milk was provided fresh daily by 21 dairymen and cow-keepers in the town. The post office had expanded to 15 sub-offices in the suburbs.
- The town centre remained the major shopping centre for a wide region. There you could buy boots, guns, jewellery, wirelesses, office equipment and toys or hire the services of veterinary surgeons, nurses, French polishers and musicians. Farmers were well-served by the weekly cattle market, 11 seed merchants and 4 manure agents. Those visiting the town centre could partake of refreshments in 21 dining rooms and more than 150 inns (Kelly, 1926; Wilding, 1925).

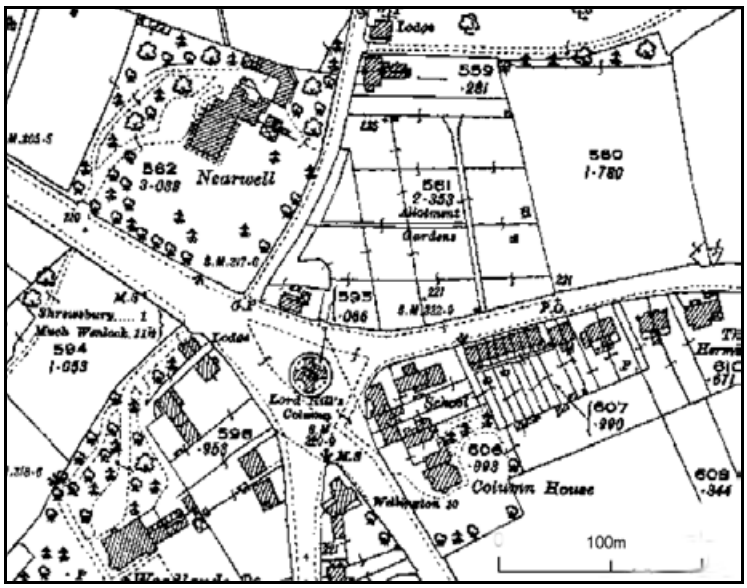
Box 5.10 Allotments nationally – the situation in 1926

In 1908 an act was passed that consolidated existing legislation. Local authorities were obliged to provide allotments where land could not be provided by private agreement. They also had the right to purchase land compulsorily for allotments; and wardens of enclosure allotments were permitted to transfer the land and its management to the local authority. By 1913 a keen demand for urban allotments was reported by the Land Inquiry Committee. The outbreak of the First World War gave a tremendous impetus to the extension of the allotment system. The Defence of the Realm Act in 1916 gave local authorities the power to secure as much land as exigencies demanded. A vast number of 'wartime plots' appeared, mostly in and around towns. 50,000 acres were requisitioned. At the end of the war demand continued, especially from returning ex-servicemen, but at the same time there was pressure from owners who wanted their land back. In consequence a series of acts was passed in the early 1920s. The concept of allotment gardens of under ¼ acre was introduced. Every town planning scheme had to consider the need for allotments and councils could not dispose of allotments without ministerial consent (Thorpe, 1969).

Source of data

In 1926 a second revision of the O.S. 1st Edition 1:2,500 plan was published and this formed the basis for the fifth snapshot of detached gardens and garden-ground. It provided accurate information on the new allotment sites overseen or provided by the local authority, which were labelled as garden-ground or allotment gardens. Older sites of detached gardens were not labelled, but the plot boundaries were delineated quite clearly.

Figure 5.28 Shrewsbury. Extract from O.S. 1st Edition, 2nd revision 1:2,500 map used to compile the cross section for 1926



This extract from the 1926-27 revision of the County Series sheet XXXIV.11 shows the Column Allotments to the east of Shrewsbury, where Abbey Foregate becomes London Rd. In this case, plot boundaries and access footways are marked, but this was not widespread on this revision.

Abundance and distribution of detached gardens

The distribution map (Figure 5.30) shows that the previous 25 years had been a period of major change for detached gardens and garden-ground. For the first time since the mid-19th century, new garden-ground sites had been established at Coton Hill, Greenfields, Castlefields, Underhill/Monkmoor and Meole Brace. The O.S. map did not provide details of the number of individual plots, but the total area of these five sites was 17.7 hectares. This was 36.6 percent of the total area of detached gardens in 1926 and represented an increase of 67.6 percent over the 1902 figure. At the same time, the old established detached gardens within the meander had hardly changed and the 2.1 hectares at Luciefelde remained untouched. There were still 3.2 hectares in the two garden sites on Copthorne Road and a sizable patch (about 2 hectares) of the old gardens in the middle of the Belle Vue estates. The railway allotments at Scot's Lane, the New Street gardens and the Column Allotments all continued and the Ditherington Allotments doubled in size, back to their original dimensions when first established by Marshalls of the Flax Mill.

The total area of detached gardens and garden-ground in 1926 was 48.4 hectares. Despite this great increase, the urban zone had also increased and the ratio of the areas of the built-up zone and detached gardens remained at 10:0.9 (Figure 5.29).

Figure 5.29 Shrewsbury in 1926. Ratio of detached gardens to built-up zone

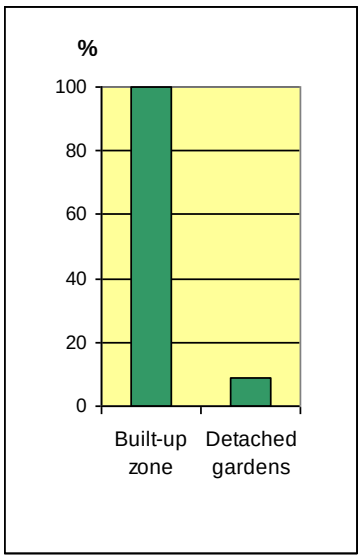
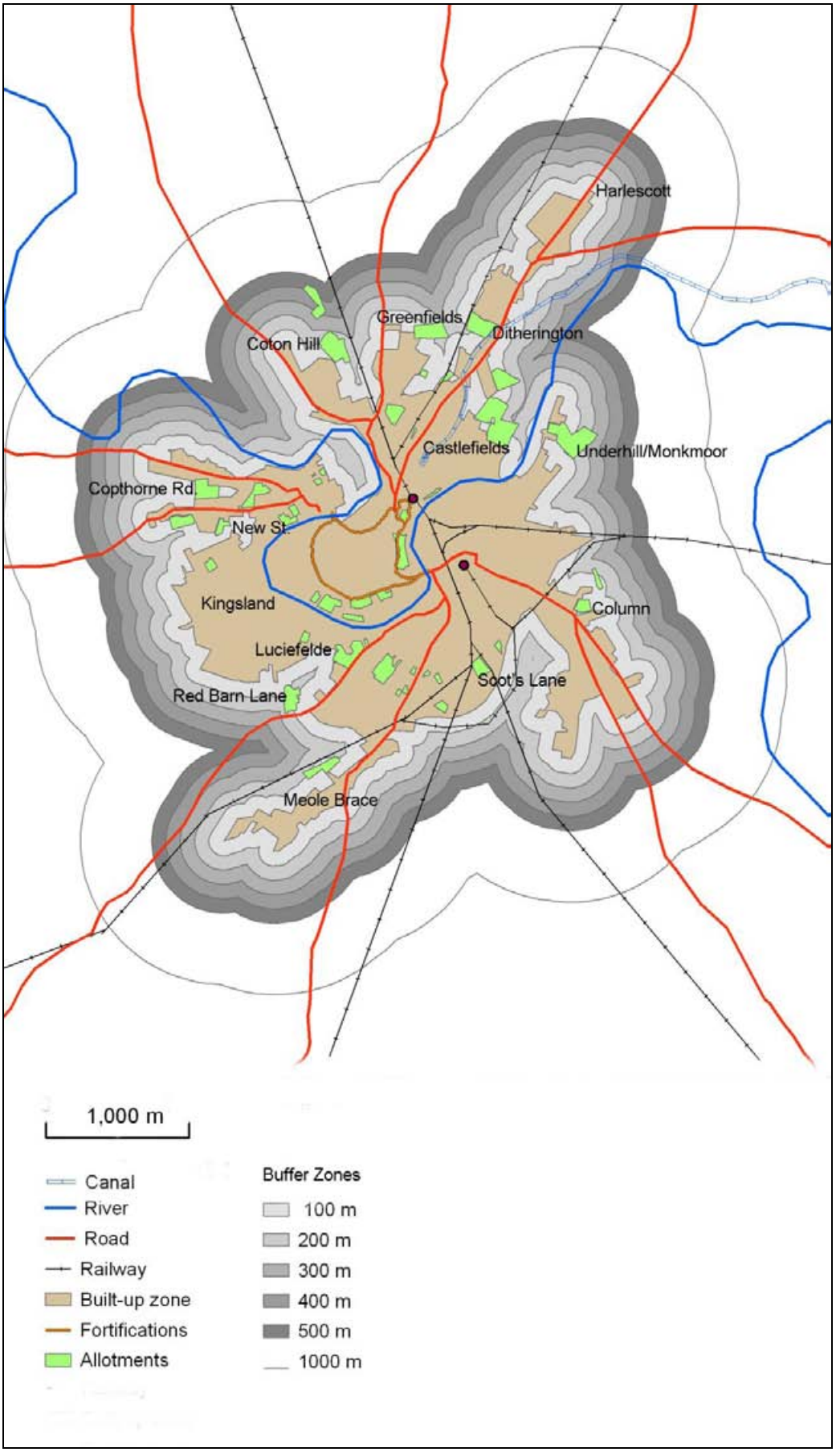


Figure 5.30 Shrewsbury in 1926. Abundance and distribution of garden-ground and detached gardens



There was a large increase in the area of gardens within the built-up zone, now comprising 36 percent of the total (Figure 5.31), though the largest proportion was still in the first buffer zone up to 100 metres from the urban fence. Figure 5.32 shows that 57.4 percent of all detached gardens, by area, had a contact edge with the urban fence and, together with those located within it, the figure rose to 92.9 percent.

Figure 5.31 Shrewsbury in 1926. Allotments by zone

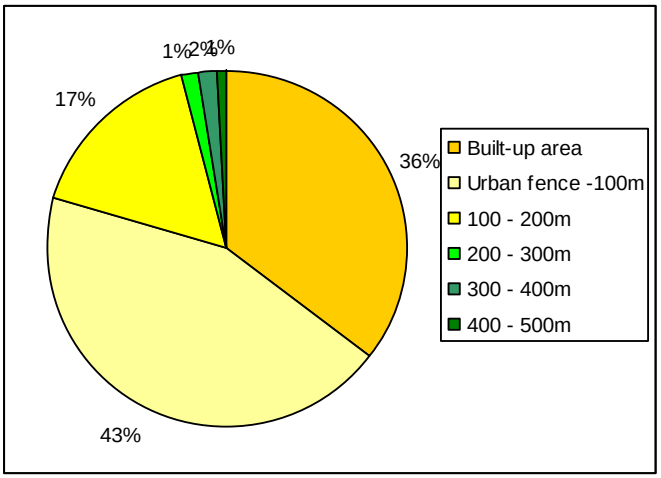
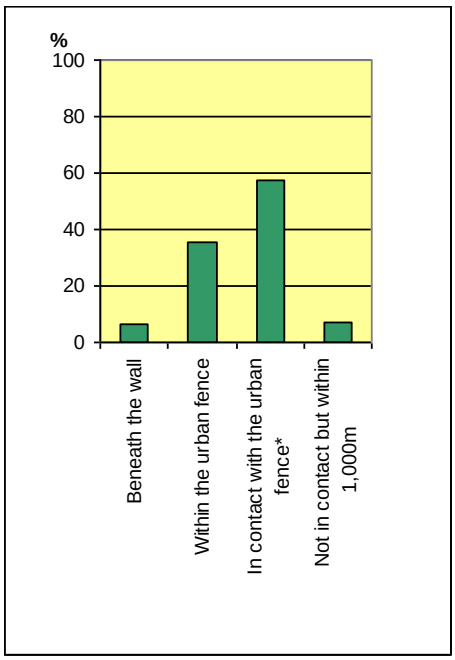


Figure 5.32 Shrewsbury in 1926. Detached gardens in relation to wall and urban fence

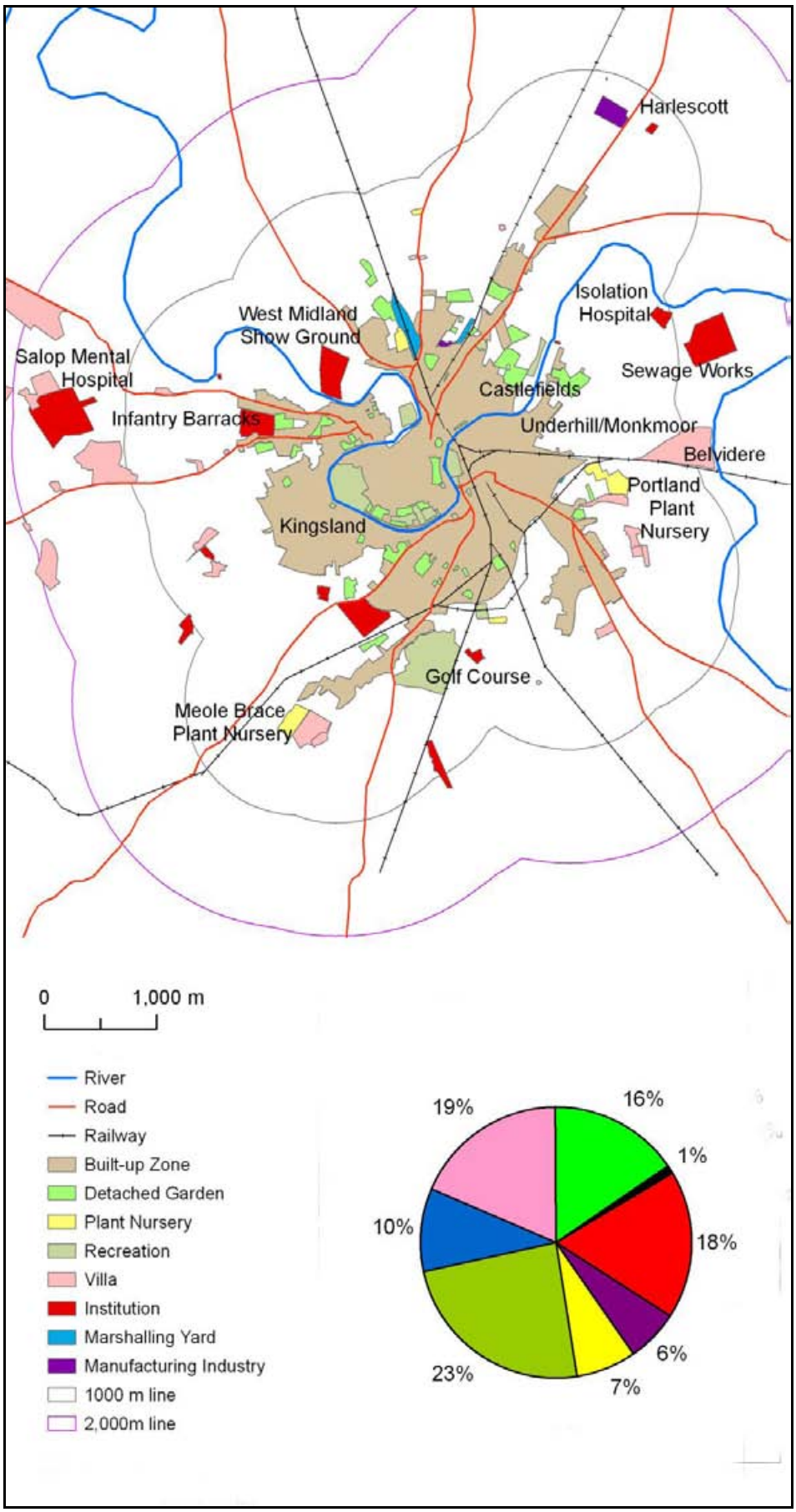


** The percentages add up to more than 100 because this column also includes detached gardens beneath the wall.*

Other fringe features

By 1926 the 1,000 metre zone had moved outwards a little, especially in the north and east, in line with the expansion of the urban fence. The new garden-ground formed a broken belt to the north and north-east of the built-up zone, but otherwise there was little change in the outer part of the fringe. The institutions had one addition, an isolation hospital. The sewage works and the Salop Mental Hospital (formerly the Counties Lunatic Asylum) still lay outside the 1,000 metre zone. A major change was the sale of the old racecourse, which now ceased to be used for recreation. Racing had stopped there in the 1880s, but the space had continued to be used for archery, football and shows. Currently it was being acquired for residential development, including schools. To the north of the town, a new industrial unit had been established at Harlescott, well beyond the urban fence, but all other factories and workshops had been embedded in general urban development and now formed part of the built-up zone. Most of the marshalling yards, too, had been embedded within the urban fence (Figure 5.33) and 17 hectares of gardens lay within the built-up zone Thus the major change in the current fringe was due to the sealing of former fringe features into the built-up zone. The fringe features, taken all together, now comprised only nine percent of the fringe area. This is summarised in the pie diagram in Figure 5.33, which illustrates that the proportion of detached gardens had risen again and was only a little less than villas and institutions. Recreation remained the major use of the fringe area. This was mainly due to the golf course; otherwise recreation was by now reduced to a recreation ground, a sports field and tennis courts, all close to the urban fence.

Figure 5.33 Shrewsbury's fringe in 1926



Box 5.11 Shrewsbury in context, 1938

Population. Approaching 62,000, an increase of 5,000 in the 12 years

Built-up area

- 749.4 hectares, an increase of 217.9 hectares: thus the area within the urban fence had increased by 41% in 12 years (Figure 5.2).
- The main area of private residential expansion was in the south and west where the new A5 by-pass encouraged development towards Radbrook and Copthorne (Figure 5.35). In Meole Brace, to the south, housing estates filled in the open land between the village and the railway and to the north several housing estates were established, especially after 1934 when the borough boundary was extended, joining Harlescott to Shrewsbury.
- In the meander downstream from the town, the First World War allotments were sold for residential building, which started in 1928 and was still in progress ten years later. The council bought the racecourse in 1925 and by 1938 had built 300 council houses, a model 'open air' senior school, an infants' school and tennis courts. A further 100 houses were built privately (Pigot, 1849; Trinder, 2006).

Access and economic life

- The increase in motor traffic in the 1930s brought congestion to the narrow streets in the centre of the town, where traffic was also hindered by the steepness of Wyle Cop and Pride Hill and the bottlenecks of the two river crossings. In 1933 a by-pass was completed for the A5, skirting the golf course and the cemetery to the south of the town (Figure 5.35)
- Within the town, the Midland Red Bus Company had a monopoly of services, establishing itself firmly in the Square with a second bus station round the corner near the General Market Hall, and providing several hundred services each day to the suburbs (Trinder, 2006).
- There were 18 motor car garages, eight firms hiring vehicles and 12 haulage contractors (Kelly, 1938).
- The Chatwood Safe Co. was still providing employment in the north of the town. The Sentinel Wagon Works, which had employed over 1,000 people in 1934, had gone into liquidation in 1935 due to competition from motor lorries, but in 1936 a new company took over, making machine tools, Bren gun carriers, motor buses and kitchen and bathroom units for pre-fabricated houses. The RAF road transport depot had closed in 1932.

Social and daily life

- Shrewsbury continued to provide a full range of services for Shropshire and the Welsh borders. By this time there were 41 firms of solicitors in the town, 12 architects, 37 insurance companies and branches of all the major banks.
- Medical and nursing services were provided in three hospitals and several nursing homes, and by nursing agencies and 17 dentists.

Box 5.12 Allotments nationally – the situation in 1938

In the late 1920s the number of allotments began to fall, through lack of demand, pressure from developers, stringencies of the new town planning regulations and the return of DORA land to its owners. In 1930 the National Allotment Society was formed. During the economic depression, pressure to relieve poverty and provide activity for the unemployed helped to slow the loss of allotments, but by 1939 there were only 109,000 acres of urban allotments in England and Wales, 815,000 individual plots (Thorpe, 1969).

Source of data

In 1938 a partial survey was undertaken to update the O.S. 1925 2nd revision County Series, but it was interrupted by the outbreak of the Second World War. The results were eventually published as the Provisional Edition in 1965, on the National Grid, at a scale of 1:10,650. Unfortunately, there were some blank areas on this map and it was not always clear whether projected developments had taken place before the war started. Additional documentary evidence was used to supplement the cartographic information.

Abundance and distribution of detached gardens

In 1938 the total area of garden-ground in the study area was 30.1 hectares, greatly reduced from the 48.4 hectares available just 12 years earlier. Distribution had not changed much in the urban fringe north of the town, but there were major losses elsewhere: the Luciefelde Gardens, in constant use since 1832, and the Underdale/ Monkmoor First World War allotments had both been overtaken by residential development. The proportion of garden-ground in the first 100 metre zone was the lowest ever (10.4 hectares) and for the first time there was a greater area of allotments within the built-up zone where 43 per cent (12.9 hectares) of the garden-ground was located (Figure 5.34).

Figure 5.34 Shrewsbury in 1938. Detached gardens by zones

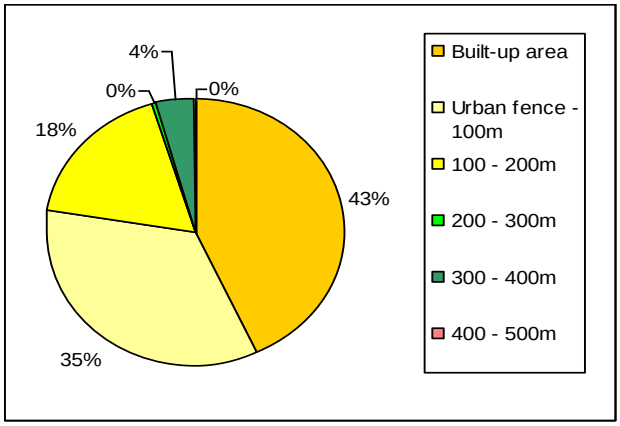
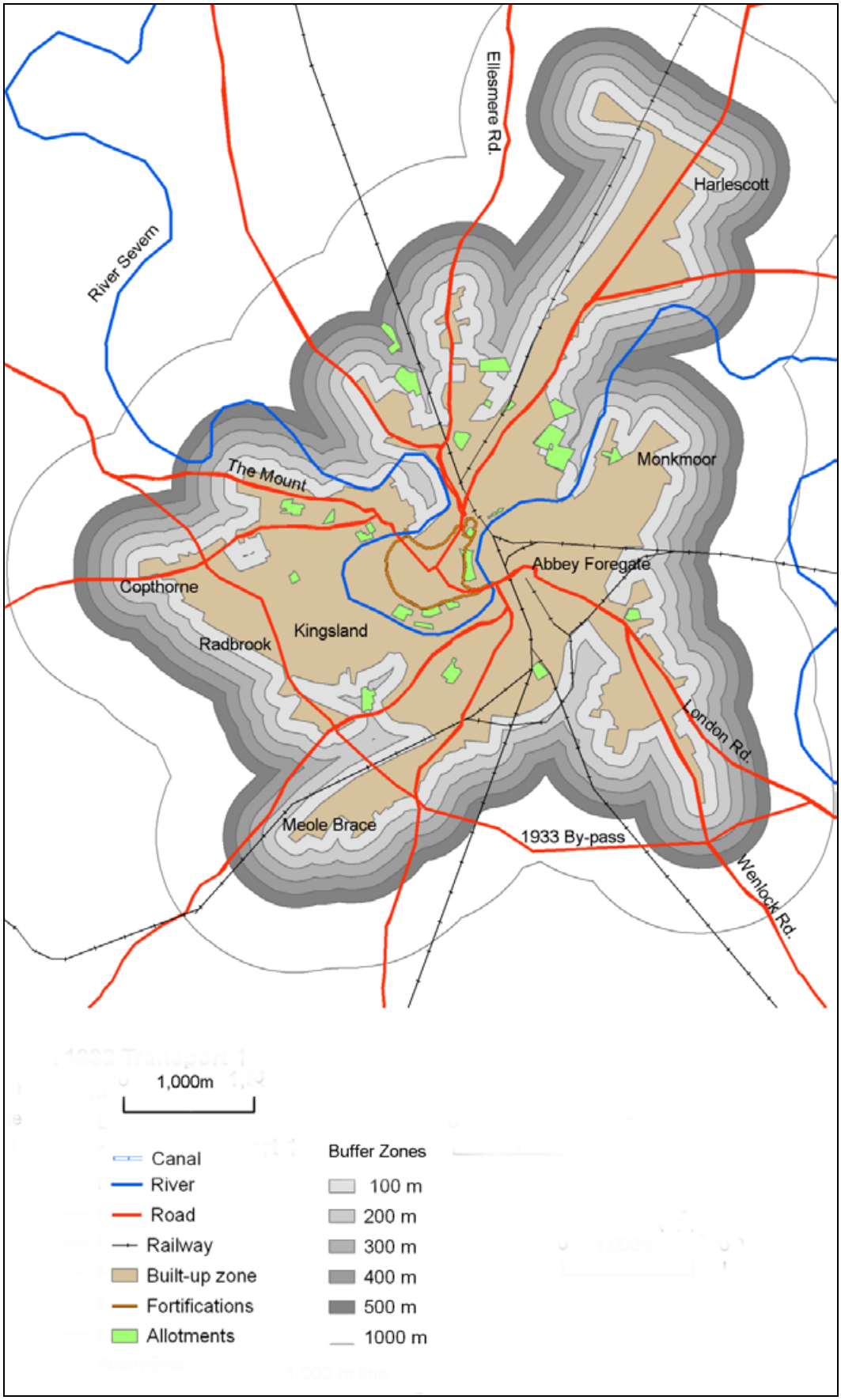
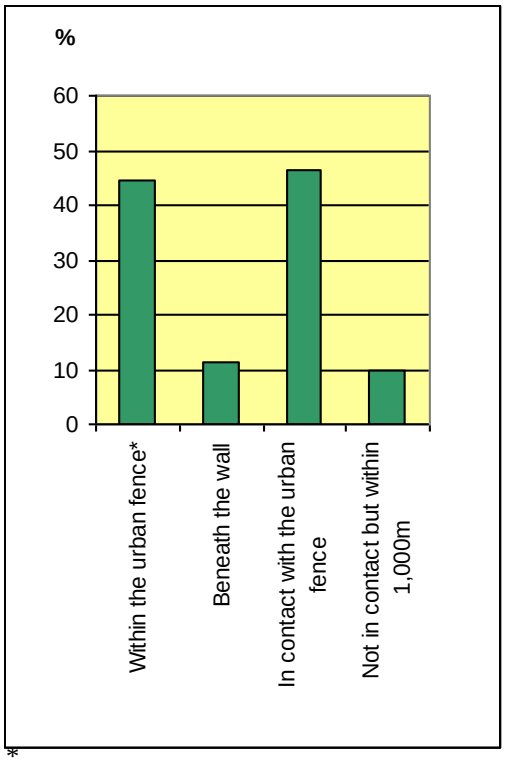


Figure 5.35 Shrewsbury in 1938. Distribution and abundance of garden-ground and detached gardens



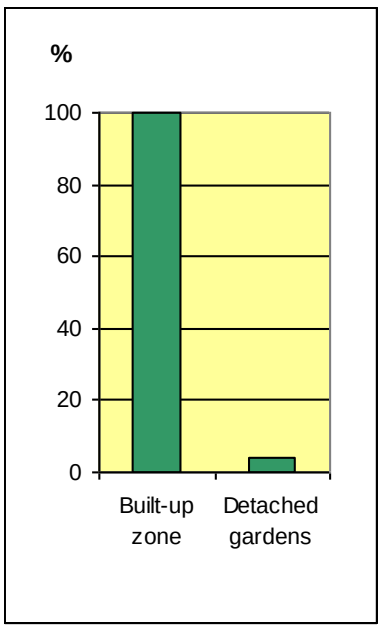
Together, the garden-ground within the urban fence and in contact with it made up 91 percent of the total. The detached gardens beneath the wall, at just over 3 hectares, had hardly changed throughout the 100 years covered by the study (Figure 5.36). The ratio of the built-up zone to the total area of gardens was 10:0.4, the lowest in this study (Figure 5.37).

Figure 5.36 Shrewsbury in 1938. Detached gardens in relation to wall and urban fence



* *This column also includes detached gardens located beneath the wall*

Figure 5.37 Shrewsbury in 1938. Ratio of garden-ground to built-up area

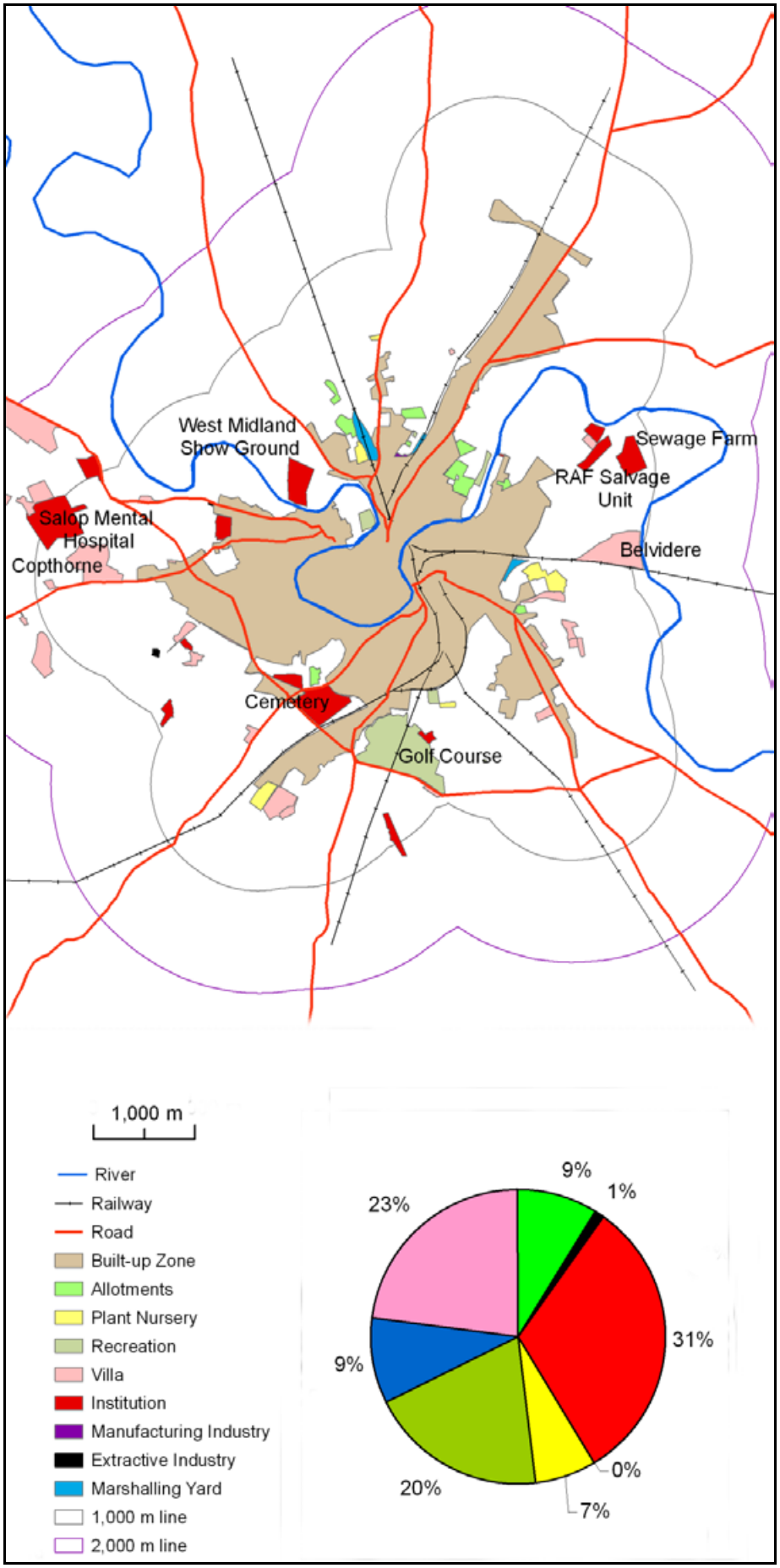


Other fringe features

By 1938, the built-up area of the town had become consolidated. The growth along the northern axis and the new by-pass in the south and west had caused the 1,000 metre fringe area to expand in those directions so that, for the first time, Salop Mental Hospital and Copthorne (18th century villa) were located within this fringe area (Figure 5.38). .Distinct sections of the inner fringe had been taken over for residential development. A cluster of buildings in Monkmoor, once the Royal Flying Corps Airfield, were brought back into use as an RAF salvage unit in 1936 and the golf course had been doubled in size. Most of the 19th century detached gardens were now embedded within the urban fence. The 20th century garden-ground was clustered in the north, close to the urban fence. Taken all together, fringe features occupied only 7 percent of the total fringe area, the lowest in the study.

Institutions were now dominant in the urban fringe, occupying 60 hectares (Figure 5.38). Although there were no newly-built villas, several with large gardens were now within 1,000 metres of the urban fence, so that villas occupied second place, covering 44.5 hectares. The expanded golf course meant that recreation was still an important factor in the fringe, but for the first time since 1832 it was not dominant. Garden-ground occupied only 9 percent of the area dedicated to fringe feature, the lowest in the whole of this study.

Figure 5.38 Shrewsbury's fringe in 1938



Synthesis, discussion and conclusions

The main objective of this chapter has been to report on the changing abundance and distribution of detached gardens and garden-ground in one town through a period of just over 100 years. The results have been presented as snapshots for six dates. In this concluding section, the data are amalgamated to form a narrative. Themes are sought, trends noted and conclusions drawn.

Abundance of detached gardens and urban allotments

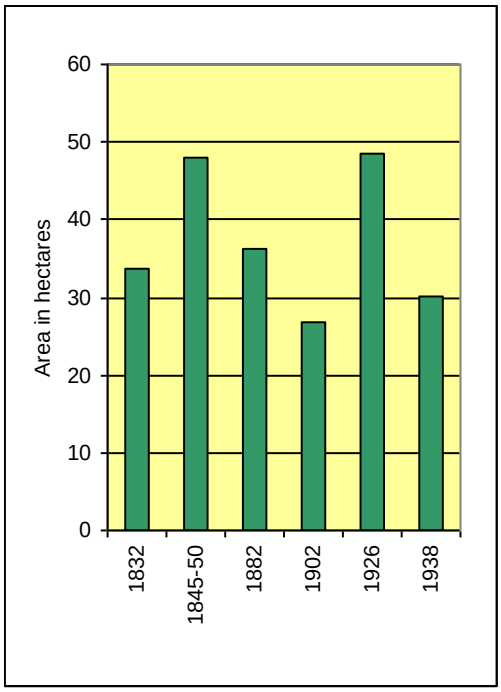
At the beginning of this survey-through-time, there were 33.8 hectares of detached gardens within 500 metres of Shrewsbury's urban fence (Figure 5.39). This figure compared favourably with the results from 18th century towns, which, on average, had 29.2 hectares of detached garden (Table 4.5). The figure for 1845-50 was significantly higher, at 48.1 hectares, an increase of 30 percent, partly due to the richness of the data available on the tithe maps, which picked out small garden sites. Another reason for the increase was the establishment of workers' allotments by Marshall and Co. for their employees at the flax mill, a paternalistic practice not uncommon among industrialists at the time (Trinder, 2000).

After this peak, the area of detached gardens declined to a low of 26.2 hectares in 1902. The decline had started before 1882, with Benyon's Gardens and others nearby being bought by the Shrewsbury Freehold Land Company and gradually filling up to become the suburb of Castlefields. The end of the 19th century was a time of frantic building activity in which many detached garden sites were sold for house building and no new sites were established. The most popular locations for housing were the inner parts of the fringe, originally occupied by the detached gardens in Mountfields, Coleham and Belle Vue. The expansion of the town and the need for gardens were out of balance. Much acreage was lost, though the gardens did not entirely disappear.

The system of private ownership for provision was breaking down and central government failed to provide strong legislation to fill the gap. However in 1908 the legislation was clarified and consolidated and allotments were now recognised as an urban issue. A firm structure was now in place, though it took the impetus

provided by the First World War to persuade local government to become involved. The Cultivation of Lands Order (1916) attached to the Defence of the Realm Act (1914) required greater home production of food and five large new allotment sites had been provided in Shrewsbury. At the same time, old established detached gardens were still being maintained, resulting in an all-time peak of 48.4 hectares. After the war demand for allotments persisted, resulting in a series of allotment acts in the early 1920s, so that, despite pressure from owners to get their land back, urban allotments were firmly established.

Figure 5.39 Shrewsbury. Total area of detached gardens by year



However, by 1938, just 12 year later, the area of allotments had plunged to 30.1 hectares, almost as low as the extreme trough in 1902. This was another era of house-building and three notable allotment sites became housing estates: Luciefelde, used since 1832 and long embedded within the urban zone, now became a spacious middle class crescent of large semi-detached houses; Marshall's Flax Mill gardens, enlarged in the First World War, became a council estate; the Monkmoor/Underdale Gardens, established in the First World War, were also developed by the local authority.

Figure 5.40 illustrates the relationship between the area of the built-up zone and detached gardens. The first two columns, for 1832 and 1845-50, exemplify the

situation before rapid growth of the urban zone began, with results similar to those of 18th century towns reported in Chapter 4 (Figure 4.15). The built-up zone was compact and the detached gardens covered an area about half as big as the built-up zone, a ratio of 10:4.4 in 1832 and 10:5.5 in 1845-50. Thereafter, as urban expansion got underway (Figure 5.41), the ratios rapidly declined, with a slight pause in 1926 when the area of detached gardens peaked, but then plunging to a low of 10: 0.4 in 1938. These data suggest that, in the flurry of house-building, the supply of sufficient gardens may not have been considered. No evidence has been collected as to whether the loss of detached gardens was compensated for by the growth of houses with attached garden plots.

Figure 5.40 Shrewsbury. Ratio of built-up zone and detached gardens

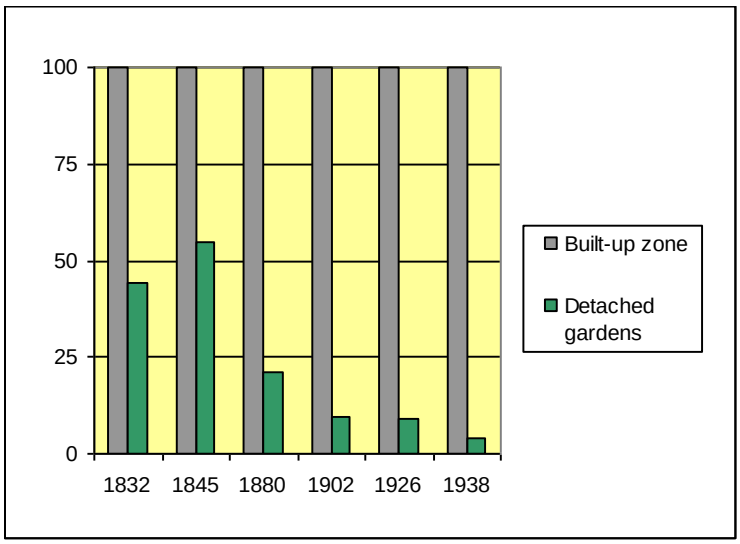
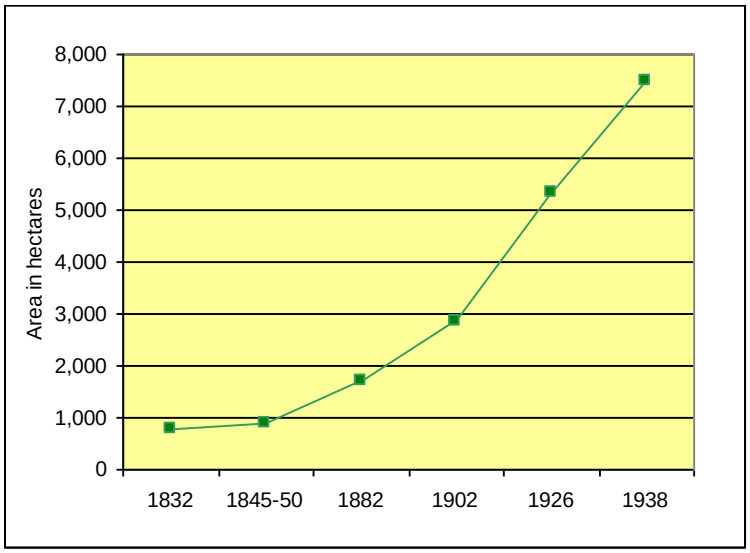


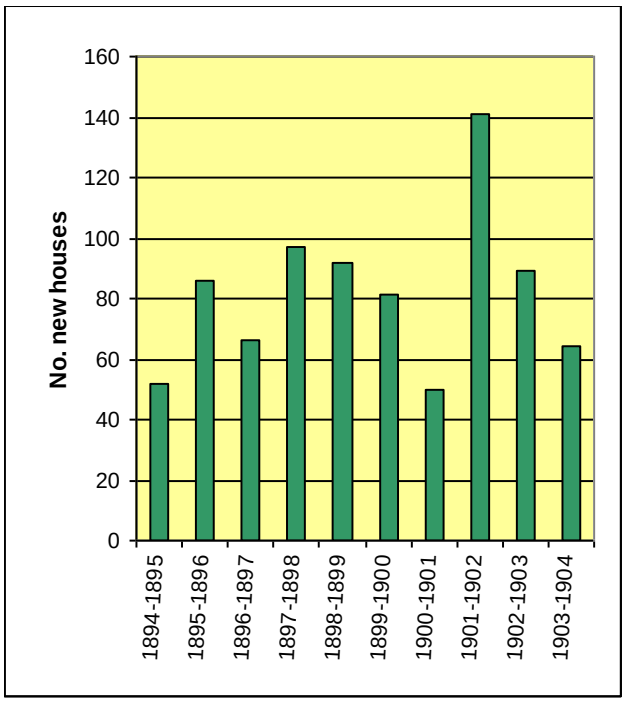
Figure 5. 41 Shrewsbury. Growth by area of built-up zone, 1832 to 1938



Gains and losses

Except in isolated cases, for example the housing estates at Cherry Orchard (Figure 5.22), new housing did not leap-frog the detached gardens, but replaced them. Sometimes this happened in a systematic manner, as in Benyon's Gardens where 48 allotments were bought by the Shrewsbury Freehold Land Society Elsewhere, individual detached garden plots were bought for building a single house or a series of contiguous plots were developed together for a terrace of houses. On a small scale this had been going on sporadically for decades, but at the turn of the 19th century there was a boom in the building cycle (Figure 5.42) (Shrewsbury Borough Corporation, 1894-1904). In the ten years between 1894 and 1904, a large number of small builders were competing for land for house-building and the privately-owned detached gardens were most vulnerable. They contained no permanent buildings and occupied a valuable central location. Thus land that had been gardened for generations, and presumably was a valuable resource for the tenant families, was lost. The landlords must have decided it was a lucrative option to sell and the tenants were the losers.

Figure 5.42 Shrewsbury. Houses agreed by the Development Control Committee between 1894 and 1904



Later in the study period it was a national crisis that provided the impetus to increase provision. Local authorities were obliged to become involved and, once

drawn in, they remained major players. Many tenants were included in the allotment system for the first time and many were not prepared to give up their plots once the First World War was over. Several DORA sites remain in use today.

Distribution of detached gardens and urban allotments

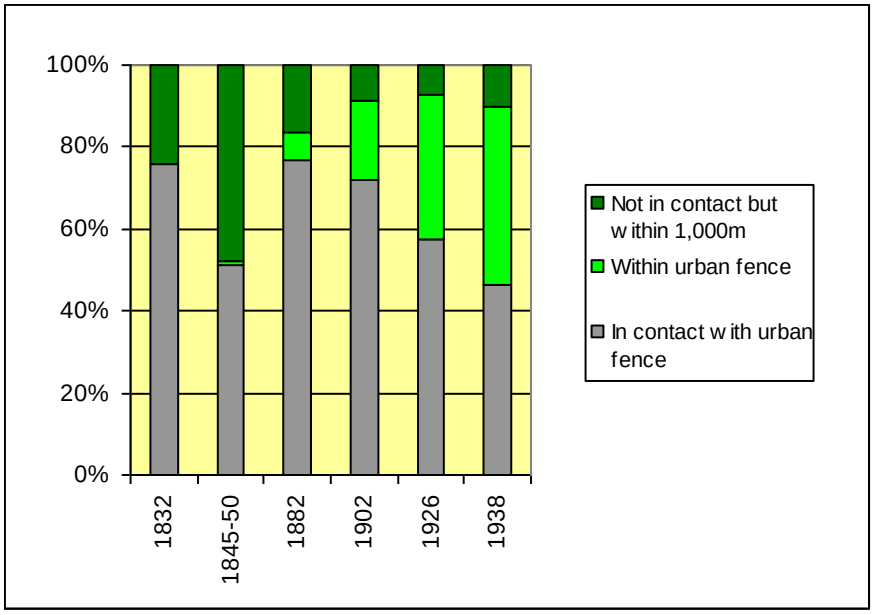
For the most part the physical relief around Shrewsbury was conducive to gardening. The flood plain was largely avoided, although utilised in particular places where other conditions were favourable. Steep river-cliffs were a problem, though terracing was employed to make gardening possible. River terraces, sands and fluvio-glacial flood gravels were all used for detached gardens (Figure 5.1). A finger of boulder clay, stretching into the town from the north was popular in the early years, but later it was turned over to brick-making. Overall, river terraces were exploited most, as might be expected in a town like Shrewsbury located within a meander in the middle reach of a very sinuous river, cutting through unconsolidated glacial material.

There was a marked difference between the distribution of detached gardens at the beginning of the survey and at the end. In 1832 the gardens were located on every side of the town, and this was even more marked in 1845-50. They were particularly clustered along and between the roads to the north-east, west and south (Figures.5.4 and 5.12), leaving small gaps to the south-west and east. The more detailed data for 1845-50 revealed the presence of smaller plots around the medieval suburbs of Abbey Foregate, Coleham and Frankwell. Except for some encroachment by residential development, the distribution had changed little by 1882 but, by 1926, the picture had altered, with five new sites established to the north and north-east of the urban fence (Figures. 5.18 and 5.29). The old sites to the south and west were now diminished and patchy and this remained the picture in 1938.

The location of detached gardens relative to the urban fence was investigated in detail for each of the six dates, since a strong relationship had proved to be a consistent and distinctive feature of 18th century towns (Figure 4.20). Figure 5.43 illustrates the proportion of detached gardens (measured by area) that had at least one edge in contact with the urban fence. For all dates it was the major factor, but

from 1882 the proportion declined steadily to a low of 43 percent in 1938. There seems to have been three phases. In the early 19th century, the detached gardens were in the proximal fringe, nestled into the urban fence, beneath the town wall and close to the edge of the suburban ribbon development. By the end of the century, 35.5 percent were located within the urban fence, overtaken by residential development. Then in the early 20th century, new allotment sites appeared at the north and north-eastern edges of the town, close to new housing developments. Throughout, proximity to the urban fence remained paramount.

Figure 5. 43 Shrewsbury. Detached gardens in relation to urban fence, by area



The growth in the proportion of detached gardens embedded within the built-up area is clearly seen in Figure 5.43. Adding this category to gardens in contact with the urban fence, the proportion was generally above 80 percent. No new detached gardens were established. It was simply a case of their being translated from the fringe to the built-up zone, as the urban fence expanded. The maps for 1882, 1902 and 1926 (figs. 5.19, 5.24 and 5.30) show this progression, with the distribution becoming more and patchy through time. The Development Control applications show that 43 builders were actively building on plots within 200 metres of the urban fence or by now embedded within it (Shrewsbury Borough Corporation, 1894-1904). Much development was irregular rather than systematic, with sections of garden sites left among the houses. By 1938, 43.7 percent of the detached gardens (by area) were within the built-up zone.

The detached gardens located immediately outside the town wall were persistent throughout the years covered by the study. As a percentage of all detached gardens, the figures were low for 1845-50 and 1926, when the provision of garden-ground elsewhere was high, but the area - just over three hectares - did not change (Table 5.3). The converse was also true: in the lean years of 1902 and 1938, they formed a larger proportion of the whole. Some of these detached gardens are still tended today (Figure 5.9).

Table 5.3 Shrewsbury. Detached gardens in relation to the town wall

YEAR	% OF ALL DETACHED GARDENS
1832	7.3
1845	6.0
1882	8.9
1902	11.5
1926	6.7
1938	11.4

Origins of the detached gardens

The date for the establishment of the detached gardens shown on Hitchcock's map of 1832 and the tithe maps of the 1840s is not known, but it appears to have been commonplace, at that time, for fields and small plots of spare ground to be divided up and rented out. This suggestion is supported by the cartographic investigations summarised in Chapter 4, which concluded that detached gardens were a common feature around towns in England in the 18th century. It also seems possible that the gardens identified in Shrewsbury might have been there for 100 years or more. On the other hand, in the 40 years previous to the publication of Hitchcock's map, the allotment movement had constantly agitated for the provision of allotments in rural areas and the arguments will not have passed by the landed classes and clergy of Shropshire. No doubt the issues were discussed in the county town and similarities with existing urban detached gardens and the needs of gardenless residents considered. Information on the age and origin of detached gardens was later sought for a selection of garden sites in a detailed case-study that is reported in Chapter 7. What is clear is that national legislation played little part in the establishment of garden-ground before 1916 and that provision was largely in

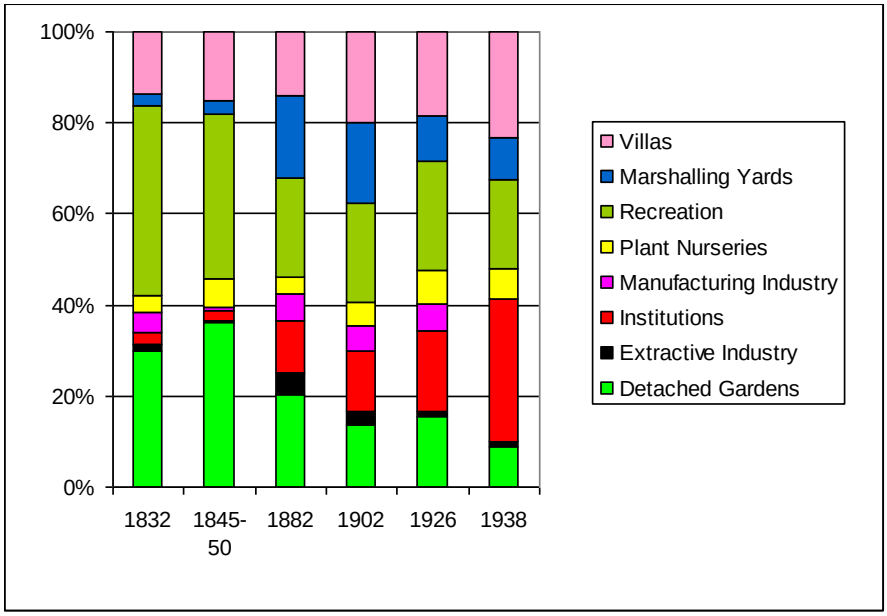
private hands for the greater part of the study period. The data on ownership of land and social aspects of landlords and tenants was later investigated for 1845-50 and is reported in Chapter 6.

Detached gardens in relation to other fringe belt features

Using the definition for urban fringe proposed in this chapter (the area between the urban fence and a line drawn parallel to it at 1,000 metres distance) the proportion covered by all fringe features was generally about 10 percent. Detached gardens started off at a high of 3.9 percent in 1845-50 and then gradually declined, in terms of their proportion of the fringe, to 0.7 percent in 1938.

All categories of fringe features that accompanied detached gardens in Shrewsbury's fringe are illustrated in Figure 5.44 which is based on the area of land covered by each category and depicts the changing proportions. It shows that, as detached gardens declined, institutions grew. Recreation halved over the period, but still maintained an important presence in the fringe in 1938. Plant nurseries remained steady, marshalling yards and other railway land expanded and declined and villas held their own extremely well.

Figure 5. 44 Shrewsbury. All fringe features, divided by categories



The effect of data source on results

The most complete data available for Shrewsbury on the abundance of detached gardens was from 1845-50, when the tithe mapping and apportionments were carried out. These data provided a picture of several large garden sites within the urban fringe and also a wide scatter of smaller sites within 100 metres of the urban fence (Figure 5.13). Together they added up to a total of 48.1 hectares, a sum 30 percent higher than in 1832 and considerably higher than most of the examples studied by cartographic means for the mid-18th century. The rich detail came from the schedules accompanying the apportionments, an information source unmatched at any other date. Hence the resulting map looked quite different from preceding or successive maps which were based entirely on cartographic resources and which labelled only large sites of garden-ground. It seems reasonable to assume that the snapshot based on these data provides the truest picture of both the abundance and the distribution of detached gardens in the 19th century.

The nation-wide survey of 18th century towns provided an early depiction of the extent and distribution of detached gardens The case-study of changes through time has added a further dimension to the knowledge of both distribution and abundance. The tithe survey and apportionment from the middle of the 19th century formed a key part of that longitudinal study. The rich data also allowed an investigation of further characteristics of detached gardens, including an examination of how the system was provided, the people involved and what the gardens looked like. These aspects are reported in the next chapter.

CHAPTER 6. CHARACTERISTICS OF DETACHED GARDENS IN SHREWSBURY, 1845-50

This chapter is a continuation of the case study of Shrewsbury. The aim is to build up a thorough description of detached gardens, concentrating on features other than extent and distribution, the two characteristics that have already been covered in Chapter 5. The intention is also to investigate the role played by these gardens in urban life.

The data on detached gardens for1845-50 were chosen for analysis because they represented the situation in Shrewsbury in the middle of the 19th century before urban expansion overtook the static proximal fringe. The database provided a more thorough picture than had been available hitherto since it was based on information extracted from the tithe apportionment and maps, in which each detached garden plot was accompanied by detailed statistics in the tithe schedules. Relevant attributes included the nature of the plots, especially their size and whether they were single or part of a larger site. A second area of interest was their ownership, including whether they were in public, charitable or private hands and, in the latter case, who were the landowners. A third area of investigation was the tenancy, if indeed the plots were not owner-occupied, with questions on the tenants' occupations and places of residence.

Method

Source material

Raw data were extracted from the tithe apportionments and maps for the six Shrewsbury parishes. The surveyors had collected information largely on a township basis. The extraction of data proved a little burdensome, particularly when townships crossed parish boundaries, or when one parish had an outlier within another, and it took some time to gather the complete database. Maps were, for the most part, at a scale of 6":1 mile. For some districts in congested inner suburbs, as in Castle Foregate, a larger scale was used to clarify plot boundaries and allow the addition of plot numbers. An example of the type of maps used is reproduced as Figure 6.1. The relevant tithe apportionments and maps are listed in Table 6.1 and the townships are marked on Figure 6.2.

Figure 6.1 Shrewsbury: extract from tithe map for Castle Foregate and Castle Ward Within, 1849
© Shropshire Archives [PF257 & 067]

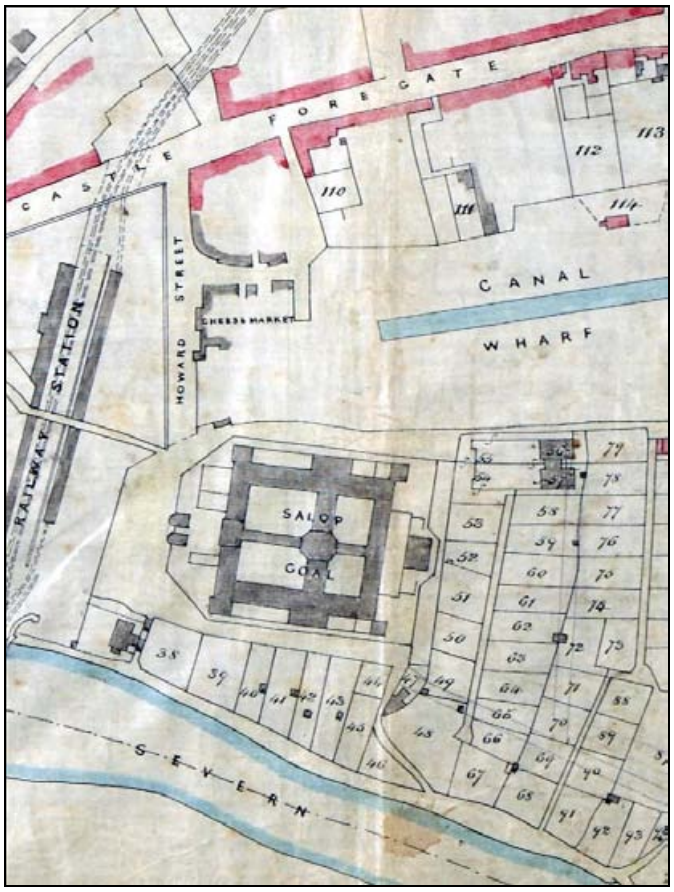


Table 6.1 Tithe apportionments and maps for Shrewsbury

Parish	Township	Date	Reference
Holy Cross	Holy Cross (includes part of Coleham)	1849	PF250/1/1 & 291/1
Holy Cross	St Giles	1840	PF250/2/1 & 291/2
St Alkmund	Harlescott	1849	PF252/1/1 & 145
St Chad	Frankwell	1843	PF253/3/1 & 132
St Chad	Oxon & Shelton	1843	PF253/ & 283
St Chad	Stone Ward	1850	PF253/ & 306
St Chad	Welsh Ward	1849	PF/253/ & 333
St Julian	Coleham	1849	PF256/ & 093
St Julian	Coton	1849	PF256/1/2
St Julian	Shelton	1849	PF256 & 282
St Mary	Castle Foregate & Castle Ward Within	1849	PF257/ & 067
St Mary	Coton Hill	1849	PF257/ & 097
Meole Brace	Meole	1843	PF186/ & 047

The tithe apportionment provided rich and accurate data, since the purpose of the exercise had been to gather exact measurements and precise information on the use of the plots for the commutation of tithes into annual rent-charges (Kain and Prince, 1985). In the Shrewsbury parishes, the tithe area was a field and field names were regularly recorded, in the second section of the apportionment roll. Gardens were identified in the column headed 'state of cultivation' as 'garden'. Orchards, which were mainly near farmsteads, were labelled as such and there were no market gardens. All schedules were in manuscript.

All material was available in the Shropshire Archives and the county reference is given in Table 6.1 as well as the national number allocated by the Public Record Office. Few problems were encountered other than those connected with conservation and protection of the original documents. Some maps were fragile and substitutes had to be used; these were photographed copies on microfiche and the quality was sometimes poor. The schedules, on microfilm, were generally quite legible. Several surveyors undertook the exercise in Shrewsbury and not all were equally diligent. For example, in the St Julian's section of the Coleham Township, which contained large fields divided into garden plots, the surveyor was confident about plots that were gardened by the landowner; he usually identified the occupier of individual rented plots, but failed to register the names of tenants on the larger garden sites, entering simply 'sundry tenants'. Elsewhere, as in Frankwell or Castle Foregate, every tenant was diligently named.

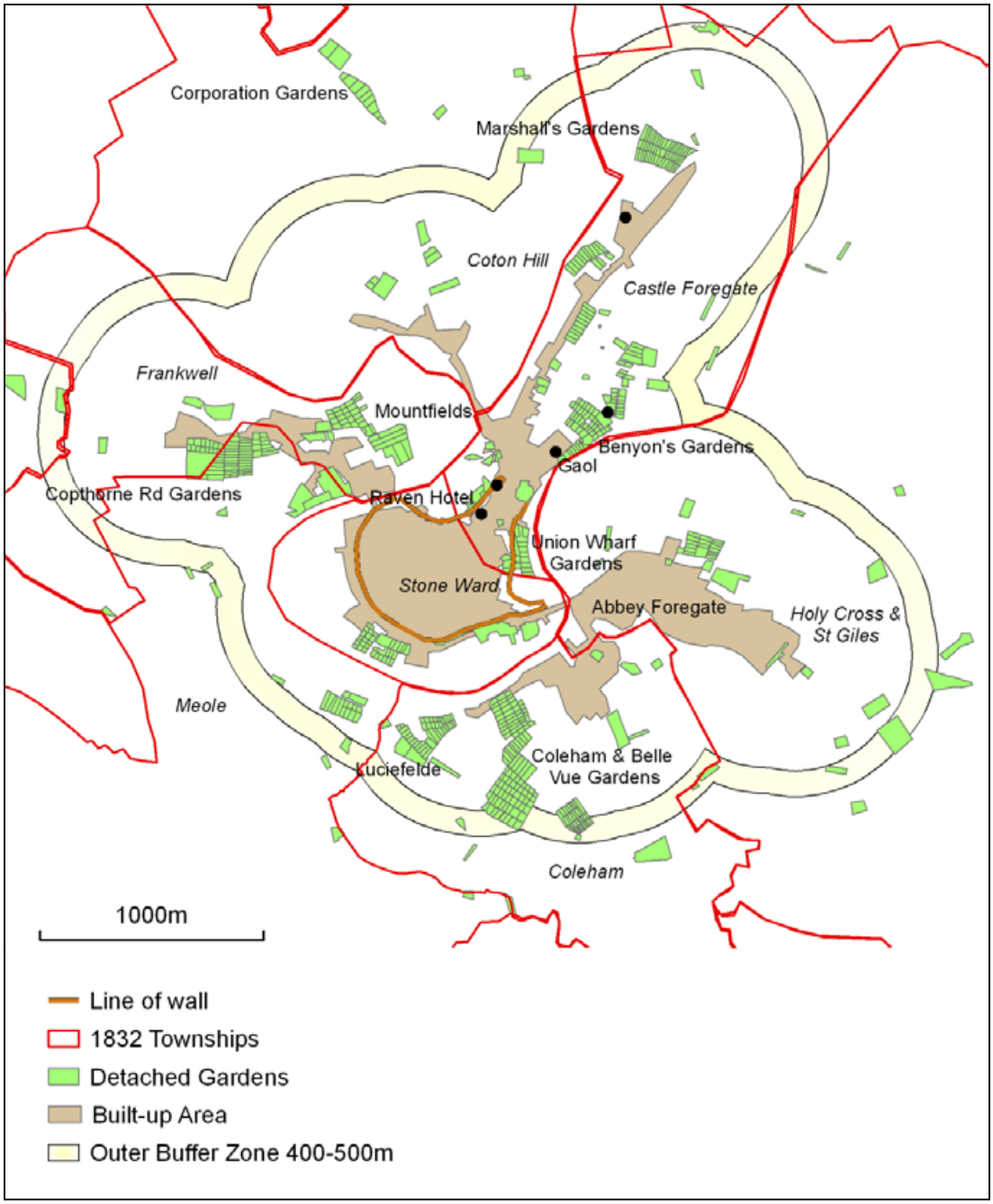
Analysis

The following data were extracted from the schedules: plot number; name of landowner; name of occupier; size of plot in acres, rods, perches; and the value of the rent-charge apportioned to it. The data were entered into Excel spreadsheets for analysis, which included:

- *Plots*: total number; area covered; proportion of individual plots and medium and large sites; average size
- *Owners*: total number, categorised into public, charitable, private, men, women; proportions of plots used by owners and rented out;
- *Tenants*: total number of tenants.

The 1851 census was consulted in a search for information on the occupations and home addresses of both the landowners and a selection of tenants. This proved successful for landowners, who were settled in their place of abode. For tenants a ten percent sample was taken and only one-third of the searches produced likely results. For the majority no entry could be found and, for a few with more common names, there were multiple possible entries.

Figure 6.2 Shrewsbury in 1845-50. Detached gardens in the urban fringe

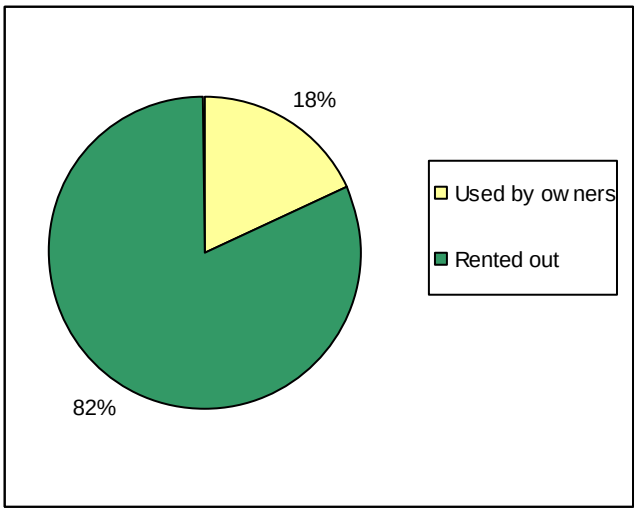


Results

The plots

All the detached gardens shown on Figure 6.2 were included in the analysis. Ninety-six percent were located within 500 metres of the urban fence, the major exception being Corporation Gardens to the north of the town. The great detail available for this date is illustrated in this figure, which also shows the townships and wards on which the tithe survey was based. There were 728 plots, covering 48.6 hectares. The average size of the plots was 0.08 hectares, which can be visualised as a plot of 40 metres by 20 metres, though the range was very great from 0.01 to 0.86 hectares. Landowners' own plots were larger on average, at 0.13 hectares. Eighteen percent of the area of the plots was tended by the owners, while the remaining 82 percent was for rent (Figure 6.3). In terms of numbers of plots, the equivalent figures were eight percent and 92 percent, due to the larger plots being retained for self use. Of the 668 plots for rent, 35 were marked as 'void', mainly on the estate of John Whitehurst on Copthorne Rd, but including a few on the Drinkwater estate in Mountfields (Figure 6.2).

Figure 6.3 Shrewsbury in 1845-50. Area of detached gardens rented out and used by owners



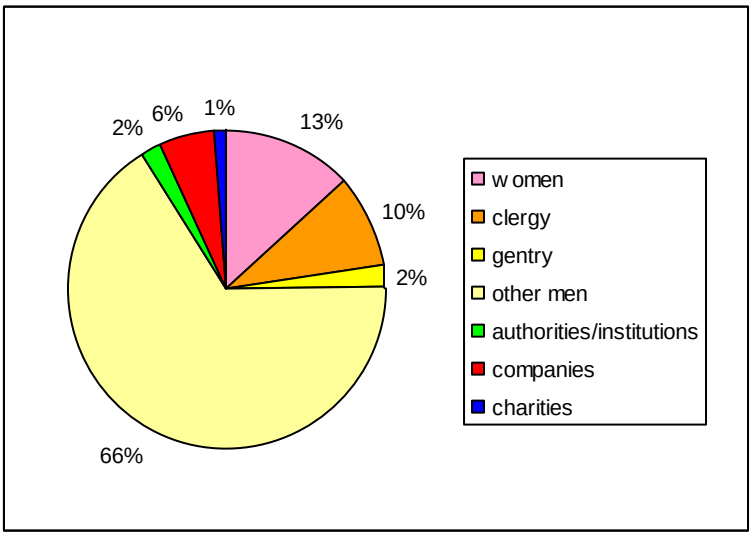
Landowners

In Shrewsbury there were 112 owners of detached gardens, amongst whom were five charities, three private companies and three public authorities or bodies. The remaining 101 were individuals, including 12 women, 8 clergy, 4 gentry and 77 other men. The holdings of these seven categories of landowners are tabulated below in terms of plots owned and area in hectares (Table 6.2).

Table 6.2 Shrewsbury in 1845-50. Landowners by category, in decreasing order according to amount of land owned

Category of Landowner	No. plots owned	Area in perches	Area in hectares
Men (other than gentry or clergy)	465	12,716	32.2
Women	107	2,542	6.4
Clergy	58	1,854	4.7
Private Companies	62	1,152	2.9
Gentry	5	410	1.0
Authorities/Institutions	12	357	0.9
Charities	19	199	0.5

Figure 6.4 Shrewsbury in 1845-50. Owners of detached gardens (by category according to area owned)

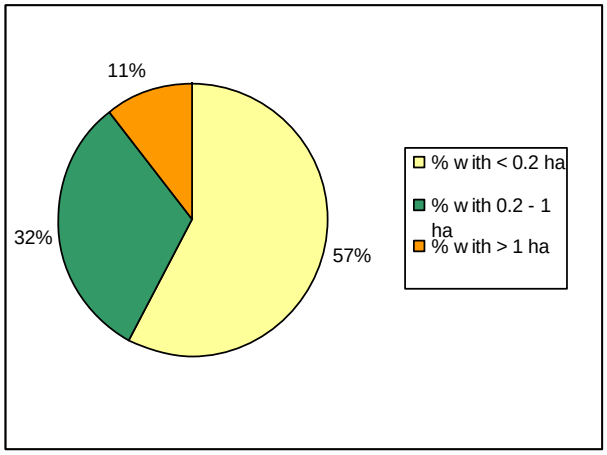


Sixty-six percent of the area under detached gardens was owned by individual males, and this increased to 78 percent if clergy and gentry were added (Figure 6.4). Women owned 13 percent of the area and clergy ten percent. Charities and public institutions were of minor importance in this respect, since they owned only three percent.

For analysis, the data on owners were divided into three broad groups, depending on the amount of land they owned. The two cut-off points were 0.2 hectares (chosen because this was ½ acre, an area frequently used in the allotment legislation) and one hectare. The analysis showed that 57 percent of the plot owners (65 people) fell into the lowest category, with less than 0.2 hectares. Thirty-two percent had between 0.2 and one hectare. Only 11 percent of the landowners had more than one hectare (Figure 6.5).

The Rev. William Alport Leighton, who was fourth on the list of landowners (Table 6.3), owned a field of 2.4 hectares between Coleham and Kingsland, close to the river (Figure 6.2). This was private, not glebe land, which William had inherited from his father, who had prospered in a coaching business and built a villa, Luciefelde, outside the river loop. The land was already divided up into 40 plots, when William gave up work as a curate, moved back into Luciefelde with his family and became a botanist and antiquarian. He was aged 46 with a wife and three children and retained two plots for his personal use. The two industrialists were John Marshall and Benjamin Benyon, both owners of flax mills. Benyon owned 40 gardens near his mill at Castlefields, which were already in existence on the 1832 map. The family lived in Quarry Place, a street of large houses within the meander at the edge of the Quarry. Marshall divided up a field next to his factory at Ditherington into 51 plots for his employees.

Figure 6.5 Shrewsbury in 1845-50. Landowners categorised by the area of detached garden land they owned



The twelve landowners with more than one hectare of land let out as gardens are listed in Table 6.3. Together, these owned 57 percent of the area of detached gardens. A woman, Harriet Lloyd, owned the most: two fields comprising 4.6 hectares. Her fields stretched from Coleham to Belle Vue and were divided into 93 plots (Figure 6.2). Harriet Lloyd was a widow aged 50, who was head of a household of 12 in Whitehall Street, north of Abbey Foregate. In the 1851 census, she was named as a proprietor of houses. Other landowners in this list included two wool merchants, a builder/surveyor, a china dealer, two industrialists, a farmer and a second proprietor of houses. Two were aldermen or town councillors (1851 census).

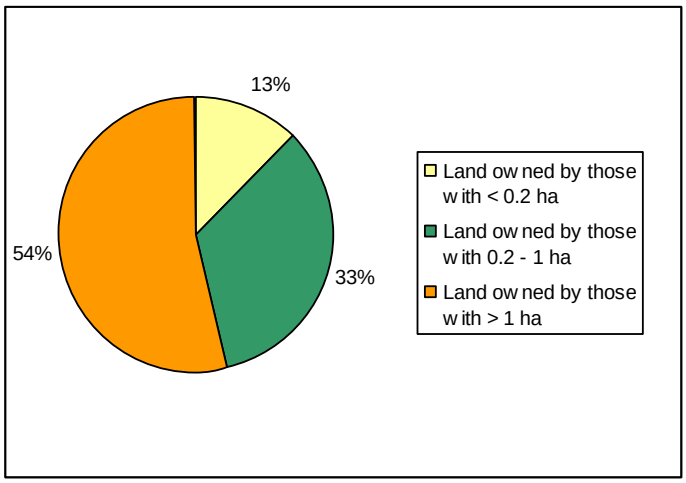
Table 6.3 Shrewsbury in 1845-50. The major owners of detached gardens

Landowner	Occupation	No. plots	Area owned
Lloyd, Harriet	Proprietor of houses	93	4.6
Whitehurst, John	Landowner	68	3.9
Drinkwater, Richard	Property owner and wool merchant	59	3.3
Alport Leighton, Rev William	Landowner and Clergyman of the C of E, without curacy	40	2.4
Jeffreys, Samuel		39	2.3
Marshall & Co	Factory owner	51	2.0
Benyon, Benjamin (Reps of late)	Welsh flannel trader, landowner and industrialist	40	1.8
Scott, George Jonathon	Farmer of 539 acres	6	1.4
Walter, Thomas		6	1.1
Groves, Thomas	Alderman; proprietor of houses & land	14	1.1
Wildig, Henry	China dealer	12	1.0
Birch, Joseph	Councillor; builder & surveyor	14	1.0

The 36 landowners in the middle class (between 0.2 and 1 hectare) included a master silversmith, a chemist & druggist, a timber merchant, a surgeon and a solicitor. Another was named as Justice of the Peace and Town Councillor (1851 Census). This group owned 33 percent of the area under detached gardens.

There were 65 landowners with under 0.02 hectares. These made up 57 percent of the proprietors, but they owned only 13 percent of the area under detached gardens (Figure 6.6).

Figure 6.6 Shrewsbury in 1845-50. Total area owned by each category of landowner



Tenants

Six hundred and sixty-eight plots were rented out as detached gardens and 380 tenants were named, the others being marked as 'sundry' in the schedules. Unfortunately, in the two large sites in Coleham and Belle Vue, no tenants were named. An attempt was made to discover more about the occupations and places of abode of the tenants, but they were more difficult than the landowners to identify from the 1851 census. Firm findings included several brick-makers, a stonemason, a shoemaker, a draper, a butcher, a basket-maker, an ironmonger, a gardener, grocers and provision dealers, labourers, publicans, inn keepers and widows. In the factory plots there were weavers, dyers and over-lockers. The plots belonging to the Free School were tenanted by the clergyman resident at the school, who also had three pupils boarding in his home. The neighbouring plots beneath the wall near the Roushill extension were used by the Raven Hotel, the tenant being named as the hotel keeper.

The 1851 census data for tenants were insufficient to build up a town-wide pattern of location of dwellings in relation to detached gardens. Individual instances of proximity were seen, such as Canal Wharf (Castle Foregate) to the County Gardens near the gaol or Wyle Cop to the Union Wharf plots near the English Bridge. But, without additional work, all that can be confirmed is that the tenants identified lived throughout the built-up area, with Mardol and Castle Foregate, both areas notorious for crowded courtyards, appearing frequently.

Conclusions

The system and its pervasiveness

With the exception of a small number of wealthy merchants and professional people living on spacious residential plots in the southern part of the walled town, the residents of Shrewsbury were living above and behind shops and in increasingly crowded courts and shuts with no provision of land for growing food or for leisure. In such circumstances, it is likely that the demand for small garden plots was high. The provision of 728 individual plots in Shrewsbury, suggests that a system had grown up to meet that need. The large number of detached gardens implies that the custom of growing crops on a plot separate from the home was a common practice in the mid-19th century. The system was not set up for the poor;

all classes and all occupations were included in it. It was a practice enjoyed both by people who owned the detached plot they cultivated (60 in Shrewsbury) and by those who rented (668 in Shrewsbury).

The system lay in private hands and the large number of landowners (112 in Shrewsbury) shows how pervasive it was. Even those with individual plots as small as 0.015 hectares (the equivalent of 150 square metres or a plot 6m by 25m) rented them out as gardens. At the other extreme, the largest landowner owned 4.6 hectares that had been divided into gardens for 93 tenants. Between these two extremes was a wide range of amounts of land held, but 65 landowners (57 percent) felt it worthwhile to rent out a single plot.

For this date, there is no reason to link this method of providing gardens in the urban fringe with the new system of allotments being established in rural areas. It almost certainly pre-dates the rural allotment system and was certainly available as a model of a functioning system. The presence of detached gardens around the two flax mills points instead to closer connections with some northern and East Midland industrialists who, following the early example of Richard Arkwright and Jedediah Strutt, had provided detached gardens for their workers since the late 18th century.

Landlords and tenants

The owners of detached garden plots were not, on the whole, landed gentry but merchants, industrialists, prosperous tradesmen and professionals who lived in the town. How so many people came to own small plots of land is an intriguing question that requires archival research in property papers deposited by solicitors. For some, the proprietorship of land and houses appeared to be the major form of revenue, but for many it was an additional income. The land they owned and let out as gardens was mainly located close to the urban fence, and mostly in contact with it. Land-value theory might suggest that such land would be under pressure at a time of urban expansion, but rapid urban growth had not yet started in Shrewsbury in 1850. It appears that, at the time, renting out land as gardens was the most valuable use of the land, providing a profitable source of income for the owners.

The average plot size was small and it is assumed that the landowners knew the requirements of their tenants and divided their fields accordingly. The charity allotments were usually small, all but one measuring less than the average size of detached gardens, though they were not available in sufficient numbers to allow for firm conclusions.

The system provided value for the tenants as well as the landowners – this can be inferred from the fact that most plots were being actively cultivated. The spectrum of people cultivating the land in detached gardens was very wide. It stretched from the owners themselves, surgeons, solicitors, tradesmen and factory owners (probably by means of their servants) through clergyman (several clergymen rented plots to other clergymen), inn-keepers, skilled craftsmen, shopkeepers, factory workers to labourers.

The methodology for this investigation has worked well. The Tithe Survey and Apportionment proved a valuable source of data for this area of research, providing information not available on other maps of the period. The 1851 census was a useful supplement, yielding some data, but with some drawbacks.

Several questions were raised as part of this strand of the research, notably how people of moderate means obtained plots of land that they could rent out and also how landowners with garden plots near the urban fence reacted when demand for building land grew. These aspects were incorporated into the final stage of the research, in which a sample of garden sites were examined to investigate transformative processes. These are reported in Chapter 7.

CHAPTER 7. TRANSFORMATIVE PROCESSES AND THE EFFECT ON LATER URBAN FORM

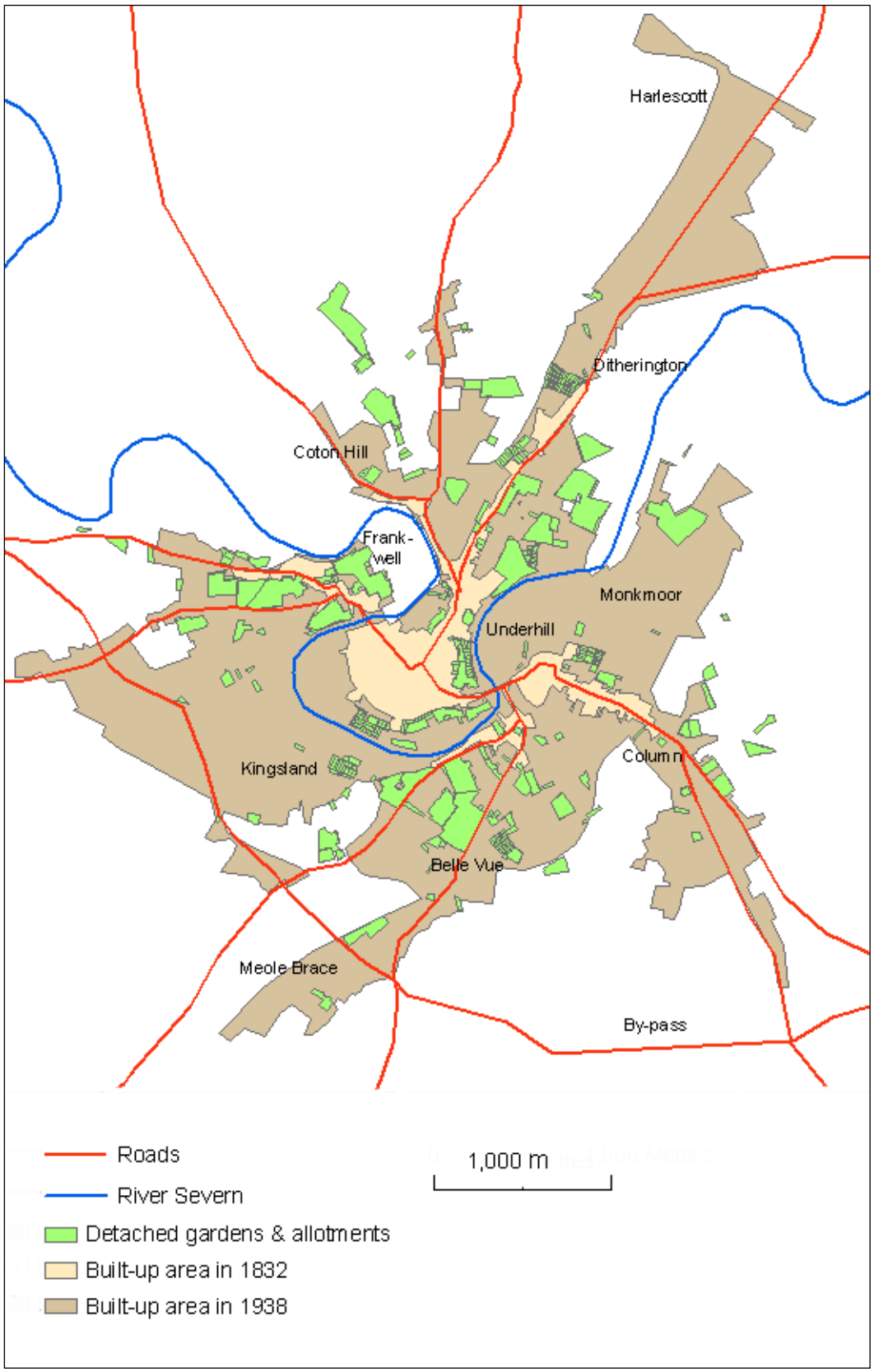
This chapter is the final section of the case study of Shrewsbury and concentrates on transformative processes. The detached garden and urban allotment plots are analysed in terms of both the modification of land-use and also the persistence of physical attributes such as site boundaries and access footways. The processes entailed in site succession and the timing and circumstances of change are examined. This leads into an evaluation of the advancing residential accretions in terms of additive and transformative processes and, in particular, an examination of how both the abundance and the location of detached gardens have influenced outward growth, and how their morphological frame has affected later urban form.

The investigation builds on the research results on abundance, distribution and attributes of detached gardens and allotments, which have been reported in Chapters 5 and 6. Throughout the 106 years covered by the study, 152 detached garden sites (not individual plots) were identified from cartographic sources. Not all were in use at the same time, but a tally shows that a total of 100.4 hectares were cultivated as detached gardens in those 106 years. Not only were the gardens abundant, but they were also distributed on all sides of the town. A marked feature was their location, tucked in close to the urban fence. All detached gardens and urban allotments for the study period, from 1832 to 1938 are shown in Figure 7.1. The evidence from the mid-19th century revealed that 65 of the sites at that time were less than 0.2 hectares (½ acre) covering 7.6 hectares, while the remaining 87 were multi-plot sites, larger than 0.2 hectares, covering 92.8 hectares. It also established that the system of garden provision was a private one, based on landlord and tenant.

Method

The main aim was to identify land-use succession and persistence on the detached gardens, to analyse the procedures entailed in transformative processes, to recognise antecedent patterns in the current townscape and to evaluate the absorption of garden plots due to advancing residential accretions. The large quantity of detached gardens and allotments (well over 1,000 plots on 152 sites)

Figure 7.1 Shrewsbury: all detached gardens and allotments from 1832 to 1938

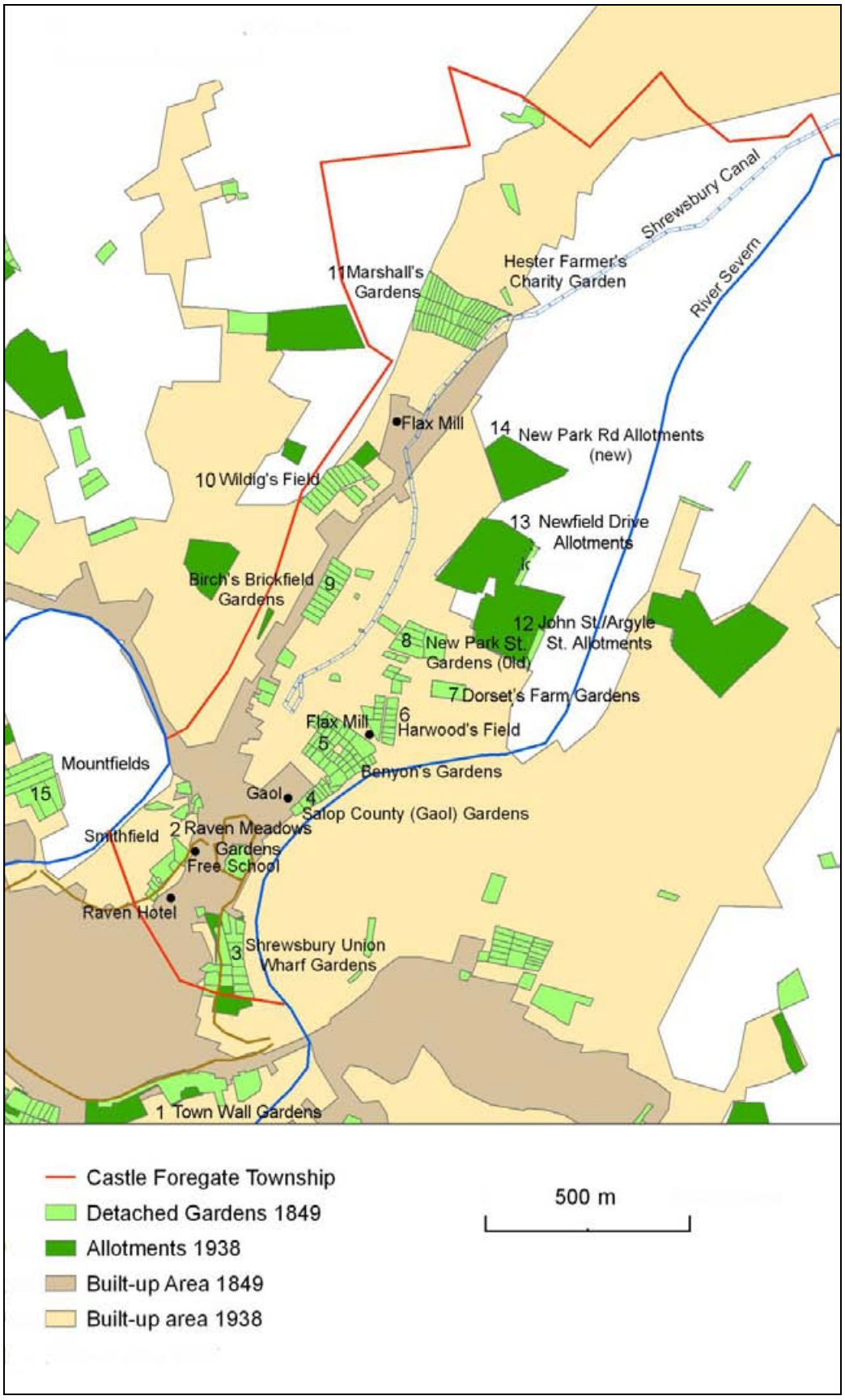


and the number of very small sites (65 under 0.2 hectares) made it difficult for the full data-set to be followed up in detail. Hence a decision was made to concentrate on the sites larger than 0.2 hectares, which limited the number to 87 while still covering 92 percent of the area cultivated as detached gardens.

First, a simple exercise was carried out to produce an overall picture of land-use succession on the garden sites. The GIS detached garden distribution maps for all six dates (as reported and illustrated in Chapter 5) were overlain onto modern O.S. 1:2,500 maps. The current land-use on the sites was noted and categorised into housing, transport, industry/workshops, institutions, allotments, parks/recreation and other open land (not built on). Any uncertainties over the present-day status of the sites were solved through fieldwork. All data were entered into an Excel table of detached garden sites and further divided into five categories, based on the year in which the garden sites were first identified; thus, for example, 15 sites were identified in 1832 and a further 45 in 1845-50. This formed the database for analysis, using Excel's inbuilt statistical facilities.

The second stage of the analysis involved taking a sample of the sites for more detailed investigation of their early history and modification through time, based on cartographic scrutiny, archival research and field work. Several sampling strategies were considered, including size of the sites, subsequent land-use categories, date of sale and date of first modification. None was perfect and eventually it was decided to take a sector of the town and analyse all sites within it, as individual case studies. The sector chosen was a wedge starting in the meander in the town centre, continuing on Castle Street and stretching north-eastwards along Castle Foregate. To the west, the boundary was the railway line to Crewe; to the east, the River Severn. As Figure 7.2 shows, this sector coincided fairly well with the Township of Castle Foregate and Castle Ward Within, which were surveyed together for the tithe apportionment in 1849. Altogether 14 garden sites were located in this sector of the town. Once amalgamated, the data were assessed in relation to the overall picture, to see if any major urban development issues had been missed. As a result, one further garden site, Mountfields, was added to the sample, to illustrate the situation where individual gardens were sold in a piecemeal fashion over a period of two centuries. The 15 sites are named and numbered on Figure 7.2 so that they are coincident with numbers in the text.

Figure 7.2 Shrewsbury. Detached garden and allotment sites included in the detailed analysis



The 15 sites were treated as separate case studies and data were gathered through four means. First, the location of the gardens and allotments was accurately determined by superimposing the appropriate historic map, prepared using GIS techniques (reported and illustrated in Chapter 5) on to a current 1:2,500 O.S. map. Once the boundaries were clear, fieldwork was carried out to gain familiarity with the modern landscape and to gather information on land-use and relict features. The third process involved detailed scrutiny of the series of revisions of the 1st edition O.S. 1:2,500 maps and the O.S. 1:500 (1882) as appropriate, in order to trace and date site succession. Last, historical information was sought from the tithe survey maps and apportionment schedules, local newspapers, solicitors' deposited papers, sales notices, photographic collections, local authority papers, building control applications and archives of individual companies. The major source of information was Shropshire Archives and the exercise was very dependent on which archives had survived and how they had been catalogued. Research was made more difficult because the terms 'detached garden', 'garden-ground' or even 'allotment', had not been used as cataloguing terms by the archivists. The resulting data illustrated a complete spectrum from limited information for some sites to an excess for others.

The results are organised into two sections. First, the analysis from the full data set is presented, largely in the form of tables and graphs under the heading 'the overall view'. This section contains broad data on whether the garden sites have been developed (a high building coverage) or remain undeveloped (few substantial buildings). Data on the status of the sites today, in terms of land-use categories, are also presented.

A more detailed analysis of the 15 sample sites forms the second part. These results cover site succession and influences of the morphological frame on urban expansion and form. For each case, a standard format is followed. Once the boundaries of the former garden site have been located on a modern map, the history in terms of boundaries and ownership are described. Secondly, modification of the land-use through time is analysed and the processes entailed in the transformation are considered. Lastly the current landscape is assessed in terms of its adaptive response to the pre-existing morphological frame provided by the detached gardens and allotments.

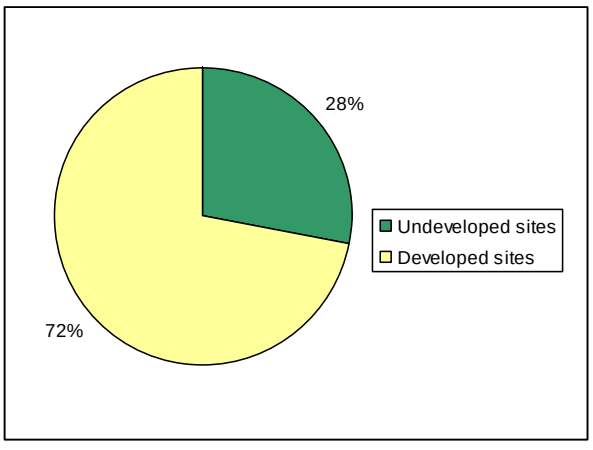
Results - the overall view

Table 7.1 summarises the full dataset of 87 garden sites. Amongst the total numbers, given in the second row, the figure for 1845-50 stands out. It is not known whether there was really such a large increase in numbers of garden sites or whether the number is due to the more detailed data available from the tithe maps and schedules. It is possible that many of the smaller sites were already in existence in 1832, but not recognised on Hitchcock's map, which was the main source of information. The second largest figure is for 1926 and, for this date, additional documentary evidence shows that, in every case, these sites were established as part of the effort to produce more food in the First World War in 1916 and 1917.

Table 7.1 Shrewsbury: persistence and transformation of land-use; 'developed' and 'undeveloped' as the end status

Year plots first identified	1832	1845 -50	1882	1902	1926	Sum of data for all dates	2010 % developed and undeveloped
Total no. of sites	15	45	7	2	18	87	
Undeveloped sites	5	8	2	0	9	24	28
Developed sites	10	37	5	2	9	63	72

Figure 7.3 Shrewsbury 2010: status of former garden sites



For the first analysis of these data, the present-day status of the sites was checked, in terms of whether they contained, or were devoid of, substantial buildings – the terms 'developed' and 'undeveloped' are used as shorthand in Table 7.1. Overall, 72 percent contained buildings today (Table 7.1 and Figure7.3). If the individual

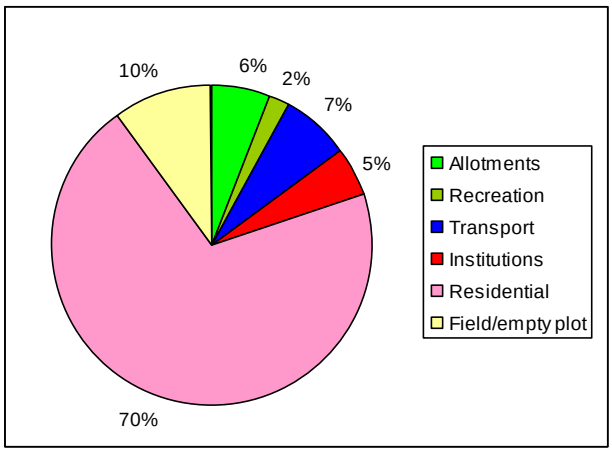
dates are examined, the ones least likely to have been built on are those identified on the 1926 map, which in practice means those established in the First World War. Fifty percent of these are still undeveloped today.

For the second analysis, the sites were examined further to determine the present land-use, which was divided into six categories, as listed in the first column of Table 7.2. This table shows that 70 percent of the gardens sites have been modified and are now residential. The ones most likely to have undergone this transformation are those first identified in 1845-50; 75.6 percent now have houses on them. Ten percent of the sites are fields or are undeveloped today. The remaining 20 percent are fairly evenly divided between transport, institutions and allotments. Six percent of the original garden sites are cultivated as allotments today and, with one exception, these were established as allotments during the First World War. These data are represented graphically in Figure 7.4.

Table 7.2 Shrewsbury: land-use on former garden sites in 2010

	1832	1845-50	1882	1902	1926	2010 SUM OF DATA	2010 % IN EACH CATEGORY
Allotments	1	0	0	0	4		6
Recreation	1	0	0	0	1	2	2
Transport	1	4	1	0	0	6	7
Institutions	1	2	0	0	1	4	5
Residential	9	34	6	2	10	61	70
Fields/un-developed	2	5	0	0	2	9	10

Figure 7.4 Shrewsbury 2010: present land-use of former garden sites



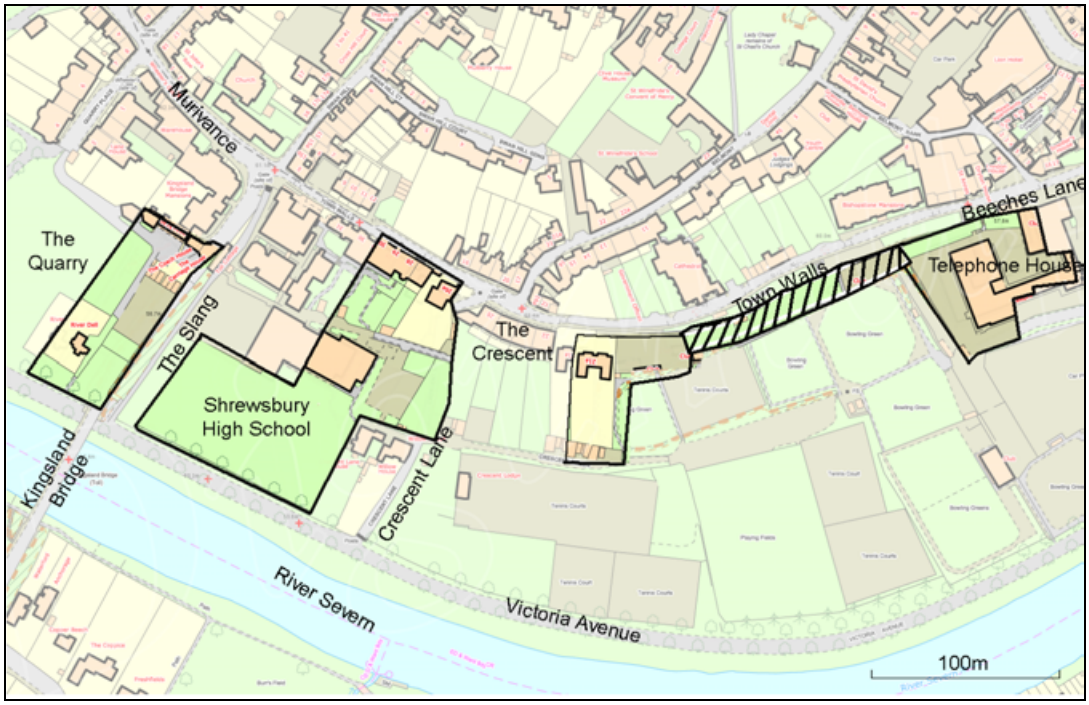
Results – the case-studies

1. Town Wall Gardens

Figure 7.5 shows the full extent of the 19th century detached gardens in this study area, superimposed on the current O.S. map. A swathe of garden, immediately outside the town wall stretched from Beeches Lane in the east to the Quarry in the west. The two western sites were divided by a narrow strip of land called the Slang, through which there was an access footpath for a foot ferry. To the east of Crescent Lane was a gap, occupied by The Crescent, a terrace of four town houses built in 1793 on the line of the wall, with gardens on the flood plain. The eastern gardens were all above the high water flood line, as marked on an undated map of Shrewsbury Horticultural Society's lands (Shrewsbury Horticultural Society, undated). However, the gardens to the west spread further from the wall as far as the towpath along the river. Spot heights show that the towpath was slightly higher than the area of gardens beyond, which, in fact, was prone to flooding.

There are many legal documents pertaining to these gardens. Those from the 18th century were mainly assignments of leases. One abstract of title from 1776 mentioned a lease of 999 years at a peppercorn rent. Another, from 1734, described a small piece of garden ground near the Town Walls which was leased for 99 years at 15/- yearly rent. In the late1820s a group of these plots on Crescent Lane was being sold at auction, following the death of Robert Hill in 1828. The ground was divided into ten gardens varying in size from 0.05 hectares (571 square yards) to 0.1 hectares (1,167 square yards) and totalling 0.76 hectares (9,049 square yards). They were sold individually and were leasehold, on a 1,000-year lease dated 1771, at a peppercorn rent. In 1832, druggists, boot-makers, fruiterers, drapers and gentlemen were listed in a conveyance and, in a Memorandum of Agreement of that year, a garden was let at a yearly rent of £2/5/0, due in half-yearly instalments and *"... at the end his said tenancy to deliver up the same and the summer house being thereon in a proper condition"* - these agreements often mentioned the upkeep of footways and hedges. In 1840 a garden of 0.36 hectares (4,306 square yards), with three sitting tenants, was sold for £460 (pro-rata £1,278 per hectare, £511 per acre or 2/- per square yard). At about the same date, it was stated in Borough of Shrewsbury papers that £550 per acre was the going rate for garden ground (Shrewsbury Chronicle, 1853b).

Figure 7.5 Shrewsbury: Town Wall Gardens superimposed on a current O.S. map



The land-use has changed on all these sites, except for four plots immediately beneath the wall in the eastern section, which remain as allotments and are sub-let to eight tenants. These are marked with diagonal lines on Figure 7.5. The other detached garden sites have all been modified, but most in a minimal way. Most are vegetated with no buildings other than sports pavilions.

The western block, behind Murivance, was sold in 1840 in two lots. There were six tenants at the time and the site continued as gardens after the sale, despite suggestions in the sale particulars that it would make ideal building land (Tisdale, 13 August 1840). It was not until the 1880s that the transformation started. In 1882 the Kingsland Toll Bridge and its access road, following the line of the Slang on the eastern boundary of the gardens, were undertaken as a private enterprise. The Eye, Ear and Throat Hospital was completed in the same year, with several service buildings spilling onto the northern garden plots. The gardens behind the hospital were used for growing vegetables for the patients, within the original plot boundaries and the remainder were still cultivated as individual gardens as seen on the photograph taken in 1891 (Figure 7.6). The hospital is now an apartment block and the former gardens are a car park. The

summerhouse has been developed into a large detached house, still standing within the original hedges of the detached garden (Figure 7.7). The remainder has been incorporated into the Quarry, the town park.

Figure 7.6 Shrewsbury: Murivance Gardens in 1891

The summerhouse in the centre has now become a detached house and the4 holly trees in the hedge are still there today (see Figure 7.7). Above the summerhouse is the ferry and to the right the new Pengwern Boathouse. On the skyline is Shrewsbury School, formerly the workhouse.

Figure 7.7 Shrewsbury: the Murivance garden site in 2010

This covers much the same area as Figure7.6. Shrewsbury School is in the top right corner, with its boathouse visible between the trees on the right. The detached house fills more than half of a former detached garden plot. The car park and ornamental gardens were also once detached gardens

In the central block of gardens, between the Slang and Crescent Lane, a chapel (1834) and several terraced houses had been built along the wall in the four northern gardens at some point following their sale in 1829. This is illustrated on the O.S. 1:500 map published in 1882 (Figure7.9). The rest remained as gardens under individual ownership with a 1000 year lease dated 1771 (Salt & Company, 1829). They were gradually bought up by the High School (established in this location in 1897 on a site with limited grounds) for a sports hall, sports field and car park (Figure 7.8). The last garden was sold in 2002.

The eastern block of gardens was still in place in 1882 (Figure 7.9). They included the Town Walls Allotments, the only privately owned allotments still in existence in Shrewsbury, and under cultivation since the beginning of the study period (Figure 7.10). The landlord is the Shrewsbury Horticultural Society, which owns most of the land between the town wall and the river, now largely used for tennis courts and bowling greens. The eastern plots have been replaced by a large telephone exchange, built in 1969. This building appears out-of-place, since most other buildings are small, located on the outskirts of the gardens and date from the 18th and 19th centuries. Generally no new buildings are allowed on the flood plain today and the morphological frame of the former gardens remains clear, especially in the boundaries which occasionally continue as hedges (Figs. 7.7 and 7.10).

Figure 7.8 Grounds of Shrewsbury High School, 2010

Former detached gardens between the Slang and Crescent Lane, now transformed into sports facilities. This section of the detached gardens was surrounded by a high brick wall against which were several lean-to green houses in 1880. On the right is Victoria Avenue, the riverside walk, and on the skyline is The Crescent, built on the line of the wall in 1794.

Figure 7.9 Shrewsbury: Town Wall Gardens in 1882, an extract from the O.S. 1:500 map

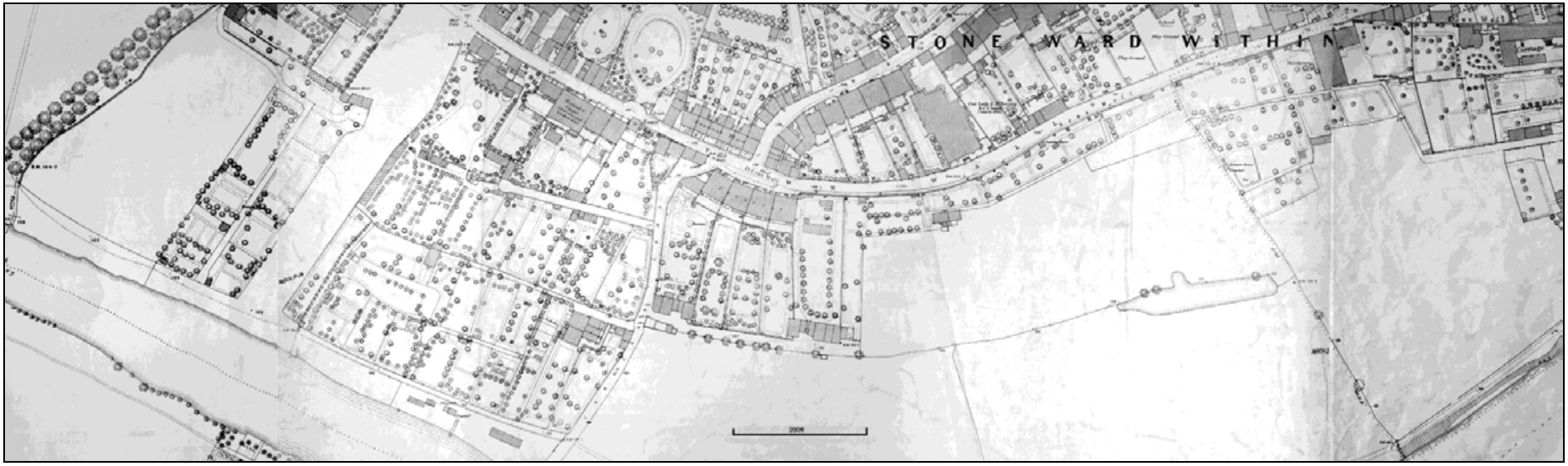


Figure 7.10 Shrewsbury: current Town Wall Allotments

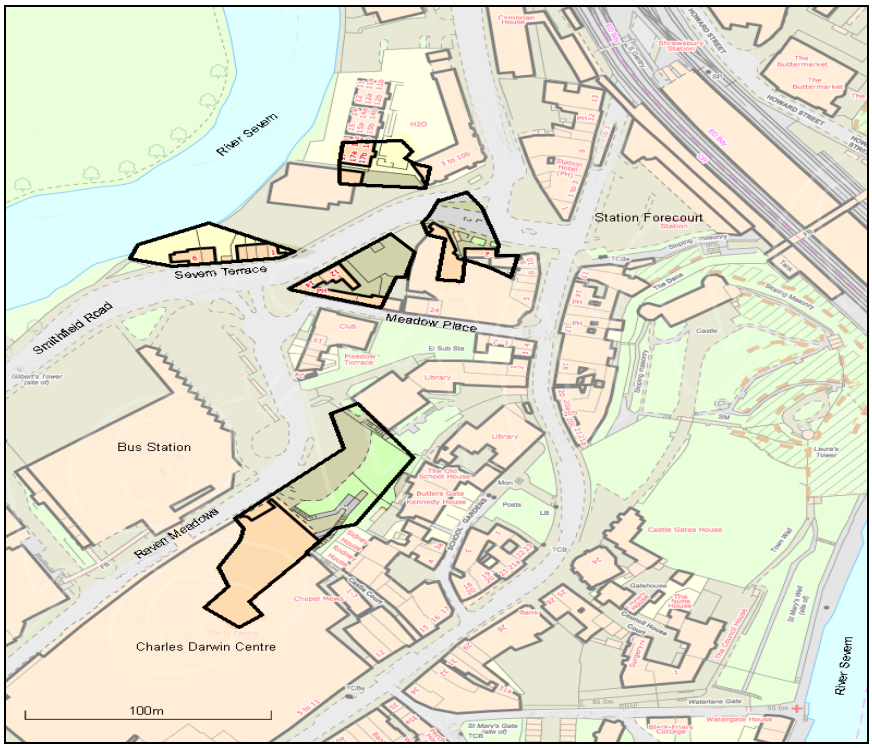
Taken from the access steps down the town wall, this photo shows the narrow strip of allotments, bordered by a hedge. To the left, on the flood plain, are tennis courts and bowling greens.

2. Raven Meadows and Meadow Place Gardens

These gardens were located in the neck of the meander (Figure 7.11 on which the River Severn can be seen in both the north-west and the south-east corners of the map). They formed two clusters. The southern one was directly outside the wall, on the slope at the bottom of the river cliff and the inner section of the flood plain, below the Raven Hotel and the Shrewsbury Free Grammar School. The northern cluster lay immediately outside the wall extension which ran from the outer gate to the river, again on the flood plain.

All these plots in the neck of the meander were labelled as gardens in the tithe schedules in 1849. The Hitchcock map depicted identical plot boundaries in 1832 and it is likely that they were gardens at that time. Further evidence came from an Abstract of Title to the Raven Inn which contains a will and plan dated 1796 stating *'…parcels of land, meadow and garden-ground…lying between the messuages and the town wall and divided into three gardens and three pieces of grass land'* (Wace Morgan Solicitors, 1853).

Figure 7.11 Shrewsbury: Raven Meadows and Meadow Place Gardens superimposed on a current O.S. map



The land-use in these gardens has been totally transformed. The four small garden plots in the northern section of Figure 7.11 lay in what became a very busy part of the town, between the station forecourt and the cattle market. The new Smithfield Road (constructed 1835) met the two roads from the north, forming a very crowded transport hub. At first sight, there seems to be little imprint of the gardens in the present townscape, but further investigation shows that site boundaries often remain. In the three decades following the tithe survey, the eastern garden was transformed into a densely-packed block containing several courts and with inns and hotels facing the station, which was constructed in 1848/49 (Figure 7.12). These, in turn, were demolished in the 1930s, when part became a road and part a cinema, later converted into a bingo hall. The boundary of the neighbouring garden was retained in the building line, the southern edge following the line of the town wall extension (Figure 7.13). A public house, the Albert, was built on the corner in 1856, handy for those attending the cattle market (Figure 7.12). The northern garden became the site for a garage and car showroom and in 2004 was transformed once again, this time into a gated housing

complex (Figure 7.14). By 1882, the western garden had already become the site for six terraced houses, Severn Terrace, which still remain. In the garden of number 6, now a summer tea garden, is the footprint of Gerewald's Tower.

Figure 7.12 Shrewsbury: the area in 1882, an extract from the O.S. 1:500 map

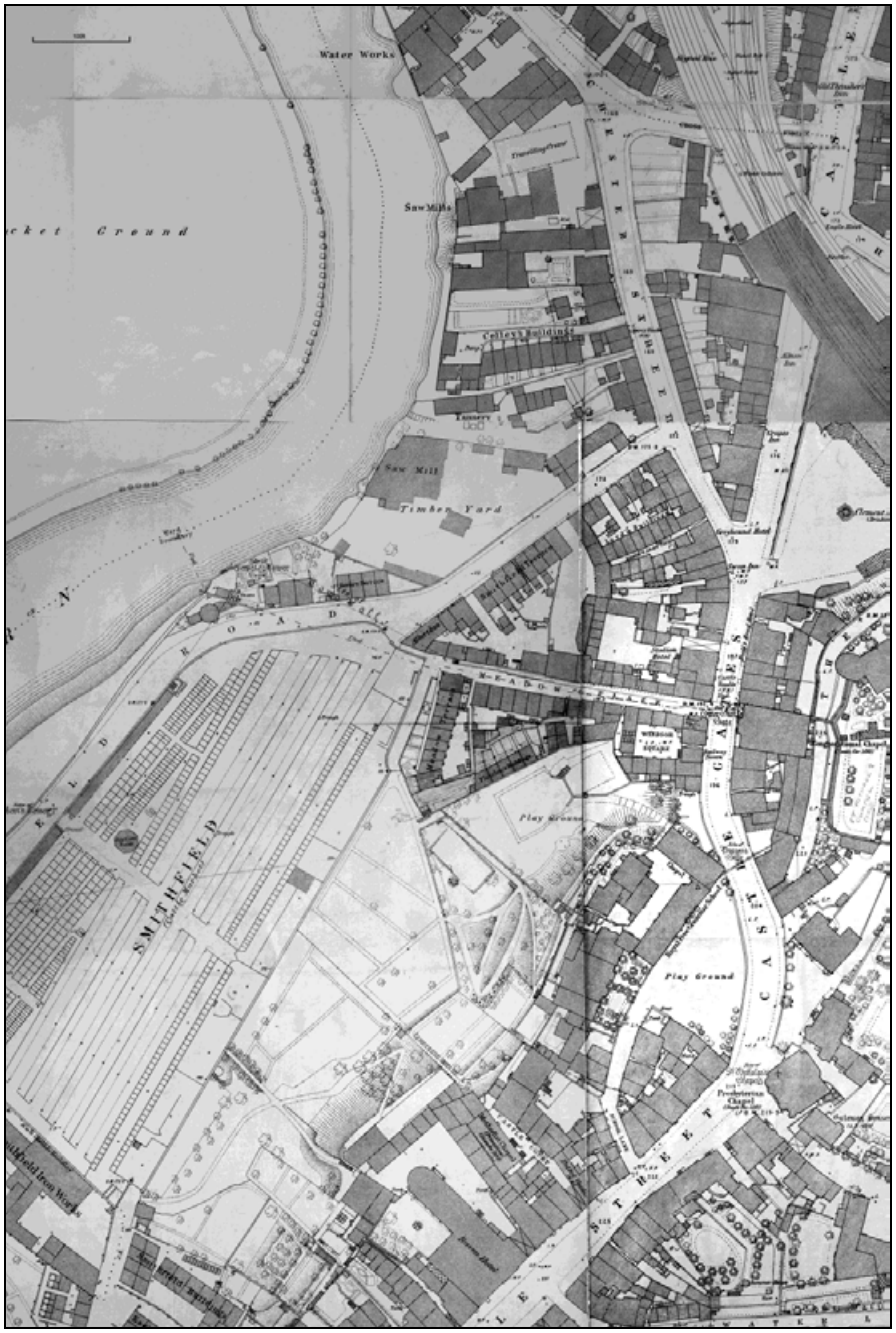


Figure 7.13 Shrewsbury: Meadow Place, with a section of the town wall extension

This is an old street, running parallel to and inside the town wall extension. A section of the wall can be seen in the centre. It formed the southern boundary of a triangular detached garden, with the Albert built at the apex

Figure 7.14 Shrewsbury: an early 21st century housing complex and road junction

This housing complex, named H2O, is on the riverside in an area subject to flooding; hence the ground floor has been raised. It replaced a car showroom which in turn replaced several riverside installations, which in turn had replaced the detached gardens by 1882. The road junction was also originally a garden, though this had already been transformed into a maze of courts and buildings by 1882.

The more continuous gardens in the south, on the flood plain beneath the Raven

Hotel, remained undisturbed for longer, despite the construction of the cattle market which was opened in 1850 (Figure 7.12). The diamond-shaped section at the northern end belonged to the Shrewsbury Free Grammar School and had five tenants. It was still a garden in 1883 when the school moved to Kingsland, described in the sale papers as *"All that productive garden… adjoining the smithfield, comprising 2,490 square yards, with an entrance from Meadow Place."* (Shrewsbury Borough Council, 1883). The 1882 O.S. 1:500 map depicted these five plots well (Figure 7.12). Some of the plots to the south still looked like small garden plots in 1882, but apparently most were used by the Raven Hotel as grazing for the horses of its guests. Today they have been obliterated by the Charles Darwin Shopping Centre opened in 1989 (Gillam, 2001), but part of the old Free School plots remains as a parking place for buses and a small terraced public garden at the base of the river cliff (Figure 7.15).

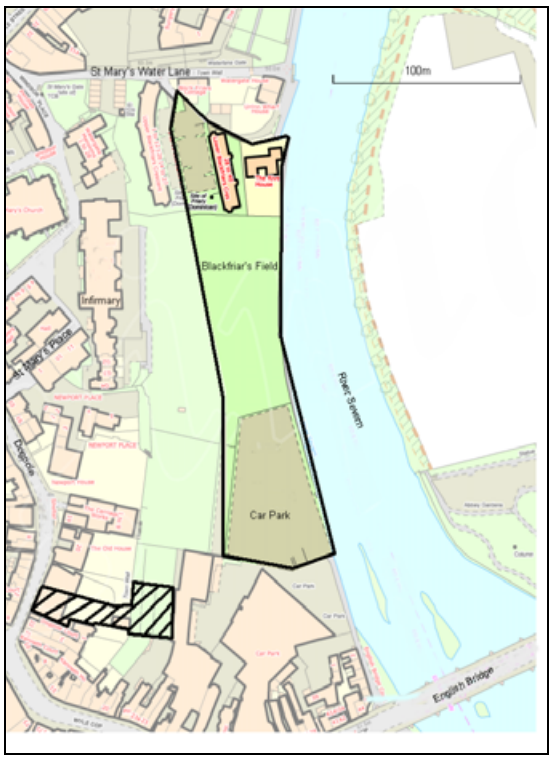
Figure 7.15 Shrewsbury: the Charles Darwin Shopping Centre and rural bus parking area

The back of the Charles Darwin Shopping Centre, with its service bays. Shrewsbury's main bus station is connected to this shopping centre and the area in the foreground is a space for rural buses to rest between journeys.

3. Shrewsbury Union Wharf Gardens

According to the tithe apportionments, the ten gardens on a steep slope between the town wall and the River Severn all belonged to the Shrewsbury Union Wharf Company, whose warehouse was located on the riverside at the northern edge of the area. In Figure 7.16 the detached garden site has been superimposed on a modern Ordnance Survey map, which shows that the boundary of the site has not changed.

Figure 7.16 Shrewsbury Union Wharf Gardens superimposed a current O.S. map



The plots, as depicted on the tithe map, first appeared on the map by John Wood, dated 1838. The Shrewsbury Union Warehouse Company was established before this date, in 1823, but there is no evidence that the plots were used by its employees. The land originally housed the Dominican Friary. On the friary's dissolution in 1538 the site included four acres of orchards and a garden let at an annual rent of 3/- (Marsden, 2006). On John Rocque's map of 1746, the external boundary of the area was shown, but with no internal plots or named gardens. It was labelled St Mary's Friers (sic).

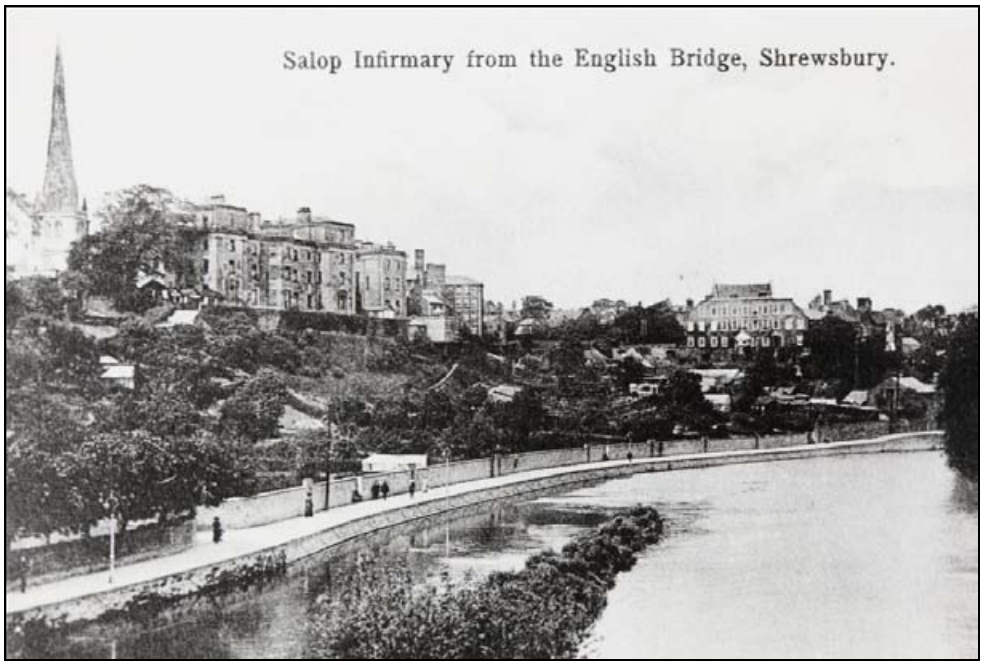
The 1882 O.S. 1:500 map shows that this whole area was covered with gardens, even the very steep slope immediately outside the town wall, above the ten detached gardens (Figure 7.17). These appear to have been joined in various ways to gardens attached to houses on Dogpole, St Mary's Court or the Infirmary, with gateways through the wall and accessed by steps or zig-zag paths. Figure 7.18 is an example, still in present-day use. The ten gardens on the lower slope were accessed from the towpath and the internal footpaths and trees were clearly shown on the 1880 map (Figure 7.17). Four gardens had sheds or summerhouses built on the line of the town wall and the northern one had glasshouses. Figure 7.19, believed to have been taken ten years later, shows the slope in full cultivation, with a large number of garden sheds and greenhouses.

Figure 7.17 Shrewsbury Union Wharf Gardens in 1882, an extract from the O.S. 1:500 map
© Shropshire Archives [Sheet 34-11-6]

Figure 7.18 Shrewsbury: a garden outside the town wall, but attached to a house on Dogpole

The town wall passes through this garden, which belongs to a house on Dogpole. The garden is terraced above and below the wall. It is marked with diagonal shading on Figure 7.17.

Figure 7.19 Shrewsbury Union Warehouse Gardens in full cultivation
© Shropshire Archives [SA-IMG 39592]



This photo of the Infirmary, taken in about 1890, provides a good picture of the detached gardens with their access gates on the towpath. The line of the town wall coincides with the break of slope.

Although all the site has been modified in terms of land-use, only the northern quarter has been built on, with two apartment blocks and a detached house constructed in 1998 (Figure 7.20). The residents of these flats purchased the middle area of the site in 2007 and maintain it as a semi-wild open area (Figure

7.21). The site now appears too steep for comfortable gardening; it was graded and reformed following an earth slip in 1959. The southern section of the site is a public car park, still containing hedges that look much like garden boundaries (Figure 7.22). Evidence for five of the seven entrance gates remain on the towpath (Figure 7.23).

Figure 7.20 Shrewsbury: Blackfriars Apartments with field beyond

The curve of the building on the right follows the former plot boundary

Figure 7.21 Blackfriars' Field

Looking south towards the English Bridge. When the slope was re-graded following the earth slip, the lower part was steepened and a flatter area made at the same level as the apartments

Figure 7.22 Car park in southern section of Shrewsbury Union Warehouse Gardens

This car park, at the southern end of the Shrewsbury Union Warehouse Gardens still retains the morphological frame of the former gardens which provides parking sections divided by hedges, the former plot boundaries.

Figure 7.23 One of the access gates into the Shrewsbury Union Warehouse Gardens

Photo taken from the towpath. This is one of the original entrances to the detached gardens. Two have been bricked up, but the rest remain with original metal gates. On the horizon is Blackfriars Crescent, built on the northernmost garden.

4. County (Gaol) Gardens

These ten gardens lay on a very steep slope between the County Gaol (opened in 1793) and the River Severn. The boundary of the site as given in Figure 7.24 represents the situation in 1849 at the time of the tithe survey and this was confirmed on a plan of the gaol, prepared by the County Surveyor and dated 1876 (Shropshire County, 1876). The boundaries of the garden site were formed by footways, road and towpath, none of which has changed today, so that the site was easily located on a modern map.

Figure 7.24 Shrewsbury: County (Gaol) Gardens superimposed on a current O.S. map

The plots were accessed from the Dana, the narrow road skirting the prison, established in 1791. Most stretched down the whole slope and were terraced (Figure 7.25). The first suggestion that this slope was being used for gardens came from a map of 1838 (Wood) in which the word 'gardens' is almost hidden by the hachuring marking the river bluff. Other plots were also named to the west of the gaol near the canal, where Howard Street was later built, but these were no longer gardens by 1849. With the firm tithe evidence, it is possible to look back at earlier maps and find that the plot boundaries were identical in 1832 (Hitchcock). The annual rent was apparently £1 and most tenants lived in Castle Street or near the canal, with occupations varying from doctor, through inn keepers to hauliers (St Mary's Rate Book).

Figure 7.25 Shrewsbury: County (Gaol) Gardens in 1882, an extract from the O.S. 1:500 map
© Shropshire Archives [Sheets 34-11-1 & 34-7-22]

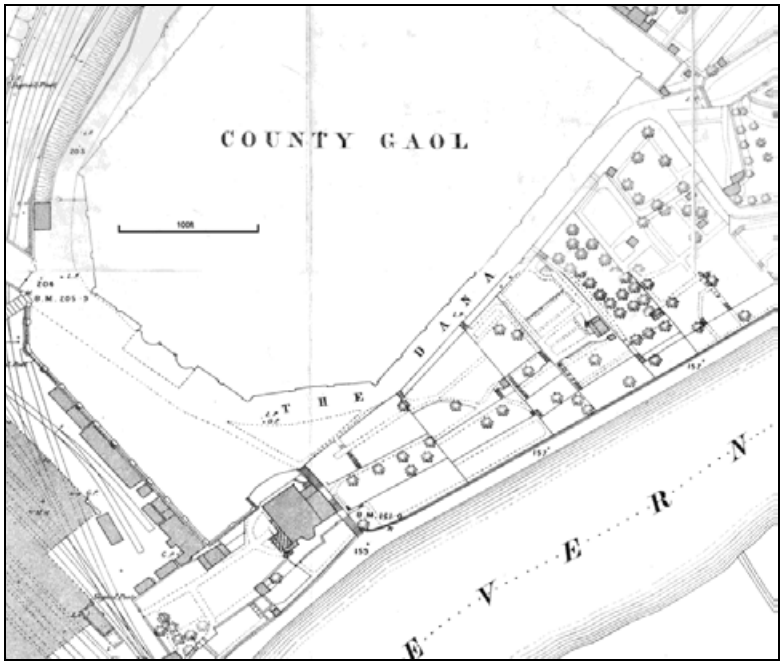
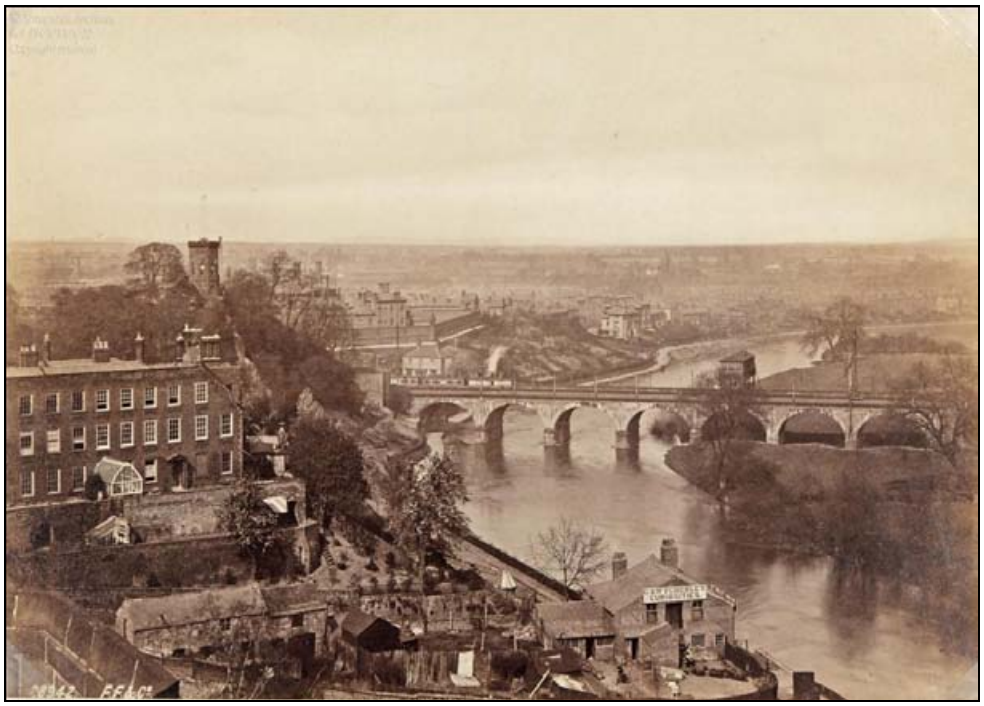


Figure 7.26 Shrewsbury: County (Gaol) Gardens, view northwards downstream from the Salop Infirmary
© Shropshire Archives [SA-IMG 39594]



The gardens are in the centre of this photograph, just above the railway bridge, between the gaol and the towpath.

Figure 7.26 shows these gardens fully cultivated. The plot boundaries appear to be hedges, mainly going up and down the slope and, several terraces across the slope can also be seen. Terrace walls, footpaths, trees and the occasional summerhouse were depicted on the O.S. 1:500 map of 1882 (Figure 7.25). The gardens were still under cultivation in the First World War but, soon afterwards some time in the 1920s, the top sections of the five northern gardens were taken for residential development, six semi-detached houses being built for prison warders (Figure 7.27), accessed from The Dana. Two-thirds of these gardens remain as open land with shrubs planted on the steep terraces which, in the past, have been tended by prisoners from the adjoining Shrewsbury Gaol. In 2008, the prison service put the site up for sale and it was purchased by Shrewsbury Borough Council (now Shrewsbury Town Council) which is selling on some sections to neighbouring houses and maintaining a section as a public garden, wildlife habitat and an area of community woodland (Figure 7.28).

Today the morphological frame of the detached gardens remains clear, though it is difficult to imagine such a steep slope under intensive cultivation. The external boundary is intact (Figure 7.29) and the terraces are still in place, though rather overgrown (Figure 7.28).

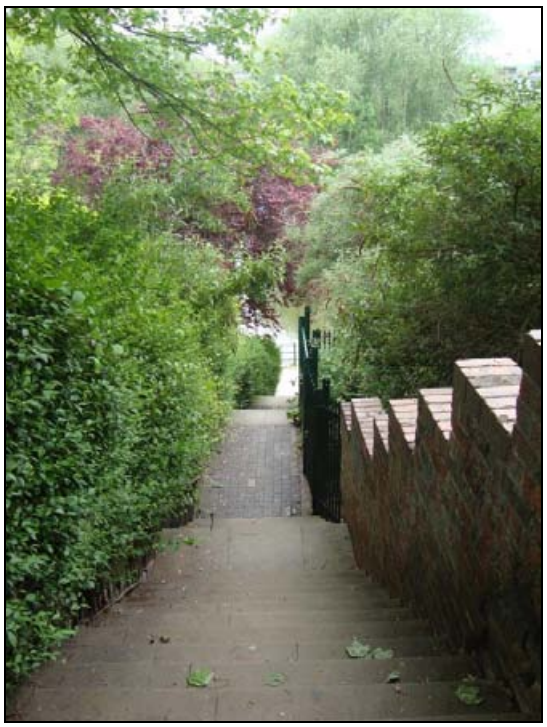
Figure 7.27 Shrewsbury: house built on the former County (Gaol) Gardens

One of three semi-detached pairs built in the early 1920s on the brow of the river bluff. Although on the road, this is the back yard, since the houses were built facing the river and the extensive view.

Figure 7.28 Shrewsbury: northern section of County (Gaol) Gardens

View from across the river, showing six semi- detached houses built on the top of the plots, with 'abandoned' gardens below. Chimneys of the prison appear on the skyline.

Figure 7.29 Shrewsbury: the south-western boundary of County (Gaol) Gardens



Steps down the terraces, leading from the Dana to the towpath and giving an indication of the steep slope.

5. Benyon's Gardens

The Shrewsbury Freehold Land Society bought all of Benyon's Gardens from the Benyon estate in1852. The superimposition of an outline of the gardens onto a current map reveals a close match between the modern streets and the external boundary of the gardens (Figure 7.30).

Figure 7.30 Shrewsbury: Benyon's Gardens superimposed on a current O.S. map

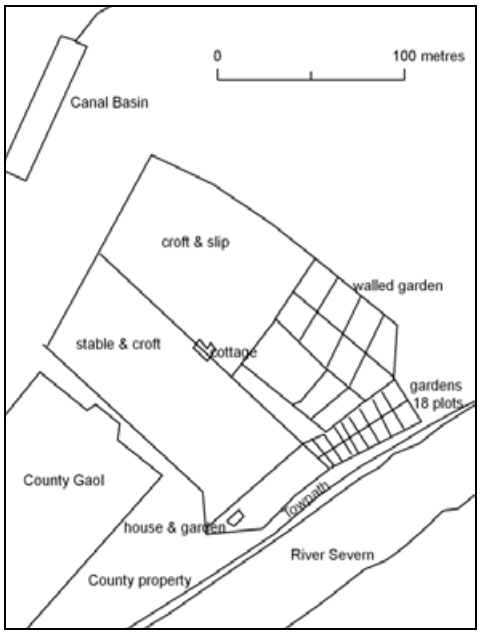
The history of these gardens has been traced back to 1813, when the land was purchased by Benjamin Benyon. The sales particulars described a small house or summer house, stable and pasture and '*two parcels of land now divided or intended to be divided into gardens and in the occupation of several persons as tenants.*' (Salt & Company, 1813). Nine years earlier Benjamin and his brother Thomas had established a flax mill in Castlefields in 1804, after pulling out of the Ditherington flax mill enterprise. This new land purchase lay immediately to the south-west of their industrial land. When they bought the land, a quarter was already divided into 29 gardens of various sizes (Figure 7.31). It measured 5 acres-3 roods-16 perches and cost them £2,050. When the land next came up for sale, in 1852, most of the remainder had been turned into gardens and 36 tenants were named (Figure 7.32). Two large plots in the north-west had already been extracted (the

Lancasterian School was built in 1851) and the remaining

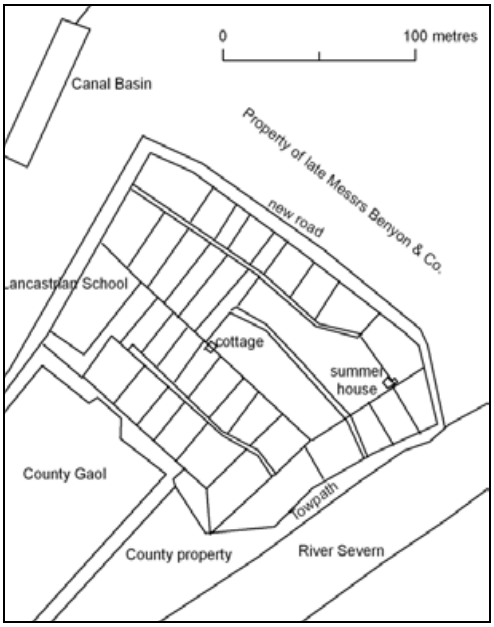
5 acres-8 perches were sold by the heirs of Benjamin Benyon for £2,000.

Figures 7.31 and & 7.32 Shrewsbury: the development of gardens between 1813 and 1852 (Salt & Co., 1813)

Benyon's Gardens 1813
Based on plan in sales particulars



Benyon's Gardens 1852
Based on plan in sales particulars



The Shrewsbury Freehold Land Society paid 1/8d per square yard though, according to the local newspaper, elsewhere in the town land was fetching 4/6d a square yard (Shrewsbury Chronicle, 1853b). The Society immediately laid out drains and roads and transformed the area into their first estate. By 1853, 278 shares had been sold and plots were ready for distribution (Shrewsbury Chronicle, 1853a). This was the Society's first estate and it illustrates a pattern characteristic of freehold land society development, with houses built singly or in short terraces. There were many differences in roof line, building materials, decoration and window shapes (Figure 7.33). However, the Society fixed a strict building line, which resulted in uniform, very small front gardens. Trinder suggested that the Society provided a vehicle for the small-scale speculator gradually acquiring a portfolio of residential property rather than a means by which the working-class could become property holders (Trinder, 2006). By 1861, Albert St, Victoria St. and the south side of Severn St had been built by Society members.

Figure 7.33 Shrewsbury Castlefields: Albert Street in 2010

A typical street in Castlefields, illustrating different styles, size and roof heights, but standard building line.

The result of this planning from early in the second half of the 19th century was a tightly-packed residential area with narrow streets and with all the open space out of sight behind the houses. Little has changed, though 100 years later in 1969, the Borough Council decided that the area needed upgrading and put forward some suggestions for reducing congestion, increasing off-street parking and creating small recreation areas (Shrewsbury Borough Council, 1969). Most schemes did not work out in practice. However, a few schemes were instituted, for example the small sitting and play area depicted in Figure 7.34.

Figure 7.34 Shrewsbury Castlefields: Linda Vellacott Garden in 2010

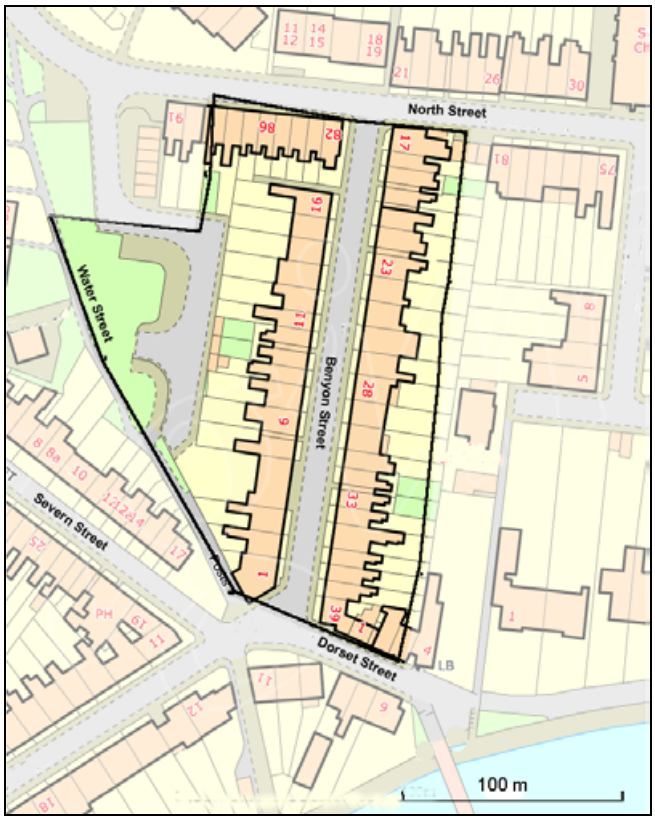
This small area is well-used and cared for today, though in the past, before the bollards were erected, some residents parked cars there.

The morphological frame provided by the detached garden site has not been lost. A comparison of the early 19th century maps and the current O.S. map (Figs. 7.30, 7.31 and 7.32) shows that the Freehold Society used several of the existing plot boundaries in laying out the roads and plots. The gardens on the south-west side of Albert St were particularly long, incorporating two rows of the former detached gardens. The boundary to the north-east was along the new road, now re-named Severn Street, which had been established in 1836 to join the coal wharf on the canal to the river. The property boundaries between Severn St and Albert St lay along the old footway giving access to the gardens. Victoria St maintained the east-west grain of the layout but was built further back from the river to allow larger gardens for these prime residential locations.

6. Harwood's Field

Figure 7.35 shows Harwood's Field, as it was depicted in the Tithe Survey of 1849. When superimposed on the modern layout of roads and blocks, the external boundary of the site can easily be discerned in the present landscape.

Figure 7.35 Shrewsbury: Harwood's Field superimposed on a modern O.S. map



In 1849, the land eastwards from Water St contained 13 gardens. All were tenanted and the executors of Sacheverell Harwood were named as their landlord. It appears that the previous history of the garden site was short. Sacheverell Harwood bought the Benyon's flax mill and land to the east in the mid-1830s. John Wood's map of 1838 showed the land as one field but, within the next ten years, it had been divided into 13 gardens.

This land formed the second part of the Shrewsbury Freehold Land Society estate in Castlefields, bought in 1853. Tenders for roads and drains were sought in 1854 and the ballot was in the same year. It developed the north side of Severn Street, Dorset Street, Benyon Street and the western section of North Street in the next ten years, based on the same rules used for the first phase. In 1863, the Salopian Society for Improving the Condition of the Industrious Classes built a terrace of six 'model cottages' on the north side of North St, having obtained large scale, working drawings for dwellings adapted for labourers earning 12/- to 15/- per week (Salopian Society for Improving the Condition of the Industrious Classes, 1860) (Figure 7.36).

Figure 7.36 Shrewsbury Castlefields: terrace of model cottages on North Street

Built in 1863 by the Salopian Society for Improving the Condition of the Industrious Classes, as suitable dwellings for labourers.

Despite the whole garden site being developed as one unit, and as an addition to a previous estate to the west, the morphological frame is clear and much remains as

a reminder of the previous use of the area. The exterior boundary of the former garden site is unmistakable, since it coincides with Dorset, Water and North Streets. In addition, Benyon Street followed the track that ran through the field giving access to plots on either side.

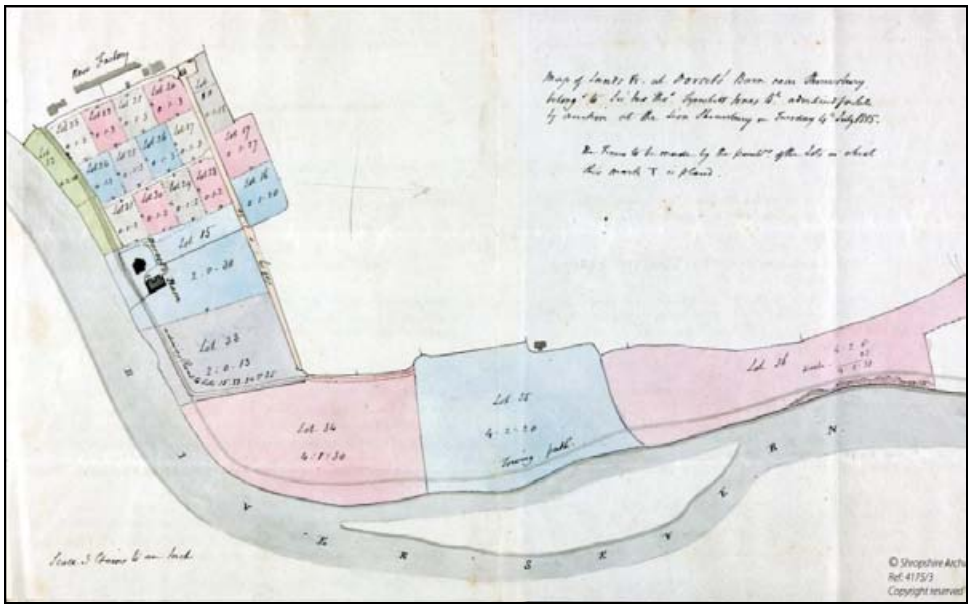
7. Dorset's Farm Gardens

By the date of the tithe survey in 1849, only one site in this area, named Burton's Field, was entered as a garden in the schedules. It lay alongside a rope walk, the line of which is followed today by North Street and can be traced eastwards along the lane to Dorset's Farm. The site is now occupied by housing on the north side of North Street, east of All Saints' Church (Figure 7.37).

Figure 7.37 Shrewsbury: Burton's Field, superimposed on a modern O.S. map

There was only one garden site left on Dorset's Farm in 1849, but there is evidence of many more in earlier years. Plots of land, including gardens as well as a rope walk, pasture and meadow, were offered for sale in 1815 (Figure 7.38). In the sale details, five plots were labelled as gardens and the tenants were named. Eleven further plots were staked out in a field and marked with a T, indicating that the purchasers would need to erect fences (Jeffreys Solicitors, 1815).

Figure 7.38 Shrewsbury: map of lands for sale at Dorset's Farm, 1815



Original hand-tinted map at a scale of 3 chains to 1 inch, part of sales particulars of land advised for sale by auction at the Lion Inn on Tuesday 4th July 1815.

.... Parcels of land, as staked out and numbered

	a	*r*	*p*		*Occupier*
16		*1*	*28*	*garden.*	*Mr Thomas Stirrop*
17		*1*	*27*	*garden (also Dorset Barn Cottage)*	
18		*1*	*15*	*2 gardens*	*Edward Barnes*
19		*1*	*30*	*rope-walk*	*Edward Barnes*
20		*1*	*3*	*garden*	*William Beacall*
21		*1*	*3*	*T*	
22		*1*	*3*	*T*	
23		*1*	*3*	*T*	
24		*1*	*3*	*T*	
25		*1*	*3*	*T*	
26		*1*	*3*	*T*	
27		*1*	*3*	*T*	
28		*1*	*2*	*T*	
29		*1*	*2*	*T*	
30		*1*	*2*	*T*	
31		*1*	*2*	*T*	

Rest marked as meadow or pasture land.

Not all plots were sold and they were put on the market again in 1819, when the rope walk and adjacent gardens were bought by the tenant, and again in 1825 (Jeffreys Solicitors, 1819; 1825). The landlord clearly felt there was an opportunity to make money on this farm-land close to the urban fence and in 1838, 20 gardens were advertised as potential building sites (Jeffreys Solicitors, 1838). All had tenants at the time. None were built on until the Shrewsbury Freehold Land Society purchased several fields from Robert Burton of Longner Hall in the early 1860s.

When bought by the Shrewsbury Freehold Land Society in the early 1860s this land became stage 3 of their estate in Castlefields, of which, eventually, it formed by far the largest part. The streets were laid out in 1866 and the ballot for more than 100 plots took place in 1867 (Trinder, 2006). Development was protracted - there are neighbouring houses in North Street dated 1868 and 1876 (Figure 7.39). However, on the whole, the end result was more uniform than in earlier parts of the estate with longer terraces (Figure 7.40). The front row of the estate was Severn Bank overlooking the river, with large plots half of which were still empty in 1885.

Figure 7.39 Shrewsbury Castlefields: protracted development on North Street

Neighbouring houses, dated 1868 and 1876

Figures 7.40 and 7.41 Shrewsbury Castlefields: John Street - long terrace with no front gardens and small back gardens

Two blocks of 6 houses

Back of an unaltered house

8. New Park Street Gardens

In the 1860s these gardens were bought by the Shrewsbury Freehold Land Society and formed part of the third phase of development of the Castlefields Estate, together with the Dorset's Farm land. Figure 7.42 shows that they were a disparate group of gardens, with the westernmost one located between the canal and New Park Road, which originally was a lane, leading to New Park Farm.

The history of these gardens has not been traced before 1848. The tithe survey (1849) showed that this cluster of gardens belonged to small landlords, including George Jeffreys, who owned just over an acre. Most gardens were rented out. In 1848, one was advertised for sale in the Shrewsbury Chronicle, following the death of the owner (Shrewsbury Chronicle, 1848)

> *"GARDEN to be sold at auction….. at the Bull's Head Inn, Castle Gates….. all that prolific garden, stocked with excellent fruits, containing upwards of 448 square yards, situate in New Park Rd, the property of the representatives of the late Mr Charles Asterley. Mr James William Jones, Shoemaker, New Park Rd, will show the garden."*

Despite the larger scale of the third phase of the Castlefields estate, the Society established a road pattern that followed several of the garden site boundaries (Figure 7.42). As in the other Shrewsbury Freehold Land Society estates, the predominantly residential land-use has persisted, though there have been minor modifications following the Borough of Shrewsbury proposals in 1969, such as blocking one end of narrow streets and establishing one way systems and small parking lots (Shrewsbury Borough Council, 1969). A major scheme replaced a block of terraced houses with a sheltered housing complex and a neighbourhood shopping centre (Figures 7.43 & 7.44).

Figure 7.42 Shrewsbury: New Park Street Gardens superimposed on a current O.S. map

Figure 7.43 Shrewsbury Castlefields: sheltered housing on New Park Road

The new building replaces 19th century housing and maintains the line of the former gardens.

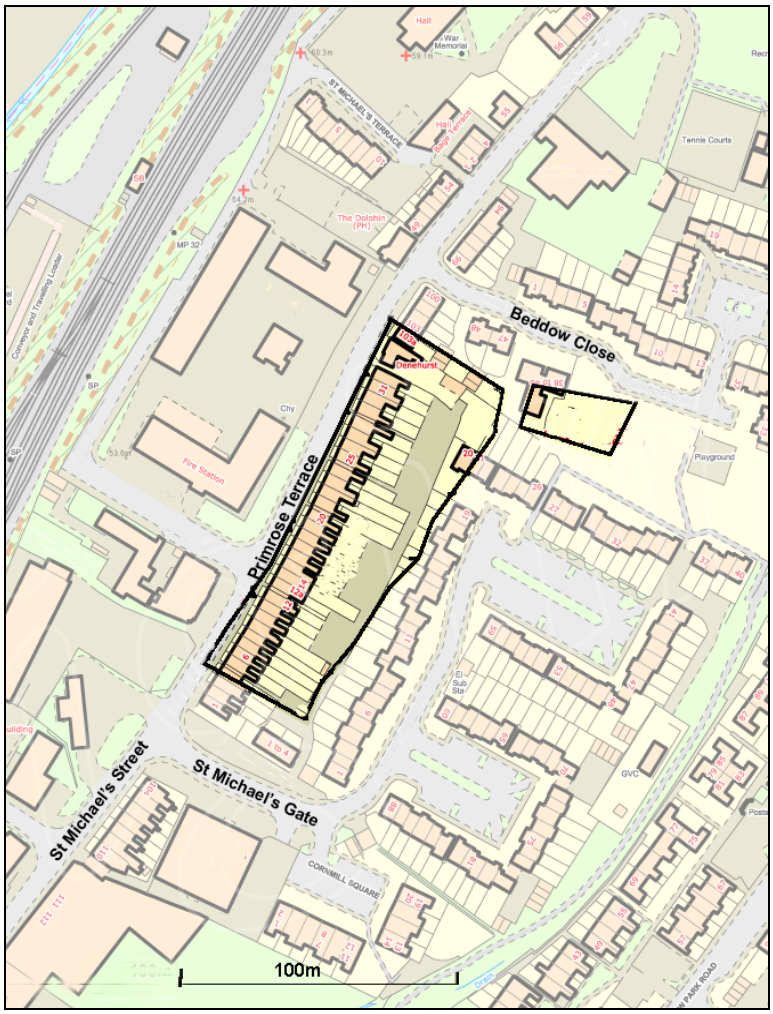
Figure 7.44 Shrewsbury Castlefields: neighbourhood shopping centre

This parade of shops was built in the 1970s to provide facilities and variety in the Castlefields Estate

9. Brickfield Gardens

These gardens were located on the roadside on the main route northwards from Castle Foregate, now St Michael's Street. The boundary of the site, as shown on Figure 7.45, illustrates the situation at the time of the Tithe Survey in 1849. Today the site coincides with a long terrace of tunnel-back housing. The geology map (Figure 5.1) indicates that this was an area of boulder clay that was used for brick-making from the middle of the 19th century.

Figure 7.45 Shrewsbury: Brickfield Gardens, superimposed on a modern O.S. map



The history of the Brickfield Gardens can be traced back to 1832 when Hitchcock, on his plan of Shrewsbury, depicted 16 small plots in the northern section of the site, stretching back from the highway to the canal. By 1838 (Wood) additional plots were added, so that most of the area later to become a brickyard was being cultivated as gardens (Figure 7.46). Eleven year later, in 1849, the landlord was Joseph Birch, builder, surveyor and councillor. He had transformed the land-use from gardens to clay pits and advertisements show that he was making bricks in clamps at the back of the site. At the same time, the roadside gardens were still being cultivated by tenants. The gardens remained in place until the end of the 19th century, when the landowner at the time, another brick-maker Thomas Williams, gradually replaced them with a continuous terrace of 32 houses called

Primrose Terrace (Shrewsbury Chronicle, 1975) (Figure 7.47). The brickfield, once the clay was exhausted, became the location for an extension to the gasworks and, in the last decade, has become a housing estate.

Figure 7.46 Shrewsbury: Brickfield Gardens, according to Wood (1838)

The morphological frame of the 1849 gardens remains clear, since the boundary of Primrose Terrace, together with its back gardens, follows the line of the garden plots. The individual garden in the north of the site (Figure 7.45) is now a green space, part of Beddow Close (Figure 7.48). Its boundaries have changed little.

Figure 7.47 Shrewsbury: Primrose Terrace, built between 1886 and 1907

There are 32 houses in this terrace, built in eight groups of four, with four tunnels through to the back

Figure 7.48 Shrewsbury: Beddow Close, open land once a garden on a brickfield

Once a detached garden plot, its shape has not changed. A small section is fenced off as a recreation area, but otherwise it forms a grassy open space within a housing estate.

10. Wildig's Field

In 1849, Henry Wildig owned this field west of St Michael's Street which was divided into 12 gardens. By this time, St Michael's Church (now the Masonic Hall) had been open for some 17 years and these gardens were located largely to the west and north of the church, on the slope to the Bagley Brook. There is little in the modern townscape to help identify the field's exact location but, by superimposing the 1849 map onto a modern map, its boundaries are revealed (Figure 7.49).

Hitchcock (1832) depicted gardens to the north and east of the church in 1832, but no earlier documentation for this site has been discovered, so it is not known if the gardens preceded the church (1832). They may even have lined the highway before 1830. At the time of the tithe survey (1849), Wildig's gardens stopped abruptly at a fence line parallel with the street and three buildings were shown in this section of St Michael's Street. The fact that the gardens were aligned at right angles to the highway, rather than to Crewe Street suggests that they preceded it.

Figure 7.49 Shrewsbury: Wildig's Field superimposed onto a modern O.S. map

The first transformative process was in 1858, when about half of the field was bought by the London & North-Western Railway Company for its line to Crewe, cutting off the western section (Figure 7.50). The remainder stayed as gardens but, by 1882, there had been considerable changes in the land-use. The gardens next to the church had become the vicarage with its own large garden. The access footway had become Crewe Street, lined with a terrace of 19 houses on the north (Meadow Terrace) and 11 on the south (Robin Hood Terrace). These all had long back gardens, following the general line of the former detached gardens.

Figure 7.50 Shrewsbury: view over railway land towards Bagley Brook

This was once detached gardens stretching to the Bagley Brook, in the middle distance.

Although not named on the map as detached gardens, the plot layout and access footways on this large scale map (O.S. 1:500) suggest that additional gardens had been established by this date. Between Meadow Terrace and the railway line a row of 23 thin, rectangular plots had appeared and there were a further 12 square plots in the eastern section (Figure 7.51).

Figure 7.51 Shrewsbury: development by 1882 (extract from O.S. 1:500 map, 1882) © Shropshire Archives [Sheet 34-7-11]

Today all the gardens and Victorian houses have disappeared and the area has been redeveloped as a housing association estate, largely a mixture of low-rise flats with a parking area (Figure 7.52). The vicarage has been replaced by a cluster of modern terraced housing in a garden (Sherwood Gardens) (Figure 7.53).

The morphological frame is not easily discernible today, since the Crewe railway line, here following the valley of the Bagley Brook, obliterated all signs of gardens in the western section. Only the boundary coinciding with the churchyard wall still exists. In the eastern section, Crewe Street has replaced the former access road and is the only surviving lineament of an earlier plan.

Figure 7.52 Shrewsbury: housing association development on Crewe Street

This was formerly the location of the 12 large detached gardens. Ditherington Flax Mill is on the horizon

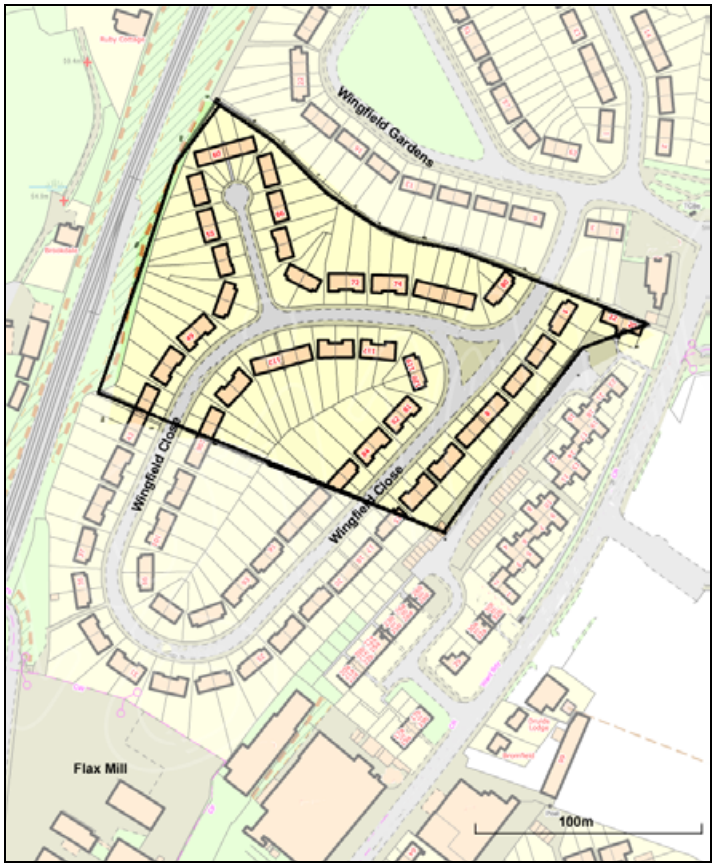
Figure 7.53 Shrewsbury: Sherwood Gardens

This again is a housing association development, but within a gated complex located in the former vicarage garden

11. Marshall's Gardens

This land was purchased by Marshall, Benyon and Bage in 1795-96 when the flax mill was built at Ditherington. It remained as an open field until some time between 1838 and 1849 when it was divided into 51 small plots, most of which were very small, at 13-15 perches. The maximum extent of the garden site, as revealed in the tithe survey, is shown on Figure 7.54.

Figure 7.54 Shrewsbury: Marshall's Gardens superimposed on a modern O.S. map



John Marshall had already established allotments at his Leeds factory and it appears that he was repeating the exercise in Shrewsbury. The 51 tenants were named at the time of the tithe survey and it is assumed that they were employed at the factory; certainly some were described as over-lockers, weavers and spinners in the 1851 census. The third generation of Marshalls showed little interest in the business and it declined from the 1870s, eventually closing in 1886. By 1882, the garden site had been reduced to half its size, but it was revived in the First World War as DORA allotments and was still in existence at the time of the 1926 second revision of the 1st edition O.S. 1:2500 map.

In the late 1920s, Shrewsbury Borough Council was beginning to demolish slum houses in the shuts and courts and they started a five year slum clearance programme under the 1930 Slum Clearance Act. They bought the gardens and the field to the south on which to build 120 houses at a cost of £350 per house. There was much press coverage between 1933 and 1937, because the builders required £10 extra for each house, due to an increase in the cost of building materials

(Shrewsbury Chronicle, 1937). The estate was completed in 1937 and was called Wingfield Close. Most houses were grouped in a mixture of twos and fours (Figure 7.55).

Figure 7.55 Shrewsbury: Wingfield Close, a council estate built in 1937

A rather desolate council estate, built as a result of slum clearance in shuts and courts in central Shrewsbury. It is located on former factory gardens which later became DORA allotments.

Figure 7.54 shows that the exterior boundary of the former gardens has been retained in the modern estate plan, forming the back fences of the gardens on three sides. The area to the south was always a field lying between the gardens and the main Flax Mill site.

12. John St/Argyll St Allotments

These were established as allotments by Shrewsbury Borough Council in 1917 as part of the war effort to produce more food under the DORA legislation of 1916 (Shrewsbury Chronicle, 1917). The north-west corner was contiguous with another large field that was commandeered for allotments a short while later and which is described in section 13 of this chapter as Newfield Drive Allotments. Two-thirds of the site remains as allotments today (Figure 7.56).

The nearby streets (Argyll, John, Queen, New Park) had been built in phase three of the Freehold Land Society's Castlefields Estate in the last two decades of the 19th century. The houses were mainly in terraces with small gardens and there

had been no allotment provision, although a bowling green had been provided. A plan of the allotments prepared by the Borough Council in 1917 (Shrewsbury Borough Council A W Ward Borough Surveyor, 1917) showed that Queen Street and John Street were not joined, but ended abruptly at the field boundary. Between the end of the war and 1926, the plots in the south-west corner had been taken to join up these two streets (Figure 7.57).

Figure 7.56 Shrewsbury: John Street/Argyll Street Allotments superimposed on a modern O.S. map

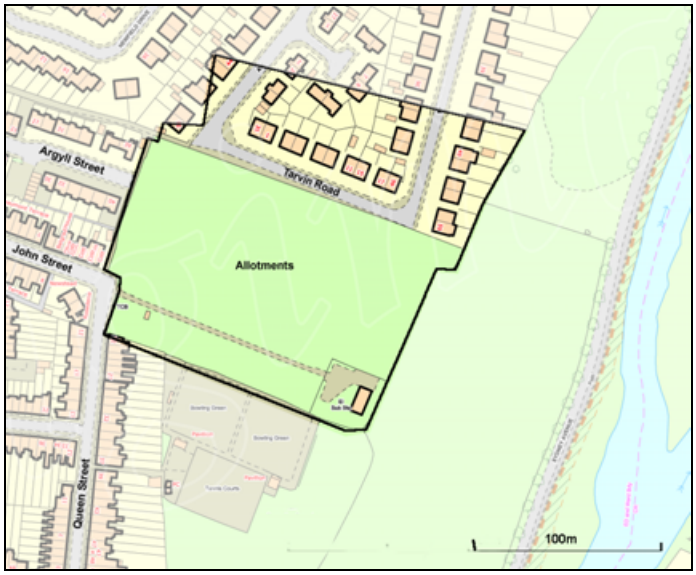
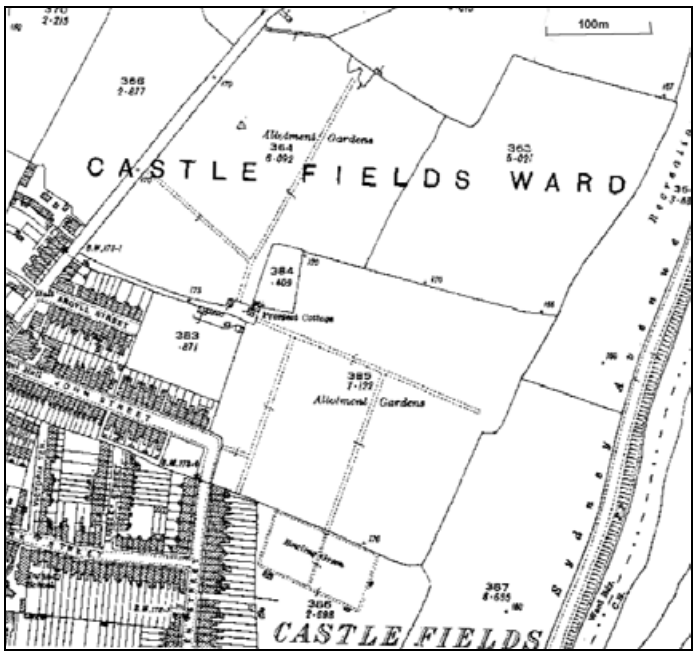


Figure 7.57 Shrewsbury: extract from O.S. 1:2500 second revision map published in 1926

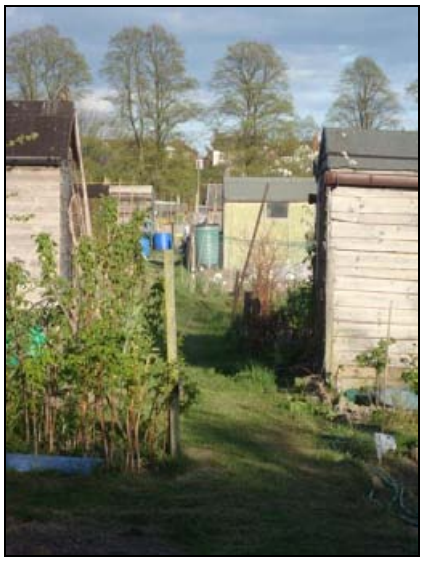


The rent books from the Castlefields Allotment Association show that all 96 plots were tenanted throughout the 1930s and they were well-used until the late 1950s when the entry 'not let' began to appear (Castlefields Allotment Association, 1932 to 1969). The Ditherington Relief Sewage Scheme whittled away a few plots and the north section was taken for residential development in the late1960s as part of a much larger private initiative, Severn Meadows. The estate, built largely in the early 1970s, had wide roads (all called drives), garages and houses with front and back gardens (Figure 7.58).

Figure 7.58 Shrewsbury: Tilbrook Drive

A typical street in an estate designed with the car in mind.

Figure 7.59 Shrewsbury: Argyll Street/ John Street Allotments, 2010



Looking eastwards towards the River Severn; the avenue of trees is on the riverside. The remaining site contains 52 plots on 1.7 hectares (4.2 acres).

The morphological frame of the 1917 allotments remains today, with the exception of the northern third, where all signs of the former allotments have

disappeared beneath a large-scale housing project. The former east-west access footpath has become the north boundary and a new wide driveway access has been established further south towards an electricity sub-station in the south-east corner of the allotments (Figure 7.56). Many of the access footpaths and the plot boundaries remain (Figure 7.59) but the original field hedges have been replaced by metal fences (Figure 7.60).

Figure 7.60 Shrewsbury: the northern boundary of the allotments on Tarvin Rd

Typical fencing used for local authority allotments in Shrewsbury.

13. Newfield Drive Allotments

These allotments are believed to have been opened in response to the DORA legislation of 1916. Today the area has been entirely transformed into residential development (Figure 7.61).

The field's southern boundary was the urban fence in 1917 and the allotments covered an entire field. The original fences were maintained and two access footpaths established (Figure 7.57). The allotments were still in use in 1926 according to the second revision of the O.S. 1:2,500 map. The housing estate that has replaced the allotments was built in the early 1970s and included the area to the east that is described above in section 12 of this chapter.

In today's landscape it is hard to visualise these allotments. No obvious relict features survive but, however, the morphological frame endures. By superimposing the field boundaries onto a modern map, a very good match may

be seen. To the east, Avondale Drive follows the old fence line and to north and south the boundaries coincide with property fence lines.

Figure 7.61. Newfield Drive Allotments superimposed on a modern O.S. map

Figure 7.62 Shrewsbury: Newfield Drive, in 2010

A typical street with a mixture of houses and bungalows, some with open plan front gardens, other with low walls.

14. New Park Road Allotments

This triangular field was made available for allotments during the First World War. Its southern boundary was New Park Road, an old road leading to New Park Farm (Figure 7.63). Although close to the urban fence, it was a short distance from the nearest houses. None of the present nearby streets had been built: Sultan Road, leading to Ditherington was constructed in 1922. It was, however, close to areas of working-class housing to the south on New Park Road, along the canal and in Ditherington. It was also only a short walk from another DORA site, Newfield Drive Allotments (section 13 in this chapter).

Figure 7.63 Shrewsbury: New Park Road Allotments superimposed on a modern O.S. map

The allotment site, doubled in size by the addition of an adjacent field, is now occupied by two primary schools, with large playing fields and landscaped grounds (Figure 7.64). The northern apex of the triangle was taken to complete the turning circle at the end of Woodhall Close, built along the western boundary of the allotments (Figure 7.65).

Figure 7.64 Grounds of Shrewsbury Cathedral Catholic Primary School

Taken from the cul de sac end of Woodhall Close, where the north corner of the allotments was taken for housing. All the grassed area was cultivated as allotments during the First World War and was still marked as allotments on the 1926 revision of the 1:2,500 O.S. map.

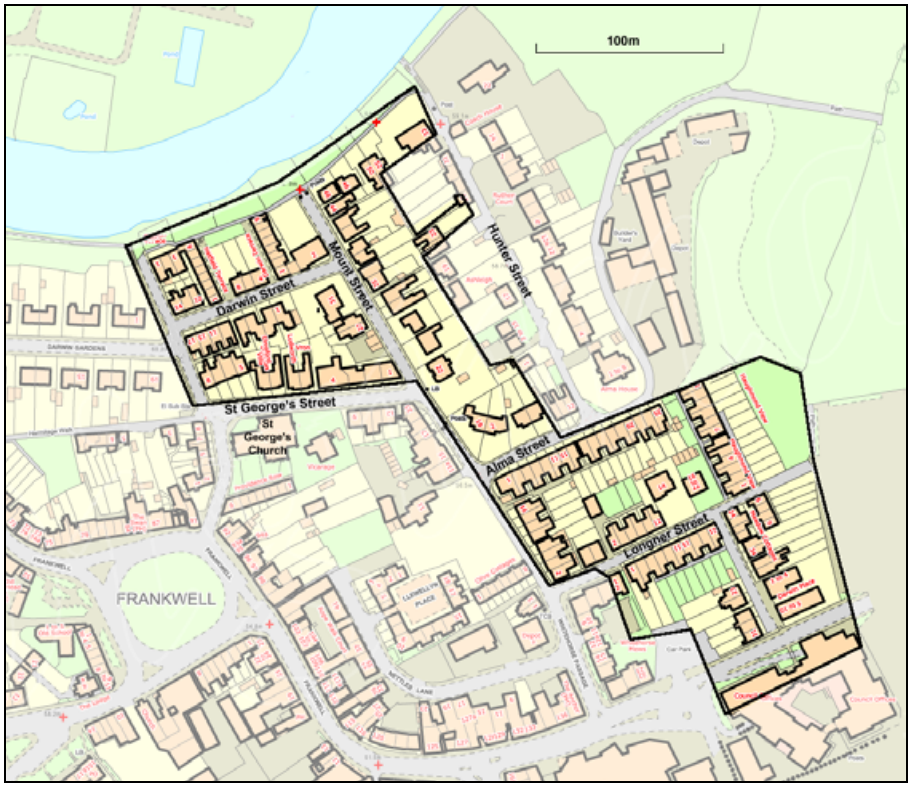
Figure 7.65 Shrewsbury: Woodhall Close

Houses were built on only one side of the street. The eastern side is the hedge-line of the former allotment site.

15. Mountfields

This was an early garden site, well located for those living in the suburb of Frankwell and also easily accessible via the Welsh Bridge for residents of the town centre. Figure 7.66 shows the boundaries of the gardens in 1849 at the time of the tithe survey. The overlay reveals an irregular exterior boundary, especially in the north-east, where plots had been sold.

Figure 7.66 Shrewsbury Mountfields: gardens of 1849 superimposed on a modern O.S. map



Lying west of the town and located within a meander, the area also attracted early villa development and by 1800 there were several large houses on the periphery, including St George's Place, home of the Drinkwater family who owned much of the land in Mountfields. By 1849 there were at least ten villas and regency-style houses, including Severn Lodge, home of the surveyor Thomas Tisdale, at the most northern point, overlooking the river (Shrewsbury Chronicle, 1843). However, the development of this area was piecemeal. Richard Drinkwater, property owner and wool merchant was frequently leasing or mortgaging gardens, orchards and other property throughout the first half of the 19th century. As early as 1815, gardens were being offered for sale as building sites (Eddowe's Salopian Journal, 1815). Even so, at the time of the tithe survey, Drinkwater still owned 61gardens, with tenants in all but five. In 1848 Drinkwater offered 21 gardens for sale (Shrewsbury Chronicle, 1848) and he continued to offer more throughout the 1850s:

> *"Several plots of superior garden-ground admirably adapted for building purposes, adjacent to St George's Church and extending to the River Severn, with country views"(Eddowe's Salopian Journal, 1854).*

By the time of the 1861 census there were 40 houses in Mountfields, some occupied by manual workers, but most by professional men. Before 1860, two terraces of four model cottages had been built by the Salopian Society for Improving the Condition of the Industrious Classes and this encouraged the building of working-class housing (Salopian Society for Improving the Condition of the Industrious Classes, 1860). In 1865, 25 plots were offered for sale, with a promise that suitable roads would be laid (Shrewsbury Chronicle, 1865). In the 1880s gardens were still being offered for sale and the streets were slowly being regularised (Shrewsbury Chronicle, 1883). By the 1901 census there were more than 150 houses, and yet more gardens were still being offered (Shrewsbury Chronicle, 1901a).

Figure 7.67 Shrewsbury Mountfields: Hatfield Terrace

One of two short terraces, built at right angles to Darwin Street on access tracks leading to the site boundary. They have a metre of front garden and face onto a road just wide enough for a small car.

The historical provenance of this residential area is very apparent. The piecemeal sale of individual or small groups of plots and the late provision of proper roads and drains led to a very different townscape from that produced by the Freehold Land Company elsewhere in the town. The streets were developed from access tracks and were often narrow (Figure 7.67). Some cottages were built at right angles to the street, with front door access gained from a footpath. Regency houses, built at the back of plots before the introduction of building lines, had long front gardens, while neighbouring houses had front doors on the pavement (Figs. 7.68 and 7.69). The occasional Victorian villa was set in extensive grounds.

Figures 7.68 and 7.69. Shrewsbury Mountfields: building lines

These neighbouring houses on Hunter Street illustrate well the juxtaposition of houses not only of different styles and date, but also built at different positions on the plot.

Conclusions

This concluding section summarises and synthesises the results from both the full data set and the 15 case studies, seeking common themes on the nature of succession of land-use on the garden plots, the persistence of the morphological frame, the timing of the transformation and the types of processes involved. It offers explanations for differences, seeking answers from both national and local events, and reports how the outward expansion of Shrewsbury was affected by the abundance and distribution of detached gardens and urban allotments. In the process of this analysis, questions other than those foreseen at the start of the study arose for further exploration, such as why the early gardens close to the town wall persisted as open spaces and the role that family circumstances played in the timing and nature of transformative processes.

Land-use succession on the garden plots

Throughout the 19th and 20th centuries, the most likely land-use succession for detached gardens and urban allotments in Shrewsbury was to residential use. This transformation to housing occurred directly, without an intervening stage, in 70 percent of the 87 garden sites. In the 15 sample sites, six fell into this group while, in a further three, part of the site was used for housing. There are also examples

of plots that have ended up as residential, but progressing first through an intermediate period of another land-use or fallow. There was little competition from industrial or institutional land-uses. Shrewsbury was not developing as an industrial centre and the river banks and canal-side were providing adequate factory locations. The gaol, workhouse, hospital and water-works had already been established in the proximal extra-mural in the 18th century and new Victorian institutions such as the lunatic asylum, fever hospital and sewage farm were located well away from the residents at the distal edge of the fringe belt. The only real competitor to housing use was the railway, requiring marshalling yards and carriage houses close to the station.

Popularity of detached gardens as building sites

As the residents of the urban core began to move out from the walled town, detached gardens proved extremely popular as building sites. This movement started tentatively in the early 19th century on individual plots, but then became more precipitous from the middle of the century, when whole sites were taken over. In a town the size of Shrewsbury, the detached garden sites were all close to the urban fence (Figure 7.1) providing valuable building sites within a short walk of the town centre. They were also very extensive, covering more than 48 hectares in the 1840s, thus providing an ample choice of locations for development.

Nature of outward expansion

There are isolated examples of garden sites near the town centre being 'leap-frogged' but, by and large, new suburban development spread outwards from the urban fence as accretions. Since the original colonisation of rural land in the proximal extra-mural had been for detached gardens, this development was a successive process, transformative rather than additive in Conzenian terms. The development was not solid, even within areas covered by large tracts of gardens. The land near the urban fence was divided between 112 landowners, none of whom owned more than five hectares. Not all were prepared to sell at the same time and much depended on the skill and knowledge of speculative builders in obtaining new building land. The 1903 O.S. map revision revealed that, in the flurry and intensity of development at the end of the 19th century, small groups of gardens were left undeveloped, producing a patchy townscape.

Transformative forces – a chronology for housing

Examples of transformation to residential use have been studied in more detail to consider the forces that pertained at the time of succession and whether these produced different townscapes, despite the underlying similarities of morphological frame and former land-use. Four distinct townscapes have emerged from the analysis, based on different types of residential development: piecemeal early development; a freehold land society estate; an inter-war council housing estate; and a 1970s private initiative estate. They were not devised as a chronological sequence but, because housing expectations, requirements, styles and legislation changed over time, a chronology has resulted.

Piecemeal development The earliest was piecemeal development, typified by Mountfields. Lying in a meander immediately upstream of Shrewsbury and in contact with the urban fence around Frankwell, this area was not only well located for gardens but also became a favoured spot for early villa development for wealthy professional and trades people. The landlord was eager to sell occasional garden plots to individuals, but there was no overall plan and private provision had to be made for drainage and access. The opening of St George's Church in 1832 and the erection of model cottages in the 1850s stimulated some interest, and development continued spasmodically so that, by 1861 more than 40 houses had been built (Shrewsbury Chronicle, 1833; Shrewsbury Chronicle, 1835; Trinder, 2006). Infill continued on vacant plots until recent years and the result is a suburb built up over a 200 year period, displaying a variety of architectural styles within a framework of roads and paths designed originally as access tracks for gardens. The end product is an unusual and diverse suburb of assorted homes that give the feel of a village.

Freehold land society development In the first half of the 19th century, only the wealthier families managed to take advantage of building booms, as evidenced in Mountfields. In the urban core of Shrewsbury, the poor were still living in overcrowded courts, particularly near the Welsh Bridge and in Castle Foregate, while small shopkeepers and tradesmen had domestic apartments above or behind their premises. However, by the 1840s, public concern about standards of housing for the poor was coming to a head, following a decade of discussion, enquiries and Royal Commissions on public health (Burnett, 1978; Tarn, 1973).

Nothing became law, but local opinion was informed. Building and freehold land societies were established and eventually action was taken to improve the housing of the working and lower middle class. In 1852, the Shrewsbury Freehold Land Society was established and, within a year, it had purchased its first block of land made up of gardens adjacent to the urban fence, in an area recently disturbed by the construction of the railway station and line to Crewe (Shrewsbury Chronicle, 1851; 1853a). The plots immediately to the north and east, comprising further gardens and other fringe belt uses such as ropewalks and plant nurseries, were affected at once by this fringe belt alienation. They, and adjoining farmland, were purchased in 1853 and 1860 by the Shrewsbury Freehold Land Society to form the Castlefields Estate. At least 65 garden plots were lost, though the resulting houses were all provided with small back gardens. Roads and drains were laid out immediately and building began within a few months. This house building boom ran through the 1860s, but it was not until the next cycle in the 1890s that the estate was eventually completed. The Castlefields Estate was already two-thirds built by the time the Local Government Board issued extensive by-law guidance on house-building, drainage and sanitary provisions (1877), so most pre-dated by-law style of housing (Tarn, 1973). The result was a compact estate with narrow roads and a distinct building line. The housing was more varied than in later by-law estates, with a mixture of single, semi-detached and short terraces, different roof lines and roof pitches and an assortment of windows, doors and decoration.

Slum clearance council estate development The third townscape is typified by the development on Marshall's Gardens, which resulted from slum clearance following the 1933 Housing Act. This site started off as garden provision for factory workers at Ditherington Flax Mill; it was reduced in size by the end of the 19th century, and then revived as part of the DORA effort in 1917. It lay conveniently adjacent to Shrewsbury's first council estate of 63 houses completed in 1914 (Shrewsbury Chronicle, 1913; 1914). In 1934 the Borough was looking for a site to build 120 houses for slum clearance, using government grants. Marshall's Gardens offered an ideal spot, a flat site next to an existing small council estate, on fallow land within the town. The whole of the allotments and the adjoining field to the south were planned as one unit and named Wingfield Close. A circular road was laid out with houses on its perimeter and also around the island in the middle, a layout which has completely obliterated the former

pattern of gardens. The houses, grouped in twos and fours, were built to a standard price and to standard designs.

Extensive private housing estate The fourth townscape is a private housing estate dating mainly from the early 1970s. It includes two allotment sites which were established during the First World War on fields belonging to New Park Farm, in locations close to the urban fence of the day. The land for the John Street/Argyle Street Allotment (still in existence) was already under negotiation before the DORA crisis and it is possible that the northern section (whose plots were numbered separately) was a DORA add-on. This northern section and the adjoining Newfield Drive Allotments to the west were eventually sold in the 1960s and were developed for housing by a large independent building company. Wide streets were laid out, designed for families with cars. Plots were spacious with a mixture of semi-detached houses and bungalows, garages and both back and front gardens. The estate was greater in size than the former allotments and it obliterated the morphological frame of the pre-existing allotments.

Site succession to transport

Detached gardens that were being cultivated in the early 19th century, most of which were located close to the town wall, proved especially vulnerable to transport developments. This was particularly the case in the mid-19th century when large areas were bought up by the railway companies, not only for stations and railway lines, but also for marshalling yards, carriage sheds and repair facilities. Wildig's Field is a good example of this succession. The western plots were sliced off by the London & North-Western line to Crewe, which not only reduced the size of the garden site, but also obliterated much of the physical topography of the valley of the Bagley Brook.

Overall seven percent of the sites were transformed into a transport-based use but, within 100 metres of the urban fence, they made up a much higher percentage. In Shrewsbury the neck of the meander was very susceptible since the station was built here, immediately outside the wall. This narrow neck of land served as both a railway and road junction and became increasingly busy as motorised vehicles were introduced. A bus station and car-parks were also required close to the town centre and were located here.

Detached gardens as a morphological frame for later developments

In the 15 garden sites selected for detailed examination, the persistence of the outer boundaries and internal layout of the plots and access paths was examined, to provide some insight into the extent to which the original morphological frame was still discernible today. The examples of site succession to housing discussed above suggest that the oldest transformations have kept the greatest footprint. This is typified by Mountfields, with its piecemeal sale of individual plots over many decades. The area was not designed; it just grew without any infrastructure planning. The result is a very distinctive townscape whose garden ancestry is clear.

Even with the advent of freehold land societies in the third quarter of the 19th century, building schemes were still small-scale, driven by small local firms. In Castlefields the freehold land society imposed a set of rules governing the development and this meant that the area was considered as one, the roads being laid out to an overall plan. Despite this, the new plan was not an arbitrary superimposition of new grid-plan roads and same size building plots. It displayed many adjustments to the former site boundaries, access footways and even, in some places to the garden plot boundaries. The roads were straight, but often short, meeting others at varying angles, the major exception being North Street, which followed the line of a ropewalk, a distinctive fringe belt feature.

At the beginning of the 20th century, the local authority was the major supplier of working-class housing. A substantial number of houses was needed at a standard price and work was put out to tender. In the case of Wingfield Close (1937-8) the tender was awarded to a large building firm from outside the county. The design completely obliterated any trace of the former gardens and only the perimeter fence remained. This trend continued as larger residential schemes were instigated later in the 20th century. The 1960s-'70s estate developed around Newfield Drive was extensive in size and expansive in space for individual dwellings. The plan abandoned all field and plot boundaries and a new layout of roads was superimposed, so that little of the morphological frame remained.

This brief analysis of the persistence of morphological frames through time suggests that only large capital expenditure could lead to the complete removal of

the pre-existing cultural landscape (Conzen, 1981b). This is borne out by the example of railway developments which generated some of the largest capital outlay in the mid-19th century, and which have also been shown to have obliterated earlier landscapes.

Persistence of other physical attributes

Other plots illustrate a slower site succession in which incisive development has not occurred, modifications have been gradual and building coverage remains low or non-existent. In these cases, much of the individual footprint of the garden sites still lingers, especially exterior boundaries which have rarely changed. 19th century documents and old photographs suggest that hedges were a popular method of separating plots within a garden site and many are still visible in the townscape today, dividing sections of car parks, sheltering bowling greens and forming current garden hedges. Similarly other relict forms, such as former access gates, have not been removed, as for example in the wall along the towpath just downstream of the English Bridge. These surviving lineaments of an earlier landscape, although small, have created diverse townscapes with reminders of the historical provenance.

Site succession leading to low building coverage

Taking the full data set of 87 sites, 28 percent had not been built on by the end of the survey period. Excluding the First World War sites which are still under cultivation and are discussed separately below, these garden sites exist today as parks, small-scale recreational facilities, semi-wild land in both public and private ownership and car parks. They are located mainly on the narrow strip of land between the town wall and the river, a zone that formed the proximal section of the inner fringe belt for many centuries, related to both wall and river, which formed a double fixation line. In some walled towns, an extra-mural ring road has been built in this location, but this was not feasible in Shrewsbury because of the river's propensity for flooding. Even today, when strategic zones are protected by barriers, the flood water is allowed to collect in this area. The uncertainties connected to flooding reduced the possibilities for residential development, though three friaries had been located here in the 13th century. The widest section of the flood plain formed the town's common grazing land, always a fashionable place to walk and later converted into a public park (The Quarry) in the 18th

century (Stamper, 1996). Other land, at the back of the flood plain, comprised steep river cliffs.

A major strip of this open land lay between the Quarry and the English Bridge, where there was a swathe of gardens between the wall and the river. There were a few minor incursions of residential developments, but the area was not interrupted until the Eye, Ear and Throat Hospital was built on the line of the wall in 1879 and the Kingsland Bridge approach road cut through in the same year (Shrewsbury Chronicle, 1879; 1881). Gradually the Shrewsbury Horticultural Society bought up the land, converting it into tennis courts and bowling greens which it rents to various sports clubs (Shrewsbury Horticultural Society, undated). The remainder now belongs to Shrewsbury High School which purchased individual gardens at the beginning of the 21st century to form a car park and sports field. Downstream of the English Bridge were the ten gardens belonging to the Shrewsbury Union Wharf Company, separated from the towpath by a high wall. The site is privately owned by the residents of an apartment block built on the two top gardens, who bought it to preserve their outlook and to prevent further development; they maintain it as a semi-wild space (Blackfriars Crescent, 2010). The remaining open area downstream is the old County Gardens between the gaol and the river, once the property of the County and then the Prison Service. Recently neglected, but now sold, the overgrown terraces are in process of regeneration as a part-private, part-public open space.

This summary suggests that it was not only the physical topography and flooding that played a part in maintaining the open nature of the former garden plots. Other agents were also involved, with different motives: the Horticultural Society was engaged in consolidating its land throughout the 20th century; the High School was striving to increase investment in its site in order to remain in its central location with improved facilities; and a group of residents were intent on maintaining their expansive views, a major feature of their residential development. The public has also become more aware of the importance of open areas and the idea of a green wedge of land, following the river valley has been raised (Campaign to Protect Rural England, 2003; Shrewsbury and Atcham Borough Council, 1997). The regulations attached to the Town Centre Conservation Area have provided some protection since 1970 (Shrewsbury and

Atcham Borough Council, 2000) and the Environment Agency has also issued guidance on future building on the Severn flood plain, particularly in relation to the redevelopment of buildings badly sited in the past, in less rigorous planning times (Environment Agency, 2008).

Family circumstances, site succession and persistence

There is some evidence that the timing of modifications, or indeed land-use persistence, was linked to changes in family circumstances, often caused by a death. What happened subsequently was often dependent on the point in the wave of boom or depression in the building cycle. Benyon's Gardens were an example of this. Benjamin Benyon died in 1834 and his factory was sold. However the garden-ground remained in contention and the problems were not sorted out for 16 years (Trinder, 2006). By that time, the Shrewsbury Freehold Land Company was on the scene, looking for land at a reasonable price and it managed a quick purchase at what Borough Councillors described as a bargain (Shrewsbury Chronicle, 1853b). Sacheverell Harwood, whose field adjoined the Benyon land, died at this strategic time and his executors followed the Benyon's example, selling to the Freehold Land Company the following year. Thus, nationwide concern about housing conditions, the formation of a freehold land society and the disruption of an area through railway construction coincided with the deaths of influential local landlords and the beginning of a house building boom. The Benyon executors were selling at a fortunate time and the result was a significant change in land-use. In contrast, the Drinkwater family was failing to sell multiple plots in Mountfields in the early 19th century at a time of housing depression.

The Leighton family, on the other hand, seemed impervious to what was going on around them for several generations, retaining a system of landlord and tenant at Luciefelde that had died out elsewhere in Shrewsbury in the second half of the 19th century. The Luciefelde Gardens lay just outside the meander (Figure 5.5), a small estate bought with a fortune made from the coaching trade in the 18th century. The eldest son took holy orders but worked for only a short time as a curate before taking over the estate which had been divided into 39 gardens. The family money must have been well invested since the Reverend Leighton spent his time as an antiquarian and botanist (Sinker et al., 1985). His descendants continued to live in a genteel manner in their home in the middle of the tenanted

gardens which persisted until 1936 (Trinder, 2006). At this point, the family sold up and moved. The land, well within the urban fence by the 1930s, was rapidly developed by a private builder. A single crescent was laid out and spacious semi-detached houses were built in large gardens.

The occupation of the landlord families may also have been pertinent. The Leightons had risen to become gentlefolk, apparently living comfortably off investments, while the Drinkwaters were business men, wool merchants, a trade that was not as prosperous as in the past. They owned much of Mountfields in 1800, including wharves, warehouses, ropewalks, pasture and gardens but, throughout the 19th century, they appeared to be using their capital assets, mortgaging land and selling off plots for building. It resulted in a piecemeal sale of their property in Mountfields, which in turn produced a distinctive landscape whose garden roots are clearly discernible.

Age of plots in relation to site succession and persistence

With one small exception, all detached gardens established in the 18th and 19th centuries have been subject to changed land-use. The question arises as to why they have not persisted. Documents from the early 19th century show that garden plots were valuable assets, eagerly bought or leased as gardens for considerable sums of money. Yet, by the outbreak of the First World War, the majority had been sold for development. Their distribution close to the urban fence made them very vulnerable to urban expansion through accretion and, during the early phases of a residential building boom, there must have been great pressure to sell. Individual landowners quickly realised the increased value of their plots, as suitable land for building was sought by freehold land companies and private developers. Nothing is known of the 65 people who rented out plots of less than 0.2 hectares, except that no such plots appear to be available today, though this is hard to verify. But some of the owners of larger garden sites, such as the Benyons and the widow, Harriet Lloyd, who owned the largest area of gardens, sold their land quickly (Trinder, 2006).

Surviving allotments

In terms of area, the biggest group of surviving allotments dates back to the First World War. Five of these sites, somewhat whittled down in size, still form the

backbone of the current local authority provision. They make up about half of Shrewsbury's allotments and have been under cultivation for almost 100 years. It is interesting to speculate if they will be less vulnerable to change than previous garden-ground. Residents appear to think that, because allotments are in public ownership, they are safer. They have also become a settled part of the townscape, embedded in mental maps as vegetated spaces. Also their location near to Victorian and Edwardian housing estates, where garden provision is limited, means that the demand remains high.

Private to public ownership

The old system of garden provision, based on a private landlord-tenant arrangement, declined rapidly from the middle of the 19th century and the decay continued unabated at the turn of the century. By the inter-war period, privately-owned remnants appeared exceptional in a system dominated by public ownership. One stands out: the Luciefelde site, property of the Leighton family, the fourth largest garden owner in 1849, whose 39 gardens survived until 1936. The family's home lay in the middle of the gardens, which formed a buffer against the late 19th century/early 20th century housing that surrounded it. Another notable example was the Crescent Lane Gardens within the meander, where there were a small number of plots with individual private owners. There had been no great demands for this land from developers and the gardens were still being cultivated in the early 21st century by local residents living in the town centre who gradually sold out to Shrewsbury High School, a private school consolidating the value of its central location. The only original detached gardens still cultivated today are Shrewsbury Horticultural Society's strip of four allotments on Town Walls still rented by individual families.

In summary, the system has changed entirely from a private landlord-tenant arrangement to provision by the local authority. It is tempting to make a causal link with the 1907 Allotment Act and even more to the pressure exerted by the need to produce food in the First World War, and no doubt these are crucial elements. However the evidence from Shrewsbury shows clearly that the private landlord-tenant system was undergoing a rapid decline so that the provision of detached gardens reached a deep low before the state moved in with legislation to encourage public provision of allotments.

CHAPTER 8. DISCUSSION AND CONCLUSIONS

In this final chapter, the key findings from the four threads of the research are brought together and are discussed in relation to the six areas of interest which were summarised at the end of the literature review: abundance; distribution; location; system of provision; age and origin; and transformative processes. The key findings are examined in turn, under these headings, and reviewed in the light of previous research. Next, the methodology used to attain the objectives is assessed in terms of the results achieved. Thirdly, the project as a whole is considered in relation to what has already been published on detached gardens and urban allotments, with particular reflections on the fringes of towns from the 18th century onwards, expansion from the urban core and the processes that transformed or maintained the landscape. This leads to final thoughts on further research.

Discussion of key findings

Extent or abundance of detached gardens in the 18th century

In each of the ten towns surveyed, detached gardens were a common feature in the 18th century. Although the sample was small and based purely on cartographic sources, it suggests that detached gardens were also widespread throughout England. Flavell's data for Sheffield (2003), based on cartographic and other documentary research, supports this conclusion, as do a number of other 18th-century maps. It is also borne out by anecdotal references to detached gardens, or at least to the green fringes of towns, in the writings of 17th-century travellers (Morris, 1982; Wickham Legg, 1936).

Detached gardens were not only present, but occurred in abundance. The towns in the study had, on average, just over 29 hectares of detached gardens in the 18th century. In Sheffield, for comparison, Flavell (2003) calculated that detached gardens covered about 36 hectares. The cartographic detail did not allow the counting of individual plots on most 18th-century maps, but Flavell was able to estimate, using a variety of sources, that there were between 1,500 and 1,800 individual plots in Sheffield in the 1780s. For Shrewsbury, 60 years later, there was accurate information for 728 plots, covering 49 hectares.

Abundance of detached gardens though time

The area under detached gardens fluctuated over time from the middle of the 19th century, as is illustrated by the Shrewsbury data. The variation appears to be related mainly to the house-building cycle and the stringencies of war. Following a high in the middle of the 19th century, a steady decline set in. It began as accretions of residential artisan streets were developed on detached gardens sites in the proximal fringe between 1853 and 1868. This was followed by a second flurry of house building at the end of the 19th century with the inner parts of the fringe again proving most popular, so that many hectares of detached gardens were lost. A low was reached early in the 20th century, with almost half the area of gardens lost. The method of providing gardens – private tenancies with individual landlords – was breaking down as landowners sold garden plots to developers in the period of rapid urban expansion.

Emergency measures introduced in the First World War provided an important impetus for the provision of new gardens, resulting in a peak of 48 hectares in Shrewsbury. Demand for allotments remained throughout the 1920s, but the 1930s saw another era of house building and most of the remaining private gardens and one First World War site were developed for both council and private housing. By the outbreak of the Second World War, the area of allotments had plunged to a low almost as extreme as the pre-First World War trough. Once again the stringencies of war increased the amount of land under garden cultivation and once again it declined in peacetime. Today, the demand for additional provision is growing at a time when local authorities are trying to pass over responsibilities to communities.

Relationship between detached gardens and urban population

It could be argued that the number of gardens and the area covered by them is likely to be linked to the number of residents in a town. This line of thought was followed and an average of 25 square metres per resident was calculated for the 10 sample towns in the 18th century. For Sheffield in about 1780 (using Flavell's estimates) it would have been 18 square metres per resident, and for Shrewsbury in about 1850 11 square metres. The latter has the most accurate figures but, for most, the estimation was rough-and-ready and based on too many approximations, so that the idea was not pursued further.

A second hypothesis proposed that there would be a relationship between the extent of garden-ground and the area of the built-up zone. Precisely measured statistics were available for ten towns in the 18th century, and calculations showed that, on average, detached gardens occupied half as large an area as the built-up area. This led to a consideration of a third, related, hypothesis that populations densely packed into a small urban core might need a larger area of gardens on the fringe. Newcastle-upon-Tyne, for instance, with a population of 29,000 had much the same built-up zone as Ipswich (population 9,500) but, although Newcastle's area of detached gardens was 43 hectares, Ipswich's was 30, giving Ipswich a larger area of gardens per resident (32 square metres) than Newcastle (15 square metres). It was clear that other considerations needed to be taken into account and this hypothesis was not pursued further.

Distribution

The national survey demonstrated that 90 percent (by area) of detached gardens in the 18th century lay within the built-up zone itself or within 200 metres of its edge. Sixty-five percent were located in the immediate fringe between the town's edge and a line drawn 100 metres away. Beyond that line, the area occupied by gardens reduced quickly and it was rare to find a garden beyond 500 metres. This narrow ring is reminiscent of von Thünen's first zone stretching 0.1 to 0.6 kilometres, where there were negligible transport costs and high investment in the land (Von Thünen, 1826). No evidence was collected in the national survey as to whether any of the gardens were commercial concerns (though this seems likely in fruit-growing areas in two of the sample towns, Canterbury and Hereford) but the division into tiny plots in most cases suggests that they were intended for family sustenance. Owners could command high rents for such handy plots and the gardeners had quick access to their gardens.

The evidence was particularly strong for the distribution of detached gardens in close proximity to the urban fence, the edge of the continuously built-up zone (Pryor, 1969). 75 percent of gardens, by area, were in contact with it, resulting in a broken ring, filling in corners and following suburban ribbon development.

The association of detached gardens with major access routes suggested a hypothesis that the two might be related, other than through the urban fence. There is some indication for this. Occasional garden-ground sites continued beyond the last buildings in the town, and also filled up spaces between parallel roads or in the triangles of ground where roads forked.

Fluctuations in distribution over time

The distribution of detached gardens and urban allotments over time was studied in detail for Shrewsbury. The relationship with the urban fence remained a consistent and distinctive feature, but from 1882 the proportion in contact declined steadily to a low of 43 percent in 1938. Three phases were discernible. The first was in the early 19th century, when the detached gardens were in the proximal fringe, beneath the town wall, nestled into the urban fence and following the edge of suburban tentacles. The second was at the end of the 19th century, when 36 percent of detached gardens were located *within* the urban fence, overtaken by residential development, but not yet abandoned as gardens. The third phase followed central government and local authority intervention in the early 20th century, when new allotment garden sites appeared on the edges of the town, close to new housing developments.

The growth in the proportion of detached gardens and allotments embedded within the urban fence was particularly marked in Shrewsbury. The revised editions of the O.S. 1:2,500 maps show the progression, with the distribution of detached gardens becoming more patchy at first, as many small-scale builders developed a few contiguous plots, leaving sections of gardens among the houses. The First World War allotments changed this pattern with five new sites established at the urban fence but, by 1938, 44 percent of the detached gardens and allotments (by area) were again embedded within the built-up zone. This time, residential development did not break them up, but left them intact, enveloping them. Today allotment sites are almost entirely located within residential areas of the town.

Location – physical factors

Quality of soil was of prime importance but, because of the individual nature of each town, it is difficult to make general statements. The ten sample towns

illustrated a range of geology, slopes, depth of soil and aspect, all of which would have affected the fertility and gardening practice. River terraces provided the best sites in Salisbury (compared with thin chalk soils elsewhere in the city) whereas, in Hereford, valley sites were ignored in favour of the rich soils on Old Red Sandstone which surrounded the town. Despite the dangers from flooding, stream valleys were popular, even when narrow as in Newcastle-upon-Tyne. The more detailed survey of Shrewsbury revealed that the first river terrace was exploited most for gardens, whilst the flood plain was left as meadows. The River Severn flooded frequently and gardens located too close to the river had short lives.

Location – beneath the wall

Sub-mural gardens, at the outer base of the town wall, made up 7 percent of the total area of detached gardens in the ten sample towns. In Shrewsbury these gardens were persistent throughout the years covered by the study, comprising just over three hectares – and some are still tended today. They were a distinctive feature of towns, even where an earth rampart was the only fortification. They were located on the narrow strip of land between the wall and ditch or skirting road or even continuing outwards across the ditch, sometimes for 100 metres or more. By the mid-18th century the defensive role of this zone had been lost, the urban core remained static and suburban development was still limited to tentacles along the main routes. This situation provided a short window of opportunity for colonisation of the immediate sub-mural strip by an activity a little more permanent than grazing. By the middle of the 19th century, the opportunity was lost as more vigorous expansion took over. Factors involved in the location of gardens here were the micro-climate of the wall environment, soil fertility produced by the accumulation of a town's rubbish over centuries, limited building opportunities due to sub-soil instability and ease of access from homes in the town centre.

Relationship to other fringe land-uses

In the 18th century detached gardens shared the urban fringe with industrial installations such as tenterfields, ropewalks and features related to quayside activities. Recreation was also evident with racecourses, bowling greens and public walks. Institutional buildings, such as workhouses and gaols were also beginning to appear. The case-study showed that, in the early 19th century,

recreation and detached gardens covered approximately equal areas of the fringe and were the most significant features in terms of the area covered. Over the next 100 years, recreation retained first place in the fringe, as detached gardens declined or were embodied in the built-up area, their position in the hierarchy of the fringe being replaced by institutions and transport-related features.

Of all the features accompanying detached gardens in the urban fringe, two appeared to have had a significant relationship. The first were ropewalks, which frequently were accompanied by detached gardens, forming a narrow strip alongside. The second were the sites of former religious houses or monastic lands, in both intra-mural and extra-mural zones, which often provided good locations for gardens. Occasional instances of this had been reported in the literature, and early town plans sometimes gave evocative names, such as Nuns' Gardens in Chester (Weston, 1789). Some of these religious houses would have had gardens in pre-dissolution times and it is possible that these continued as gardens throughout the centuries. In Shrewsbury, the Dominican Friary, at the time of dissolution, had orchards and gardens with tenants (Marsden, 2006) and this area was under cultivation as detached gardens in the 18th century, though no evidence for its use has been discovered for the intervening 200 years. Of all the detached gardens identified from maps in the national survey, 14 percent were on the sites of former friaries and abbeys.

System of provision

The case-study of Shrewsbury illustrated that the custom of growing food crops on a plot of land separate from the home was a common practice in the middle of the 19th century. At that time, 728 individual plots were provided for a population that was, by and large, living above and behind shops and in increasingly crowded courts. These findings support Flavell's evidence for Sheffield, where a minimum of 1,500 tiny gardens were available for rent in the late 18th century (Flavell, 2003). The average plot size in Shrewsbury was small (0.08 hectares), but it was not a system set up just for the poor. Detached gardens had several uses: for food production, as pleasure gardens or sometimes a mixture of the two. They were used and enjoyed by all classes and occupations.

Shrewsbury had 112 landowners of detached gardens, not landed gentry on the whole, but merchants, industrialists, prosperous tradesmen and professionals who lived in the town and had converted profits into landholding. None had vast amounts of land. Sixty-five landowners rented out single plots and a few of these plots were as small as 0.015 hectares. The largest landlord owned only 4.6 hectares. This system contrasts strongly with the provision in Edgbaston, where a small number of well-known local families held the leases on the guinea gardens (Thorpe et al., 1977), but appears similar to parts of Sheffield described by Flavell ((2003) and to West Cambridge where several colleges owned small garden sites (Brown and Osborne, 2003). Although not making a link with detached gardens, Conzen also made an interesting point about small-scale landowners: *"By about 1825, when the expansion of the town began, the greater degree of sub-division of ownership on the south side provided virtually the only outlet for Alnwick's growth in terms of smaller houses and complete layouts."* (Conzen, 1969, page 52).

The variety of people cultivating the detached gardens was also very wide, ranging from the owners themselves (18 percent of the land) through tradesmen, surgeons, solicitors and factory owners (probably by means of their servants) to clergymen, inn-keepers, skilled craftsmen, shopkeepers, factory workers and labourers. Flavell (2003) found that freehold land in Sheffield was being let mainly to cutlers, but also to button makers, miners, bricklayers and butchers, whilst Brown and Osborne (2003) in Cambridge described distinct clientele in different garden sites: senior academics at one and established tradesmen or college servants in another.

Private to public

In the middle of the 19th century, the system of detached gardens lay in private hands but, in the next 100 years, the method of provision completely changed. In Shrewsbury in the 19th century, only three percent of the area cultivated as detached gardens belonged to official bodies or charities. Six percent was located next to factories and was converted to allotments by the industrialists. The remainder was owned by individuals. The land, located close to the urban fence, provided a profitable source of income for the owners as well as a convenient and valuable resource for the tenants – early 19th century documents show that garden

plots were eagerly bought or leased for considerable sums of money. But their distribution close to the urban fence made them vulnerable to urban expansion through accretion and, in the pressure for land in the early stages of a residential building boom, many landowners sold quickly. By the First World War the majority of detached gardens had been built on and, by the inter-war period, privately-owned remnants appeared exceptional. In the meantime, to deal with an all-time low in provision, the government had stepped in with legislation to encourage public provision of allotments. The need to produce food in the First World War created a turning point and, from then on, the local authority was the major landlord.

Beginnings

This thesis depicts a system of detached gardens that was firmly established by the 18th century, supporting Flavell's systematic research on 18th century garden-ground in Sheffield. In this he described evidence, based on documents and maps, of the increasing provision of 'small gardens' during the century (Flavell, 2003). Occasional references to pre 19th century detached gardens were also found in the literature of the time, especially in travel documents, diaries and 18th century local histories (Deering, 1751; Harding and Taigel, 1996). Putting these disparate sources together with the current findings, a picture can be built up of pre-industrial stand-alone towns with individual detached gardens within the urban core and clusters of gardens within the fringe. A few references go back to 16th century gardens and, for Shrewsbury, sale conveyance documents have been identified for individual detached gardens in Castle Foregate for the 15th century (Shropshire Archives, 1433; 1456; 1463).

Evidence from Shrewsbury revealed that detached gardens continued to be developed throughout the first half of the 19th century. Thorpe et al. (1977) showed that the guinea gardens in Birmingham increased in number until the 1830s, when rapid urban development took over. But, in towns where industrialisation was less rapid, detached gardens were still being established, as in Nottingham, Warwick and Coventry, where pasture was being converted into gardening plots (Hill Close Gardens, 2011; Stoney Road Allotments, 2010). These appear to be examples of gardens set up to fulfil an established need, as do the factory allotments in Shrewsbury and Birmingham (Cheshire, 1801), but

elsewhere there was a suggestion of opportunism, of buying or laying out land with an eye to future residential development (Brown and Osborne, 2003; Flavell, 2003).

Allotments set up in times of emergency formed an important group. First World War provision is a good example. Some DORA allotments were located on land earmarked for development and this was returned in the years following the war. But many still remained almost 100 years on. In Shrewsbury they form the backbone of the current provision.

Transformative processes

Throughout the 19th and 20th centuries, the most likely land-use succession for detached gardens and urban allotments in the case-study was to residential use. This transformation to housing occurred directly, without an intervening stage, in 70 percent of the 87 garden sites. There was little competition from industrial or institutional land-uses. The only real competitor to housing was the railway, requiring marshalling yards and carriage sheds close to the station. This meant that detached gardens of early date, near to the urban fence, were particularly vulnerable to transport developments.

Despite the underlying similarities of morphological frame and former land-use, four distinct townscapes have been produced in Shrewsbury based on different types of residential development: piecemeal early growth on individual plots; a freehold land society estate; inter-war council housing; and large-scale private initiatives. Over the period under review, the scale of operations changed significantly and this was crucial in the resultant landscape, as were people's expectations, statutory requirements, varied styles and legislation. These findings confirm research on building styles published by urban historians (Chalklin, 1974) and on urban landscape regions by urban morphologists (Conzen, 1981a; Whitehand, 1992).

There is some evidence that the timing of plot transformation, or indeed land-use persistence, was linked to changes in family circumstances, often caused by a death. What happened subsequently was often dependent on the point in the wave of boom or depression in the building cycle. In one set of circumstances,

nationwide concern about housing conditions, the formation of a freehold land society and the disruption of an area through railway construction coincided with the deaths of influential local landlords and the beginning of a house building boom. In another set, a situation existed in which local merchant families failed to sell multiple plots in the early 19th century at a time of housing depression. Still other families seemed cushioned from outside events and lived in the middle of their tenanted gardens until shortly before the Second World War, even though their land was well within the urban fence.

Persistence of land-use

Taking the full data set of 87 sites for Shrewsbury, 28 percent had not been built on by the end of the survey period. These included the First World War allotment sites which were still under cultivation (6 percent of the total) and a proportion of the recreational, institutional and transport sites with open land. Ten percent remained undeveloped and exist today as parks, small-scale recreational facilities, semi-wild land in both public and private ownership and car parks. They are located mainly on the narrow strip of land between the town wall and the river, a zone that formed the proximal section of the inner fringe belt for many centuries, related to both wall and river. It was not only the physical topography and flooding that played a part in maintaining the open nature of the former garden plots, but also public and private agencies acting with a variety of motives, including consolidation of holdings, increasing investment on a central site, protecting an amenity, flood protection and public pressure on the loss of 'public land'.

Morphological frame and persistence of physical attributes

It was only large capital expenditure that led to the complete removal of the pre-existing cultural landscape and, in a town like Shrewsbury, this did not happen until after the Second World War. The research has shown that the oldest transformations have kept the greatest footprint. This is typified by piecemeal sale of individual plots over many decades, where the developing area was not designed, but just grew without any infrastructure planning. The result is a very distinctive townscape whose garden ancestry is clear. Even with the advent of freehold land societies in the third quarter of the 19th century, when a set of rules was imposed and roads were laid out to an overall plan, the resulting estates

displayed many adjustments to the former site boundaries, access footways and even, in some places to the garden plot boundaries. At the beginning of the 20th century, when the local authority was the major supplier of working-class housing, the design completely obliterated any trace of the former gardens and only the perimeter outline remained. This trend continued as larger residential schemes were instigated later in the 20th century; all field and plot boundaries were abandoned and a new layout of roads was superimposed, so that little of the morphological frame remained.

Other plots illustrated a slower site succession in which incisive development had not occurred, modifications had been gradual and building coverage was low or non-existent. In these cases, much of the individual footprint of the garden sites still lingers, especially exterior boundaries which have rarely changed. Old photographs and 19th century documents suggest that hedges were a popular method of separating plots within a garden site and many are still visible in the townscape today, dividing sections of car parks, sheltering bowling greens and delineating gardens still in use. Similarly other relict forms, such as former access gates, have not been removed. These surviving lineaments of an earlier landscape, although small, have created a distinctive townscape, with many reminders of its historical provenance.

Some reflections on the methods employed

This research has illustrated the linkage of old-school, empirical methods of historical research with modern methods of handling the data, using a GIS. What was needed to instigate the project were snapshots of stand-alone towns in the 18th century and these were provided by a cross-section approach, which successfully reconstructed the past landscape of detached gardens for ten towns. The interpretation of the spatial variation in abundance and location of the gardens was transformed from a simple description to measurable data by means of parallel zones constructed by the GIS program.

Maps were pivotal and the success of the research was dependent on two totally different aspects of their use. The first was the identification of 18th and 19th century town plans that depicted detached gardens. The cartographers and engravers had produced beautiful and clear maps, which were a joy to study.

Scales, symbols and accuracy varied from map to map, but the problem was overcome by the simple device of transferring information in a standard way onto O.S. large-scale maps, using digital techniques in a GIS. This was the second successful use of maps, since they could have additional layers superimposed to reveal relationships of distance or area or with other features mapped into the system. The GIS also provided facilities to produce comparable maps as well as graphs and tables derived from the information held.

The success of the parallel zones method (called 'buffers' in GIS) was dependent on establishing a meaningful starting point. For this, the urban fence was used, in its original concept as a line drawn to enclose the continuously built-up area (Pryor, 1969). With some adaptations to amend the original practical model, this provided a sure method of producing comparable data for different towns or in a longitudinal study of one town. The evolutionary approach used by urban morphologists is a well-tried method and it proved successful in the analysis of townscape development and the identification of the morphological frame.

A particularly successful use of maps was provided by the Tithe Survey which was carried out in Shrewsbury between 1845 and 1850. The survey had two parts, the maps and the accompanying schedules. The field and plot boundaries were meticulously drawn and each plot was numbered, hence providing the best cartographic data in the project. Attached to this were the schedules with information on area, land-use, value, landlord and tenant, adding rich data to the cross section. Other valuable sources of data, putting flesh on the cross sections, were town directories providing information on the everyday as well as innovative features. These were particularly beneficial for the longitudinal study of Shrewsbury.

The research on transformative processes involved the investigation of archived material especially solicitors' papers, sales particulars, building control applications, local authority papers, newspapers and photographic collections. This method of research requires a great deal of time and patience and is not suitable for a time-defined project. Knowing that further material was probably available made this the most unsatisfactory part of the research, leaving a feeling

of a job unfinished. However, much useful information was found in the time available albeit in a random manner.

Sampling of 18th century towns was another research technique that produced a disappointing result; again, this was a time issue. The intention was to take a larger sample, but the time and effort involved in transferring the data onto digital maps reduced the number to ten. And so, despite initial care to provide a wide-spread sample, it remains questionable as to whether such a small number of towns can be used to make firm assertions about a national picture. However, enough similarities were discovered to allow positive statements.

Overall, the assemblage of methods worked together smoothly. The mixture of traditional and modern methods of analysis worked well and provided an example of GIS use not yet reported in detail in the geographical literature.

Some reflections on the whole project

This research has taken a group of provincial towns, most with county responsibilities, but also some of similar size with ecclesiastical or other interests, and investigated a particular aspect of their historical geography. This in itself is significant, since county towns have not been widely covered, as a group.

In terms of urban history

Social and urban historians have not shown great interest in the areas covered in this thesis. Through research on urban life from the 18th century to recent times, they have gathered substantial information on population growth, building types, improvement schemes, politics and amenities. However, everyday activities, including the production of food for the home, have been neglected. To build up any background on these topics, it was necessary to search for snippets of information, in government reports on social problems and treatises on health and labour provision.

Although the research was limited to the abundance, distribution and characteristics of detached gardens, it has added considerably to the overall picture of 18th century towns. Most historical research, up to now, had concentrated on the built-up area and had failed to look in detail at the urban

fringe. This research suggests that it should be viewed as an important part of urban life, not just as an area that country people passed through on their way to the urban core. It was intimately connected with the built-up area, with residents spending time working there and passing back and forth on a regular basis. The fringe of gardens formed a belt, broken and narrow, but filling in corners and lining the edge of the built-up area. It must have been a distinct feature of many towns in the 18th and early 19th centuries.

The research has also added to our knowledge of how residents interacted with each other and how they viewed land-owning in their town. The case-study found that more than 100 people owned land used as detached gardens. Many were in possession of just one small plot that they rented out. This is a different aspect of land-owning that has not been covered in historical research, which up to now has given the impression of substantial landowners on the edge of towns. Although limited, research carried out on the ownership of plots, as part of the case-study, has provided some indication of the value given to land. It has also shown that shopkeepers and craftsmen of moderate means managed to purchase plots.

In terms of urban expansion

In Chapter 2 it was noted that the literature on urban expansion and the development of suburbs in the 19th and 20th centuries had made no reference to detached gardens and urban allotments. This research shows that detached gardens were prime locations for both individual houses and small housing schemes in the 18th and 19th centuries and were an important facet of urban expansion from the core.

In terms of today's planning directives and the search for sites within the urban fence for future residential development, it will be interesting to see if the current statutory provision of allotments stands up better than the old system of private provision. In the 19th century, the profit motive won and the provision of gardens reached a dangerously low level. Today, with local authorities forced to reduce their aspirations, there are suggestions that allotments could well be handed over to the private sector. This is an interesting situation, since in 2011 there is unprecedented demand at a time of national and family financial difficulty and it

is in such times that provision has, historically, been increased. There are now examples of groups of residents developing their own community gardens on privately rented land. Evidence suggests that people believe that open land in private ownership is more susceptible to development than publicly-owned land. This may well be tested.

The literature provided an excellent overall picture of housing for the artisan class, describing the building and land societies, the process and the estates produced. The case-study for Shrewsbury has added details at a different scale. In the 1850s the Shrewsbury Freehold Land Society, looked for sites close to the urban fence and found owners of detached gardens who were willing to sell. The Society worked at a small scale, advancing field by field, and even as late as the beginning of the 20th century, it was still providing building plots on gardens. Still later, in the period of local authority council housing between the wars, a period covered well in historical, architectural and political literature, little note was taken of the sites chosen for the new council estates, except to state that many were large. The evidence from Shrewsbury shows otherwise and this is probably due to the scale of operations in a provincial town. Sub-standard housing was found in the town centre courts and passages and the local authority looked for small sites at the urban fence for re-location. They found convenient detached garden sites that had been revived as DORA allotments and now lay vacant.

A substantial proportion of the literature concentrated on relocation of the middle classes onto small landed properties or exclusive estates in salubrious areas within easy reach of town centres. This is confirmed by the case-study, especially movement to the west, even though a town of Shrewsbury's size did not produce a large number of prosperous families. They did not all choose to go far into the countryside to find peace and quiet, good air and space, since the meander core immediately upstream was full of detached gardens, with a landlord eager to sell. What is also clear from the study is that many wealthy townspeople stayed in the town centre, building large detached or terraced houses on open land within the wall, some of which is known to have been detached gardens. They formed a distinctive residential area overlooking the park and the swathe of detached gardens between the wall and the river.

In terms of urban morphology

This research was not planned per se as an investigation of the urban fringe. It did not set out to substantiate or question findings or concepts already in circulation amongst urban morphologists. However, through its focus on one land-use that was essentially urban and through its concentration on how that land-use was modified, it has produced results that add to our knowledge of the fringe belt, an important component of urban morphology research. It reveals much on the composition of features that make up fringe belts, especially those continuing to develop in the 19th century. It provides interesting insights into site succession and on reasons for the persistence of a land-use on particular plots. Almost certainly the results will demonstrate, to those interested in urban expansion, the importance of identifying the land-uses that originally colonised fringe belt plots in order to understand the plan-units of subsequent development. It also may add to the debate on the development of fringe belts in stand-alone towns.

A comprehensive list of land-use types that were likely to make up early fringe belts was provided by Conzen (1960) and adapted by Whitehand (1967), Barke (1974) and others. Barke (1974), in his study of land-use succession in Falkirk, provided data for original colonisers of the inner fringe compared with land-use of the same plots in 1961. His calculations showed (amongst others) that allotments originally covered 46 percent of the total area of the plots, and community buildings covered just four percent. By 1961, these numbers had changed to four percent for allotments and 16 percent for community buildings. The case-study of Shrewsbury confirms the decrease in the proportion of the fringe belt area covered by allotments, but it reveals substantially more information, largely due to the spatial referencing and layer analysis functions of a GIS program. The actual extent and the proportions of each fringe belt feature have been accurately measured. The longitudinal study, based on six cross sections, has shown growth, reduction and fluctuations in many features from 1830 to 1940, which has initiated a search for contributing factors.

In retrospect, it seems likely that the use of the concept of the urban fence (Pryor, 1969) made a difference to the way of thinking about the urban fringe. For each cross section in the research, the edge of the built-up area was redefined and with

it the urban fringe. At first the changes were small, but there were marked increases in the outward movement after 1850. The evidence both from Shrewsbury and the ten towns in the nation-wide survey, reveals a distinct relationship between the urban fence and detached gardens. It is reminiscent of Conzen's description of a *'continuous contact zone'*, a phrase he related to a fixation line (Conzen, 1969). Since the urban fence is acting so strongly as a contact line, the wall-and-river combination in Shrewsbury which, in Conzenian terms, would have been deemed a well-defined fixation line, loses significance. It is not that the urban fence has become a fixation line – it is continually advancing as residential accretions are added – but the model of a stationary fringe seems no longer a useful concept.

In this thesis, the area which contained the detached gardens and other fringe-related features has been defined as the urban fringe. It never stretched more than 1,000 metres from the urban fence and it moved outwards as the town grew. This is very different from the concept of the inner fringe described by Conzen. He depicted fringe belts as always growing, combining new components with earlier ones, and this is what has been found in Shrewsbury. But Conzen stayed with the concept of contact with a fixation line and this led to his proposals for proximal and distal extra-mural areas. The distal section was originally part of the inner belt, which continued to develop in the first half of the 19th century. However, Conzen decided to break it away, so that it could form a separate (intermediate) fringe belt, reasoning that its distance had *"allowed undeveloped fields and accretions of a different kind to intervene between it and the Inner Fringe Belt. These accretions were much more compact and organized plan-units, extensions of the town practically void of fringe features"* (Conzen, 1969, p64). This argument appears contrived and seems only necessary because of Conzen's insistence on a stationary fixation line. Scrutiny of his series of maps, (Conzen, 1969, Figures 11 to 13) suggests another possible interpretation, something more akin to what was discovered in Shrewsbury. Here, under-developed inner fringe plots (gardens, crofts and other pieces of open land) close to the urban fence were taken over for development on a piece by piece basis. Conzen describes this process himself under the heading 'additive processes': *"Because of the organizational scale predominant in the Victorian and Edwardian periods…building operations advance field by field, in comparatively small estates aggregated in a cellular*

or mosaic pattern with access through single residential streets…" (Conzen 1978, translated in Whitehand 1981, page 115]. If an urban fence is inserted onto Conzen's series of maps of Alnwick, it is no longer necessary to separate artificially a new intermediate fringe belt from the old inner fringe. The fringe belt just appears to keep on growing, and it is not necessary to draw a line to separate it into two sections. For the research on Shrewsbury, it was decided that an ongoing process with a constantly changing result was a more meaningful concept.

Most investigations on land-use succession reported in the literature have concentrated on what happened in the extensive fringe produced in late Victorian and Edwardian times (Whitehand, 1972a; 1972b). In contrast this research, by focusing on the inner sections of the urban fringe of a slow-growing town, has added considerable details to our knowledge of site succession in an earlier period, at times of slow outwards expansion. One major contributor in this area was Barke (1974; 1976) who carried out a transition probability matrix analysis for inner fringe belt plots in Falkirk. He found a highly complex succession process, with shape and size of plots, continuity of ownership and centrality of location recognised as significant factors. He discovered that allotments, which were originally clustered around the old town centre, were more susceptible to change than most other categories. His matrix confirmed that they were transformed into a great mixture of small industrial, warehousing, community and residential uses. The results from Shrewsbury do not entirely support this finding. Seventy percent of allotment plots were transformed directly to housing, with a small percentage of detached gardens of early date being turned into marshalling yards when the railway arrived.

It may be that Shrewsbury is atypical on account of its wall and river forming a double barrier to outward development and this has affected the development of fringe belts. Conzen (1969), describing the expansion of Alnwick, speaks of the *".. gradual transformation of the continuous open space outside the line of the town wall into a ring road."* (page 58). By 1827, in Alnwick, sections of lane had been joined into a ring road. In Shrewsbury, this process did not occur on account of a difficult terrain of flood plains and steep river bluffs; indeed there is still no consequent road system today. The proximal inner fringe has not been developed

for either transport or other large projects that might have modified the landscape substantially. This has the advantage that it has been possible to unearth information that has probably been lost in other towns, since Shrewsbury's location within the meander has allowed central land-uses to persist. Twenty-eight percent of the full dataset of allotment sites had not been built on by the end of the research period and many of these were in the narrow strip of land between the town wall and the river. Plots adapted slowly, so that much of the morphological frame of early colonising land-uses has been retained and numerous relict features can still be seen. Such extra-mural plots have not been reported in detail in the literature, and this research has added considerably to the body of information on their origins and subsequent modification. It has also provided an opportunity to analyse reasons for persistence of land-use, including the concept of embeddedness and the changing perception of public and private open space (Whitehand and Morton, 2003; 2004).

The timing of plot transformation and the causal factors that triggered the process are two areas covered in this research, which have not been widely discussed in the urban morphology literature. Slater (1978) through research on families inhabiting country villas in Cirencester, showed that changes in family circumstances were influential. This is borne out in Shrewsbury. On one hand, the death of strategic landowners precipitated the sale of detached garden sites. On the other hand, amazing perseverance of detached gardens was noted, related to a family in a comfortable house located in the midst of its tenanted gardens, which had been embedded within the built-up area for many decades. The research also pinpoints occasions when a number of factors converged to start off a process: disturbance of land and lives by the building of the railway station, a rise in the tempo of national debate on housing conditions, the foundation of a freehold land society, the death of a garden landlord. These factors, operating together, caused a residential building boom that triggered the beginning of the decline of detached gardens. Six decades later an increase in the area of urban allotments was directly related to government intervention, as a result of a national emergency, and this illustrated both the original colonisation of agricultural land and also transformation of land in other uses.

Much of the research on plot transformations in this thesis has eventually led to descriptions of townscape types that have already been documented by urban morphologists (Conzen, 1981b; Whitehand, 1992; Whitehand and Carr, 2001). It has confirmed the typical layout of roads, blocks and building types of housing estates developed at different times and under different regulations. In this thesis, their development has been linked additionally to the loss of garden-ground and their layout to the morphological frame provided by detached gardens. The presence of detached gardens as an interim land-use has been established.

In terms of allotment literature

This project started with a series of questions on urban allotments and their precursors. In the search for answers, many snippets of information and four research papers were assembled, but no systematic investigation was found. With such gaps in our knowledge, it has been simple to add a great deal in a methodical way, both on the universality of provision and the widespread distribution of detached gardens. The use of a GIS has also enabled accurate measurement, so that statistics could be used to define location in relation to the urban fence and also changes over time. The longitudinal study revealed how the system for provision changed entirely from a private to a public structure, how central and local government became involved and how legislation failed to recognise the reality of demand for several decades.

Today's allotments do not differ greatly in size and shape from the detached gardens of 200 years ago and, although their appearance might have changed, many similarities have been noted. The assertion of Thorpe et al. (1977) that *'...the two concepts were so different in character and clientele that neither seems to have exerted much influence on the other'* now appears questionable. The system of providing gardens in the urban fringe certainly pre-dated the rural allotment system established after 1790. It was available as a model of a functioning system and rural landowners must have been aware of its success. However, there were several differences in size and type of plots and the method of cultivation between the old detached gardens and the new village-based rural allotments. Yet, it appears that early advocates of allotments did not differentiate between town fringes, industrialised villages and rural sites when allotments were being established, and the distinction between the two may be arbitrary. Certainly

the literature suggests an increase in urban provision in the 1830s (Brown and Osborne, 2003; St Ann's Allotments, 2010) at a time when there was a sudden and widespread upsurge of interest in rural allotments.

Ideas for future research

Since so little research has been done on detached gardens and urban allotments in the past, this project feels like an exploration, a first stage attempting to unite disparate information in a methodical manner. As such, hopefully it will be seen as a stepping stone leading on to further investigation. As part of this, historical research on the linkages between the work of the 19th century allotment movement and the system of detached gardens would be valuable. It seems unlikely that the two should not be linked and evidence might be found in the writings and speeches of early instigators. Dr George Law, the Bishop of Wells, an influential activist at national and local levels, presided over an allotment site of 100 acres in Wells, which he quoted as an example of provision for the poor. The site had 360 tenants in the 1830s and the plots, about 0.1 hectares in extent, were described as 'kitchen gardens' by visitors. This set-up seems more akin to the detached gardens described in this thesis than to the traditional field gardens of the rural allotment movement. It seems that the division between the two might be artificial, an academic device for convenience.

Little is known about the origins of detached gardens. Did they form a fringe around towns before the 18th century or were towns less tightly packed in those times, so that gardens were available within the urban fence? Mentions and records of gardens and orchards have been found in a few diaries and travellers' memoirs from the 17th century, but these are just infrequent accounts. Similarly, occasional references to quitclaims, leases and grants of gardens within the wall and in the medieval suburbs of Shrewsbury have been identified, dating back to the 14th century. It would be interesting to see if a valuable contribution could be made by bringing such sporadic data together.

This research has shown that many of today's allotments had their origins in the First World War. It is intriguing that sites set up as an emergency measure should

prove so enduring. It so happens that the First World War broke out at a time when the government was intervening with legislation to improve the provision of allotments for urban residents. There seems to be an interesting research question here to relate these two aspects and to look at present-day provision and the stability of the current system.

The research on the characteristics of detached gardens in the middle of the 19th century revealed an amazingly large number of small land-owners around the urban fence. Questions arise as to who they were and how they got the land, and possibly even why they obtained it. Some had whole fields, others just tiny plots. Some were cultivating it themselves, but many more were renting it out. It is possible to conceive that residents were buying with investment opportunities in mind, but this might be difficult to prove. Legal documents dealing with small property transactions are available in depositions of solicitors' papers, but it needs time, persistence and skill to follow them up.

Cartographic evidence from the survey of 18th century towns indicated that a sizable proportion of detached gardens were located on sites of former religious houses. This research was based purely on scrutiny of the maps, which leaves a large gap in the narrative. The fact that friaries and convents held open land within and around towns does not imply that it was cultivated as gardens in late medieval and Tudor periods, though examples were identified of friaries that were renting out gardens at the time of dissolution. There might have been continuity of use through several centuries, but it is just as likely that it was turned over to pasture and brought into garden use later. It seems that archival research is needed to throw light on this question.

This project was based entirely in England and much of it, narrowly, on one town. Research on the European equivalent of detached gardens was not followed up, although fascinating glimpses of similarities and differences occasionally emerged. Research to illustrate the wider picture of provision and how England fitted in or diverged from the rest of Europe would be constructive. At the other extreme, case studies can produce much worthwhile material and it would be beneficial to look further at the pre-industrial urban fringe in other small stand-alone towns, particularly with the management of urban landscapes in mind.

Last thoughts

It is notable that a town like Shrewsbury, slow to change and limited in growth, was dynamic enough to illustrate so much of national derivation in its building history. The effect of wars, bad harvests, credit availability, legislation on building materials and much more have all been seen, albeit on a small scale, through this study of land-use change focused on gardens and allotments. The longitudinal study of changes in detached gardens through time has shown clear links between gains and losses in garden-ground and national events. Much garden-ground was lost at times of house building booms, always triggered by national events and adjusted slightly to local conditions and issues. When garden-ground was gained, it was due to outside events, such as a rise in national consciousness following the report of a Royal Commission in 1834, or a national crisis, such as shortage of food during the First World War. Residential development and transport were the major land-uses that originally replaced detached gardens at the urban fence and, today, transformation continues in the same areas, with transport providing the main brown-field sites for new housing.

To return finally to the questions raised on those Sunday afternoon strolls in Shrewsbury, the importance of the morphological frame stands out as an important concept. Through careful observation and analysis, this research has revealed even more residual features. In the inner urban fringe, modifications have often been made with minimal interference, leading to a varied landscape in which small distinctions help to define the character. Most of all it has maintained a feeling of continuity and a sense of place.

APPENDIX 1. KEY FINDINGS SUMMARISED

The following 12 points condense the main facts discovered during the research.
They refer only to towns in England.
Many are derived from the case study and hence refer to Shrewsbury.

1. Detached gardens were a familiar feature in the outskirts of stand-alone towns in the 18th century, and widespread throughout England. They were not only present, but occurred in abundance. In the 1850s, Shrewsbury had 728 plots, covering 49 hectares. In the early 19th century, the area covered by detached gardens was equal to the area dedicated to recreation and these two land-uses formed the most significant fringe-belt features.

2. Ninety percent of detached gardens in the 18th century lay within the built-up zone itself or within 200 metres of its edge. Seventy-five percent of gardens, by area, had an edge in contact with the urban fence.

3. Sub-mural gardens were a distinctive element of towns in the 18th century, even where an earth rampart was the only fortification. They made up 7 percent of the total area of detached gardens in the ten sample towns.

4. The sites of former religious houses and monastic lands provided the location, in the 18th century, for 14 percent of detached gardens, by area.

5. The plots were small (on average 0.08 hectares in the 19th century in Shrewsbury) and were used by a complete cross section of urban residents as kitchen gardens, pleasure gardens or a mixture of the two.

6. From the middle of the 19th century, the area of detached gardens steadily declined reaching a low early in the 20th century. In the same period, under conditions of vigorous residential growth in Shrewsbury, 36 percent of detached gardens were embedded within the urban fence, in a degraded patchy form.

7. Up until the First World War, detached gardens were provided privately, by a large number of small landholders drawn from the professional, industrial and merchant classes. The system gradually broke down in the late 19th century, as more lucrative opportunities to realise the value of the land opened up.

8. Early in the 20th century, the need for gardens was not being met and central government stepped in and amended the allotment legislation to deal with urban situations, but it took a national emergency to force local government to become involved and build up the area of gardens (now called allotment gardens) to their former level.

9. The beginnings of detached gardens remain uncertain but examples from the 14th century have been identified. In stand-alone provincial towns, new private sites continued to be established until the middle of the 19th century.

10. Throughout the 19th and 20th centuries, the most likely land-use succession for detached gardens and urban allotments was to housing, though detached gardens of early date located near to the urban fence were particularly vulnerable to transport developments. The oldest transformations to housing, made before the introduction of large-scale residential development, have kept the greatest footprint.

11. There is evidence that the timing of plot transformations (and hence the reduction in numbers of detached gardens) was linked to booms in the housing building cycle. Conversely, the increase in numbers of detached gardens and urban allotments was occasioned by national emergencies. Changes in family circumstances, often caused by a death, were also significant.

12. Twenty-eight percent of land originally colonised by detached gardens and allotments had not been built on by the end of the survey period. These included First World War allotment sites which were still under cultivation and some recreational, institutional and transport sites with open land. Ten percent of sites had undergone no real transformation and exist today as parks, small-scale recreational facilities, semi-wild land in both public and private ownership and car parks. Where land-use succession has been gradual and limited, much of the individual footprint of the garden sites still lingers.

APPENDIX 2. ACTS OF PARLIAMENT THAT HAD A BEARING ON THE PROVISION OF ALLOTMENTS

1782		Guardians of the Poor could enclose up to 10 acres of waste ground around the poor house for the benefit of parish paupers, though they did not have to allot it to individuals.
1819	Select Vestry Act	Churchwardens and Overseers of the Poor could purchase or hire any plot of land up to 20 acres and let it to the poor and unemployed in the parish. First public Act to specify provision of allotments for the poor.
1831		The limit was increased to 50 acres, where demand outstripped supply.
1832		Wardens of fuel allotments (usually no longer viable) could break them into small units and let them for individual cultivation at economic rents.
1845	General Enclosure Act	Commissioners could specify an allotment for the labouring poor. Wardens could set aside land as 'field gardens', with ¼ acre limit.
1873 1876	Allotment Acts	Amendments to the 1845 act, but not really concerned with allotment provision. Interest rejuvenated following reports of the Royal Commission on the Employment of Children, Young Persons and Women in Agriculture.
1882	Allotment Extension Act	Trustees holding charity land for the use of the poor were required to set apart a portion for allotments.
1885		Land held in parishes could be let in the form of allotments at the same rate as the surrounding agricultural land.
1887	Allotment Extension Act	Sanitary Authorities could provide allotments and, if necessary, acquire the land by compulsory purchase. 6 registered electors could appeal for Act to be put into force.

1888	Act establishing County Councils	As a result, local Sanitary Authorities were compelled to provide land for use as allotments. But intense and sustained opposition.
1890	County Council Edict	Standing Committees on Allotments had to be set up by County Councils. Duty to hold enquiry if Sanitary Authority failed to obtain land by voluntary agreement.
1892	Small Holdings Act	Clear differentiation between small holdings as a means of livelihood and allotments as a spare time activity.
1894	Local Government Act	Parish and Urban District Councils given power to provide land for allotments by voluntary agreement. If land voluntarily hired, plots could not exceed 1 acre; if compulsorily acquired, 3 acres of pasture could be added.
1907	Smallholding and Allotment Act	Clarified responsibilities of parishes, boroughs and urban districts.
1908	Smallholding and Allotment Act	Repealed 1907, 1887 & 1890 Acts and consolidated law. Basis of modern allotment system. Duty of parish or district council to provide allotments to residents who required them, where no voluntary agreement. Could purchase land compulsorily. Board of Agriculture became central authority for all allotment matters.
1916	Defence of the Realm Act (August 1914) and Cultivation of Lands Order (1916)	All unoccupied land in boroughs and urban districts could be secured by the Board of Agriculture or by those acting on its behalf to provide allotments.
1922	Allotments Act	Compelled allotment authorities to set up allotment committees. More security to tenants. Introduced into law the concept of allotment gardens, under ¼ acre for production of fruit and vegetables.
1925	Allotments Act	Provision should be considered in every town planning scheme. Allotment land could not be sold or converted without Ministerial consent.

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