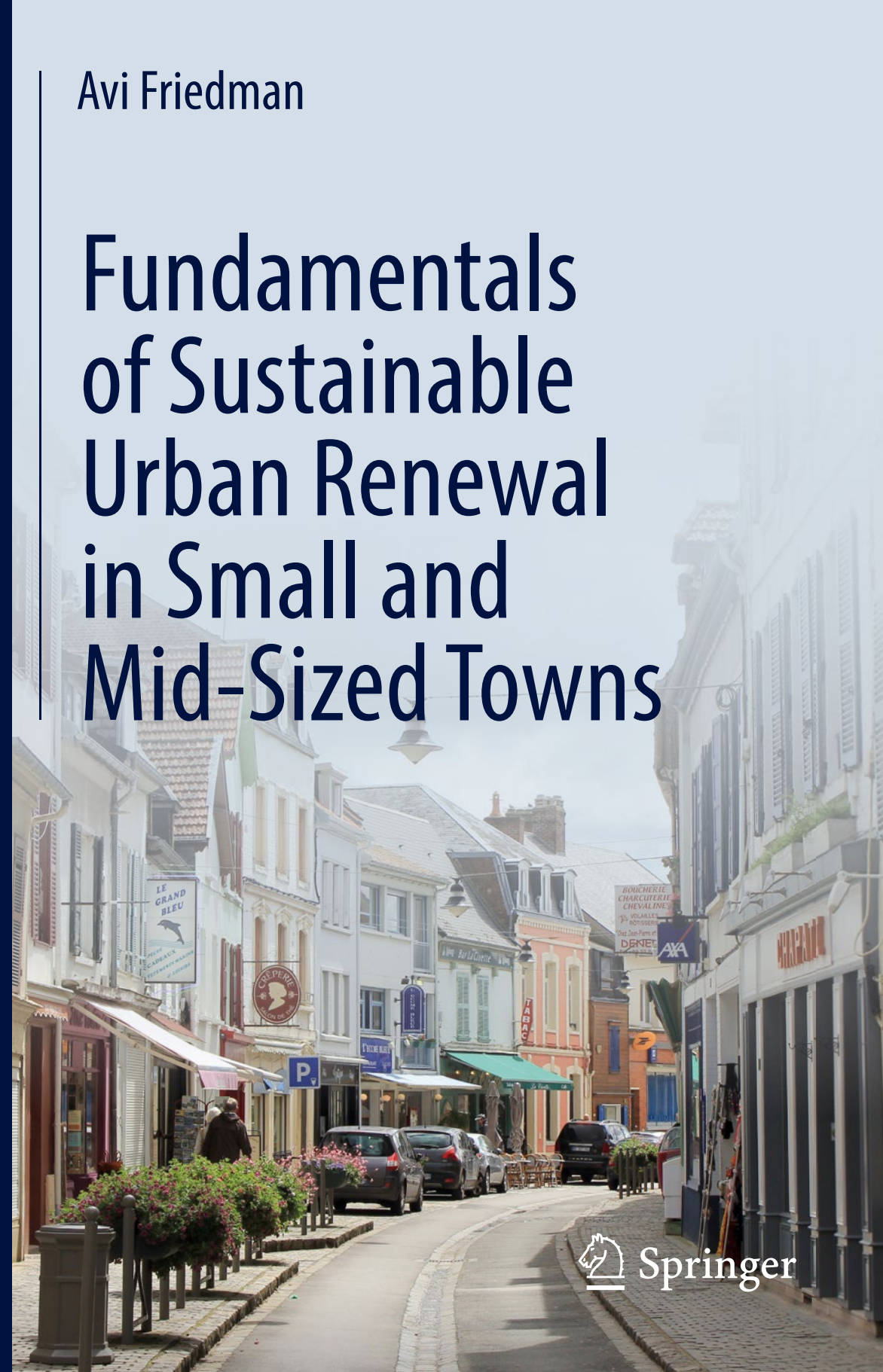Avi Friedman

Fundamentals of Sustainable Urban Renewal in Small and Mid-Sized Towns

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Preface

The streets of Woodstock, Vermont, with a population of 3,100, felt like a movie set as I parked and stepped out of my car. It looked as if at any moment, someone would shout "action!" and actors would appear in the second-story windows of the ornate red-brick buildings lining Central Street to sing a joyous theme song of some sort.

It was around lunch time in July when I was traveling through America's New England towns researching for this book. Woodstock had all the markings of a thriving place. People stepped in and out of F.H. Gillingham & Sons General Store, strolled along and stopped at store fronts or to chat with an acquaintance. Patrons flocked to Bentley's restaurant, and outside Norman Williams Public Library were readers looking for a bargain at the annual book sale. Down the road in The Green, under leafy trees, farmers set up stalls and welcomed customers. On a notice board I saw an invitation to a Front Porch Forum. On the agenda: "find lost puppy," "give away desk and chairs," and "share moose sighting."

Since its founding in 1761, resiliency, hard work, scenic views, and lots of good fortune have made Woodstock what it has become. Like many communities of its kind, much of this good fortune came by way of railway lines; a road to the north passes through it, becoming the terminus of the Woodstock Railway company in 1877.

Throughout my travels, while walking on main streets, dining in local eateries, and stopping at farmers' markets, I spoke with many residents in an attempt to determine just what makes these small places unique. I surmised that such towns, primarily old ones like Woodstock, put us in touch with a long-gone urban and human past.

These are places where a shopkeeper knows their patrons' names and where you may just run into your third-grade teacher on Main Street. There are also places that revel on the joys of the slow life—the satisfaction of trading one's hectic city routine for a calmer pace. In old towns, the comfort of structures made to proper human scale and humble architecture do not escape the eye either. Along narrow streets, charming buildings crowd together in one small stretch, and one can find the church, school, bank, and the Town Hall complete with a flag pole or a statue on its front square. This urban intimacy offers a special, serene order.

How did small towns come to be in the first place? In the *Economy of Cities*, writer Jane Jacobs suggests that historically, people settled in easy-to-defend spots and those which supported their livelihood. This begun with fertile land for

agriculture, waterways for fishing, and, later, power to fuel factories or transit routes for service and trade (much like Woodstock).

The aftermath of World War II gave rise to a new type of small town: suburban. Built on the edges of big cities with wide roads, these settlements consisted of low-density residences and were without commerce. They lacked the original charm of the older settlements and, unfortunately, did not offer opportunities for such charm to emerge years later. The fact that the residents of these areas had easy access to vehicles and well-paved roads was noticed by developers, who went on to build commercial and office parks away from old core areas. Shopping strips, malls, and later "big box" retail outlets provided plenty of parking spots, heated and air-conditioned interiors, and lower-cost products, all offerings with which the owners of mom and pop stores could not compete. It was a downhill road for many small communities.

Some small towns lacked the resources necessary to reverse their downward spiral. Others failed to alter old bylaws that limited mixed land-use, preventing the sort of intelligent planning that layers residences over commerce. Gradually, the town center in these unfortunate communities became vacant on evenings and weekends, largely in part due to the fact that there was no downtown population to support its commercial activities or animate the streets.

Substantial efforts have been made to renew many of these small towns—ongoing, ambitious investments that aim to create welcoming environments out of unfortunate circumstances. In some cases these efforts proved successful in reversing a decline, or at least for a while. In other towns they failed, the lure and staying-power of well-financed big-box retail proving very strong competition for small local businesses. In turn, the closure of these small stores often left these areas even more bereft of the unique social and cultural allure that keeps small towns alive. Often this stage of decline was followed by the departure of a notable number of the area's inhabitants, to the extent that many left behind unoccupied dwellings.

This book offers strategies and practices for the urban renewal of small and mid-sized towns, which can be defined as settlements of 100,000 inhabitants or less. To further define our terms, urban renewal is regarded here as the rehabilitation of some areas by renovating or replacing rundown structures; introducing housing, public buildings, open spaces; and altering the mobility and connectivity networks in accordance with a comprehensive master plan.

The impetus behind this book was a recent literature review revealing that most research in the social sciences and urban planning has been devoted to the study of large metropolitan areas. For a variety of reasons, issues affecting small towns have, in large measure, escaped the attention of scholars, even though these areas are home to more than half the population of some countries.

As a practicing urban planner and an architect, I have made this discrepancy front and center in my own work and so attempted to pay closer attention to the functioning and needs of small hubs. I reviewed societal trends and their manifestations in small town settings to draw original conclusions about how to best shape new places and renew old ones. These insights are illustrated in the design principles and strategies I have applied in real-world urban renewal projects in several Canadian towns.

When investigating social issues, it is hard to draw parallels between any two towns. This is true even in those of the same size—never mind between towns of vastly different populations. The historic events, urban characteristics, and economic conditions that have shaped a mid-west North American town will be markedly different from attributes that through accretion have formed a small hillside Tuscan town or shaped a small community in rural China. Yet, one can nonetheless identify principles that are fundamental to how all places evolve, and how they cope with contemporary challenges.

Urban environments, small towns included, are the agglomeration and the layering of their subcomponents. A well-functioning town is the outcome of its transportation system, economy, governance strategy, and environmental resources to name but a few of its many parts. By examining these different features in turn, one can better appreciate the whole. In this book, I look at each of these elements separately to gain an understanding of its individual importance in the urban renewal process, while highlighting its relationship to the small-town planning strategy more broadly.

Chapter 1 begins by identifying the key attributes of small towns, with special attention paid to town centers—places of key importance in many urban renewal strategies. Then, it maps the most important contemporary social transformations and challenges facing revitalization in these communities today. We then address the basic principles of sustainable planning. Setting the stage for the chapters that follow, this chapter provides background material on environmental challenges, demographic trends, economic changes, and cultural transitions. To apply sustainable planning practices to small towns, it is important to first understand their pre- and post-World War II history.

Following a description of their origins, including an analysis of street patterns, urban form, and land use, Chap. 2 offers planning strategies that can address the unique needs that arise from these small settlements' historical experiences. Such tactics include strategic densification, appropriate street patterns, particular architectural forms, comfortable micro-climates, and environmentally sensitive land use.

Chapter 3 looks at environmental issues relevant to small towns, in particular focusing on issues affecting towns that are endowed with natural features. Issues explored include climatic conditions, water harvesting, building and street orientation, and the preservation of fauna and flora. The examples provided illustrate how to successfully relate urban form to the lay of the land and use nature as a tool of urban renewal.

Chapter 4 focuses on redesigning mobility and connectivity networks and making small towns pedestrian- and cyclist-friendly. The discussion covers various elements of urban infrastructure including road design, public transportation, and utility services. We then move on to offer recommended practices for the design of traffic calming measures, public transit, parking, pedestrian and cyclist paths, and the strategic location of commercial and institutional buildings within a comfortable walking distance from residences. This chapter will also provide case studies that demonstrate how to link neighborhoods with each other as well as to the town center.

Along with these contemporary social trends, those planning small towns must consider the matter of dwelling options. For example, seniors, single-parent

families, and singles make up a significant segment of today's population, and these demographics are seeking innovative dwellings. To accommodate these populations, Chap. 5 proposes a fresh look at mixed-use buildings aligned with sustainable principles and includes detailed examples of such projects. It also considers methods for incorporating the advantages of downtown living into building designs. In addition, the chapter discusses aspects of sustainable dwelling design to include reducing energy consumption in the urban and the unit levels, recycling and harvesting water, and land subdivision.

Downtowns can be dynamic places where the past and present are linked to the future; they can be places rich with heritage. The preservation of buildings can strengthen cultural identity and continuity, in addition to simply being an integral part of any building process. Chapter 6 relates the concepts of "renewal" to "heritage" and "sustainability." It explores the evolution of heritage conservation in small towns and lists principles of urban and building preservation. The chapter ends with case studies that illustrate these concepts.

In recent times, some small towns have witnessed economic decline as jobs move overseas. As such, rethinking and retooling local economies in the face of these economic shifts is urgent. Positioning a town center as the new wealth generator by design speaks to these transformations, but this economic strategy requires careful foresight and proper planning. Thus, Chap. 7 offers methods for reconfiguring urban, geographic, and economic assets to create an economic engine of a downtown core. In particular, it will reflect on the ways in which communities can attract visitors to encourage and support local commerce.

Finally, in an era marked by the rise of digital communication, establishing more opportunities for face-to-face contact in the heart of communities is essential to having vibrant and livable small towns. Chapter 8 reflects on the unique social dynamics of small communities and the physical factors that affect personal interactions. It also proposes public art projects as a method by which to promote communication between residents and to weave cultural tradition and heritage into the fabric of everyday social life.

Small towns are an important part of any nation's urban tapestry. The success and evolution of such communities often depends on their ability to adapt to new times and to renew themselves in the face of emerging realities. It is with great hope that this book will offer ideas, strategies, and tools to those who plan small towns' adaptation in our changing world.

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Acknowledgments

Contents

Setting a Context

1

Contemporary social, economic, and environmental transformations are forcing small town leaders and administrators to rethink urban policies and planning strategies. This chapter explores the nature of these complex changes and the theory behind the decision-making that looks to grapple with them. After first defining the key attributes of small towns, we will proceed to map the variety of transformations underway—social, economic, and environmental. This is followed by a general discussion of the nature of urban decline and renewal. Finally, we establish the principles of sustainable urban planning as a theoretical framework that offers a way forward in an era of complex change.

1.1   A Place of Reference

Located 31 miles (50 km) east of Finland's capital Helsinki is the city of Porvoo. With a population of 49,000, this community adheres to many environmental, social, and economic sustainable development principles. Initiatives introduced by the city include renewable energy projects, innovative public transportation systems, and measures to accommodate the needs of senior citizens. In a bid to become a leader in green tech, the municipality also put concerted efforts into attracting specialized enterprises (Jaakkola 2007). Additionally, Porvoo paid special attention to the urban renewal of the city's old centre.

Waves of settlers first arrived in Porvoo in the fourteenth century, and over the periods that followed, the settlement had to continuously fight for its existence. Be it a result of natural catastrophes or damages caused by conquering armies, the town had to rebuild itself time and again. Despite this history of conflict and change, the settlement has maintained a large part of its original urban form and architectural style (Sparre 1897).

As to this form and style, the paved cobblestone streets in the historic centre are edged by neatly painted two- and three-storey wooden structures (Fig. 1.1). The place is a mix of residential and commercial buildings, and among the stores that

Fig. 1.1 Views of old and new Porvoo, Finland

serve the locals are businesses that cater to tourists like me. A short distance from the town centre, along the Porvoonjoki River that runs through the city, one can find rows of the red-painted shore houses. Originally used for storage of boat-important goods, these structures have since been converted into residences.

The old centre, and in particular the shore houses, served as inspiration for the design of a new neighbourhood across the river: Skaftkarr. Architect Tuomo Siitonen embedded several sustainable principles into the new design, including walkability, design for active living, diversity of dwelling type, and energy efficiency. The saffron and red ochre-painted new homes are a visual link to the past but designed in a contemporary style.

In essence, Porvoo stands for what this book is about, namely, it represents one of the many examples that this book seeks to explore on urban renewal in small towns achieved through adherence to sustainable principles. This is a shining example of a place that respects its past—a place that builds on this past without losing sight of its future needs. In fact, the restoration was used as an economic leverage and inspiration for the generation of new wealth and innovative development.
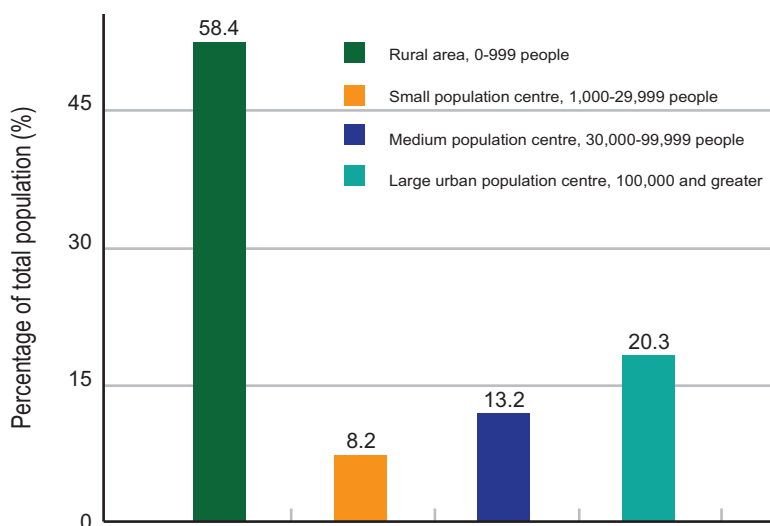
Fig. 1.2   Distribution of Canada's population by place of residency

1.2 **Defining Characteristics of Small Towns and Mid-Sized Cities**

A variety of measures and criteria have been introduced in an effort to define small towns, with population size measured area being the leading yardsticks. For example, Ofori-Amoah (2007) suggests that small cities are loosely defined as those with less than 100,000 residents, while French (2005) defines these areas as those with populations of between 2500 and 25,000 inhabitants. Naturally, due to the geographical differences between nations, the definitions may also vary country to country. For example, in Canada, the Centre for Justice Statistics (2006) suggests that a small town is "any urban area that has a minimum population of 1,000 persons and a population density of at least 400 hundred persons per square kilometer".

In addition to small towns, "mid-sized cities" or "mid-sized towns" are also commonly referred to by the literature. By some definitions "mid-sized" includes urban areas with populations between 50,000 and 100,000 people. In this book, municipalities whose population does not exceed 100,000 inhabitants are considered small towns; the term "small" will here also include "mid-sized".

North American statistics demonstrate that the majority of the population live in small, rural, and mid-sized communities. For example, as shown in Fig. 1.2, in a sparsely populated nation like Canada, 58.4% of the population lives in rural areas, while 21.4% live in small- to mid-sized towns, and the remaining 20.3% live in large urban centres (Statistics Canada 2011). According to the United States Census

Bureau (2009), in 2006 54% of Americans lived in cities with populations between 10,000 and 250,000. Of them, 40% lived in cities between 10,000 and 100,000. In Europe, the percentage of those who live in small- and mid-sized communities is reaching 38% (European Union 2011). Considering the staggering global population growth and a trend toward urbanization, one can assume that new small towns will also be developed and rural hubs expanded.

Unlike highly populated cities that wield political and economic power in a nation, small towns are rarely the focal point of federal politicians and often receive little national media attention (Ofori-Amoah 2007). For example, a single square mile in New York City could house upwards 18,000 residents (10,500 residents per square kilometre). Therefore, population wise, 2 mi^2 of a large city has approximately the same population of a small or mid-sized town. Yet, as noted above, the combined number of those residing in small towns might, in some nations, be greater than those who reside in big cities. At times, this can direct policies in their favour.

Historically, small towns have originated in various locations and for a variety of reasons (as will be discussed in Chap. 2). Some (primarily post-World War II towns) have been built on the outskirts of cities to form urban metropolises, while others are geographically isolated and less dependent on large cities. Of course, a small town may also be located somewhere between these two ends of the spectrum. In general, the number of small towns within a country depends on its overall level of development, namely, developed nations tend to be more urbanized and have more large cities, whereas developing countries, with their economies more closely tied to agriculture, will have more small towns and villages.

In regard to what motivates people to migrate to small towns, Filion (2010) suggests that urban systems are first shaped by a demand for staples and, subsequently, by the "dichotomy between an industrial heartland and resource-based hinterland" (p. 517). As a result, unique opportunities, such as very cheap land, lead to migration and eventually to the establishment of a community. In other times, small towns have attracted those who crave both traditional social values and a unique physical environment. Other documented reasons to migrate to a small town are specialized employment opportunities, proximity to family, and housing affordability (Tabuchi et al. 2005).

Small towns can also be distinguished according to their economic drivers, of which are largely dependent on a place's location. Due to a limited workforce, a town may attract fewer enterprises and rely on a single resource or employer, which might be natural such as mining or forestry. Additionally, when a place is endowed with inviting natural scenery, it may draw in visitors to support a tourist industry (often times seasonally). Location near a major national or local highway is another crucial factor, making the offering of services to travellers a central economic pillar. Another consideration is the establishment of a large institutional or service centre, such as a university, that will create a plethora of jobs in those facilities (Fig. 1.3).

A smaller community will also impart a more intimate social behaviour among the townsfolk. Having less people generally implies that neighbours can get to know and see each other more often, and this familiarity can develop into a unique form of kinship (Adams 1960; Lampard 1965). The small scale also encourages a more laid-back lifestyle compared to the hectic rhythm of a large city. A place's unique

Fig. 1.3   One of the economic pillars of Hanover, New Hampshire, is Dartmouth College

cultural traditions, which often have decades of practice, will further distinguish a small town from a city setting. The sense of place represented among others by the imagery, noises, and smell will leave its own impression on locals and visitors, making a place truly unique (Fig. 1.4).

Small towns' folksy and relaxed attitude seems to attract people who value such attributes. The public perception is that these towns appear to be a suitable place to raise a family while also providing a low-key, natural vibe. One drawback to living in a small town is its limited human resources, services, and amenities, namely, goods that are produced or sold a distance away will have to be imported or ordered online or require long commute to obtain. Given the small population size and economy of scale, products tend to be more expensive as well.

1.3   Implication of Social Transformations on Retooling Town Centres

Despite the fact that small towns are removed from the political epicentre of a country, they are not immune to national and global social transformations. In a highly connected world where information can be easily accessed and economies are highly integrated, concepts or ideas that were originated halfway across the world may inspire other locations. At the outset of any urban renewal process, one needs to be aware of these trends and recognize what their potential implication might be. In this section, we will explore three domains of global transformation affecting small towns today: sociodemographic, environmental, and economic. I should note that the implications of these trends can be observed in most nations, yet they are highly noticeable in Western societies.

Fig. 1.4 Images of Woodstock, Vermont, USA

1.3.1   Sociodemographic Trends

In the last 50 years, the world has witnessed its proportion of senior citizens increase more rapidly than any other age bracket. In 1950, 205 million inhabitants were age 60 or over. Half a century later, this figure has increased threefold and is expected to reach 2 billion by 2050 (UN 2002). What's more, there has been a significant decrease in the potential support ratio as mortality rates decline and fertility in more developed regions fall well below their replacement levels. This tipping dependency ratio means that health and pension funds will continue to be supported by a relatively smaller number of economically active citizens (UN 2002).

In Canada, for example, with the ageing of the "baby boom" generation, the number of older persons has been gradually increasing (Fig. 1.5), so much so that the average population age has grown by 10.2 years over the past 30 years alone, making the average Canadian citizen aged 41 years old. This number is especially notable compared to 1982, when the median age was 31. Even more, all age groups 45 years and over have showed at least a hundred percent increase since the established 1982 tabulation (Statistics Canada 2015).

Small towns tend to suit older people due to the relaxed lifestyle they support but also because they generally offer more affordable living and closer proximity to basic amenities and commerce. On the other hand, seniors can just the same leave a small town for a city that offers more amenities, such as specialized medical care and entrainment. To meet the needs of its ageing population and compete with the attraction of big cities, small towns will have to accommodate seniors in a number
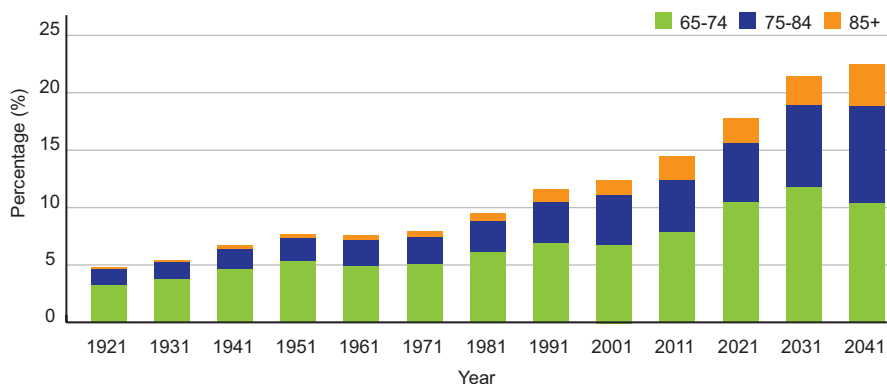
Fig. 1.5 Canadian seniors by age groups as percentage of the total population, 1921–2041

of ways. Investing in creative residential housing solutions, such as the multigenerational arrangements discussed in Chap. 5, will be key to maintaining a town's population level. Public and private investment will have to be made in healthcare facilities and public transit to suit older generations by introducing specialized service for those with reduced mobility. Further, some municipal public events may have to be rescheduled since the elderly find it challenging to take part in late-night activities.

Another demographic-related challenge that is faced by small towns is the departure of young people in pursuit of higher education or employment in large cities. A decrease in the number of younger residents will negatively affect the local economy since younger cohorts have a decidedly more robust spending pattern than older generations and consume different products and services. Therefore, it is vital for a small town to keep and attract new families in order to maintain a vibrant and diverse economy. In addition, a common demographic trend, especially in Western nations, is a steady decline in household size. The long-term outcome for small towns might be a future reduction in the number of taxpayers whose contributions fund the social services upon which older generations depend.

With rising global migration trends, small towns stand to benefit from new arrivals who may find these places affordable and attractive. Some may choose to reside in the town's centre where apartments are commonly found, which works to contribute to the core's overall renewal. Yet, according to Hyndman et al. (2006), few immigrants are opting for small towns and are rather choosing to live in larger cities. The majority of immigrants flocking to Canadian cities was drawn to large cities because they had a greater number of employment opportunities and because they preferred to live near people from their native country. Simply put, few immigrants seek to live in smaller towns where they may feel culturally isolated. A study by Brennan and Hoene (2007) found that more than 76% of the population of small towns were ethnically white, while a city such as Markham, Ontario (a suburb of Toronto), has a population that is made up of nearly 73% ethnic minorities (Statistics Canada 2015). Although this example is dramatic, these demographic statistics are

important for small towns to consider, given. Ultimately, attracting immigrants by way of a welcoming social policy may prove vital to the long-term prosperity of these places.

1.3.2 Environmental Concerns

A defining aspect of the twenty-first century is a need to counter and reverse the negative ramifications of climate change. It is a global challenge that will require rethinking urban planning and economic development policies and intervention by a wide spectrum of participants. Local decisions in small towns, such as reducing carbon footprint, that seem insignificant at first due to the small number of inhabitants, can have a valuable cumulative implication when other communities adhere to the same objective. Effectively, it may also stand to benefit the town economically since it will consume less power; the town may even be able to export some if public buildings use solar power.

Another important consideration is urban sprawl. Due to their location, small towns are often composed of low-density homes with big physical footprints, large lots, and wide roads. Such planning patterns lead to more driving and, as a result, high levels of emissions (Fig. 1.6). For example, in the USA it was found that residents living in communities with higher densities tend to drive three times less than those who live in neighbourhoods with single-family homes (Rodrigues et al. 2006).
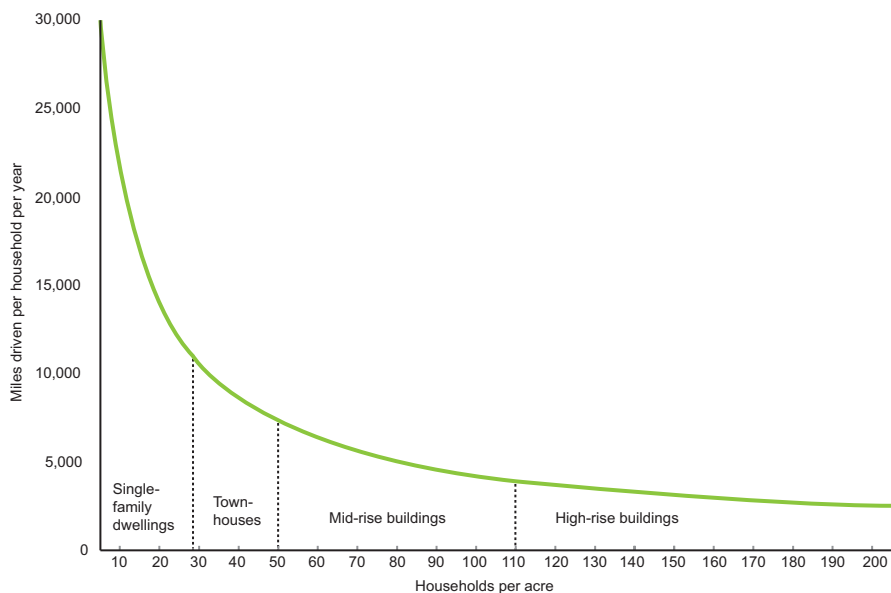
Fig. 1.6 Residents living in US communities with higher densities tend to drive three times less than those who live in neighbourhoods with single-family homes

It has therefore become apparent that denser cities and towns have smaller carbon footprints (a topic which will be discussed in Chap. 3).

Reducing reliance on private vehicles and increasing density can pose a challenge for small towns since, more often than not, people were attracted to them for their abundant and cheap land in the first place. In addition, regional services and amenities such as specialized medical care or large-scale commerce are often only available in major urban hubs and require long-distance commute by private cars when public transit is not available or infrequent. In fact, a study about suburbs in the USA found that the average distance between a family's home and their primary grocer was 3.4 miles (5.5 km) (Ver Ploeg et al. 2015). Of course, this high level of driving generates a staggering amount of greenhouse gas emissions; according to Rodrigues et al. (2006), road transport sectors (excluding rail, air, and sea) generate 74% of the global CO_2 emissions (equivalent to billion kilogram of CO_2).

When new small towns are planned or when their core is renewed, there may be a need to revisit density yardsticks. To this extent, the introduction of mixed land-use practices in the centre is one possible approach. This would require amendment of bylaws to permit mixed-use buildings where residents live above ground-floor commerce. Other carbon-efficient strategies that a town can pursue may include the requirement for new buildings to have higher energy efficiency, use products made of recycled materials, have green roofs, and use water-efficient appliances.

1.3.3   Economic Transformations

Global and local economic transformations are having a profound effect on small towns in the areas of wealth generation and, as a result, on the lives of individuals. Recent fluctuations have resulted in unstable job markets or a rise in unemployment, primarily among young cohorts. The unstable nature of the economy has also caused hesitation among investors, employers, and workers alike, at times resulting in stagnation. In the long term, these fluctuations may trigger the start of new enterprises or bring about an end to existing ones.

When the economy of a small town is reliant on a single employer who chooses to close or to relocate, the negative consequences on the community at large will be significant. What may be considered a minor setback in a large city will cause a big one in the livelihood of small town's residents. To avoid such occurrences, a diverse and resilient economy needs to be established and particularly one that is less reliant on global market fluctuations or a single employer. In addition, the need to initiate and patronize local businesses must ultimately be a goal of a town's leadership and citizens (Fig. 1.7).

A desirable economic outcome happens when an employer moves to a town, when jobs are generated, when disposable income increases, when new households migrate in, and when new taxes are collected. Eventually, these factors spring the need for further residential development as well as improved public services and renewed infrastructure. This kind of cycle often makes the availability of affordable housing all the more relevant. People, primarily young households, will move into

Fig. 1.7 Promoting local
shopping in a small town
in Vermont, USA

a community if jobs and affordable housing are available. The cycle demonstrates
the connectivity between urban renewal and a place's overall economic
performance.

In recent decades, the general nature of commerce has changed, and the line
between global and local has become blurred. Using digital communication, com-
panies no longer need to be tied to a single location but can run their affairs from
afar as depicted in Fig. 1.8. What has become apparent is that online shopping has
expanded to rival personal purchases with devastating effects on small town centres.
These trends are likely to affect the way people consume and as result local econo-
mies suffer. It is also hard to predict whether large format stores will be as trendy in
the years to come or whether mom and pop stores will thrive again. The need to
further foresee the evolution of commerce and the effect of a "hyper-connected"
world is necessary to the understanding of the economies of small towns and will be
discussed in Chap. 7.

1.4   Anatomy of Places' Decline and Renewal Challenges

A town centre's decline can follow several scenarios. It can be a relatively rapid
process lasting several years (often times as a result of a departure of major
employer) or a slow one spanning several decades (e.g. the outcome of change in
consumption pattern). In North America, the 1950s federal investment in highway
construction, the affordability of private automobiles, and the cheap petroleum cou-
pled with the proliferation of suburbia marked the start of a gradual decline in small
towns' centres (Robertson 1999; Smith 2008). Having easy access to a vehicle and
comfortable roads to drive on was also noticed by developers, who went on to build
commercial and office parks away from old core areas. Shopping strips, malls, and
later "big box" retail outlets offered plenty of parking, heated and air-conditioned
interiors, and lower-cost products with which the owners of mom and pop stores
could not compete (Smith 2008; Powe et al. 2009). Some town's leaders, against the

Fig. 1.8 The old Marble Work's factory in Middlebury, Vermont, USA, now houses small businesses, many of which operate online only

interest and action of local retailers, even invited and welcomed supersized outlets who they believed contributed to the community's tax base and created jobs. Often, a single large retailer sold merchandise similar to several small downtown stores, who eventually had to close as illustrated in the scenario in Fig. 1.9. Visually, the big outlets were "off the shelf" enormous buildings set in a sea of asphalt, with no windows, roofline, or attempt to respect the local architectural character (Beaumont and Tucker 2002).

According to Knox and Mayer (2009), other factors that might lead a town to financial, sociological, and environmental decline are reduction in public services, lack of growth opportunities, or social isolation. Knox suggests that, when one pillar declines, others can support the one who is on a downturn. For example, a small town with a thriving business sector may also boast a high level of equity among its citizens but might not be environmentally-friendly. In this case, the town would be able to count on its prosperous community to develop habitat protection programmes, attract volunteers, or fundraise for a clean-up. However, it would be much more challenging for a town to recover once it experiences the complete failure of one of the domains. For example, a total economic collapse can devastate the other two.

With the loss of business, unemployment rates will rise to further aggravate the situation and require a complete retooling of the town's economy—a process which will take time. As a whole, if a town wishes to maintain a functioning urban centre, all three domains need to be working together and be considered equally. Though the reasons for a town's decline may be caused by specific events, it is worthwhile to analyse a broader set of issues and factors prior to the start of the renewal. Aspects

New edge commerce is built and elevated online shopping

Local merchant cannot compete

Patrons and residents stay away or move

Store closing

Act of vandalism and abandonment

Departure of secondary services (banks, offices, etc.)

Municipal government fails to take action

Fig. 1.9 Possible scenario of a town centre's decline

such as historic evolution, sociological makeup, and cultural attitude need to be investigated to preserve a community's original integrity and to cast a foundation for the town's new beginning (Fig. 1.10).

In general, when a decline lasts very long, it is an uphill battle to chart a new course. On occasion, attempts were made to attract large retailers to downtown locations. However, these attempts ultimately proved unsuccessful due to the lack of large plots or high land cost, which thereby directed developers to the outskirts of towns. In addition, these modern malls often had a second storey with leasable office space. Gradually, service amenities such as accounting offices, medical clinics, and law firms that once drew people downtown moved to these new locations, thereby contributing to the creation of additional vacant commercial areas (Robertson 1999).

Some small towns lack the in-house knowhow and necessary funds to reverse a downward spiral trend. Others failed to alter old bylaws that limited mixed land use that layered residences over commerce. Gradually, the area became vacant after hours and on weekends, ultimately because there was no local population to support commercial activities or animate the streets. On occasion, random acts of vandalism rendered those places unsafe, which further escalated their condition and mandated more policing.

Type	Definition	Characteristics
Entrepreneurial	• Culture of initiation and implementation	• Pro-growth • Steady leadership • Ample resources • Capable implementers • Broad population support
Analytical	• Overly studied communities	• Each process begins with a study • Take long time to decide • Weak implementers
Defender	• Rejects new ideas and initiatives	• Content with the status quo • Avoid decision-making • Lack of vision • Population rejects initiatives
Destroyer	• Action results in negative consequences	• Poor consultation process • No understanding of cause and effect • Poor reading of global trends • Do not resist external pressure
Desperate	• Action is driven by desperation ("loss of major employer")	• Poor strategic thinking • Hasty decision-making • Under pressure by population • Willing to offer incentive

Fig. 1.10 Type of communities and their attitude to economic development

Fig. 1.11   To encourage pedestrian activity, many towns like Potsdam, Germany, closed their centres to vehicular traffic during certain hours

Investments in creating welcoming environments have been attempted, and they are ongoing in many small towns. The thrust of these efforts was to foster a walkable environment and ameliorate their appearance through façades and signage improvements, sidewalk enlargements, and better lighting installations as was the case in Potsdam, Germany (Fig. 1.11). Drawing people in for a short time by staging events was another strategy used by other communities.

In some cases these efforts proved successful in reversing a decline, or at least for a while. In other places they failed entirely. The lure and the staying power of the well-financed large retail outlets on the edge of town was hard to compete with and win against, further leading to stores closing and enforcing the area's negative stigma. A variety of strategies for strengthening a town's core and successful renewal cases will be outlined throughout the book's chapters.

1.5   Principles of Sustainable Planning for Urban Renewal

As noted above, being *resilient* is essential to a town's ability to cope with sudden pressure—be it economic or environmental. Another aspect which in recent decades has become a central preoccupation of planners is to place a community on *sustainable* footing. By definition, for a town to be sustainable, it needs to consider present needs without compromising the ability of future generations to meet their own

needs (WCED 1987). This section articulates the principles of sustainable development and the context in which these principles were developed.

Since the mid-1970s, many local and international organizations were formed in response to rising concerns over the state of the environment and the realization that the amount of non-renewable resources is finite and rapidly depleting (CMHC 2000). In addition, the consumption patterns of these resources in most nations increased several folds to reach unsustainable levels. The work of several thinkers set the stage for a new paradigm about the relationship between people and their environment. Rachel Carson (1962) exposed the harmful effects of certain man-made chemicals, and E. F. Schumacher (1973) studied the effects of globalization. The three Rs—which stand for *reduce*, *reuse*, and *recycle*—were put forward by Kibert (1999). According to Kilbert, although a substantial damage has already been done to the environment, it can still be repaired. Among others, measures that need to be taken are pollution control and the development of technologies that are in sync with natural systems (Kibert 1999). This mind-set should be extended to the planning of communities and design of buildings and their subsystems so that they too may be fabricated using renewable means.

The three original pillars of sustainable development put forward by Wheeler (2004) were social equity, economic, and environmental aspects. However, it later became abundantly clear that culture and governance must also be part of any attempt to implement sustainability initiatives if the implementation process is to succeed. The first concern among these aspects reflects and responds to the social requirement of a small town's inhabitants and their values. Social needs and equity are broad, all-compassing concepts that can be explained and interpreted in a multitude of ways. For example, when the creation of a sustainable healthcare system is an objective, a contribution to public health can be achieved by encouraging fitness. It has been shown that people with an active lifestyle are less likely to suffer from cardiovascular- and diabetes-related illnesses. It is, therefore, in the best interest of a small town that the urban renewal of the centre will include bicycle and pedestrian pathways and that residential and non-residential functions are integrated.

Promoting vernacular culture and preserving local traditions and heritage buildings also contribute to society in direct and indirect ways. Old buildings that are worth preserving are visible reminders of human history, and people who pay homage to the past might contribute to the quality of future buildings. Conserving and converting old buildings also avoids demolition, thus working to reduce the consumption of natural resources that may otherwise be used in new construction. This is a crucial topic that will be discussed in depth in Chap. 6.

Fostering economic sustainability is another objective with ramifications for small town's renewal. The aim is to avoid the transfer of the costs incurred by bad present decisions to future generations. Building unnecessarily and excessively wide roads rather than narrow streets, for example, will have long-term economic implications. The streets will need to be resurfaced periodically, and more snow will accumulate and need to be removed in cold climate regions. When a development is privately initiated, the cost of wider roads will raise the price of each house, forcing

buyers to borrow more money that they will have to repay over a longer period of time, thereby putting at risk their own financial sustainability.

Environmental sustainability is concerned with ecological attributes created by the construction and upkeep of a development, including its roads, open spaces, and homes. A "cradle-to-cradle" cycle assessment is necessary when a renewal process is to begin. It regards not only the initial effect of choice of materials, for example, but also their long-term performance and their recyclability once their use has ended. Asphalt-covered roads will make run-off stream to manholes, while creating streets with permeable surfaces will return rainwater to nature and save the building of run-off sewer systems.

Governance is another vital aspect of sustainable development. Strategies and concepts, innovative as they may be, will not be implemented unless a municipal leadership can set appropriate policies and explain its long-term vision to the citizens. An effective political system will also draw new younger participants to public service, thereby creating a continuity of ideas and actions (Fig. 1.12).

On a more detailed level, sustainable urban renewal may also be achieved by observing the following principles. The *path of least negative impact* is a course of action that will ensure limited short- and long-term negative ramifications of the process. To ease the effort and ongoing contributions by all parties involved, a *self-sustaining system* should be sought. Any method that generates its own income,

Fig. 1.12 Young participants are invited to take part in a street survey in Haarlem, the Netherlands
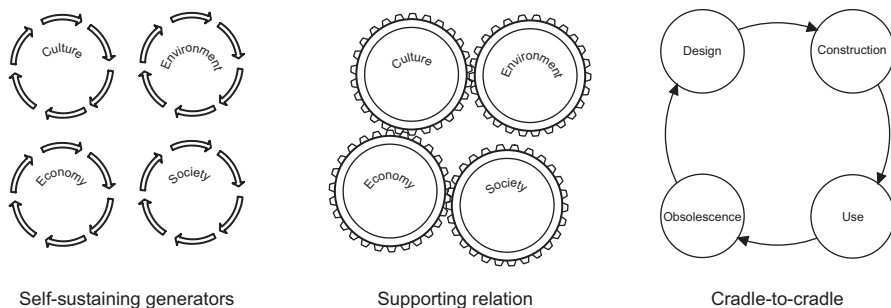
Fig. 1.13 Key principles of sustainable systems

improves the environment, and contributes to social equity should be sought after. If the relationship between the sectors is *supportive,* it will likely reduce costs and improve performance of all sectors. Finally a *lifecycle approach* sees the built environment as subjected to an ongoing change and evolution by being flexible and able to easily adapt across various realities (Fig. 1.13).

The five pillars and the principles that were described above can be viewed and followed independently. Yet, when the inner workings of an urban renewal process are examined, one can notice that the confluence of all the aspects is essential. This confluence is, in essence, an additional focus of this book. These issues are presented here as a way by which concepts will be formed and applications illustrated.

1.6 Retooling for Sustainability

1.6.1 Cornwall, Ontario

One example of a mid-sized city that sought to revitalize its declining core sustainably is the community of Cornwall in the province of Ontario, Canada (Fig. 1.14). The town was founded in the 1700s as an agricultural settlement, but by the early 1900s, it had become a vibrant textile manufacturing hub due to its proximity to the St. Lawrence Seaway canal, through which cotton was delivered to its mills and fabrics were shipped to markets. Expanded industrial production contributed to its modest success, and its population eventually grew to the 47,000 residents it boasts today.

The town's economic downturn began with the relocation of its textile manufacturing plants to low-wage countries in the 1970s. The overall decline also resulted in a deterioration of the town's centre which saw many businesses close and residents move away. The building of a new sprawling shopping centre in the area made the old downtown's stores less attractive and out of step with modern commerce. Efforts to reverse course have been made by the town's leadership, having tried to revive the area mostly by ameliorating the place's visual appearance. These efforts included the installation of new light poles and the replacement of sidewalks, but

Fig. 1.14   Images of downtown Cornwall, Ontario, Canada

these attempts have ultimately produced less-than-satisfactory results (Courtaulds Fibers Canada 1993; Kyte 1983; McCullough 1992).

An invitation was extended to my team and I to develop ideas and a plan for renewal based on the aforementioned sustainable principles (Fig. 1.15). The process began with an analysis of the existing conditions that were posing as crucial issues in the area's overall approach to land use and organization of public spaces. The general conclusion was that Cornwall did not use the land in the core resourcefully. Specifically, it did not take advantage of its waterfront near which the downtown is located, it lacked sufficient parking, and the housing being offered was not innovative or affordable. In addition, many of the empty lots, some of which were owned by the city, were not well-maintained. The area's main artery, Pitt Street, had clearly seen its small commerce fall into a state of disrepair and was in dire need of strong renewal ideas to attract residents and visitors.

To revitalize the area, four key strategies were suggested: development of the waterfront, reconfiguration of a typical block, revamping Pitt Street, and complete redesign of the parking and circulation. To take advantage of the vacant waterfront land, my team proposed to rebuild two residential blocks. Typically, the blocks in the core were inefficient and did not reflect current urban needs. It was proposed to divide the larger blocks into smaller ones to increase density, make them walkable and liveable, and improve circulation in the area for all users be they pedestrians, motorists, or cyclists (Figs. 1.16 and 1.17).
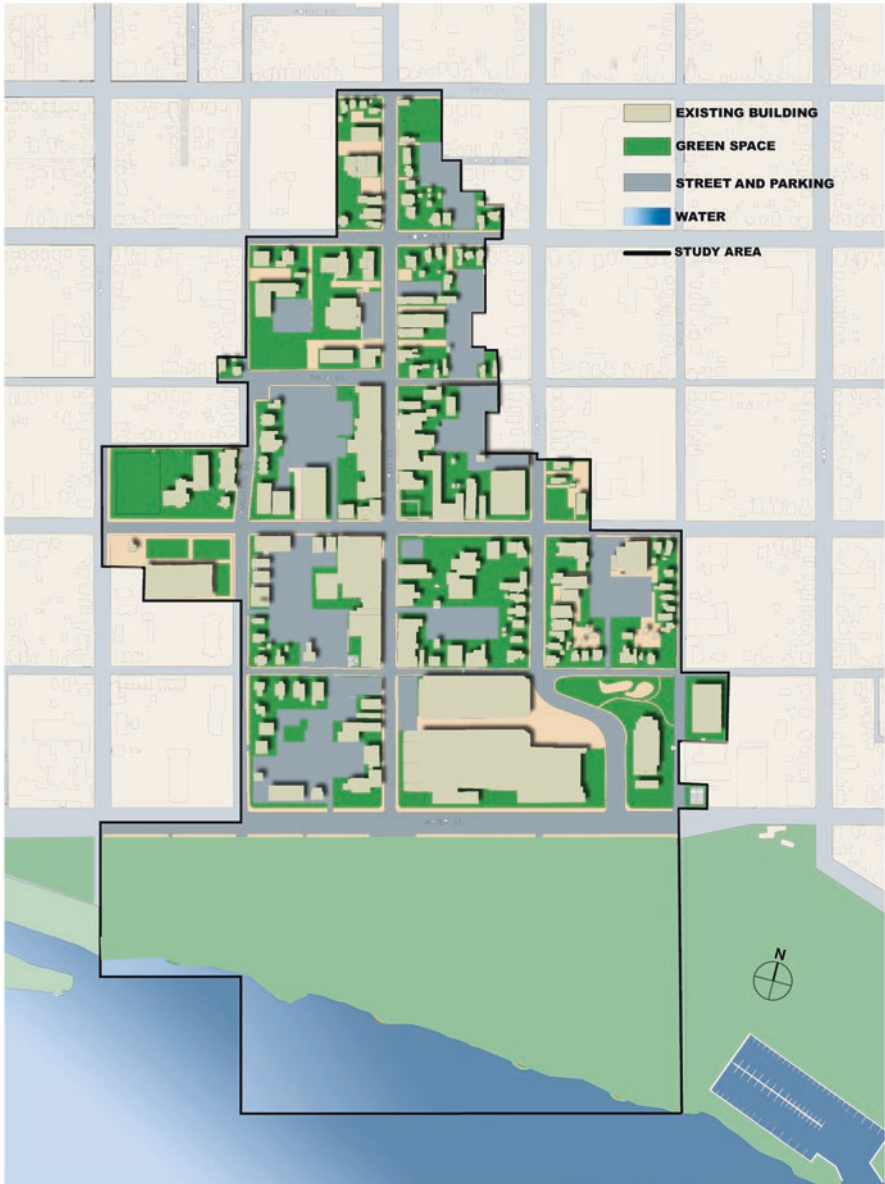
Fig. 1.15 The project's area

Repairing the dilapidated public spaces was strongly encouraged as well. In addition, it was argued that Pitt Street and its businesses needed more foot traffic to truly thrive; thus several interventions were suggested. They included conversion of an old existing structure to a historic textile museum, building a privately funded art gallery, and the overhaul of the street's building facades by initiating a cost-sharing

A new road bisects the block, creating two independent segments, each of which can have several housing arrangements, such as U type or L type.

An "L" type road is added to divide it into two unequal parts. This way of subdivision can be used in the block which has several types of housing in different cost ranges, which also meets the residents' requirement of separation.

The third strategy provides the opportunity to maximize the dwelling density in a certain area; therefore, adequate parking and green space can be offered.

Fig. 1.16 The guiding urban design principles

programme between the city and the building owners. To have mixed-use buildings, it was suggested to change the current zoning bylaws that prohibited such projects.

Lastly, new circulation opportunities were also part of the proposal. Since most of the streets in the downtown were one-way, a situation that limits access for people who want to reach the stores by public transit or bicycle, it was proposed to turn some to two-way streets. Also, it was suggested to provide more underground parking spots so as not to alter the streetscape by having many on-ground parking lots. As far as commercial and institutional land use in the area was concerned, it was suggested that Pitt Street would be a place for mom and pop businesses to maintain the place's original intimate feel and scale. Second Street, another key artery, would focus on galleries and the historical aspects of Cornwall. Additionally, all blocks would ideally have residences above these commercial and public spaces (Fig. 1.18).

1.6.2 Stony Plain, Alberta

The town of Stony Plain, in the province of Alberta, Canada, has seen its population rise dramatically to today's total of 16,000. Given this change it was forced to update its master plan to better meet future growth. As a result, my team and I were
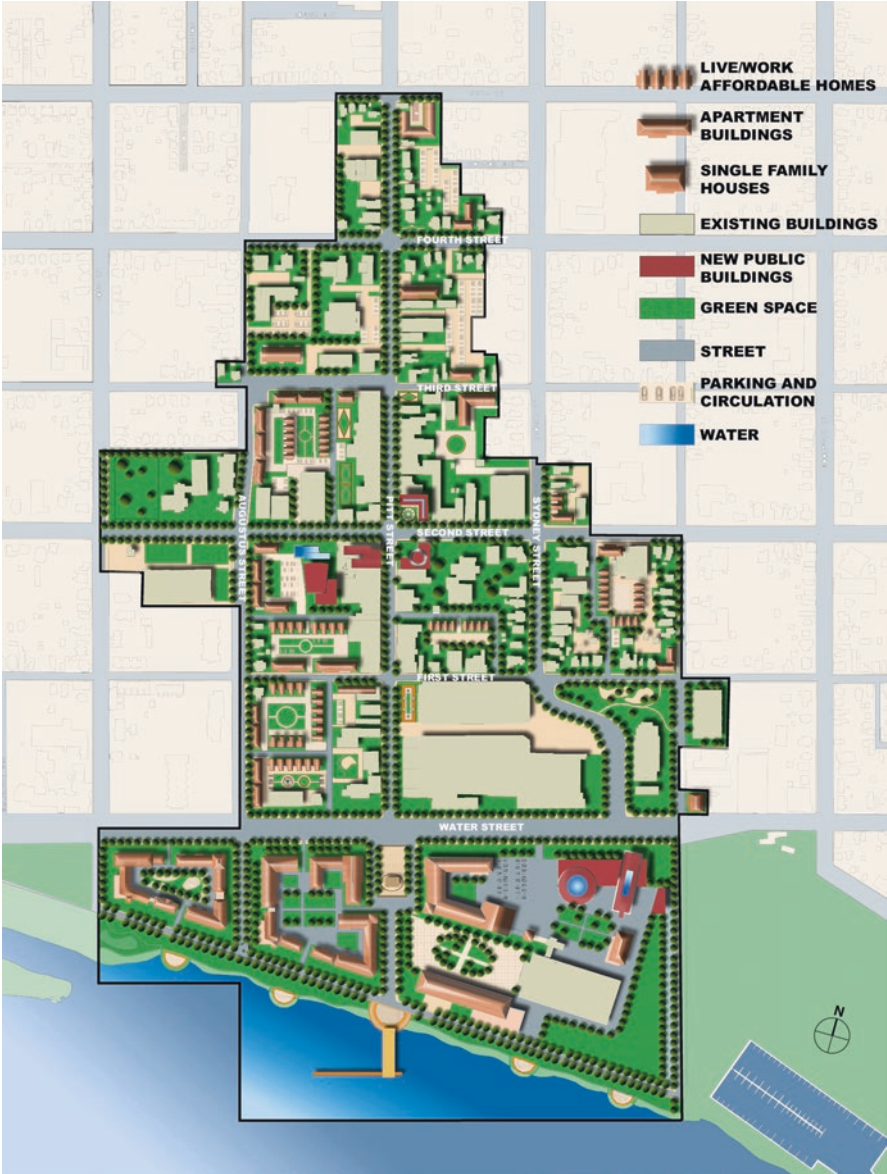
Fig. 1.17 Proposed urban intervention

invited to propose a new plan to chart its expansion along sustainable principles. In-migration was prompted by the town's growing prosperity, high quality of life, and the relative affordability of housing compared to the capital of Edmonton. The town also boasted quality schools, a low crime rate, and many green and open public spaces. Stony Plain's area covers over 6.56 mi^2 (17 km^2) with a railway line and

Fig. 1.18 One of the blocks showing the inserted dwelling units

is crossed by a key highway (Figs. 1.19 and 1.20). This highway connects the town to Edmonton and to several farming communities that use Stony Plain as a service centre.

Stony Plain was founded in 1881, and its historic core was laid out in a traditional Midwest gridiron pattern which featured a main arterial street lined by a mixture of institutional, commercial, and residential buildings. As the town grew, new neighbourhoods expanded outwards, and the direction of growth was often dictated by the availability of land rather than by a master plan. In this process, the town's east side saw further residential development, and industrial buildings were built along the highway. The historical layout of the town was not imitated in the new low-density housing that takes up the majority of the town's area. The town's centre is highly accessible by foot or bicycle with a well-developed network of paths popular with residents.

Fig. 1.19   Images of Stony Plain, Alberta, Canada

To meet the demands of growth, several suggestions that considered social, economic, environmental, and cultural factors have been made. Most importantly, the town's historic centre is to be retooled due to its vitality role in the community. One of the larger changes within the master plan was made to future residential areas. A new mid-density neighbourhood was proposed for the north-west part of the town and denser developments in the north end. Though the town has grown sporadically over the years, it was proposed that these decentralized neighbourhoods be connected by mid-density housing. These portions would act as hallways of sorts between the existing residences and the downtown core (Figs. 1.21, 1.22, 1.23, and 1.24).

To strengthen the core, we recommended that the town limit the building of "big box" stores to an area south of the highway and encourage construction of taller apartment buildings with ground floor businesses along key streets. Encouraging work-live residential opportunities was also recommended. As the core becomes a
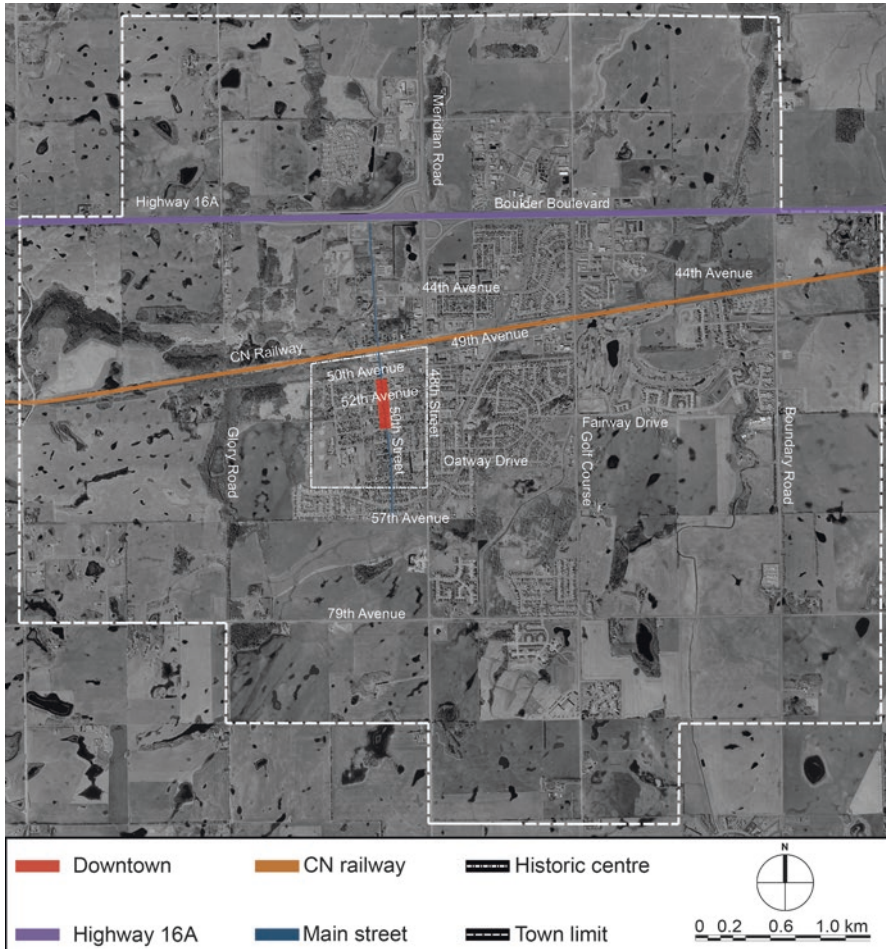
Fig. 1.20 A railway line and a highway cross the town of Stony Plain

draw, more effort needs to be invested in its appearance. Downtown must have architectural design guidelines to ensure harmony of forms, materials, colours, and proportions. To broaden its tax base, diversify its economy, and reduce the daily commute to Edmonton, the plans suggest development of a new light-industrial area off the highway to meet the land needs of the many companies which service the oil industry and are currently seeking locations.

Another key planning concept that was advocated by the town's people was maintaining the small town experience (Figs. 1.25, 1.26, and 1.27). To achieve that, it was decided that the lifestyle would be preserved by keeping a surplus of green spaces, parks, and multi-use buildings. An additional goal of the plan was to create community spaces and use, such as a public area located across from the Town Hall for that purpose. Throughout the planning process and especially in the core, there
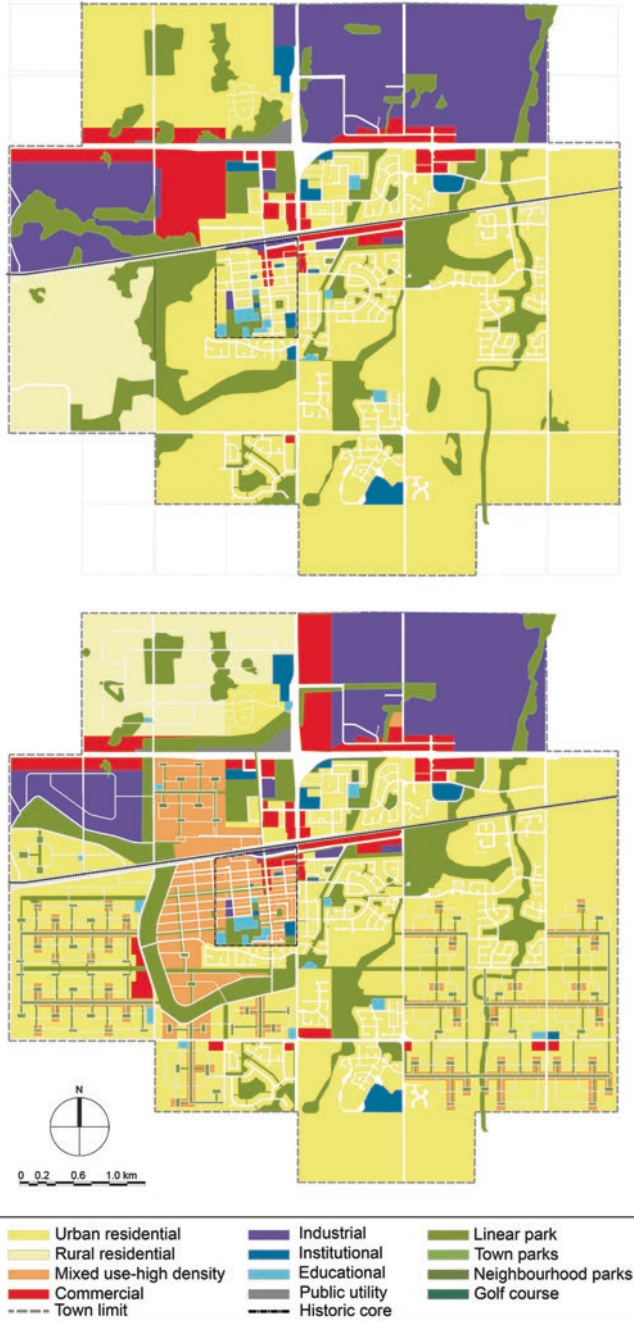
Fig. 1.21 Existing land use (*top*) and proposed (*bottom*)
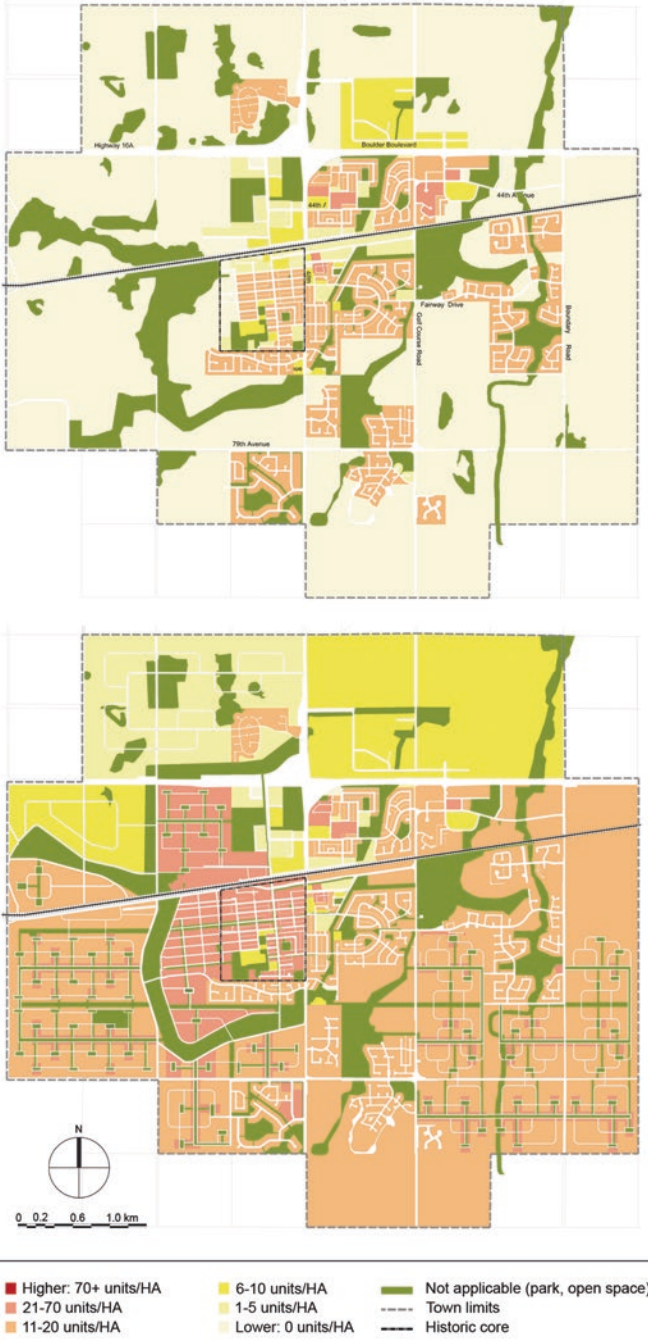
Fig. 1.22 Existing density (*top*) and proposed (*bottom*)
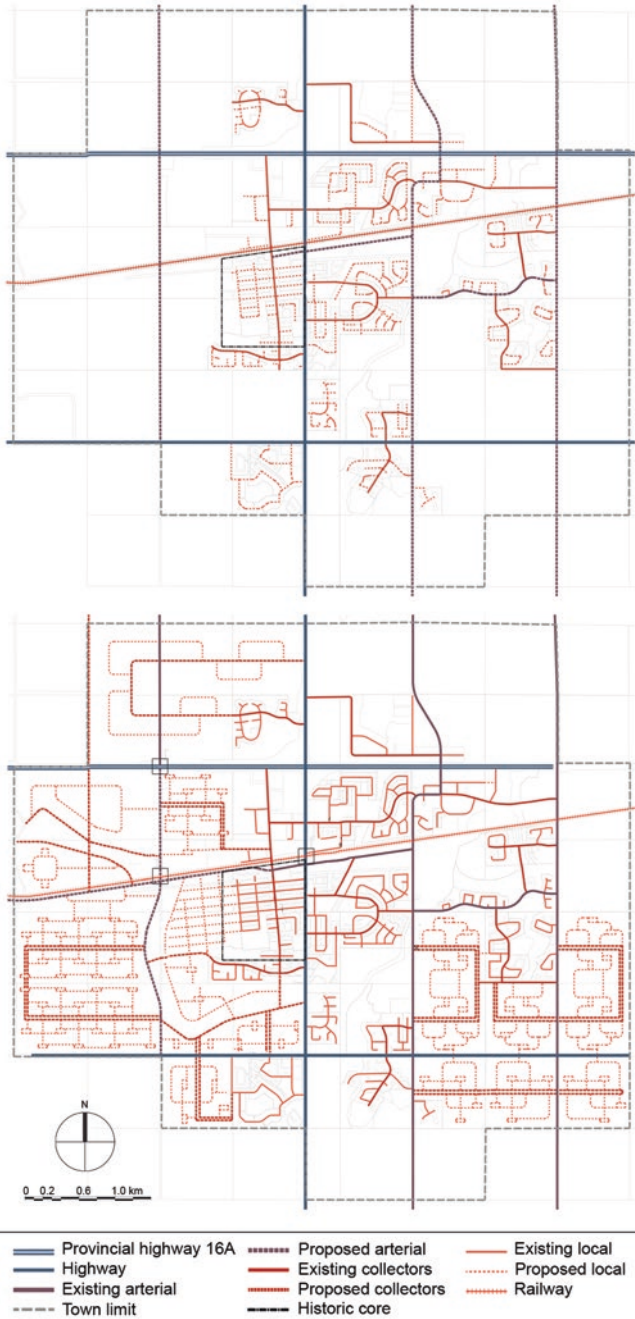
Fig. 1.23 Existing road network (*top*) and proposed (*bottom*)

Fig. 1.24 Existing open spaces (*top*) and their use as commuting network (*bottom*)
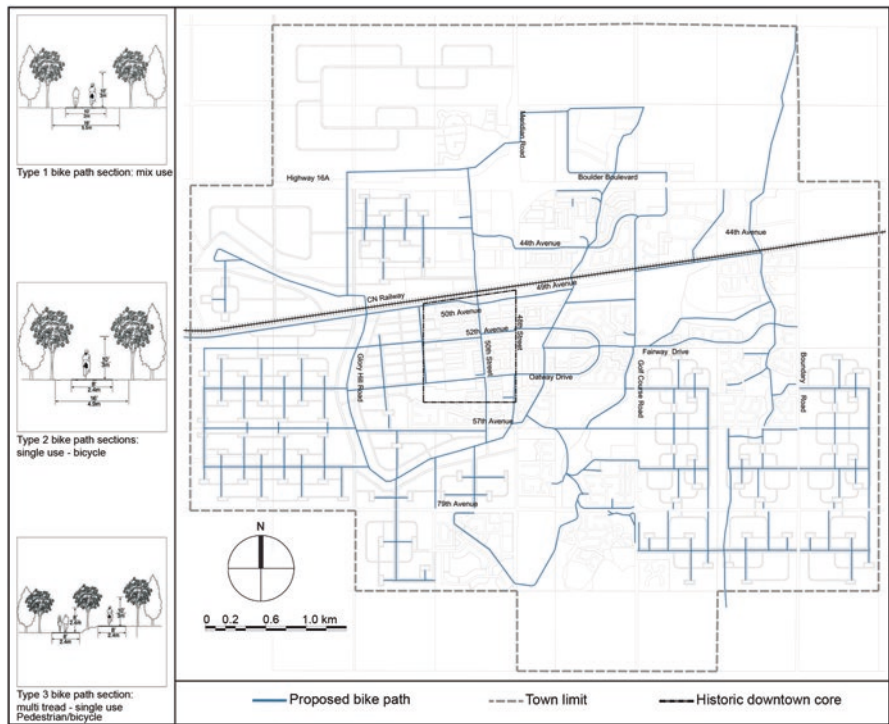
Fig. 1.25 Proposed network of bike paths

has to be a cohesive architectural style that also fosters diversity among the buildings themselves. The development of multi-use buildings were encouraged, given that these structures accommodate housing with multigenerational living arrangements and so are compatible with community needs. For example, having apartments integrated into municipal buildings was recognized as a way to keep the community diverse, adaptable, and resilient to change.

1.7 Final Thoughts

Some small towns, particularly those in metropolitan regions, have experienced a decline in recent decades. The reasons for their demise are varied but in general are rooted in the evolution of transportation, the introduction of big-box retail and e-commerce, and poor land-use planning. A number of small towns lacked the resources necessary to tackle such issues as they arose and entered a downward spiral.

In addition, like any other community, small towns are facing a dire need to align themselves with various aspects of globalization, be it social, economic, and environment changes. Climate change, dwindling natural resources, ageing populations,
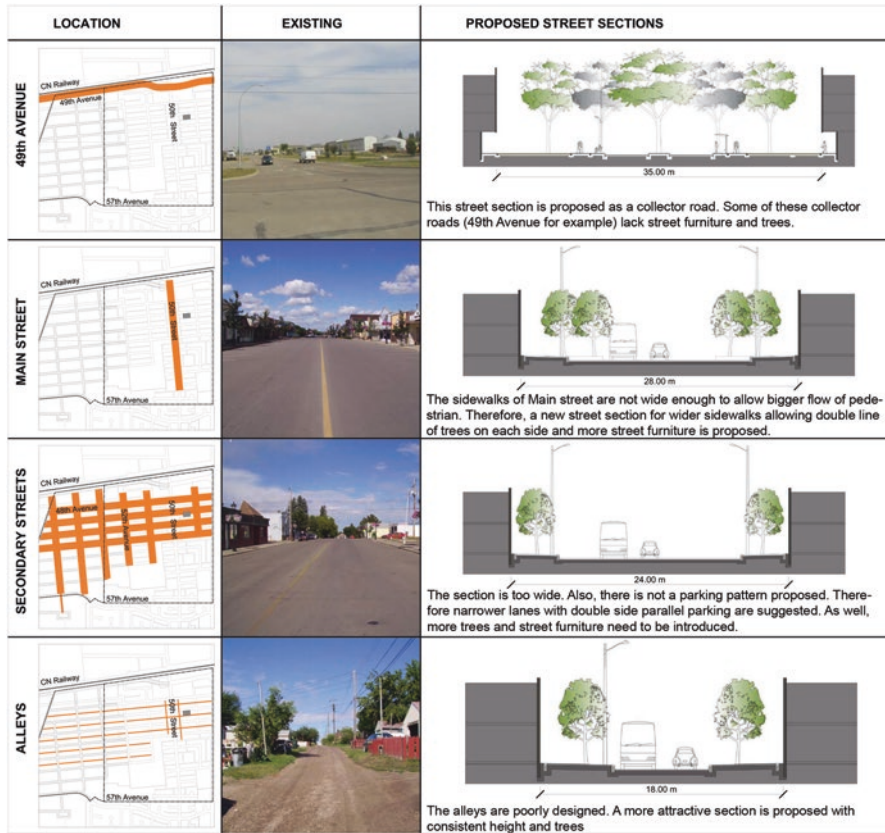
Fig. 1.26 Proposed street sections

wider diversity of household types, soaring housing costs, and the advent of new technologies have combined to create a perfect storm of circumstances that merit the retooling of old ideas concerning the built environment.

In the face of these immense problems, the *sustainability* perspective offers a way forward. A much talked-about term in many areas of contemporary policy and social thought, it provides a useful framework for new thinking about the urban renewal of small towns. The fundamental thrust is a thought process and action that let one recognize the future consequences of present development actions. Considering environmental, economic, social, and cultural aspects in parallel is the underpinning approach at the base of the idea.

Fig. 1.27 Rendering of the redesigned Main Street

References

Adams, R. M. (1960). *The origins of cities* (Vol. 203, pp. 153–168). New York: The Scientific American. Lampard 1965.

Beaumont, C., & Tucker, L. (2002). Big-box sprawl (and how to control it). *National Trust for Historic Preservation, 43*(2), 6–9.

Brennan, C. K., & Hoene, C. (2007). Demographic changes in America's small cities, 1990–2000. In B. Ofori-Amoah (Ed.), *Beyond the metropolis: Urban geography as if small cities mattered* (p. 69). Lanham: University Press of America.

Canada Mortgage and Housing Corporation (CMHC). (2000). *Practice for sustainable communities*. Ottawa: CMHC.

Canadian Centre for Justice Statistics. (2006). *Victimization and offending among the aboriginal population in Canada*. Statistics Canada Catalogue no. 85-002-XPE, 26(3), Ottawa.

Carson, R. (1962). *Silent spring*. Boston: Houghton Mifflin.

Courtaulds Fibres Canada. (1993). *Souvenir book of the Courtaulds in Cornwall*. Cornwall: Courtaulds Fibres Canada Inc.

European Union. (2011). *Cities of tomorrow: Challenges, visions, ways forward*. Brussels: European Commission, Directorate General for Regional Policy.

Filion, P. (2010). Growth and decline in the Canadian urban system: The impact of emerging economic, policy and demographic trends. *GeoJournal, 75*(6), 517–538.

French, P. E. (2005). Policy, management and political activities: A current evaluation of mayors and managers in small cities and towns. *The Social Science Journal, 42*(4), 499–510.

Hyndman, J., Schuurman, N., & Fiedler, R. (2006). Size matters: Attracting new immigrants to Canadian cities. *New York: Journal of International Migration and Integration, 7*, 1–25.

Jaakkola, M. (2007). *Yleista Porvoosta*. Porvoo: City of Porvoo, Finland.

Kibert, C. J. (1999). The promises and limits of sustainability. In C. J. Kibert (Ed.), *Reshaping the built environment: Ecology, ethics and economics* (pp. 9–38). Washington, DC: Island Press.

Knox, P. L., & Mayer, H. (2009). *Small town sustainability*. Basel: Birkhauser Verlag AG.

Kyte, E. (1983). *From royal township to industrial city: Cornwall 1784–1984*. Belleville: Mika Publishing.

Lampard, E. E. (1965). Historical aspects of urbanization. In P. M. Hauser & L. F. Schnore (Eds.), *The Study of Urbanization* (pp. 519 –554). London: John Wiley.

McCullough, A. B. (1992). *The primary textile industry in Canada, history and heritage*. Ottawa: Minister of Supply and Services, Canada.

Ofori-Amoah, B. (2007). *Beyond the metropolis: Urban geography as if small cities mattered*. Lanham: University Press of America.

Powe, D., Hart, T., & Bek, D. (2009). Market town centres in England: Meeting the challenge of maintaining their contemporary relevance. *Planning Practice and Research, 24*(3), 301–319.

Robertson, K. (1999). Can small-city downtowns remain viable? A national study of development issues and strategies. *Journal of the American Planning Association, 65*(3), 270–283.

Rodrigues, J. F., Domingos, T. M., & Marques, A. P. (2006). *Carbon responsibility and embodied emissions: Theory and measurement*. New York: Routledge, Taylor & Francis Group.

Schumacher, E. F. (1973). *Small is beautiful: Economics as if people mattered*. New York: Harper & Row.

Smith, K. L. (2008). You say you want a devolution? Lessons from the main street program. *Local Economy, 23*(1), 85–92.

Sparre, L. (1897). *The Iris factory*. Porvoo: Sparre Self-Publishing.

Statistics Canada. (2011). *From urban areas to population centres*. Retrieved November 21, 2016, from http://www.statcan.gc.ca/subjects-sujets/standard-norme/sgc-cgt/notice-avis/sgc-cgt-06-eng.htm

Statistics Canada. (2015). *National Household Survey (NHS) profile, Markham, T, Ontario, 2011*. Ottawa: Office of the Auditor General.

Tabuchi, T., Thiesse, J. F., & Zeng, D. Z. (2005). On the number and size of cities. *Journal of Economic Geography, 5*(4), 423–448.

U.S. Census Bureau. (2009). *Americans spend more than 100 hours commuting to work each year*. Census Bureau Reports. Retrieved May 1, 2013, from http://www.census.gov/Press-Release/www/releases/archives/american_community_survey_acs/004487.html (site discontinued).

United Nations. (2002). *World population ageing: 1950–2050*. United Nations, Department of Economic and Social Affairs, Population Division.

Ver Ploeg, M., Mancino, L., Todd, J. E., Clay, D. M., & Scharadin, B. (2015). *Where do Americans usually shop for food and how do they travel to get there? Initial findings from the National Household Food Acquisition and Purchase Survey*. Washington, DC: U.S. Department of Agriculture (USDA).

Wheeler, S. M. (2004). *Planning for sustainability: Creating livable, equitable, and ecological communities*. Oxon: Routledge.

World Commission on Environment and Development (WCED). (1987). *Our common future*. Oslo: General Assembly of the United Nations.

The Form of Small Town Centres

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2

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Over the course of history, development in small towns has been determined by several factors. Of special importance, this often includes its geographic location. The current need to better align communities with sustainable planning makes it important to first understand the urban evolution of pre- and post-World War II small towns, namely, before delving into contemporary planning and renewal issues in the chapters that follow, it will be of value to first know how settlements were established and how the form of their centres was created and how it has evolved. The first section of this chapter describes how the location and form of small towns were chosen, while the second section outlines their post-Industrial Revolution history. This is followed by a review of sustainable land-use strategies and, finally, two case studies that will illustrate the ideas outlined above.

2.1 A Place of Reference

On the north-west coast of the Greek isle of Rhodes, I stood atop of Mount Akramytis in Kameiros, an ancient Hellenistic city, overlooking the ruins of the Temple of Athena and marvelling the scenery (Fig. 2.1). Along with Lindos and Ialysos, Kameiros was mentioned in Homer's writing and was known to have been destroyed by an earthquake in 226 BC. Its easily defensible location, coupled with the rich soil for grazing and agriculture in the valley below, explained why this spot was settled in the first place.

The town's plan followed the Hippodamian grid system which divided the area into three urban zones or levels. The first, where I stood, was the Acropolis: the place of worship. The second, with dense stone structures, would have been the area that housed people. The last zone, marked by a large open space and a colonnade, was the Agora, the open public gathering area, and the Fountain-House where religious ceremonies took place. The simplicity of the urban plan on its three sections illustrate the way ancient towns along the Mediterranean sea were designed to accommodate the inhabitants needs, whether these be religious or social in nature.

Fig. 2.1 Images of Kamieros, Greece

For centuries, settlements like Kameiros, with less than 10,000 inhabitants, were home to the population of most nations. Understanding past development pattern of a place can give light and offer ideas about the future, of which will further be elaborated below.

2.2   Location and Form of Small Towns

In the *Economy of Cities*, Jane Jacobs suggests that a settlement's location was chosen based on the place's proximity to primary resources, food of course being the main one (1969). During society's hunting and gathering phase, this would be a place with access to gaming and means to build a shelter. In fact, a band's size was often determined according to the amount of food that the area could provide. As societies evolved and people settled down, a place that was both ripe for agriculture or a point of trade was a natural spot to start a community. Planning historian Kostof (1991) argues that an "instrument of authority, rather than any particular form or activity" was the guiding force of many towns. Distant seats of power or central governments initiated settlements and populated them with loyal subjects to spread their authority over vast territory.

Settlements were also built next to natural features such as waterways and aquifers to provide access to fishing, drinking water, and other communities. Another aspect in choosing a place for settlements was defence; this is especially apparent in many small Tuscan hill towns (Fig. 2.2). Volterra, which sits on two mountain ridges

Fig. 2.2 The location of many Tuscan hill towns like Volterra was chosen for ease of defence

and whose origins date back to the Neolithic time, became a regional outpost and later had a large wall built to protect against attacking armies (Lanzi 1831).

In regard to their form, Kostof (1991) suggests that the form and urban evolution of settlements commonly follows one of two patterns. He calls the first *spontaneous*, where growth happened in a non-planned, organic fashion. In such places, land was set aside for civic institutions, but spontaneity governed its growth including that of the town's centre. With meandering roads, European and mid- and far-east towns followed such development patterns. Kostof calls the second planning method *created*. A plan was drafted along with a set of rules beforehand to direct the place's establishment and evolution. Created places, according to Kostof, can have one of three forms. The first, a diagram city, is often a product of visionaries. In this category, one can include the town of Seaside, Florida (Fig. 2.3). He names the second grand manner, in which buildings, streets, and public spaces were arranged to convey the visual effect of grandeur and coherence. Such schemes were often the outcome of planning interventions in big cities rather than in small towns. The final category is the grid, where growth happened in a controlled and regulated fashion similar to the one I saw in Kameiros.

Rooted in the invention of *geometry*, which translates to "earth measurement" in Greek, the origin of the grid can be traced to ancient communities in Egypt and China well before their appearance in Greek cities. Yet, the most coveted of grid-based planning of the time was the city of Milatos. Dating back to the fifth century BC, the city is now on Turkish soil (shown in Fig. 2.4) after having spread to other
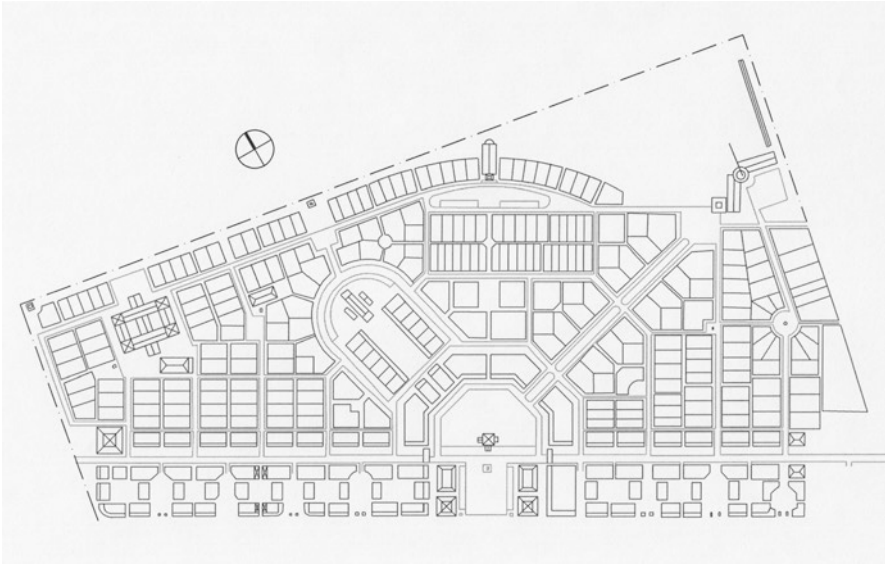
Fig. 2.3 The town of Seaside in Florida, USA, can be considered a diagram city

parts of the continent (Mamford 1961). Kostof suggests that the grid was a means of instilling a political structure and formulating an urban order, not a simple fit at the time. When meeting a river or encountering a defence wall, the grid's lines could easily be curved as needed. It also made further subdivisions of large area to smaller parcels simpler to accomplish.

The Greeks ushered in another concept: the agglomeration of several rectangular dwelling clusters to create the forerunner of a neighbourhood. Settlements at the time were small, often numbering about 5000–10,000 inhabitants with neighbourhoods being equivalent to a contemporary city block of about 1 acre (0.4 ha). The cluster had its own distinct physical markings such as narrow streets, perimeter walls, and small squares. The use of the grid was abandoned with the demise of the Hellenistic period, yet did not fade for good and saw incarnation in a modified form in Roman settlements where city blocks were larger. The Forum, which replaced the Greek city's Agora as the main gathering public space, was located in the heart of the settlement near two main intersecting axes: the Cardo Maximus and Decumanus Maximus (Fig. 2.5).

Centuries later, and most notably in the aftermath of the Industrial Revolution, the beginning of settlements and their evolution saw a radical change which will be described below.

2.3   The Genesis and Evolution of Suburban Towns

The building of small communities on the periphery of large cities, later becoming known as suburbia, was a catalyst to the development of many small towns. The Renaissance which altered humanity's perception of art, music, and literature also
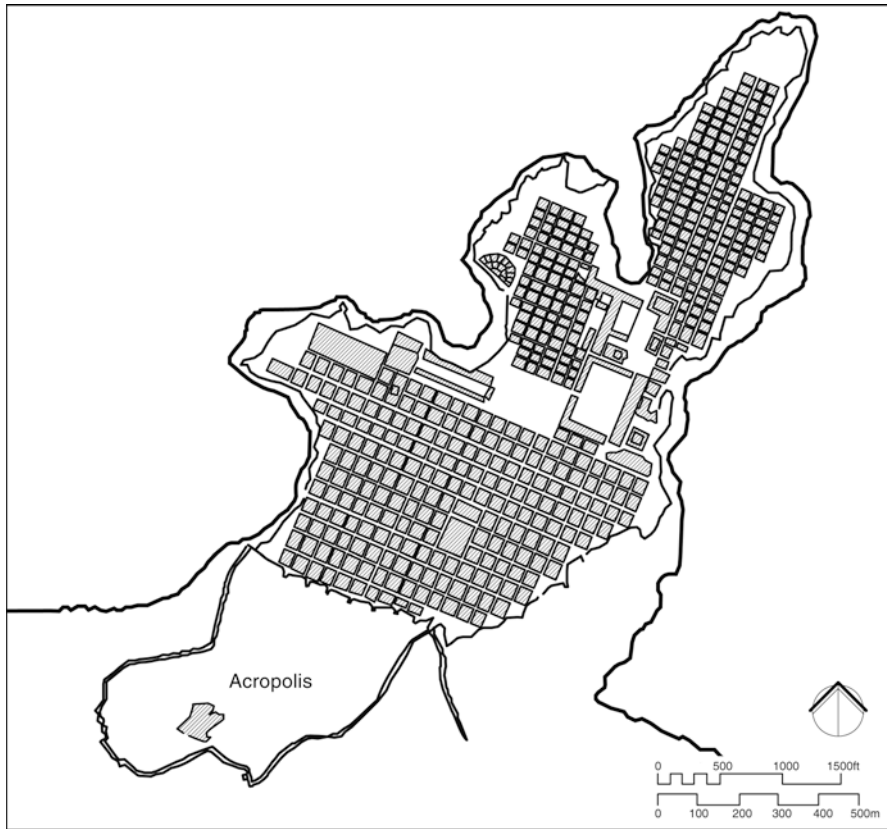
Fig. 2.4 The planning of Milatos, a fifth-century BC town now in Turkey, followed grid geometry

introduced novel concepts about cities as places of living and to some degree expanded the notion of suburban living. Yet, the spark that triggered a large-scale introduction of the contemporary suburban development and the planning of many small towns in the Western world caused the largest human migration to cities in history. The Industrial Revolution saw waves of people abandoning agrarian life in villages to seek employment in cities that swelled rapidly. Abject poverty, disease-ridden neighbourhoods with no sewers or running water, poorly ventilated overcrowded homes, and harsh working conditions were the breeding grounds and the circumstances that led a certain man to introduce his far-reaching urban planning idea.

In 1876, Ebenezer Howard was employed by a company that transcribed parliamentary records. His job and further reading exposed him to the ongoing debates about cities and the squalid conditions of their inhabitants. Reflecting on what he had read, he had an idea: a new type of community that would draw on the best that both city and country living could offer. In 1898, Howard went on to unveil his vision in the book *To-Morrow: A Peaceful Path to Real Reform*, which would later be revisited and renamed *Garden Cities of Tomorrow* (Howard 1902). In the book,

Fig. 2.5 The Cardo and the Decumanus streets and, in their intersection, the Forum in Ostia Antica, Italy

he argued for withdrawal from overcrowded industrialized cities to communities that would combine the social and public convenience of towns with the healthy and serene aspects of rural life. Howard felt that since private ownership of land led to an exploitation of the city centre and inflation of its property values, a community whose land is to be owned by a limited-dividend company rid of private speculation would allow for free buildings, services, and economy.

With building spread out in a small community setting, Howard initially proposed a 32,000-resident limit where the countryside and its benefits would be accessible to all. The proposal Howard made for a Garden City was diagrammatic, hierarchic layered circles with no particular architectural style (Fig. 2.6). Industry was located at the town's centre surrounded by a ring of parkland. Near the park was a crystal palace, a glass arcade that housed shopping amenities. In the next layers were houses with gardens attached to them. These were enclosed by a Grand Avenue of 127 m (420 ft) wide, which served to separate residential from industrial areas. At the periphery were rail lines and larger farms (Macfadyen 1933).

Howard divided his diagram city into six identical wards, with each housing 5000 people. It was the first time that a number would be suggested as to what would go on to be a desired size for a neighbourhood in modern times. In the heart of each ward, in an open space he named Grand Avenue, Howard proposed a school where the number of pupils would adequately suit the community's size. More than a mere concept, he offered several yardsticks for what contemporary communities need to encompass: a defined population size, hierarchical order, inclusion of green
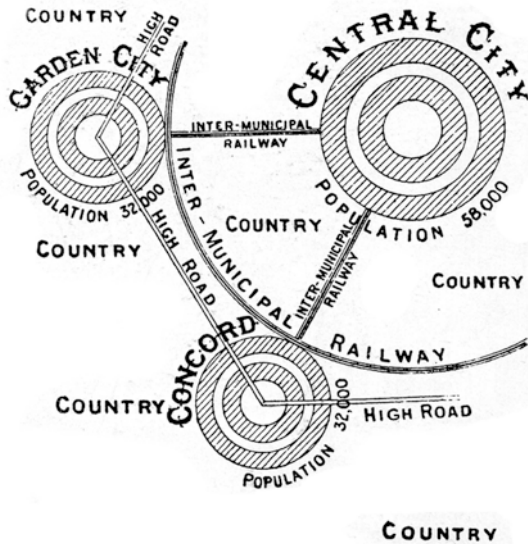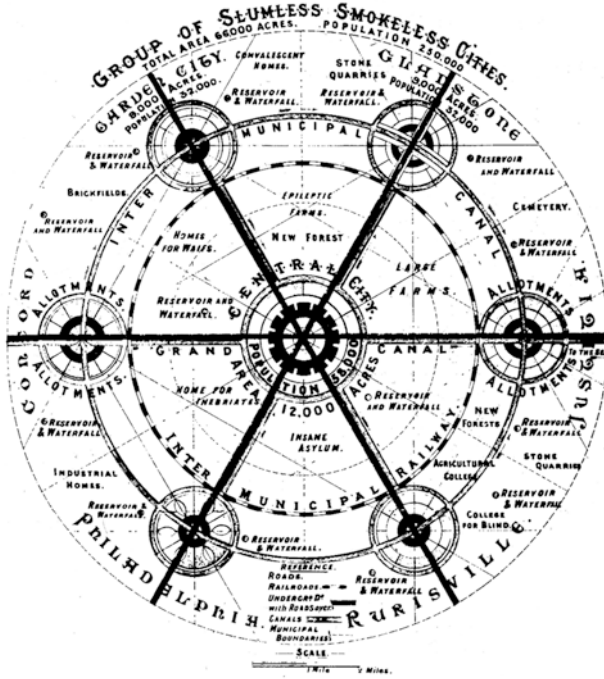
Fig. 2.6 Howard's proposal for Garden Cities surrounding a central city

spaces, a public transit linked to the big city, and land-use distribution between industry, agriculture, and housing.

Ideas often take root and stand a chance to have a lasting effect when they are implemented. Howard's vision was translated to reality in the planning of the town of Letchworth. In 1903, the Garden City Pioneer Company bought 3822 acres (1529 ha) of land north of London, and subsequently hired planners Raymond Unwin and Barry Parker to implement Howard's vision. Unwin had worked previously in community planning and was involved in the design of New Earswick, where he developed concepts of low-density housing. With Letchworth, Unwin and Parker converted Howard's diagrams into actual plans with a central civic area enclosed by a park and housing radiating from this centre (Fig. 2.7). Unfortunately, it ultimately lacked the geometrical clarity of Howard's planning, and certain features of the town were misplaced (Unwin 1909).
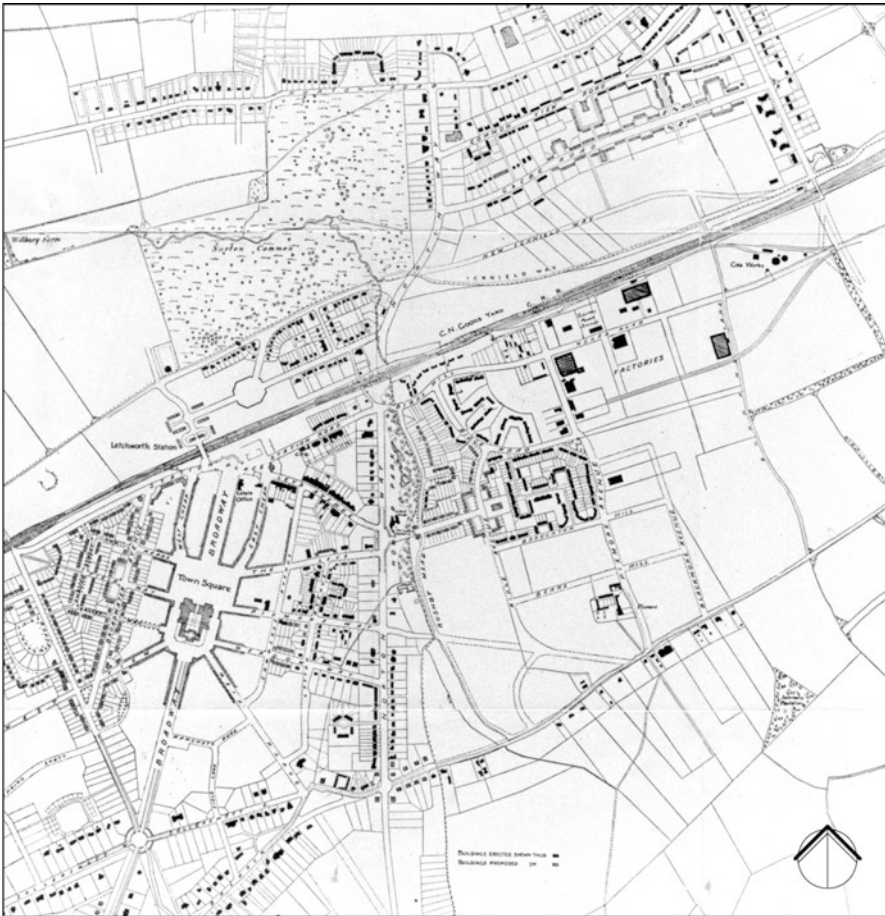
Fig. 2.7   The plan of Letchworth, UK, follows Howard's Garden City principle

The building of Letchworth was followed by a string of other British towns. With the inclusion of Garden City features, the town of Welwyn was planned by Louis de Soissons. A treed boulevard leading to the centre formed its spine, and homes were set back from the street and separated by a strip of grass. These were just some of the many design guidelines that the plan followed. In 1906, another town named Hampstead Garden Suburb was designed by Unwin and Parker, which was unsurprisingly also based on Howard's principles. There were now several communities which included a Garden City idea and built components for others to see.

In 1922, two young American planners, Clarence Stein and Henry Wright, travelled to England to meet Howard and to visit Letchworth. Having left an impression, the two planners returned to the USA to inform a group of colleagues of what they had learnt. The group, which came to be known as the Regional Planning Association, and included famed architect and sociologist Lewis Mumford, discussed and incorporated many avant-garde planning and social ideas of the time. Their goal, much like England's and sparked by the poor living conditions of large American cities, was to create more humane environments by including the Garden City sensitivities. The subsequent work of members of the Association was highly progressive, drawing on ideas from influential thinkers of the time including fellow American Clarence Arthur Perry, a planner, sociologist, author, and educator.

Similar to Howard, the driving forces behind Perry's pivotal ideas were social needs. In 1907, he went on to work for the Russell Sage Foundation, which was established to improve living conditions in cities. He resided in the Sage Foundation development of Forest Hills Gardens in Queens, New York. Planned by Frederick Law Olmsted Jr., this place helped him define his famed neighbourhood unit concept.

When observing Forest Hills, Perry noted five aspects that contributed to its successes: clear boundaries, a well-planned internal street system, a variety of properly chosen land uses, the presence of a central area, and the provision of open spaces. Based on his observations, he laid down his own principles that were drawn in an iconic sketch (Fig. 2.8).

First, the unit needed to have a shape where all sides were of equal distance from the centre. Perry suggested an ideal quarter mile (0.4-km) radius and a size of 160 acres (65 ha). Second, the neighbourhood centre would have communal amenities including a school grouped around a central green space. Apart from this, shops on the ground floor of apartment buildings would be located in outer corners. Fourth, small parks and opens spaces would be scattered in each quadrant and account for 10% of the neighbourhoods' area. Having arterial roads bound the unit's sides was Perry's fifth principle. Finally, the street would be made up of both curvilinear and straight roads to reduce traffic.

Equipped with new ideas and having seen a built project, Clarence Stein and Henry Wright set to implement them. They aimed, according to Stein, to build "balanced communities in balanced regions" (Stein 1949). Radburn, in the state of New Jersey, is by far the most renowned product of their partnership (Fig. 2.9). Here, houses were sold as opposed to being rented in British Garden Cities and New Towns. However, some elements were not implemented at all. For example, the
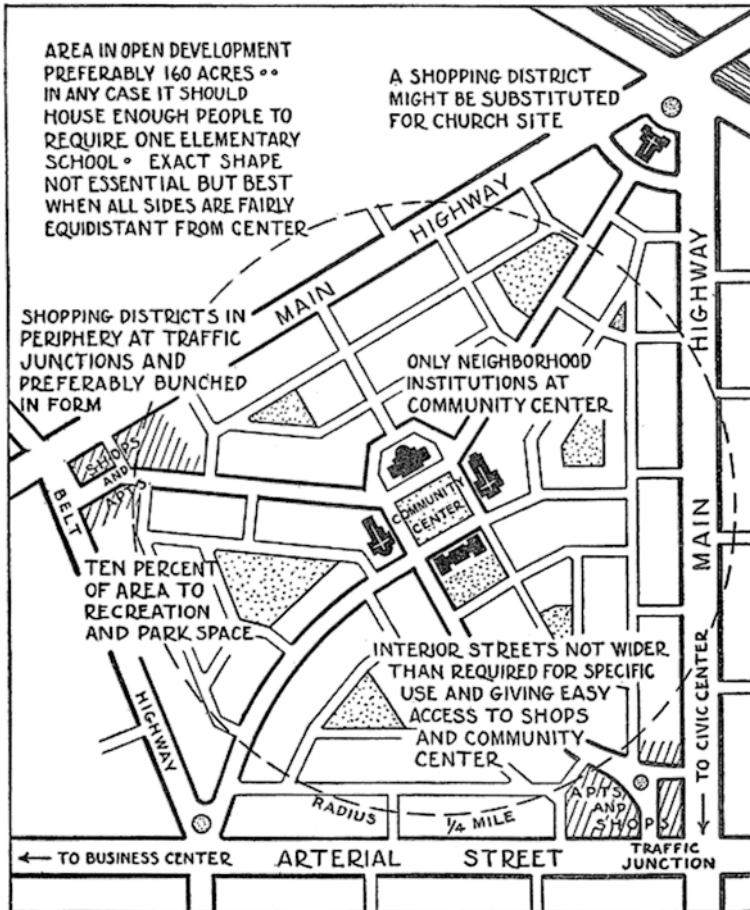
Fig. 2.8 Clarence Perry's iconic diagram of a neighbourhood unit

surrounding greenbelt was never purchased because of the Great Depression. Yet, the overall result was still a community for young families with a variety of housing types, green patches, small retail centres, and cul-de-sacs and scenic curving streets. It was also a first-generation community where parking garages were attached to each home.

The ideas that were embedded in Radburn became a model of suburban planning for the rest of the twentieth century. Its planning coincided with the introduction of *Euclidean Zoning*, which separated large swathes of strictly residential areas from all other land uses. Introduced to simplify speculative land development, it also resulted in separation of residential from other land uses and even led to social and racial segregation (Logan 1976).

The influence of Radburn was one of the catalysts to the proliferation of developments and small suburban towns that were built after World War II. New zoning

Fig. 2.9 Several features were considered in the planning of Radburn, New Jersey, including cul-de-sac roads and garages
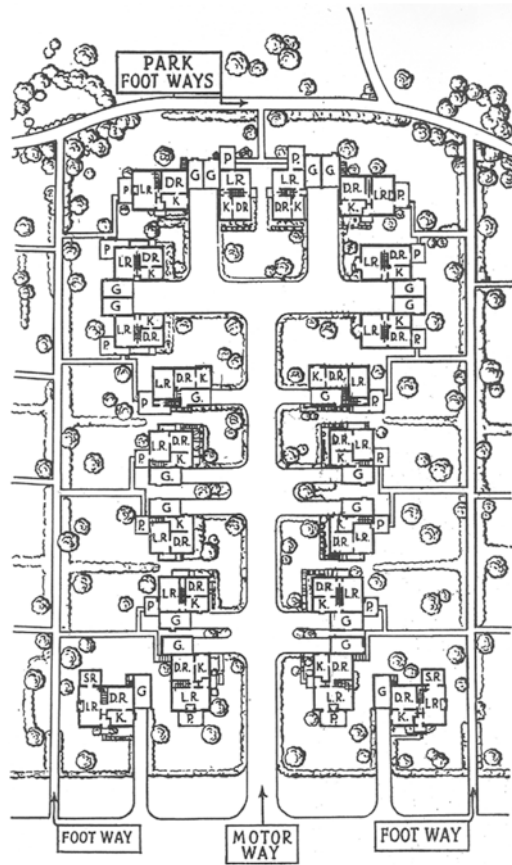
regulations that controlled the design of these places attempted to maintain the drawing power of suburbia: detached homes with large plots of land set apart from next door neighbours and with roads gradually growing wider (Fig. 2.10). Achieving it entailed a density of 7–10 units per acre (17–25 units per hectare), but such density did not justify the economic viability and frequency of use of most amenities. Business owners could not find patrons, transit authorities did not have enough riders, and libraries had few readers. Residents who bought into the suburban dream were also not content to reside next to businesses, which drew in traffic and generated noise. Bylaws strictly objecting their construction in the heart of communities were put in place, and as a result very few small towns had centres similar to those of old traditional towns.

The need of dwellers in suburban communities to access basic amenities did not decline. Residents had to get to stores, medical clinics, and post offices, which have now been located away and shared by inhabitants of several developments. Reliance on private cars became essential, and every household had to have more than one vehicle that, with low-frequency public transit, was used often. When the number of cars
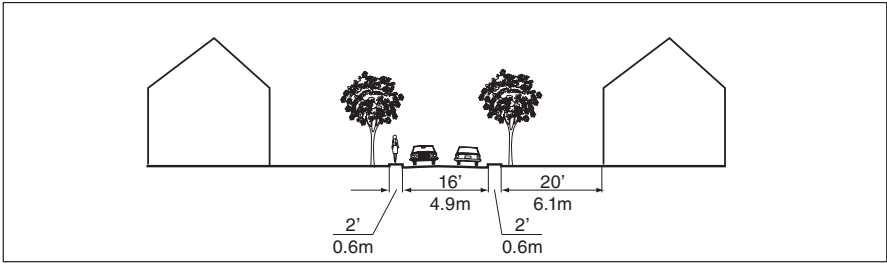
Hampstead Garden Suburb, 1905
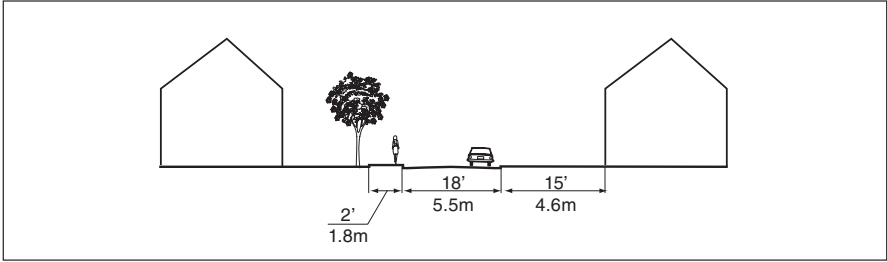
Radburn, New Jersey, 1927
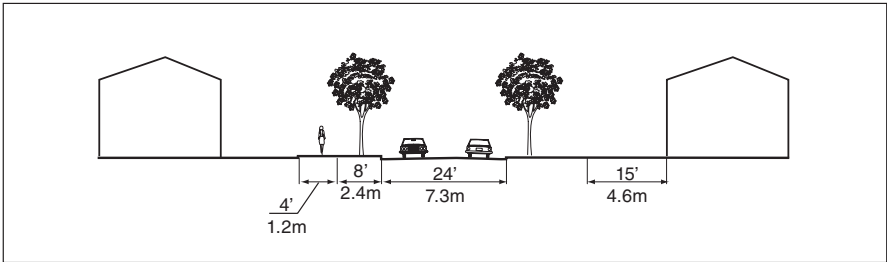
FHA Standards, 1936
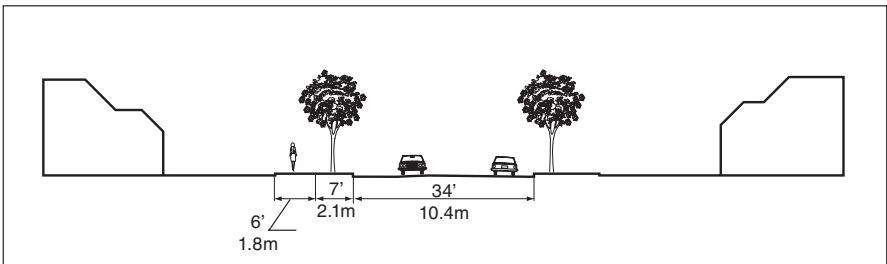
ITE Standards, 1965

Fig. 2.10 Over the years the widths of local roads gradually expanded in small US towns

increased, the need to build roads to accommodate them grew as well. Paradoxically, the roads remained empty and were hardly used except for rush hours.

Along with roads, the need to park several cars in each home became evident. Parking garages were constructed adjacent, to homes which meant that a typical lot had to be widened as well. When the lots grew, the street length also expanded, contributing to further decline in density. Length and expenses associated with infrastructure to serve these homes mushroomed, contributing to the emergence of another challenge—housing affordability. Water lines, fire hydrants, storm sewers and house drainage systems, electrical grid, telephone, internet, and cable TV were among the many services that needed to be buried below ground. Unsurprisingly, this only further increased development costs.

The social layer, a web of relationships essential to turning a development into a community where interactions among citizens exist, eroded. When town centres did not exist, meeting places also vanished which led to the decline of social relations and face-to-face encounters. Even more, limited types of dwellings resulted in socially and aesthetically homogenous communities. This meant—among other things—that members of an extended family, young and old, could not reside in the vicinity of each other to create a support system. Long distances and, at times, lack of sidewalks confined people to their cars or home, ultimately preventing opportunities to meet and get to know each other.

A movement that tried to remedy the errors of post-World War II planning was *New Urbanism.* The movement sought to preserve the core principles of traditional towns including town centres, yet adapted to contemporary living standards. Bressi suggests that "New Urbanism synthesized the core values of small town design" but "whether one can or needs to recreate the old has remained debatable" (2002). In the end, attempting to *recreate* old architectural styles does not encourage advancement or evolution. The movement nonetheless took hold, and several new communities were designed along *New Urbanists* principles including Bois-Franc near Montreal (Fig. 2.11).

Finally, theorists have speculated why some cities grow while others remain small. Linteau (1991) argues that cataclysmic events such as the Industrial Revolution or the aftermath of World War II could trigger a significant growth. Two centuries ago in North America, a small number of people lived in cities of more than 10,000 inhabitants. For example, prior to 1890, only few cities like New York or Philadelphia could boast numbers well past a million residents (Lynd and Lynd 1929). With industrialization and successive waves of immigration, nearly a third of Americans had moved from rural towns to larger cities, and small cities have continued to expand.

It was also suggested that towns that were reluctant to adopt new technologies remained small. For example, towns that introduced electricity or the telephone early on generally proved more successful in the long run (Lynd and Lynd 1929). As the twentieth century wore on, convenient ways of travel and job opportunities elsewhere kept some towns small. In addition, when several small towns were clustered, they merged to become a single municipal entity. Some residential areas on fringe become the geographical centre of the new agglomeration.

Fig. 2.11 The planning of the community of Bois-Franc near Montreal followed principles of New Urbanism with homes facing public squares

2.4   Sustainable Land Uses in Small Town Centres

Judging by the state of this post-World War II suburban planning, it is clear that planning strategies for renewal of existing and new towns' centres need to be reconsidered. Past economic, social, and environmental approaches will not be able to sustain old lifestyle and consumption habits for long. The current land use, function, and layout of small town centres need to be reassessed and new strategies developed.

The prevailing mind-set needs to create a sustainable urban system where current land-use bylaws will need to be constantly reviewed and changed if they do not respond appropriately to new challenges. Thought must be given to fundamental physical aspects such as street widths, buildings heights, and minimum lot coverage. A key concern is lack of adaptability, which affects a small town's ability to be resilient and remain competitive, ultimately leading to stagnation and the eventual departure of citizens.

Several indexes have been proposed over the years by theorists to link a town's vitality and form. McDonald has conceived an index called *Landscape Matrix* that could be used by a town to assess its configuration. He defines land-use *connectivity* as the degree of aggregation of the various uses, land-use *heterogeneity* as the amount of general functions the town fulfils, and land-use *intensity* as a scale to measure the amount of people per unit area (McDonald 2008). Essentially, these indexes can become tools of self-assessment in evaluating a town centre's viability.

However, McDonald was not the first to have considered such assessments. Johann Heinrich von Thünen had also developed strategies for appropriate economical distributions within a region. One of his strategies was a logical way to sell arable land to farmers. According to the theory, the further away the land was from the market place, the less expensive the lot would be to purchase (England 1980). Although this may seem like a great system, it encourages the purchasing of distant land and increased the amount of food purchased in and transported from further away. In another setup, which is more focused on the land within the city, William Alonso suggested that land is distributed according to the highest bidder; the price includes the cost of travel to and the geographical distance from the centre (England 1980).

Contemporary land use in small towns is commonly decided on according to functions and activities. In old towns like Volterra, there were no land-use allocations and functions were mixed. For centuries, building anew was only restricted by the surrounding defence wall; Volterra's urban planners had little choice but to build on top of or next to the existing buildings. On the other hand, in post-World War II suburban towns, the land use divided the place into distinct zones. Industrial and commercial districts were located away from the residential, and reliance on cars became unavoidable. In addition, the integration of mixed-use developments and the layering of residential units on top of businesses became unfavourable. Further segregating these functions within a town, the 1950s witnessed the full-scale effect of the "malling of America" and later the introduction of "big-box" retail, where new commercial centres were established on the fringes of towns as shown in Fig. 2.12 (Garreau 1991).

In order to create sustainable town centres, several yardsticks can guide the process. A tool used to measure the amount of area a community needs for survival is its *ecological footprint* (Holden 2004). This is a scale developed with respect to thermodynamic and ecological principles, ultimately considering the amount of land that a place covers, the amount of waste produced by its population, and the quantity of resources needed. According to Holden, in the year 1999, global consumption of natural resources exceeded the Earth's capacity for sustainability by nearly 20% (2004). In a study of compact Norwegian towns, Holden also found that they expended 10% *less* energy than the residents of larger urban centres where people tended to travel more.

The level of social equity in a town is also considered viable to its prosperity (Bramley et al. 2009). Aspects such as the level of the town's pride, the amount of social interaction between citizens, the level of safety, and satisfaction with the homes were considered. When describing the factors within social equity, consideration was given to the accessibility of local services, shops, schools, health centres, open spaces, public transport, job opportunities, and affordable housing.

Another key aspect which affects the sustainability of a town's centre is population density. In a place with more people, there will be a larger demand for basic amenities and a higher likelihood of a need for specialized services. A larger number of people will warrant a more developed public transit system and will foster more economically viable levels of services. More people will also justify a need for more green spaces and other features to make a space liveable. Bramley et al. (2009)

Fig. 2.12 Big scale retailers surrounding a parking lot on the edge of Campbell River, British Columbia, Canada

stated that unless a place is "acceptable to people as places in which to live, work and interact" they will not be successful towns, regardless of how sustainable they would be in theory.

What will one then look for in a well-planned small town centre? Surely, it would be a place where residents live near basic amenities yet still maintain a desired measure of privacy. Smaller residential zones are organized around the centre so that no part of it is located further than a 15 min walk to the core as shown in Fig. 2.13 (Jabareen 2006). A system of public transport will be available to reduce the usage of private vehicles, and as much as green space as possible would be designated for public parks, community gardens, protected trees and greenery, and privately owned vegetation. Finally, dwelling types will be diverse to accommodate people from all walks of life regardless of their financial standing, age, and family size.

2.5 Shaping Communities' Forms

2.5.1 Fort Saskatchewan, Alberta

Located in the province of Alberta's capital Edmonton, the city of Fort Saskatchewan's economy is linked to the oil and gas industries (Fig. 2.14). The population has a steady growth, reaching nearly 20,000 inhabitants who are spread over 11,470 acres
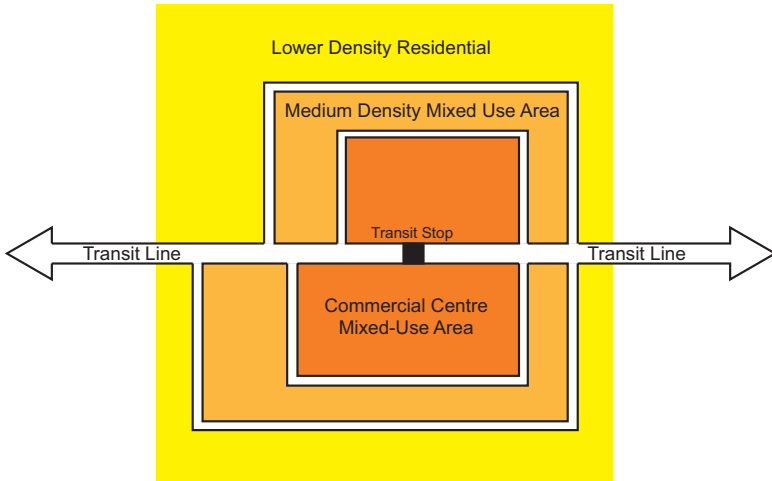
Fig. 2.13   When planning a small town, residential zones need to be organized around the centre no further than a 15 min walk to the core

Fig. 2.14   Images of downtown Fort Saskatchewan, Alberta, Canada

(4642 ha) of land (Erickson 2015). However, over the years, commercial development on the south side of Highway 15 has driven businesses away from the local commerce located in the core. As a result and in order to stay competitive, some of the smaller shops had also relocated from the core to this new commercial centre, leaving behind empty stores and ultimately causing an inner-city decline (City of Fort Saskatchewan 2009).

It is this background that led to our invitation to advise the town's leadership and develop a plan to revitalize the downtown. In consultation with elected representatives, city planning officials, and business owners, eight blocks have been selected to be the subject of an urban design intervention. We explored macro- and microscale ideas to invigorate the area and to make it attractive for residents and visitors who may choose to reside in or patronize downtown commerce.

To set a historic context, Fort Saskatchewan was established over 200 years ago with an industry of canoe building. In 1875, the North-West Mounted Police built a fort on the Saskatchewan River. Originally known as "Sturgeon Creek Post" , the name was changed to Fort Saskatchewan, and a community began to develop adjacent to the fort. In 1905, the Canadian Northern Railway reached the fort, which subsequently provided a great boost to the whole district. Despite a number of grandiose schemes, the community remained a quiet place until World War II, where shortly thereafter Sherritt Gordon Mines Limited established a nickel refinery. Following this, petrochemical industries started to move into the area, attracted by the availability of land, easy transportation access, salt deposits, abundance of water, a skilled labour force, and an appealing community for their employees (City of Fort Saskatchewan 2009).

Our planning process started with an evaluation of the existing conditions. The team recognized that at present, the core lacks a proper identity and sense of place that would distinguish it from downtowns of similar cities in the region. Most municipal services and public amenities are currently spread throughout the town, which not only forces extensive driving but also prevents accessibility for cyclists and pedestrians. Even more, there is no public transit to connect the core to the wider region. Geographically, despite the fact that the central area is stretched parallel to the Saskatchewan River, there was no physical link between the downtown and the water.

Several key strategies were adopted at the start of the planning process. For one, we recognized that increasing the population adjacent to the core was vital. As a result, two blocks that were made empty with the departure of a large shopping outlet became the site of a new neighbourhood. Attention was also given to improving connectivity between the different areas of the core by introducing better pedestrian and cycling paths. To create an engaging shopping environment, special attention was given to Main Street by turning it into an open mall with ameliorated streetscaping (Fig. 2.15). It was also suggested that a new town hall be built on that same street in the near future. Another strategy paid close attention to the back alleys in the centre, specifically by converting them into local pedestrian streets through which people could access new housing projects on infill lots (Figs. 2.16
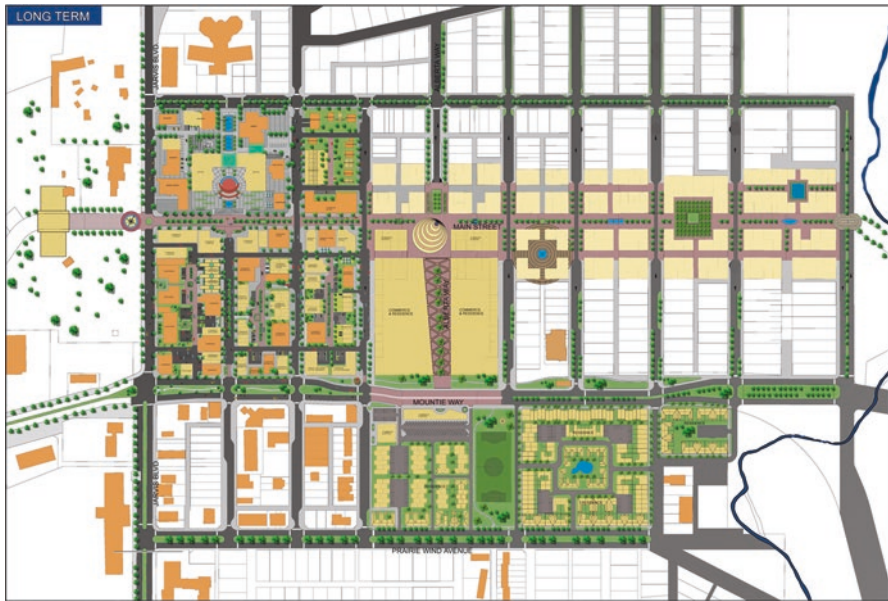
Fig. 2.15 The proposed master plan for the downtown Fort Saskatchewan

and 2.17). Further, it was suggested that all buildings in the downtown area would have to be between two and four stories tall and taller structures would be stepped back. The team also proposed a design for a new civic centre to include a town hall (Fig. 2.18).

To encourage commercial retail along key downtown streets, walls adjacent to the street and at pedestrian level will have store fronts. Sidewalks lining commercial streets will be slightly wider so as to offer additional space to merchants in front of their shops that would encourage foot traffic. In addition, structures along pedestrian streets will have canopy or awning to provide shade and shelter from the weather, primarily in winter time. As far as details were concerned, whether it is the addition of signage, a balcony, or the shade of brick, the remodelled streets must present an integrated and cohesive design.

2.5.2 Mundare, Alberta

Located in the central part of the province of Alberta, Canada, the town of Mundare was founded in the early 1900s by immigrants of Ukrainian heritage. The town's population of approximately 1200 has seen a reduction in agricultural production, not only affecting its economy but also driving some young residents out in search of employment elsewhere (Figs. 2.19 and 2.20).

Downtown Mundare has been experiencing a decline, and many businesses have failed to invest in improving their storefronts. The new Whitetail Crossing Golf

Fig. 2.16   Two of the redesigned blocks where the lanes were turned into a livable street

Course development on the southern edge of the community introduced a challenge to downtown Mundare with its contemporary appeal. Further, along one of the highways, the town administration approved a commercial development that will include big-box retailers. This will undoubtedly draw away shoppers from mom-and-pop commerce on 50th Street, the core's main road. It is with this background that I was

Fig. 2.17 Models showing the two blocks with insertion of new buildings and a rendering of the built insertion

invited to consult the town and to develop comprehensive guidelines and recommendations for the town's downtown renewal.

As usual, the retooling process began by an examination of socio-economic, historic, and land-use aspects (Fig. 2.21). There was also a town hall meeting where participants were asked to describe their vision of the core and the town as a whole and what they believed needed to be done to improve existing conditions.

As part of the macro-scale recommendations, it was suggested that in order for Mundare to have sustainable growth and offer affordable housing to its seniors and young families, the town needs to undertake several critical steps. First, new wealth must be created by attracting new enterprises since the town cannot continue to rely only on residential taxes and a small income from industry. Second, proactive steps need to be taken to attract young families. Third, the town needs to put in place a system of incentives to strengthen its downtown in light of the upcoming new big-box developments. Fourth, the town needs to make an effort to draw-in motorists who drive along Highway 855 and will support local commerce. Finally, the town

Fig. 2.18 Proposed plan for a civic centre to include a new city hall

needs to promote itself as a destination by creating a unique village atmosphere on 50th Street.

As part of a proposed land-use planning, my team suggested the extension of the commerce of 50th Street beyond the rail line and the addition of new residential development opportunities in the southern and north-western sectors (Figs. 2.22, 2.23, and 2.24). The housing in the new area would have a medium density closest to 50th Street, and low to medium density further away.

The plan for 50th Street also focuses on urban design elements that can be implemented within a short timeframe. Sidewalks would be expanded at certain areas so as to respect the functions of some buildings, such as outdoor dining space for restaurants and at the intersection adjacent to the civic square. Parking along 50th Street would also change significantly; parallel parking would be introduced, and 45° angled streets would be implemented perpendicular to 50th Street.

The proposal for downtown's empty lots was to encourage construction of new buildings on them or, alternatively, to build small gathering places with landscaping and benches until they will be developed. More trees along the street would be planted, and an entrance feature would welcome visitors to mark the beginning of 50th Street (Fig. 2.25). A roundabout large enough to have a sculpture in its centre would be built at the intersection of 50th Street and 50th Avenue to form the town's main gathering spot (Fig. 2.26).

Fig. 2.19 Images of Mundare, Alberta, Canada

To increase the housing density around 50th Street and to provide affordable dwellings to young families, the town will provide incentives to builders who construct residential projects. To qualify for such incentives, the boundary of 50th Street would be extended two blocks north and south of the street. Components of the housing incentive policy can be to sell town's owned empty lots for below-market rate, eliminate charges for connection of municipal utilities, assist with applications for provincial and federal grant programs, and assist in the promotion and advertisement of projects in local media.

The renewal process was divided into four phases. The first involved research, drawing plans, and adopting incentive policies. The second focused on

1. CHURCH   6. WATER RESERVOIR

2. MONASTERY   7. CIVIC COMPLEX

3. MUSEUM   8. RECREATION CENTER

4. ESSO GAS PUMP   9. GRAIN ELEVATOR

5. SAUSAGE MONUMENT   10. HOCKEY ARENA

Fig. 2.20   Landmarks in Mundare

implementation, construction of different spaces, erecting streetlights, and constructing the entrances feature. The main objective of phase three was the development of empty lots, planning the cultural heart, and the development of an industrial park. The final phase was to follow through with all unfinished plans and to complete the transformation of South 50th Street. Ultimately, the changes outlined were the product of many people's careful considerations and dedication.

2.6   Final Thoughts

While many metropolitan areas continue to grow in size, small towns remain important elements of the urban system in many nations. Over time, their form has evolved in response to forces such as the development of the railway, which created a distinct commercial geometry and led to increased development of settlements along rail lines. By observing the most successful sustainable initiatives thus far undertaken by small towns, we can observe the most promising methods to follow: mixed-use development, positioning a range of high-density housing types near the

Fig. 2.21 Land uses of the buildings on 50th Street

commercial core, the establishment of functional street patterns, aesthetics and safety, the conservation of heritage elements, and the creation of vibrant public spaces. Further, precedent demonstrates that small towns should emphasize natural elements such as trees and vegetation to generate a wealth of environmental benefits including reduced air pollution, decreased storm-water runoff, and a generally healthy ecosystem.

Fig. 2.22 A proposed land use for the area
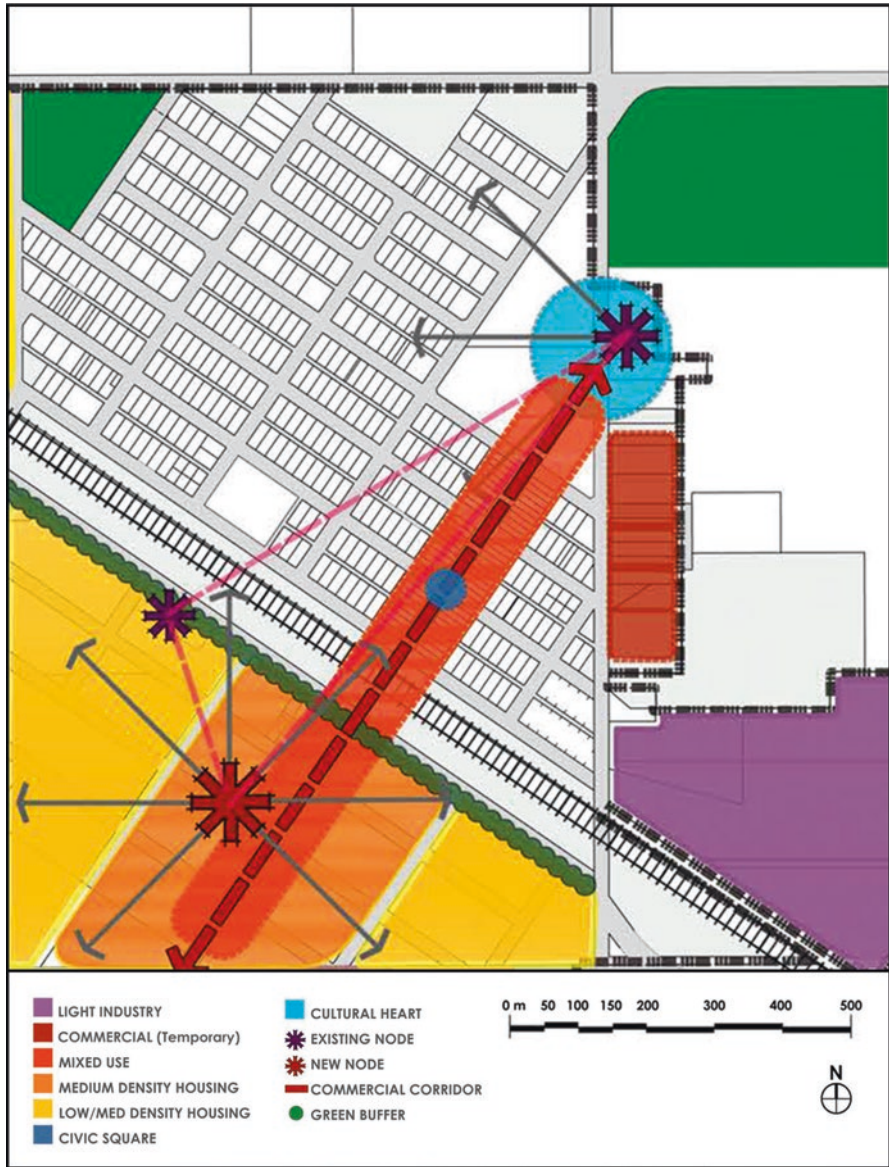
Fig. 2.23 Conceptual approach to the area's development

Fig. 2.24 Detailed development plan for the area
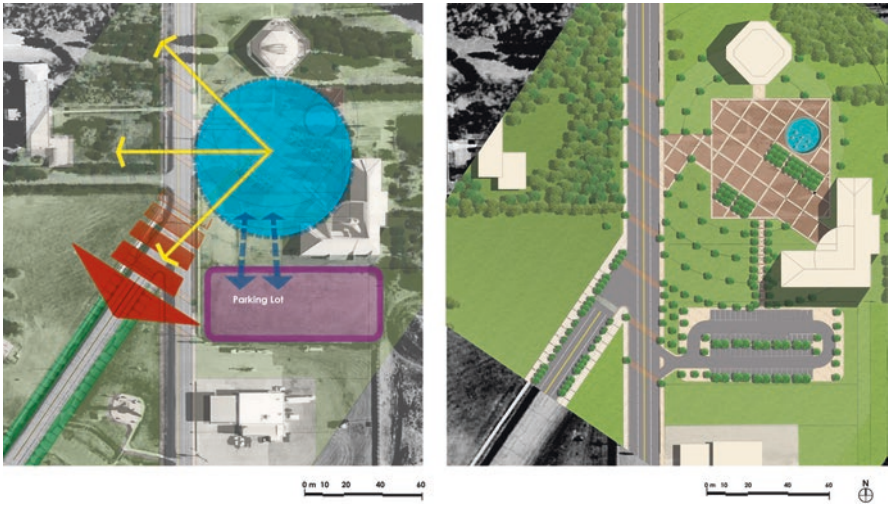
Fig. 2.25   The entrance way to downtown
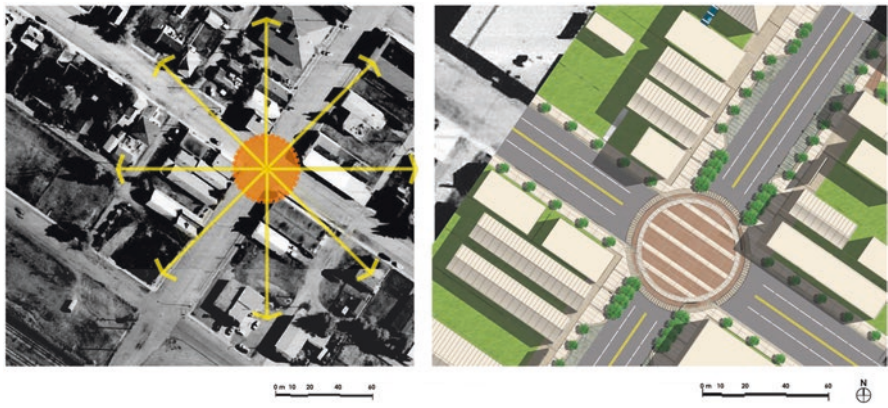
Fig. 2.26   A new public square on 50th Street

References

Bramley, G., Dempsey, N., Power, S., Brown, C., & Watkins, D. (2009). Social sustainability and urban form: Evidence from five British cities. *Environment and Planning A, 41*(9), 2125–2142.

Bressi, T. W. (2002). *The seaside debates*. New York: Rizzoli.

City of Fort Saskatchewan. (2009). *City of Fort Saskatchewan downtown area redevelopment plan*. Prepared by Urban Systems and Carlyle + Associates for the City of Fort Saskatchewan.

England, J. (1980). Residential land and prices in the City. *Habitat, 23*(3), 13–19.

Erickson, M. (2015). *Fort Saskatchewan 2015 population and demographics*. Fort Saskatchewan: Infogram.

Garreau, J. (1991). *Edge City: Life on the new frontier*. New Jersey: Anchor Books.

Holden, E. (2004). Ecological footprints and sustainable urban form. *Journal of Housing and the Built Environment, 19*, 91–109.

Howard, E. (1902). *Garden cities of tomorrow (original 1898 title: Tomorrow: A peaceful path to real reform)*. London: Swan Sonnenschein & Co..

Jabareen, Y. R. (2006). Sustainable urban forms: Their typologies, models, and concepts. Journal of Planning Education and Research, 26(1), 38–52. Kostof (1991).

Jacobs, J. (1969). *The economy of cities*. New York: Random House.

Kostoff, S. (1991). *The city shaped*. New York: Bulfinch Press.

Lanzi, L. A. (1831). *History of painting in upper and lower Italy, volume I in II*. Italy: J. Hatchard and Son.

Linteau, P. A. (1991). *Quebec since 1930*. Toronto: James Lorimer & Company.

Logan, T. (1976). The Americanization of German zoning. *Journal of the American Institute of Planners, 42*(4), 377–385.

Lynd, R. S., & Lynd, H. M. (1929). *Middletown: A study in contemporary American culture*. New York: Harcourt, Brace, and Company.

Macfadyen, D. (1933). *Sir Ebenezer Howard and the town planning movement*. Manchester: Manchester University Press.

McDonald, R. I. (2008). Global urbanization: Can ecologists identity a sustainable way forward? *Frontiers in Ecology and the Environment, 6*(2), 99–104.

Mumford, L. (1961). *The city in history: Its origins, its transformations, and its prospects*. New York: Harcourt.

Stein, C. S. (1949). Toward new towns for America. *The Town Planning Review, 20*(3), 203–282.

Unwin, R. (1909). *Town planning in practice: An introduction to the art of designing cities and suburbs*. London: Adelphi Terrace.

Weaving in with Nature

3

Abstract The chapter looks at environmental issues relevant to small town centres and in particular those that are endowed with natural features and points out the key principles of integrated design. It includes considerations of climatic conditions, water harvesting, buildings' and streets' orientation, and preservation of fauna and flora to name a few. The examples provided would illustrate how to successfully relate urban form to the lay of the land and use nature as a tool of urban renewal.

For nature to be used as a successful tool of urban renewal, planners must begin utilizing passive methods. For instance, decision-makers might consider creating pedestrian-friendly streetscapes or encouraging homeowners to harvest water— both passive practices. However, for sustainability to truly succeed, there must first be a general increase in environmental awareness. To this extent, the first step is to integrate the natural world into citizens' daily lives.

This chapter will first identify key environmental issues relevant to small towns, in particular issues that affect their centres. Consideration will be given to how climatic conditions pose further obstacles in sustainable planning and design. We then explore sustainable solutions to these obstacles, from the preservation of fauna and flora to the orientation of buildings and streets.

3.1   A Place of Reference

The town of De Koog is located in the North Holland Region Island of Texel. With a white church in its heart, along with hotels and low-rise residential buildings, the town is a home to 1300 people (Fig. 3.1). In the forested south side, you can find *Ecomare,* a nature museum with seal and bird sanctuary, a sea aquarium, and information about the nature in the Wadden and North Sea regions (Ecomare 2015).

A feature that has made De Koog a Mecca for bird watchers is its situation near a popular nesting spot of migratory birds. As a result ornithologists from around the

Fig. 3.1 Images of De Koog, the Netherlands

world flock to the area every year to witness the phenomena. As a result, the town has taken steps to protect the birds by introducing zoning bylaws that forbid construction of tall buildings near the coast (Ecomare 2015).

The place also has sandy beaches and campgrounds that make it tourism-centred (Statistics Netherlands 2001). The proximity to the ocean offers opportunities to take up windsurfing, kitesurfing, or regular surfing in one of the local seaside schools (Ecomare 2015). Truthfully, the whole region is very scenic, making it just as breathtaking to go for a walk and watch nature while enjoying the easy-going lifestyle.

De Koog represents what this chapter is all about: communities that not only preserve nature but turn it into an economic pillar of its existence.

3.2   Yardsticks for Environmental Performance

Human habitat's effect on nature is unavoidable, no matter how small the place or the intervention. Historically, when society transitioned from nomadic living to permanent settlements, it began to modify landscapes and introduce man-made responses to natural conditions. For example, during the Renaissance, Western civilizations incorporated virgin woodlands into large domesticated gardens as shown in Fig. 3.2. In the late eighteenth century during the Industrial Revolution, vast areas of forests were harvested when a demand for timber products arose (McBride and Jacobs 1985; Todd 1985; Zelov and Cousineau 1999).

Fig. 3.2 A garden in a villa near Florence, Italy

The relationship with nature was fundamentally altered during the nineteenth century with the advent of suburban living. It started when landscapes were exploited for their natural beauty by wealthy townsfolk looking for a country home (Fig. 3.3). In the years that follow, virgin forests or ones once used for farming were cleared to make way for new low-density residences. Unfortunately, developers saw the economic potential this had offered and did not attempt to work with the existing natural features. The prevailing mind-set of the time was that everything could be unabashedly changed or cleared to ease construction (Macionis and Parrillo 2014).

As noted in Chap. 1, large metropolises and small towns are faced with contemporary global challenges that are often exacerbated by climatic conditions. Scorching summer months are increasingly accompanied by extreme heat waves, posing a particular threat to seniors. Health concerns also relate to the disproportionate heat and air pollution-related problems, which are associated with an unequal distribution of green space. Excess air pollution leads to a number of respiratory and cardiovascular diseases, ultimately causing premature death. Evidence suggests that this is due in part to the fact that in many nations, a large number of inhabitants live in proximity to major roads or highways (Zupancic et al. 2015).

Small communities whose economy is heavily depended on natural resources such as oil or mining are affected by polluted water bodies due to acid mine drainage, whereby heavy metals and acids produce a toxic mixture and runoff into local

Fig. 3.3 A large estate that was built in the early 1900s as a summer residence in Senneville, a waterfront community near Montreal

streams and lakes. To make matters worse, high water-intensive industry places a huge demand on local freshwater supplies, and mining waste often results in soil contamination. The agricultural sector, on which many small towns rely, can also be held accountable for causing environmental degradation. For example, in 2010, 41% of the deforestation in Canada resulted from the clearing of land for pasture or crops (Natural Resources Canada 2008).

Several yardsticks have been introduced to gage the effect of a community on its surrounding environment. The *ecological footprint* measures the amount of physical space a population requires to sustain its existence. The area will include natural capital, crop, and grazing land needed to produce food, obtain natural resources, and espouse waste (Rees 1992). According to the Global Footprint Network, the earth's population consumes one and a half times more resources than the earth can replenish (2014). Therefore, the *ecological footprint* yardstick directs more thought to *preservation* due to the unsustainable rate of resources consumption. Another valuable index of a town's environmental performance is the place's *carbon footprint*. This is the total amount of greenhouse gas emissions (GHG) produced by the population of a defined area through acts such as the heating and cooling of homes or driving.

For economic reasons and to avoid urban sprawl, it may appear to make more sense to concentrate more people in cities. However, big communities strain the natural local surroundings and produce more pollution per capita. Some even argue that the best way to create *eco-cities* is to ensure that they remain small (The Why Factory 2010). Yet, it is difficult to prove that small towns have a lesser carbon or

Fig. 3.4 Boxes for urban agriculture are spread through the town of Ålesund, Norway

ecological footprint than large cities. The degree of eco-friendliness of a town rests on its ecology, economy, and location, to name a few factors. For example, an edge city with many daily commuters will have a larger carbon footprint than an urban hub whose citizens walk or take public transit to work.

The push for municipalities by many countries to adopt eco-friendly strategies and technologies has led to the emergence of *eco-tech* communities. These places prioritize ecological aspects through various forms to include harvesting and recycling water, recycling waste, encouraging nonpolluting vehicles, using renewable energy and renewable materials, and green roofs and urban agriculture (Fig. 3.4), to name a few. These methods also stand to increase a town's *resiliency* in its ability to overcome exterior pressures of environmental nature (Hopkins 2008).

3.3 Adopting to Topography

The topography of a town has a significant effect on efficiency of land use and appearance. It is therefore highly recommended to preserve as much of the natural features and the lay of the land as possible. Ideally, all buildings on their supporting infrastructure would be arranged around natural elements or at the very least respect the lay of the land. A useful method of laying roads is to follow and build them parallel to the contour lines, which prevents erosion and is cost-efficient to construct as shown in Fig. 3.5. In addition, since these roads will naturally have more curves, motorists will drive slower which will create safer zones (Moughtin 2003).

The above-noted approach applies not only to roads but to buildings that may also be constructed while respecting topography. Featuring a method called *terracing*, structures can be oriented towards the sun for passive solar gain and to avoid
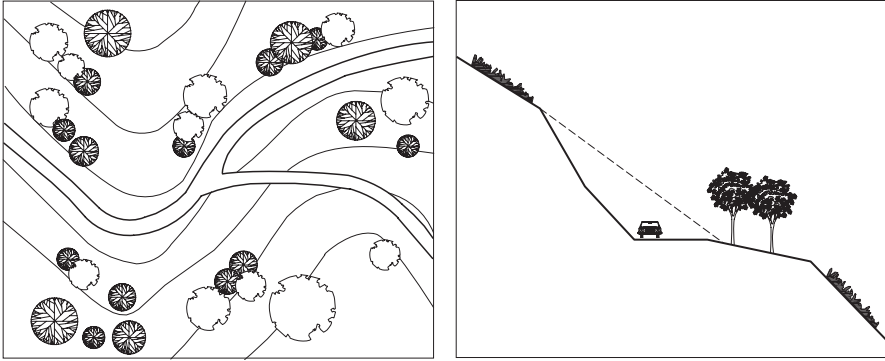
Fig. 3.5 In hilly towns, roads need to follow and be integrated into the place's topography

Fig. 3.6 Positano, on the Amalfi coast in Italy, is built on a sloping mountain respecting topography and benefiting from southern exposure

use of mechanical heating systems as shown in Fig. 3.6. This is achieved by placing buildings at varying elevations, which also serves to optimize views. Building on a slightly sloped ground also facilitates natural rainwater drainage which will reduce infrastructure construction cost, offer ground's stability, and limit soil erosion. By preserving the site's grade, more water will be absorbed by soil and plants rather than casted away as runoff.

If a building is to be built on a terrain that has a grade of over 10%, the structure can be divided to several segments where each is built at a different elevation
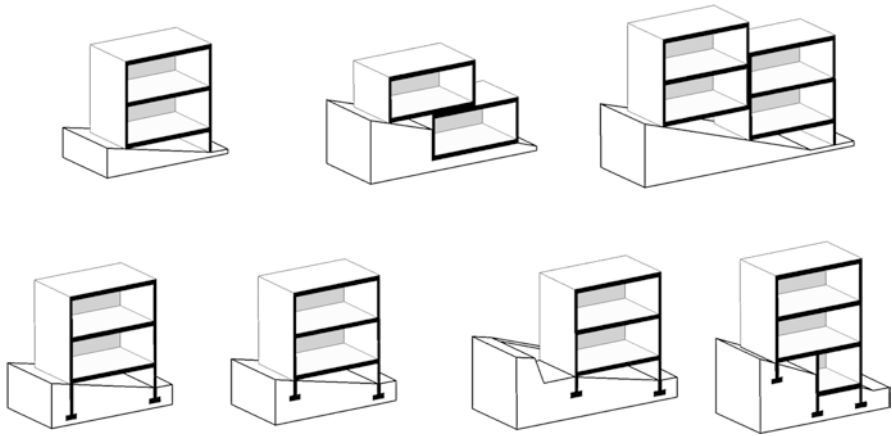
Fig. 3.7 Buildings can be made to fit a sloping site in variety of ways

Fig. 3.8 Homes follow a place's topography in Langford, British Columbia, Canada

(Figs. 3.7 and 3.8). The benefit of this approach is the greatly reduced amount of cut and fill required to lay a foundation. This way, only minimal amounts of the earth are displaced, and the natural features, including trees, the water table, and natural drainage systems, will remain intact. However, it may not be appropriate to apply

this method to all terrains but to buildings that are placed on ground with a moderate or steeper grade (Bradford 1991).

A slope of less than 10% would not be suitable for terracing because the building costs will be too high. The minimum grade that would benefit from terracing would be where there is a difference of at least 1 ft (30 cm) in elevation between distinct segments of the structure. The lower levels of the building would remain at ground level despite the change in elevation, and the design will thus have a more natural feel because its shape mimics the landscape. Furthermore, on a terrain where there exists a grade steeper than 25%, a second floor can be built on top of the staggered lower segment or develop a split level because it will provide more continuity to the interior space (Numbers 1995).

Structures built on a slope will always face the challenge of drainage and may require special attention. Most of the time, it is easiest to retain any soil excavated from the site and use it to pile a perimeter enclosing the foundation. Like this, any water running off from the land will be cast around the building and most importantly away from the foundation. The least amount of soil possible should be dug up or removed from the site to preserve natural drainage patterns. These methods will greatly simplify construction and also improve stability because the building will be constructed in parallel with the existing lay of the terrain.

While determining which site is most appropriate to build on in a town centre, several factors need to be considered. The sorts of buildings that can be supported will depend on the quality and type of soil that they sit on. A thorough analysis will include the study of the following factors: the soil's permeability, the level of bedrock, the local vegetation and ground cover's ability to retain water, the possibility of ground thaw periods, and the quantity of rainfall. All of these factors affect the amount of surface runoff to be expected for a given terrain, and all buildings to be erected on it must accommodate or else risk structural instability or water damage.

To avoid affecting the natural processes, cut and fill should be limited and only used if absolutely necessary. In a rocky terrain, homes can be constructed on-grade, thus avoiding excavation (Fig. 3.9). The same should be applied to the grading of the soil. The least amount of soil should leave the site, and if any additional earth is needed, it should be of the same type and composition as that of the native soil. Furthermore, during the process of building, ground cover should be maintained to avoid erosion and water casting, which will inevitably affect the soil's ability to absorb water (Corbett and Corbett 2000).

The built environment does not only consist of structures but also extends to all types of excavation and infrastructure such as parking areas and roads that in general should be reduced where possible. Thirty foot (9 m) wide streets can consume vast quantities of energy and material to lay, can require substantially more maintenance, can be much more expensive, can take over large amounts of land which would otherwise be used by ground-covering plants, and can effectively reduce the fertility of the soil that lies beneath and around it.

An environmentally favourable solution would be streets that measure no more than 20 ft (6 m) wide. As shown in Fig. 3.10, instead of sidewalks these streets would be lined by soft shoulders that would help limit the amount of wasted land,

Fig. 3.9 In a rocky terrain, homes can be constructed on-grade avoiding excavation
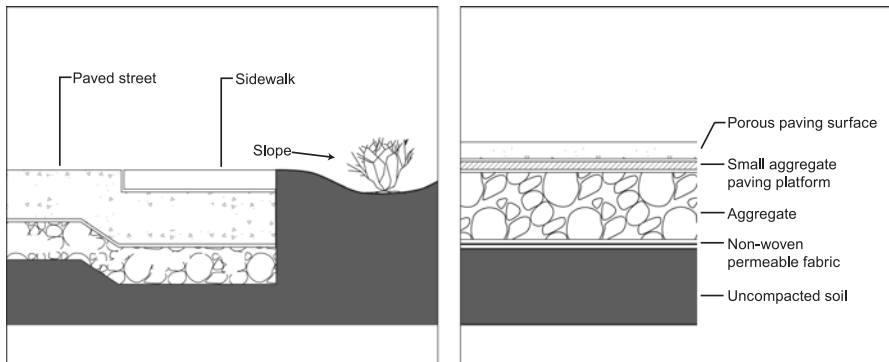
Fig. 3.10 Sidewalk can be placed at the road level to let rainwater flow to bioswales

preserve as much of the soil's quality, and limit the effect that infrastructure has on the soil's ability to support plant life. If a street is laid right next to a tree or over its root system, it undermines the tree's stability as a whole. Therefore, any develop-ments which relate, respect, and conform to existing patterns of vegetation are encouraged. The idea is not only to avoid causing unnecessary damage to nature but to also develop a mutually beneficial relationship with it. The processes of

biodiverse landscapes and the inner workings of building systems should have some sort of resonance between the two (Marshall Macklin Monaghan Ltd 1992).

To summarize, building while adhering to natural features, as opposed to altering them, is an economically worthwhile pursuit. The outcome will be much more aesthetically pleasing and environmentally responsive.

3.4   Planting Principles for Small Towns

As noted in Chap. 1, poor land-use planning, the introduction of newer retail on towns' edges, and economic downturn were among the aspects that contributed to the demise of some small town centres. To remedy that, green spaces can play a role in urban renewal through various strategies. For example, green corridors can link severed districts and build natural bridges between them as shown in Fig. 3.11. New parks and gardens can become the new "green dividend", and innovative, inspiring landscapes and public realm can transform the image of the depressed area (Cowan et al. 2005).

Green patches of land with trees, fauna, and flora provide habitats for a variety of species. However, they also generate a wealth of other benefits including pollution absorption, noise reduction, improved mental health, recreational opportunities, and a link between residents and their surrounding environment. The "greening" of

Identify areas of ecological importance to be preserved

Add greenbelt

Take account of topography

Consider potential water features

Identify hedgegrows, woodlands and recreational areas

Establish a planting framework
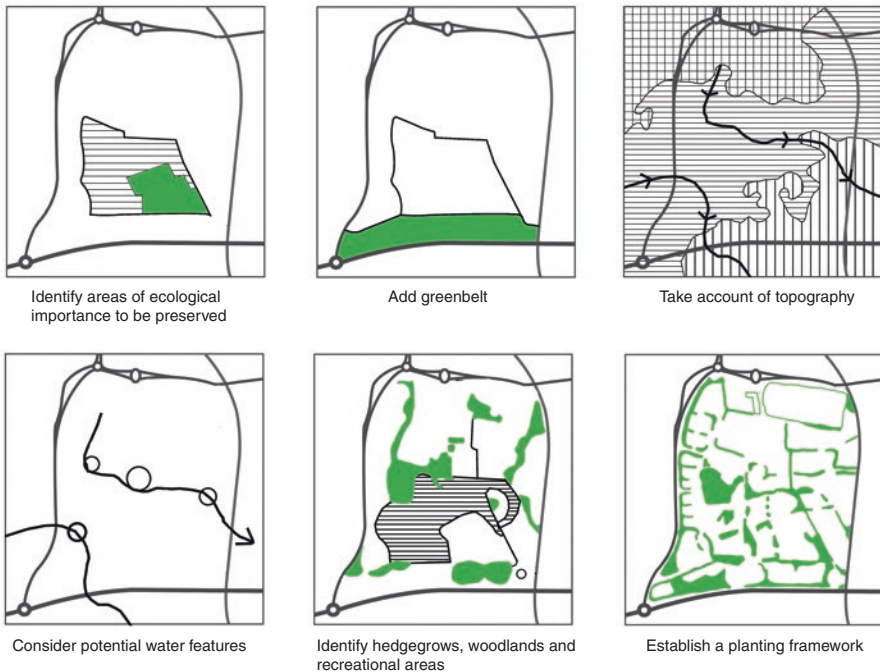
Fig. 3.11 Creating *green* belt corridors supports a place's biodiversity

Fig. 3.12 Treed streets and roadside bioswales help with pollution mitigation

small towns can adopt various forms—from urban greenbelts (planning to protect valuable ecosystems and increase the place biodiversity) to green corridors near roads (Fig. 3.12). This section explores how natural features can be integrated and preserved to contribute to the renewal of small town centres.

Small towns can reap vast benefits from urban forests and the planting of trees along streets and walkways (Fig. 3.13). Urban trees, shrubs, lawns, and permeable soils can mitigate pollution, reduce impacts of flooding, as well as buffer the urban heat island by improving air quality, which in turn slows runoff and cools land surface temperatures (Marshall 2013). Trees have a remarkable ability to filter multiple air pollutants, including sulphur dioxide and nitrogen oxides, which decreases health hazards. By simply providing shade, trees are associated with thermal comfort and relief from heat stress at the street level and neighbourhood scale, particularly in summer months. Commonly, the daytime air temperatures of parks are at least 33.8°F (1 °C) cooler than built-up areas (Reimer 2009). However, it must not be assumed that planting trees is completely benign nor is it a guarantee of well-being.

Pollution mitigation along roadsides is highly complex and depends on many different variables such as surrounding structures and the wind's direction and speed. While trees can effectively capture traffic pollutants, there is a risk that they may increase pollutant concentrations in densely built street canyons. The explanation for this is that the presence of leaves on trees reduces the upward transport of vehicle emissions, which in turn reduces the downward movement of air from above and increases air pollution with the canopy space. Although not as densely built as

Fig. 3.13 A well-planned network of tree-lined streets and green corridors encourages people to walk or cycle instead of drive

larger cities that have numerous street canyons, small towns should take this fact into consideration when planting trees.

Municipalities should also choose designs that capitalize on the opportunities offered by the local landscape as well as their local plant species. For example, in Nordic communities that experience a short growing season and long periods of frost, it would be more appropriate to plant grasses, mosses, sedges, and other low herbaceous plants that characterize the region (Zupancic et al. 2015). On the other hand, recommended vegetation for landscaping in small towns in coastal areas would largely consist of conifers and deciduous species, which would be appropriate for the wind, cool temperatures, and abundant precipitation of these regions.

The benefits of tree planting and vegetation are not limited to the environment, and numerous studies show that green space creates social benefits that contribute to the revitalization of urban centres. Parks, squares, and gardens provide an entirely different sensory experience from built-up spaces, and their function in connecting people with nature and providing space for recreation is key for healthy urban living (Cowan et al. 2005). A well-planned network of tree-lined streets and green corridors deters people from driving and instead encourages them to walk or cycle and spend more time in the public spaces of the towns' centre (Fig. 3.14). Effectively, a virtuous cycle emerges whereby environmental quality and community vitality reinforce each other. Since green pedestrian streets encourage people to walk, there will be a decrease in vehicle emissions and an increase in air quality. Moreover, it was also recognized that access to nature promotes lower blood pressure, by both reducing stress and improving mental well-being (Evans 2003).

Fig. 3.14 Green corridors can link severed districts and build natural bridges between them

To summarize, urban renewal in small town centres can be achieved in part through the introduction of green, public, and open spaces and through planting trees along streets to increase the place's biodiversity. These will provide natural habitats for species while generating social benefits for citizens such as recreational opportunities and a connection between themselves and nature. Effectively, these initiatives can make the place more accessible and attractive to visitors.

3.5 Streets and Buildings Design

From establishing green corridors and legislating suitable bylaws to energy-efficient buildings, there are numerous elements that turn communities sustainable. This section outlines various strategies related to streets and buildings that can play a detrimental role in the urban renewal of small towns.

In general, architects and planners need to consider the effects of landscape elements, sun exposure, wind, temperature, and humidity (Brown 2010). In the latter case, humidity and air temperature are mostly unaffected by changes at the microclimatic scale, but air near the surface of parks is cooler than asphalt, so cool air can be carried into adjacent hot urban areas. As mentioned in the previous section, deciduous trees provide shade in the summer when they are in leaf but allow a lot of solar radiation to pass through when they are leafless in the winter. However, they have little effect on wind in the winter.

Coniferous trees provide shade in the summer and the winter, but they will reduce wind flow during winter. We can therefore deduce that a combination of different tree species would be the most beneficial. In addition, a trellis oriented to the south with a vine growing on it will provide shade during the summer but will allow solar radiation to pass through in winter, creating year-round thermal comfort (Fig. 3.15). Also, a stone wall exposed to the sun can absorb large amount of solar radiation, particularly if the colour of the stone is quite dark. This energy is stored in the rock and emitted as terrestrial radiation, reducing the energy budget on cold nights.

Understanding microclimate is also highly relevant in terms of planning green infrastructure to allow transition between buildings and the surrounding countryside. Green edges can protect natural conservation areas and provide movement corridors for pedestrians and cyclists. Effectively, the microclimate for nearby homes is improved, and grey water and sewage can even be treated in reed beds along with other sustainable urban drainage systems. Corridors can follow the natural course of rivers or walking trails and should be designed as multifunctional spaces. Similarly, greenbelts can protect natural and agricultural lands while preventing urban sprawl and putting residents in daily contact with nature (Bilgili and Gökyer 2012). A UN-Habitat report on sustainable urban development suggests that *mosaic patterns* were praised as the most favourable as they provide for compact design while preserving large patches of green space (Kehew 2011).

Buildings with exterior green walls, also referred to as *living walls*, may serve an important role in mitigating heat stress in urban areas (Fig. 3.16). Although not as effective as trees in ameliorating air quality, they are highly useful in places with limited capacities for tree planting. By blocking the radiation from walls during the night, and through the evapotranspiration of plants, vegetated walls and roofs reduce wall surface and provide local cooling. Furthermore, they may be suitable in street canyons, where tree planting is sometimes problematic.

A common problem in small towns that have experienced stagnation or decline is that of vacant plots and brownfield sites. Lack of planning controls and the decline of industry are the principal culprits of derelict lots. Fortunately, these underused areas can be used productively for small, community-based activities. Urban agriculture, shown in Fig. 3.17, has increasingly been reintegrated into towns and cities and is an example of a strategic closed-loop, zero-waste, and energy-efficient system (Gorgolewski et al. 2011).

Unused rooftops and parcels of derelict land can accommodate significant agricultural activity and hold great potential to contribute to the food supply in small towns and particularly in isolated northern communities where food has to travel vast distances (Fig. 3.18). Even former industrial areas offer opportunities for farming, as greenhouses, raised-bed, and rooftop gardening are suitable for areas of prior soil contamination. Infrastructure such as highways and power line corridors often has ample spaces of wasteland that could integrate the production of food, and the towns' waste and storm water can be treated and reused as nutrients for crops.

Lastly, building and design codes can define common environmental standards for designers and developers, covering aspects such as general urban form and the
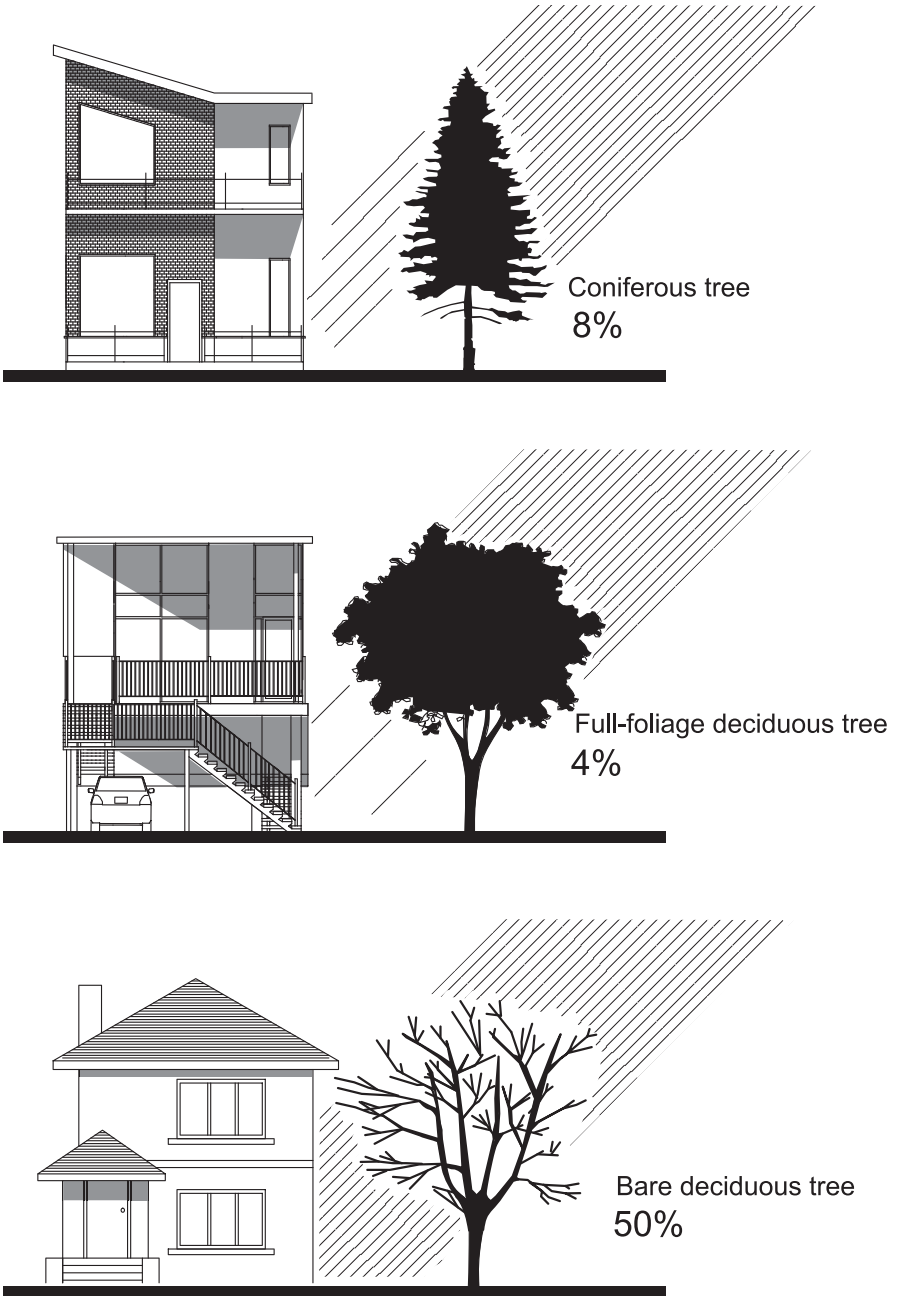
Fig. 3.15 Coniferous trees provide shade in summer and let in sun in winter

Fig. 3.16 Buildings with exterior green walls, also referred to as *living walls*, like this one in Singapore, may serve an important role in mitigating heat stress in urban areas

Fig. 3.17 Urban agriculture has increasingly been reintegrated into town planning and is an example of a strategic closed-loop, zero-waste, and energy-efficient system

Fig. 3.18 Unused rooftops can accommodate significant potential to contribute to the food supply in small towns particularly in isolated northern communities, where food has to travel vast distances

character of streets, as well as more detailed coding on courtyards or green spaces (Cowan et al. 2005). Small towns can observe Malmö, Sweden, as an exemplary case, where a "menu" of green measures was devised. There, green space codes were based on a point system whereby greener measures like planting a tree is worth more points than planting a square meter of grass (Fig. 3.19). The result of this initiative was that design codes encouraged sustainable building in a flexible, diverse, and creative way. UN-Habitat recommends similar regulatory approaches and incentive-based strategies ranging from strengthening building codes to green mortgages and rating tools.

   To summarize, the proper design of streets and buildings can make a large contribution to the renewal of towns' centres. A sustainable built environment incorporates key elements, including understanding microclimate, designing green edges to protect natural conservation areas and create mixed-use corridors, and using mosaic patterns to preserve green space. Towns' centres can also benefit from the reintegration of urban farming practices to engage the community and make use of derelict land that acts as an eyesore and decreases land value.

3.6   Considering Waterways, Rivers, and Oceans

Throughout history, societies have had a fascination with and a dependency on bodies of water. Though we are completely reliant on water for survival, the relationship is often one-sided. Some want to live on the water's edge to enjoy the view, yet

Fig. 3.19 In Malmö, Sweden, a "menu" of green measures was devised where planting a tree is worth more points than planting grass

development of coastal regions often comes at a cost to the natural habitat. Many flora and fauna species consider shorelines their habitat, but they are constantly being encroached upon by human development. Ideally, the gap between both will be mitigated, where residents are able to live near shorelines while also preserving the environment (Fig. 3.20). This section looks into development in towns near water or those that have water running through them.

Historically, many human settlements started along waterways due to ease of transportation and trade. Water was naturally a source of food supply, and freshwater was used to cultivate land (Gravel and Bouchard 1999; Frost 1981). As time passed, the land reaching water was divided into long strips and granted to tenants through the *seigneurial system*. As industrialization geared up during the eighteenth century, land developers began advertising the shoreline as a place where one could lead a "civilized lifestyle" (De la Torre and Miller 1987). It was being considered as a scenic location ideal for seasonal cottages for wealthy residents (Fig. 3.21), and the land was being primed as a real estate commodity with yacht clubs, resorts, and footpaths and roads as public access (Baird and Hall 1998).

As a reaction to the damage caused by the Industrial Revolution, the *City Beautiful* movement expressed an acute concern for the social well-being and rehabilitation of waterfronts (Breen and Rigby 1994). The previous approach had disrupted the environment of the coastal region and had dampened civic moral. To combat the spoiled spirits of the community and to encourage a revival in prosperity, emphasis was placed on the development of human connectedness to natural environment (Knox and Marston 2001).

Fig. 3.20 Residents should be able to live near shorelines while also preserving the environment like this small town in Norway

Fig. 3.21 Waterfront homes near Cape Town, South Africa

Years later, people began to travel to rugged landscapes as an escape from the crowded cities. Certain areas within commuting distance on lakesides and river bends were particularly sought after by land developers for private homes. The emergence of suburbanization within small, strategically scenic fringe towns curtailed public access to waterways further. The *City Beautiful* movement was intended to reconnect people with nature, but ultimately the spirit of the movement was undermined by the desire to capitalize on cheap shoreline property.

People began migrating from cities to waterside areas that offered picturesque views, leisure activities, and less traffic. The burgeoning middle class' average income had been gradually increasing to the point where many could afford to leave the city and become permanent residents in coastal regions. With increased traffic, it appeared that communities were inching towards making waterways more accessible to the general public. Unfortunately, however, they were only becoming more exclusionary (Clawson 1972).

Residents wanted privacy and their own exclusive portion of the coast, and so a number of land-use bylaws and planning regulations were introduced. Furthermore, the development of master plans and the subdivision of lots became the major factor of lakeshore configuration. The larger portions, which had always been open to the public and were owned by the city, were then divided and sold to the highest bidder. What had once been free for all was now being sectioned off slowly. While this does reap a short-term quantity of financial benefit for the town as a whole, the privatization of the waterfront was prioritized over environmental concerns.

Ignoring environmental concerns does not happen without eventual ramification. The development of the coast into usable space usurped the region's natural features of many small towns. There is a distinctive difference between the built environment and the biodiversity that occurs in an unaltered region of the world. When community infrastructure is laid in an ecosystem or habitat, the animal and plant populations are divided into "smaller, more isolated units" through a process called *fragmentation* (Van Bohemen and Bekker 1991). This is incredibly harmful to the habitats and causes irreparable damage to native species' populations. The noise from traffic, noxious emissions, improper waste management, and light pollution all contribute to the contamination of the natural habitats. Any form of fragmentation caused by infrastructure only aggravates the disturbances further.

If a town, for example, allowed to clear-cut trees, the soil would not be able to absorb water as well as it once could. Inevitably, this would lead to an increased amount of storm runoff. The runoff is collected in drainage facilities and, if not treated properly, is discharged carelessly into waterways. If the water is not appropriately managed and is discarded irresponsibly, then it risks seriously polluting the waterways it gets poured into. This poses a major problem because runoff from modern developments sweeps up many impurities and/or unnatural products like fertilizer, pesticides, salt, and oil and then flushes them into the ecosystem. This can lead to an extinction of species, spur huge growths of unwanted species such as algae, or may gravely alter the landscape. To counteract such a dangerous practice, the sewage and used water should be treated before being reintroduced into natural waterways.

Ground cover should be made as permeable as possible to avoid impeding the absorption of water into underlying soil. When groundwater cannot recharge properly, the surrounding bodies of water suffer. They will experience periods of drought and scouring, leading to the erosion of shorelines. Strategies have been developed by various environmental activist boards that govern the successful protection of the shores. For example, developers must submit an assessment of their plan's potential environmental impact and their mitigation procedures to the board for approval prior to construction. The main objective of these boards is to sensibly meld the environment with human development (Nakamura 1989).

Environmental Impact Assessments (EIAs) take into consideration the water quality and quantity, physical changes of shoreline properties, salination, and the potential disruption of vegetation or waterways while keeping the environmental, commercial, residential, political, and public sectors in mind. EIAs are relevant in any building project because they present themselves right from the start, advising all plans before construction can begin. In addition, they provide guidance for developers and recommend construction techniques to help reinforce structures and stabilize against any possible negative consequences such as soil erosion.

Newer technologies are always being explored, such as the case in the Netherlands. The country is set below sea level and must accommodate through the use of several clever building techniques. Gabions and retaining walls, a relatively contemporary invention, are used to prop up buildings so that they do not fall into the waters of the canals which in some towns are regarded as streets (Fig. 3.22).

Fig. 3.22 Gabions are used to prop up canal facing buildings in the Netherlands

Fig. 3.23 The path can follow the shoreline to add appeal to the water's edge and attract pedestrians

Intuitively, people prefer to be surrounded by and look at trees, forests, and natural landscapes compared to the built environment of cities (Wolf 2007). Alessa et al. (2008) found that the greater the exposure to and view of nature, the more productive workers will be. To ensure continued sightlines and views from properties, the buildings in the town centre should respect certain height restrictions and also be set back from the shore. This has an added benefit of reducing the risk of flooding (CMHC 1983).

Slope zoning and terracing may also be applied to ensure good visibility of the water for inhabitants who are set further from the shore. The placement of a path that closely follows the shoreline adds appeal to the water's edge and may attract pedestrians as shown in Fig. 3.23. Foot paths should encounter vehicular traffic as little as possible so as to assure safety and provide pedestrians a preferred view of the water, unobstructed by any motor vehicles. To generate the most life within a town centre, there must be paths and ease of accessibility throughout the town and especially to the community's main natural features. There must also be visual boundaries to clearly indicate the land and water's edge and nodes or points of activity placed in the different districts (Lynch 1960).

To summarize, the breadth of influence humans wield on the surrounding environment has become increasingly apparent. It calls into question the sustainability of our relation with waterway and shores and demands that they be overhauled to become more ecologically respectful. A town next to or one that has water run through it can regard it as a resource that may drive its economic engine while respecting the environment.

3.7   Small Towns Renewal in Cold Regions

For much of the year in Nordic regions, the temperatures fall below comfortable levels for outdoor activities. Small town centre streets are often in competition with shopping centres that offer protected indoor weather control and thus attract more people. Winter conditions bring a physical discomfort caused by wind chill and cold temperatures, a psychological impact due to longer hours of darkness, and a climate hazard that reduces outdoor mobility (Arsenault and Reid 2005). However, northern site planning can capitalize on opportunities to engage in outdoor recreational activities, create lively streets, and reinforce the vitality of town centres by addressing issues related to snow removal/storage, sunlight exposure, safety, wind, and darkness. Knowing how to plan a town centre that offers comfortable conditions in Nordic regions is therefore essential.

Planning Professor Norman Pressman identified three primary components that a "winter city" should have: high-quality microclimate urban spaces, infrastructure to accommodate the winter needs of the most vulnerable groups, and education to teach inhabitants how to understand and enjoy winter (1996). Furthermore, Pressman underlines the difficult conditions that hinder pedestrian travel in winter cities, such as ice and vehicle spray, and suggests that solutions can be found through design tools such as the modification of roof designs. He is highly critical of the "shopping mall design", which he describes as being uninviting for pedestrians particularly in winter because of the lack of walkways and disproportionate expanse of parking space. To counteract the dull winter weather, Pressman also proposes increasing natural light, outdoor furniture, natural materials such as snow and ice, and engaging with the exterior buildings' colour as shown in Fig. 3.24 (1996).

Buildings and open spaces can maximize sunlight exposure and minimize development on north-facing slopes, while wind speeds can be reduced by considering their height and placement and by incorporating balconies, stepped facades, and irregular exteriors on buildings (Fig. 3.25). Roof designs should be such that snow and ice accumulation is prevented from shedding into walkways, which can be achieved by using vegetation and swirl areas as well as transition areas at building entrances for house owners to clear snow.

Similarly, street design should adapt to the climatic context, and pathways should be provided on the sides of buildings that benefit from the greatest exposure to sunlight. Snow accumulation can be prevented through landscaping in parking lots and raised crosswalks and by installing storage areas near roads. Curbs should have gentle curves to accommodate ploughs, and priority for snow clearing should be

Fig. 3.24 In Nordic communities, colourful buildings' facades help alleviate dull winter conditions
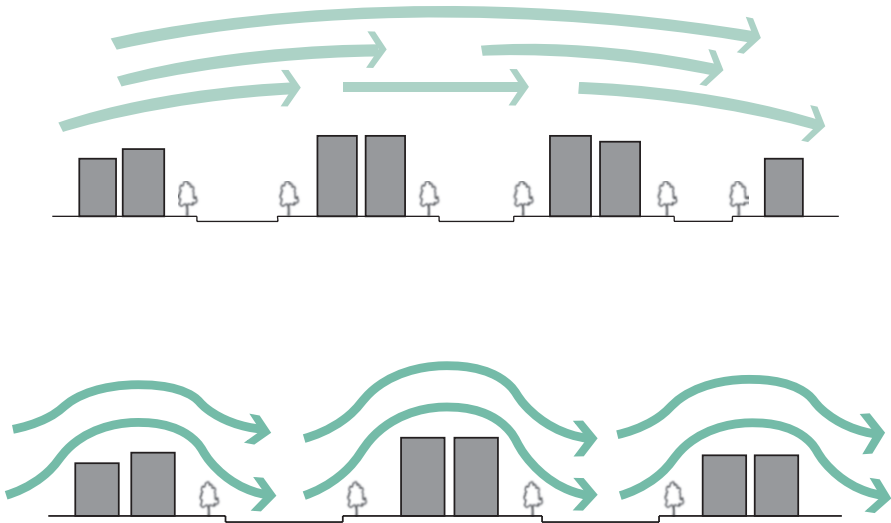

Fig. 3.25 In the planning of towns, tall buildings can be considered as a means of mitigating winter winds

given to walkways and public transit platforms. In addition, authorities should build infrastructure that promotes year-round activity, encouraging citizens to make use of winter recreation opportunities.

To summarize, there are a number of tools that small towns in cold climates can use to revitalize their centres and create vibrant and comfortable places while reducing energy costs and consumption.

3.8   Integrating Communities and Nature

3.8.1   Ponoka, Alberta

An approach to the urban renewal of a small town is the integration with the surrounding natural habitat. This was the case in the town of Ponoka, located in the province of Alberta, Canada, located between its capital of Edmonton and the city of Red Deer (Fig. 3.26). Established in 1891 as a refuelling stop, it is home to 6700 people who reside around a charming urban core with mom-and-pop stores surrounded by dwellings. While other Albertan towns experienced growth due to the success of its booming oil industry, Ponoka's economy and population base dwindled.

With few visitors, downtown could not compete with larger regional businesses. As a result, Ponoka needed to develop a strategy to stimulate its economy and inspire population growth. To do this, it needed to adopt a new vision or theme that would respect the urban form and importantly to strengthen the relationship between the town centre and its residential districts. It was this background that led to my team's invitation to propose plans for the town's renewal.

Ponoka's core features many historical buildings, signs, storefronts, and even small shops that date back to the origin of the town (Fig. 3.27). In an attempt to encourage rejuvenation, the town adopted a program which while improving the appearance of the buildings, ultimately did not succeed enough to replenish the faltering community.

Upon Ponoka's establishment and with its original master plan, land was segregated by use (Figs. 3.28 and 3.29). The commercial and industrial sectors occupied the south-west corner, while the residential area was placed at the core. As the community grew, homes branched to the north-east and distinctly in the opposite direction from the rest of the town. Not only are the districts separated by zoning regulations, but the Battle River runs through the heart of the town and physically bisects the commercial zone from the residential. The river created a green space that acted as a buffer between the two halves of Ponoka. Eventually, after successive population growth periods, the eastern side of the river was developed for housing. Only the core of Ponoka had a mix of residential and commercial use, which served farmers who came to town for goods and services.

The Stampede, an annual event that the town hosts, takes place outside the downtown's perimeter and is attended by some 70,000 people who frequent the Western-style games. The regional location of the Stampede has a major benefit as it is

Fig. 3.26   Images of Ponoka, Alberta, Canada

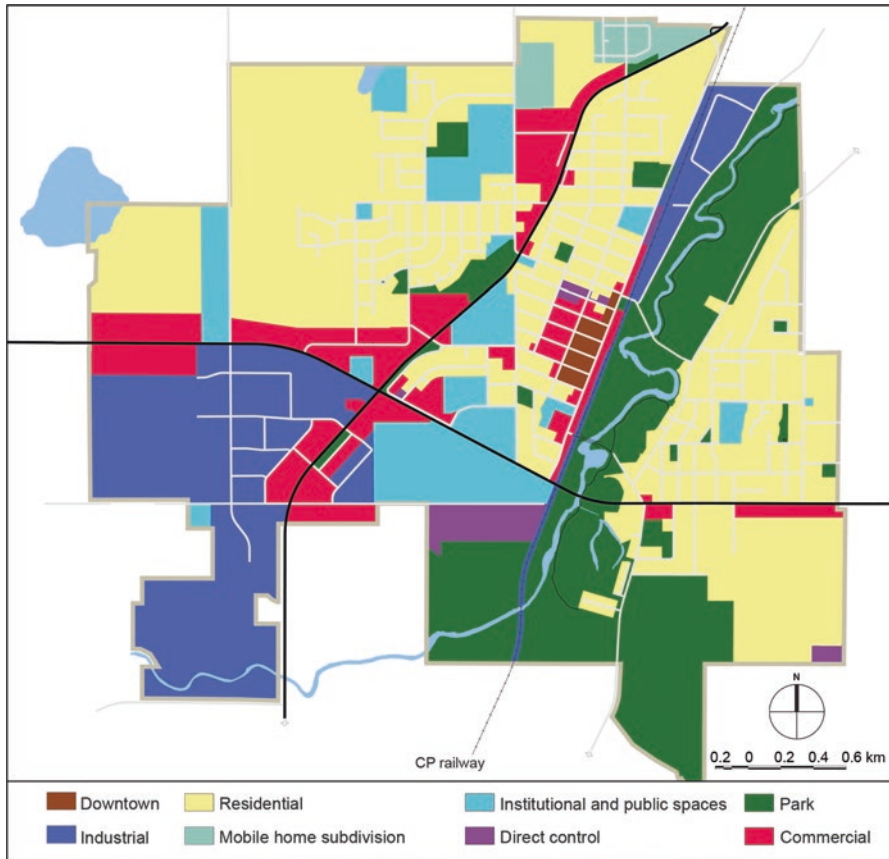**Fig. 3.27**   Street façades on Chipman Avenue in Ponoka

Fig. 3.28 Ponoka's existing land-use plan is common in many small western Canadian towns

conveniently placed between two large cities and acts as a neutral meeting point. Furthermore, the centre of Ponoka is very pleasant and vibrant with a relatively even distribution of age groups. There is a historical presence and a communal pride, but there is also plenty of vacant land near the core. As such, the option to expand is always present should the opportunity arise.

Drawbacks include division of the town by the rail line, disconnect between the core and the Battle River, lack of a community social meeting point, and no physical link between the Stampede area and downtown. To bridge the gap between the core and the new residential areas, it was suggested that the western and the eastern sections be linked parallel to connect between the river and downtown (Fig. 3.30). Along with increasing its population, circulation is one of the biggest challenges Ponoka is facing because its sectors are so distinct that they cannot benefit from working off of one another.

As an overarching recommendation, we recognized that in order to expand activity and to support local businesses in the core, the town would have to see its
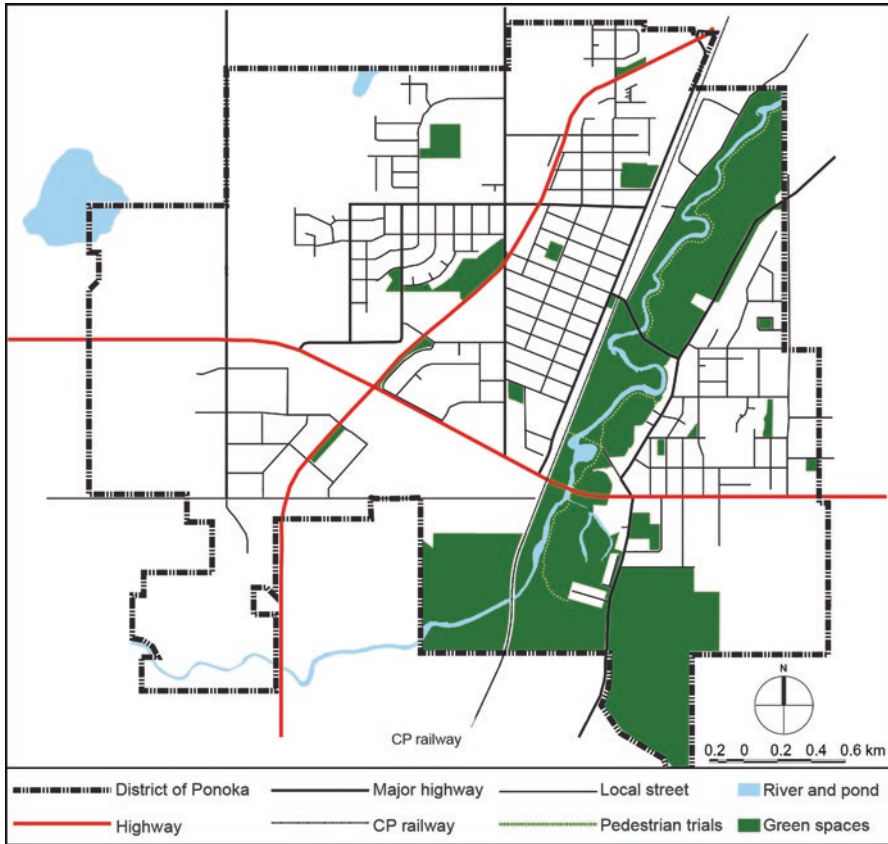
Fig. 3.29 Ponoka's transportation network

population increase. This can be done by constructing apartment buildings with units that could be afforded by young families, with commerce on lower levels. Alternatively, floors could be added to existing structures (Figs. 3.31 and 3.32). In addition, the green banks of the Battle River—one of Ponoka's main natural assets— can serve as a central pillar of any urban renewal process. For example, initiating summer boating activities and winter skating events on the river, as well as cultural and leisure destinations on its banks, can turn it into a local and a regional draw. Also, planning Ponoka's core for winter conditions by planting wind-blocking trees that will also provide shade in summer time can be a necessary step in attracting year-round customers to Main Street. We suggested that the process will be done in phases to accommodate gradual financial investments.

The green space on the banks of the Battle River should be seen as a public attraction and draw both local and foreign visitors. In the area, different events could be organized on a regular basis so as to turn the place into a local gathering point all based on Ponoka's natural attributes.
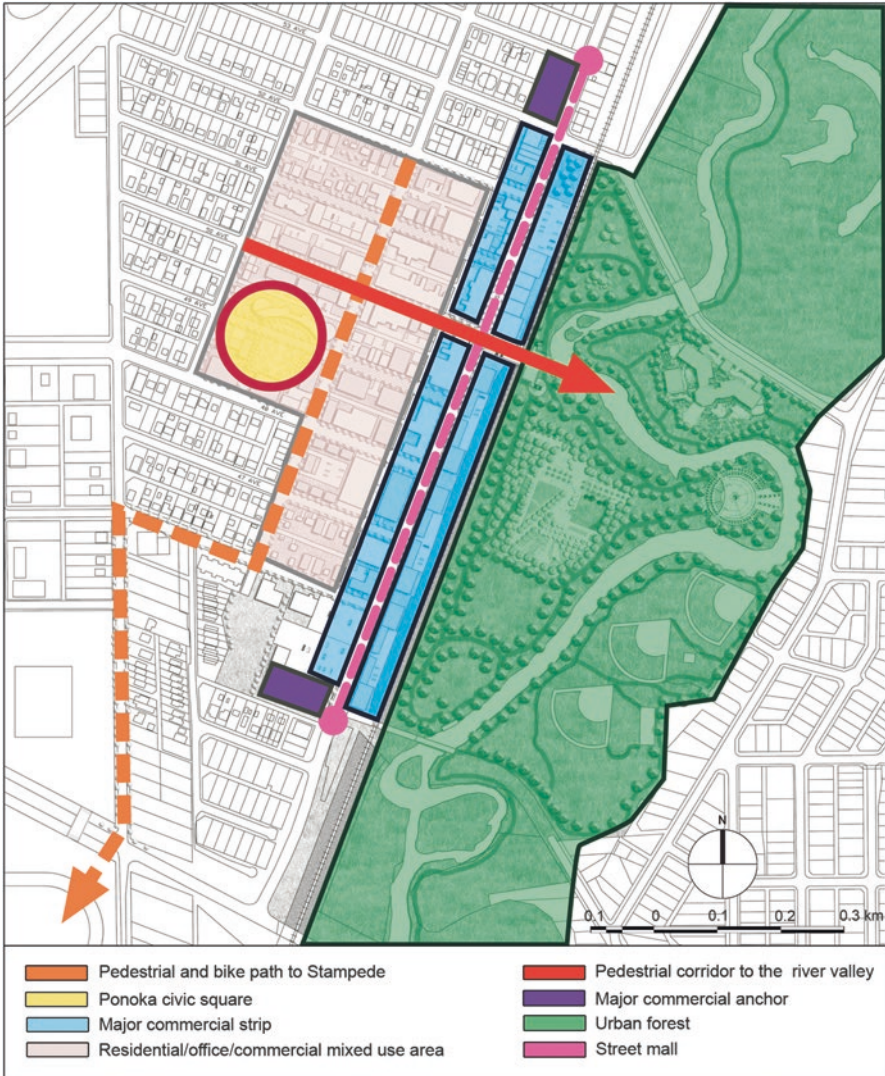
Fig. 3.30 Conceptual plan showing new areas to be developed and their link to the old

3.8.2   Sainte-Genevieve, Quebec

A 2 acre (0.8 ha) waterfront site in the small town of Sainte-Genevieve, in the province of Quebec, Canada, was chosen for a demonstration of sustainable planning and building techniques along a large body of water (Fig. 3.33). The centre of Sainte-Genevieve has the amenities and services that a place of its kind needs, including a high school, a church, a modest-sized food store, and a senior citizens' centre.

Fig. 3.31 A detailed plan for Ponoka's redesign

Fig. 3.32 Rendering of a proposed civic square

Fig. 3.33 The site is located in the Town of Sainte-Genevieve, Quebec, Canada, and borders the Rivière des Prairies

One edge of the site is bordered by the Prairies River, which offers a scenic backdrop for the town's newly planned shoreline neighbourhood. On the site, green spaces comprising of a garden with a bandstand cover the south and west ends and continue on into the south and south-west until they reach the river bank. The majority of the vegetation which dots the site's relatively flat terrain are trees and low-lying shrubs that descend towards the water ever so gradually. The placement and distribution of plant materials acts as an effective barrier against the harsh north winter winds. Conversely, a summer breeze glides in from the southeast and cools the buildings.

When a community is planned on a relatively flat terrain such as this one, the above-mentioned method of terracing houses becomes obsolete. Since most buildings are approximately of the same height, those located near the river have excellent views of the water, whereas the dwellings placed on the northern and furthest end of the town do not enjoy this attribute (Fig. 3.34). Interestingly enough, the uninhabited portions in the west and south-west of the site boast spectacular scenery. To preserve as much of this scenery as possible, development was reserved to the site's boundaries and away from the waterfront.

Establishing sensible design principles played a key role in the preservation of the riverside environment. These principles articulated the intentions of the town
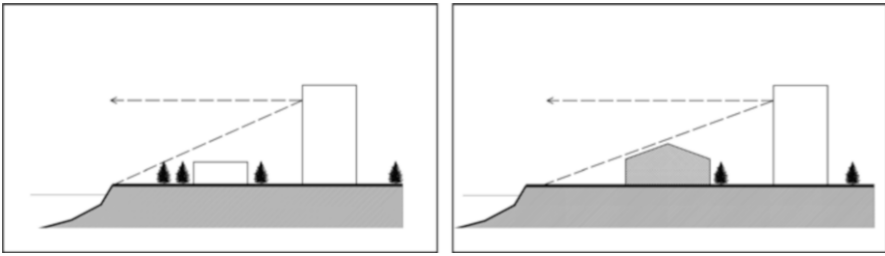
Fig. 3.34 For a better view, building heights can be increased the farther they are set back from a shoreline (left). Lower buildings closer to the shoreline can have pitched roofs (right)
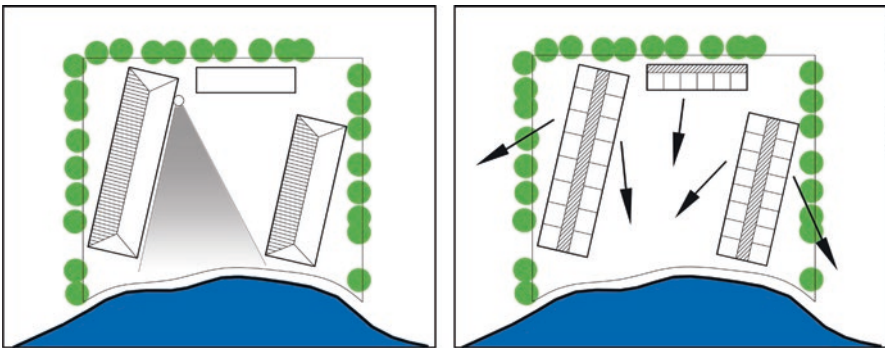

Fig. 3.35 Building orientation along a diagonal access will maximize units' views (left). A double-loaded corridor will also offer a view to dwellings on either side (right)

and included attention to orientation, function, and sense of place. Having low-density housing permitted the addition of a third floor which also creates a nice architectural feature. At three stories, the residents of the upper floors will have a view of the waterfront whereas before they saw the next-door buildings. This would become a major attraction for the dwellings despite their distance from the shore (Fig. 3.35).

Sightlines from any of the adjacent structures were maintained, and no excessive shadows are predicted to be cast by the increase in buildings' height. This method works because the further back a structure is set from the shore, the taller it may grow all while having a limited effect on its surroundings. Roofs of houses placed close to the water were also sloped so as to accommodate the sightline from the tops of buildings that are placed further inland. When the roofs are sloped properly, we recognized that the residents would be able to see the shore from their units.

When trying to organize the placement of the buildings on the site, it was important to pay attention to their orientation. Specifically, they were set to receive both the greatest amount of sunlight while providing the best view of the neighbouring bodies of water. In fact, not only natural elements were considered while trying to harmonize building layout as we kept in mind that the built area must work in tandem with the natural one. It was recognized that no housing units should cast long
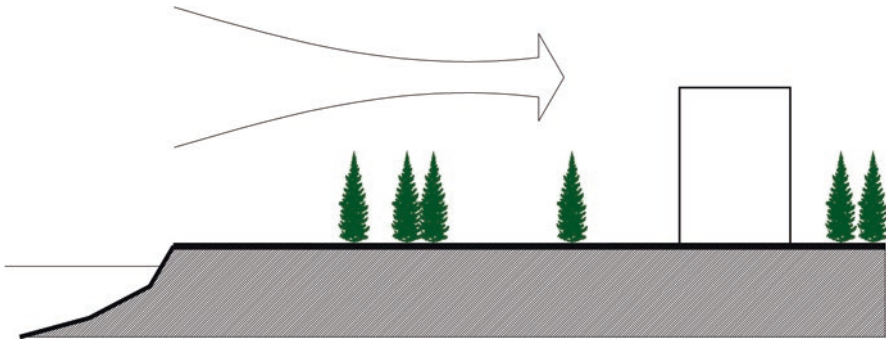
Fig. 3.36 Bushes and trees can effectively diffuse breezes that blow towards buildings
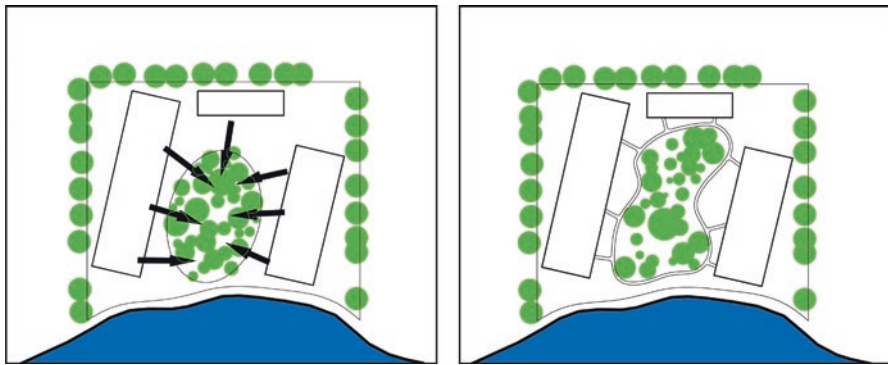
Fig. 3.37 Pedestrian paths connect units with each other, a shared open space and a shoreline boardwalk

shadows or obstruct sightlines for other buildings. Instead, the majority should be configured into diagonal axes from the shoreline.

Arranged diagonally from the water, all units will have the best view possible, while rear units will simply face parallel to the water's edge for a convenient view. The vegetation should follow the same height principles as the buildings, although trees and other greenery may grow taller the further back they are set from the water (Figs. 3.36, 3.37, 3.38, and 3.39). Shrubs and underbrush grow easily along the river, so the flora will be expressed naturally along the contours and bends of the water's edge.

The trees set closer to the edge contribute greatly to the climate because they diminish the amount of wind that touches the buildings and their root systems along the coast inhibit the erosion of soil into the river. As such, these aspects should be preserved at all costs. The number of mature trees on site was maintained away from the new buildings because they cast large shadows that might obstruct the view.

Fig. 3.38 The master plan of the proposed shoreline community

Fig. 3.39 A rendering of the common area and the dwellings that border it

All in all, the proposed community in Sainte-Genevieve included a hundred and fourteen dwelling units in a density of 45 units per acre (a hundred and twelve units per hectare). It will be a place where residents may sit on their porches and balconies and enjoy the view and natural breeze.

3.9   Final Thoughts

Some small towns have suffered decline due to land-use planning that fails to intelligently integrate the natural world with human structure. For instance, many municipalities have paid dearly for the introduction of big-box retail to their town's edge. This process diminishes the town's overall environmental quality, which in turn weakens a town's core. However, there are a number of strategies that have the potential to place small communities on sustainable footing by thoughtfully incorporating the natural and human-constructed worlds. In essence, urban renewal can be achieved through the design of energy-efficient, affordable buildings and through planning that capitalizes on natural features.

In Nordic locations, the key is to thoroughly understand the implications of living in a cold region and to adjust the town planning accordingly. This entails understanding microclimate, installing infrastructure for year-round activity, and encouraging people to make use of recreational spaces. This can be achieved through building sunny, tree-lined pedestrian walkways, creating plentiful parks and green spaces, and utilizing mixed-use corridors across the town. However, care must be taken to avoid "greenwashing", which merely creates an illusion of sustainability and creates only superficial change.

References

Alessa, L., Kliskey, A., Lammers, R., Arp, C., White, D., Hinzman, L., & Busey, R. (2008). The arctic water resource vulnerability index: an integrated assessment tool for community resilience and vulnerability with respect to freshwater. *Environmental Management, 42*(3), 523–541.

Arsenault, L., & Reid, J.W. (2005). *Welcoming winter: Changing the climate of planning*. Annual Conference, Faculty of Architecture and Planning, DalHousie University.

Baird, R. L., & Hall, G. (1998). *Beaconsfield and Beaurepaire: A chronicle of the city of Beaconsfield and the District of Beaurepaire*. Montreal: Harpell Printing.

Bilgili, B. C., & Gökyer, E. (2012). *Urban green space system planning*. INTECH Open Access Publisher, London, UK.

Bradford, S. (1991). For Starters. Builders, January, p. 170.

Breen, A., & Rigby, D. (1994). *Waterfronts: Cities reclaim their edge*. New York: McGraw-Hill.

Brown, R. D. (2010). *Design with microclimate: The secret to comfortable outdoor space*. Washington, DC: Island Press.

Canadian Mortgage and Housing Corporation (CMHC). (1983). *Problem land: Building in a flood-risk area*. Ottawa.

Clawson, R. (1972). Social needs and the urban-marine environment. In J. F. Peel Brahtz (Ed.), *Coastal zone management: Multiple use with conservation* (pp. 85–96). New York: Wiley-Interscience.

Corbett, J., & Corbett, M. (2000). *Designing sustainable communities: Learning for village homes*. Washington, DC: Island Press.

Cowan, R., Hill, D., & Campbell, K. (2005). *Start with the park: A guide to creating sustainable urban green spaces in areas of housing growth and renewal*. London: CABE Space.

De la Torre, R., & Miller, D. L. (1987). *Fisheries: The evaluation of design, material and placement optimums* (pp. 582–589). Mexico: Gulf and Caribbean Fisheries Institute.

Ecomare. (2015). *Visit ecomare; the centre for nature and marine life on Texel*. Ecomare Official Website CC-BY-NC. Retrieved May 15, 2016, from http://www.ecomare.nl/en/

Evans, G. (2003). The built environment and mental health. *Journal of Urban Health, 80*(4), 536–555. https://doi.org/10.1093/jurban/jtg063.

Frost, P. M. (1981). Old Montreal – Vieux Montreal: Geographical essays. In D. B. Frost (Ed.), *Montreal, geographical essays* (pp. 69–91). Montreal: Concordia University.

Global Footprint Network. (2014). *How the ecological footprint works* (p. 2). Geneva: International Environment House.

Gorgolewski, M., Komisar, J., & Nasr, J. (2011). *Carrot City: Creating places for urban agriculture*. New York: The Monacelli Press.

Gravel, D., & Bouchard, V. (1999). *LaSalle then and now*. Montreal: Cavelier-de-LaSalle Historical Society.

Hopkins, R. (2008). *The transition handbook*. Totnes: Green Books.

Kehew, R. (2011). *Urban patterns for sustainable development: Towards a green economy*. UN-Habitat.

Knox, P. L., & Marston, S. A. (2001). *Places and regions in global context: Human geography* (2nd ed.). New Jersey: Prentice Hall.

Lynch, K. (1960). *The image of the city*. Cambridge, MA: MIT Press.

Macionis, J., & Parrillo, V. (2014). *Cities and urban life* (2nd ed.). New Jersey: Prentice Hill. 2001. Global Footprint Network.

Marshall, B. (2013). Facts & figures of the Canadian mining industry. *The Mining Association of Canada (MAC).*Retrieved November 21, 2016 from http://mining.ca/sites/default/files/documents/FactsandFigures2013.pdf

Marshall Macklin Monaghan Ltd. (1992). *Achieving infrastructure cost efficiency/effectiveness through alternative planning approaches.* University of Western Ontario, Prepared for Canada Mortgage and Housing Corporation (CMHC).

McBride, J. R., & Jacobs, D. F. (1985). Pre-settlement forest structure as a factor in urban forest development. *Urban Ecology, 9*, 3–4. 1986, pp. 245–266. Todd.

Moughtin, C. (2003). *Urban design: Street and square*. Great Britain: Architectural Press.

Nakamura, Y. (1989) *A method for dynamic characteristics estimations of subsurface using microtremors on the ground surface* (pp. 25–33). Quarterly Report. Washington, DC.

Natural Resources Canada. (2008). *Deforestation in Canada – What are the facts?* Retrieved November 21, 2016, from http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/28159.pdf

Numbers, M. J. (1995). Sitting a house: Proper sitting and design strategies enhance energy efficiency. *Fine Homebuilding*, pp. 40–45.

Pressman, N. E. (1996). Sustainable winter cities: Future directions for planning, policy and design. *Atmospheric Environment, 30*(3), 521–529.

Rees, W. E. (1992). *Ecological footprints and appropriated carrying capacity: What urban economics leaves out. Environment and urbanization*. Vancouver: School of Community and Regional Planning.

Reimer, B. (2009). *Rural Canada: Challenges and opportunities*. Report prepared for the Federation of Canadian Municipalities.

Statistics Netherlands (CBS). (2001). *Bevolkingskernen in Nederland 2001*. Texel: CBS.

The Why Factory. (2010). *Green dream*. Rotterdam: NAi Publishers in association with MVRDV, The Why Factory, and Delft University of Technology.

Todd, K. W. (1985). *Site, space, and structure*. New York: Reinhold Company.

Van Bohemen, H. D., & Bekker, G. J. (1991). *Shaping and management of banks and bank pro-tection structures of state-owned waters*. Wageningen: Centre for Agricultural Publishing and Documentation.

Wolf, K. L. (2007). The environmental psychology of shopping: Assessing the value of trees. *California: Research Review Berkeley Lab's Public Information Department, 14*(3), 36–43.

Zelov, C., & Cousineau, P. (1999). Why is architecture oblivious to the environment? An interview with Ian Mcharg. In F. A. Stitt (Ed.), *Ecological design handbook: Sustainable strategies for architecture, landscape architecture, interior design, and planning* (pp. 17–21). New York: McGraw-Hill.

Zupancic, T., Westmacott, C., & Bulthuis, M. (2015). *The impact of green space on heat and air pollution in urban communities: A meta-narrative systematic review* (p. 67). Vancouver: David Suzuki Foundation.

Mobility and Connectivity

4

Mobility and connectivity in urban planning have taken on an elevated importance in recent years. The need to curb urban sprawl, reduce dependency on private vehicles, and lower emission levels is among the factors that are forcing planners to rethink transportation network design. Further to the topic of this book, small towns face unique incarnations of these recent trends and cannot simply rely on the solutions available to big cities to address them. As such, small places demand their own set of transportation solutions. This chapter explores how improved mobility and connectivity can be used to renew small town centres and highlights issues such as mixed land use, transit-oriented development (TOD), traffic calming, pedestrian and cycling paths, parking, public transit, and infrastructure. The chapter concludes with two case studies that demonstrate how two communities retooled their downtown cores by changing their transportation systems.

4.1   A Place of Reference

Walking the narrow streets of Szentendre in Hungary, I was marvelled by its old buildings (Fig. 4.1). The town population of 26,000 covers nearly 17 mi^2 (44 km^2) and is located near the border of Slovakia. Framed by the Danube River, the majestic mountains and rolling hills made of fertile lava work to grow plentiful vineyards (Miklós 2000; Ignjatovic 1952). However, what caught my attention most was that the centre was made accessible to all modes of mobility and the streets had no sidewalks. This weaved together nicely the vehicular, pedestrian, and cycling activities to seamlessly link the core and the town's edges.

Szentendre's urban renewal process started by the end of the 1970s when the original master plan was altered with a large-scale inner-city project and a merger, of which intended to turn dispersed pockets of buildings and connect them to create a single entity (György 1999; Miklós 2000). Museums, the town's main attractions, have been laid out along a vertical axis that also includes important monuments,

Fig. 4.1 Images of Szentendre, Hungary

housing, government buildings, and public parks (Franyo 1995). The town not only linked its spaced-apart districts, but government funding in 1992 also allowed for its modernization of the suburban train line to Budapest, subsequently making it a big tourist draw (BKK 2016). In essence, Szentendre depicts what this chapter is about: the innovative planning of mobility and connectivity networks as a tool for urban renewal.

4.2   Macro Network Systems in Small Towns

In general, linking the edges of a small town to its centre requires consideration of circulation patterns and the study of the connectivity between the different sectors. Introducing pedestrian paths, for example, will go hand in hand with a decreased reliance on private vehicles. A place where the use of public transit and cycling is more common will also foster healthy living habits.

A small town centre commonly includes commerce, professional offices, public amenities, religious buildings, entertainment, and green spaces (Fig. 4.2). The prime focus in planning mobility and connectivity is not only on basic daily necessities but also on services that people need monthly or even yearly. A walkable centre of this type will boast a density of about 25–30 dwelling units per acre (62–74 units per hectare) and attract pedestrians from a quarter mile (400 m) away to create a multi-faceted mixed-use zone.

A principle based on these perimeters was described by planner Peter Calthorpe in his *Pedestrian Pockets* concept (1993). Calthorpe suggests a system of paths to connect the centre to other areas. Within the pockets, which are located at various

The town center performs best when it is
located on or near main transit routes

Creating higher density transport oriented center
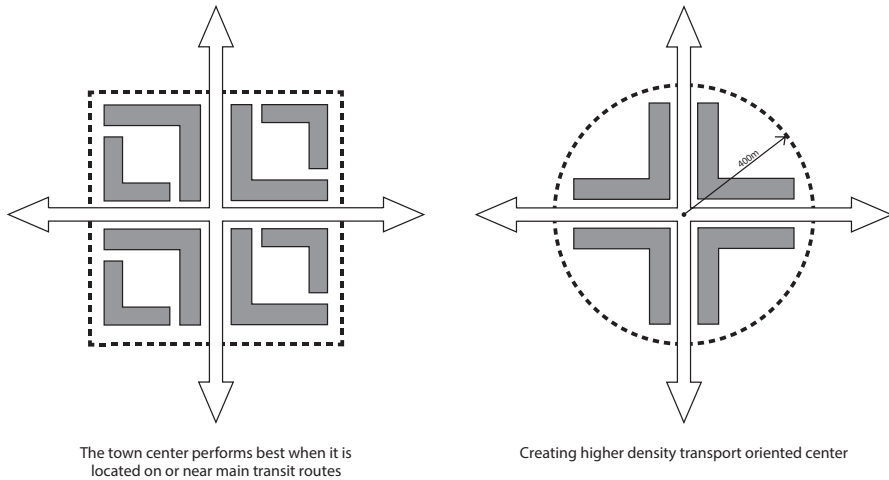
Fig. 4.2   Relations between buildings and roads in a town's centre

Fig. 4.3   Pedestrian pockets, located at various distances from the centre, have a mixture of high-density housing, a mixed-use main street, and a light transit rail station

distances from the centre, there is a mixture of high-density housing, a mixed-use main street, and a light transit rail station as illustrated in Fig. 4.3. The size of the pocket would typically be no larger than a hundred acres (40.5 ha) or span greater than a quarter mile across (0.4 km) (Kelbaugh 1989). All pockets would include

different types of housing to offer residents a wider range of living options. Ideally, there would be many job opportunities and ample shopping places in each pocket. This type of arrangement would encourage the use of public transit which, in turn, would diminish private car travel and connect several regional residential pockets to each other.

According to Calthorpe, the size of the communal space in each pocket would depend on the population size. Each of the town's medium-sized districts would have a neighbourhood centre and the smallest convenience centre (Van der Ryn and Calthorpe 1986). To optimize walkability, services like a post office, civic or recreational centres, pharmacy, day care, or government offices would be in close proximity to each other or integrated with higher-density residential buildings. These facilities can also be near public open spaces.

A neighbourhood centre is larger than a convenience centre because it caters to more people and offers a greater variety of services. On average, it would have about 12 shops per acre (30 per hectare) and be stationed to serve a community of around 4000 within a quarter mile radius (0.4 km). To encourage walkability, car-dependent activities like car washes or drive-through restaurants would not be permitted within the centre (Southworth 1997).

4.3   Transit-Oriented Development (TOD)

Contemporary transit-oriented development (TOD) is an example of a regional growth planning strategy (also known as *smart growth*) that is further attributed to Calthorpe. It is a higher-density development located within easy walking distance of transit stations. At its core, TOD is a mixed-use approach that increases location efficiency by encouraging the use of public transit to minimize the impacts of congestion (Fig. 4.4).

The introduction of TOD can be traced to the late nineteenth century, when the rise of streetcars linked suburbs to urban hubs. Streetcar lines were laid by a land owner who used transit as a means to add value to an area by providing a transit link between jobs in the centre and housing at the periphery. Much like Calthorpe's pedestrian pockets, streetcar stops typically had an embedded small cluster of shops to serve commuters, but with the rise of the automobile in the 1930s, this type of development was replaced with roads and highways as was the case in Welwyn, UK (Fig. 4.5).

The years that followed saw a decline in transit ridership and the abandonment of many railways, while bus service had become a last resort rather than a reliable transit option. However, as congestion worsened, new transit systems were built to alleviate pressure from the roads and served a principally regional purpose. With the assumption that most commuters would drive to transit stations rather than walk or cycle, the new systems were built to work with the automobile, and there was little regard for the area near the station. Despite the wave of TOD projects that have emerged since the 1990s, many small towns that once benefited from a regional train system are still plagued with vast parking lots that encase local train stations and create barriers with adjacent communities.
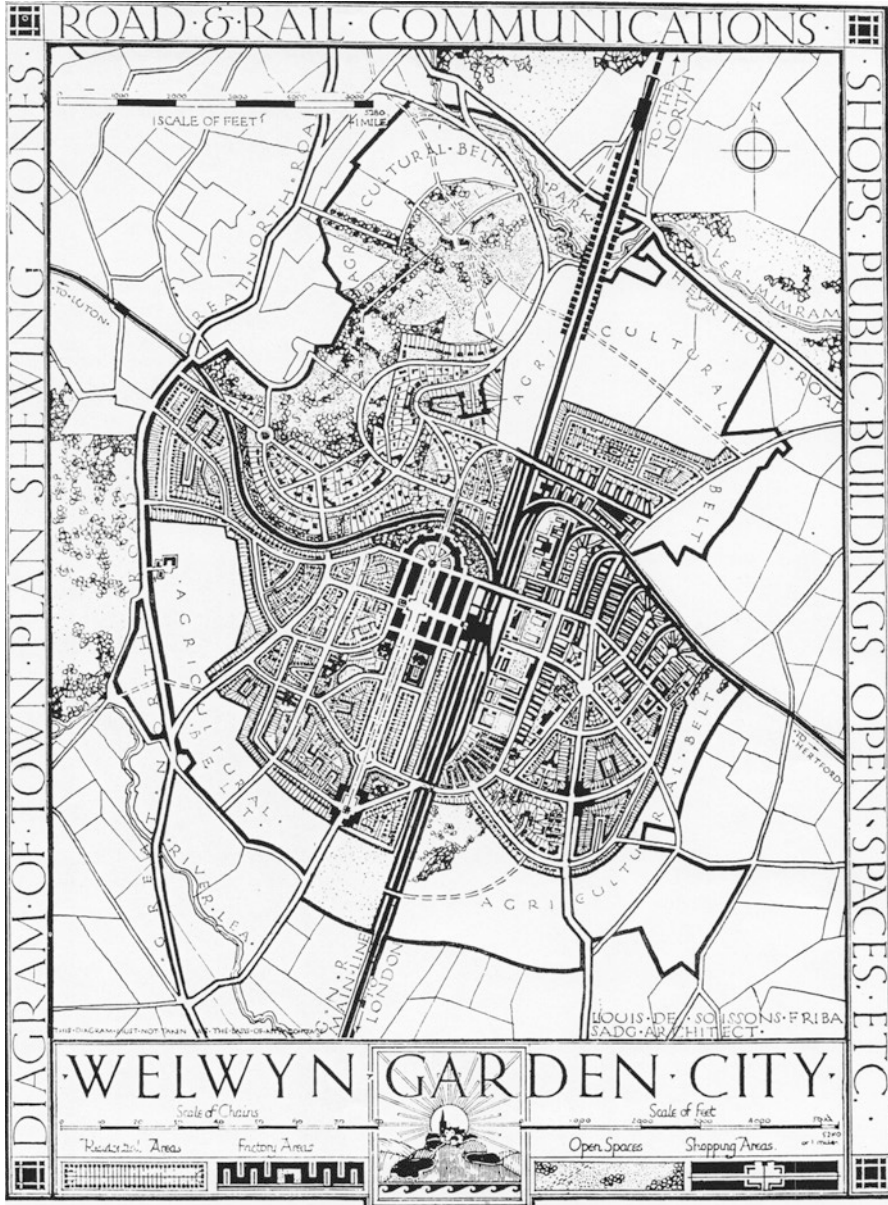
Fig. 4.4 The introduction of TOD can be traced to the late nineteenth century and the rise in the use of streetcars that linked suburbs such as Welwyn, UK, with urban hubs

Fig. 4.5 A transit link between Ørestad and Copenhagen helps reduce traffic congestion and also draw in visitors

For residents of small towns that depend on large metropolitan areas for employment and services, a daily commute by private car to the big city is common. The negative ramifications of such a practice are significant and include pollution, traffic congestion, and ongoing investment in infrastructure. In an era of greater environmental awareness and high cost of fuel, the need to consider alternative transit systems such as TOD has become urgent. In regard to the viability of small town centres, having a transit link with a large urban hub stands to help draw tourists to a place.

In recent decades, TOD has emerged as a leading concept in response to some of the challenges that small towns located on transit corridors face in moving and housing their citizens. Renewed interest in transit use has been accompanied by changing demographics, which are creating a nationwide need for a diversification of housing types that are accessible to all ages and income groups. For example, TOD can reduce household transportation costs, thereby increasing the affordability of housing. On the other hand, an important consideration is that TOD also has the potential to increase land and property values, which exposes habitants to threats of gentrification and displacement, as was the case in several towns in the American state of California (Fig. 4.6). It is therefore necessary that town's authorities take measures to create and preserve affordable housing near transit stops before the market flourishes.

Several design principles have been introduced to guide the introduction of TOD. They include transit supportive land uses with child care, recreational and cultural facilities, restaurants, and apartments within 0.3 mi (600 m) of a rapid

Fig. 4.6 Transit-oriented developments have the potential to increase land and property values, which expose habitants to threats of gentrification and displacement

transit station. In addition, the establishment of high-density residences generates pedestrian and cycling traffic and encourages travel outside of peak periods. Also, the outcome of a planning process needs to discourage non-transit-supportive car-oriented land uses such as car dealerships, car washes, and drive-through facilities. Finally, new streets, laneways, pedestrian, and cycling connections need to become a network of short block lengths of no more than 500 ft (150 m) that offer route choice and pedestrian-friendly settings.

A chosen transit technology commonly defines the TOD corridors, yet they also depend on the system's design and quality. High-quality, high-frequency service along dedicated lines provides certainty to investors that it will not be suddenly abolished. TOD potential is also determined by the walkability or the bikeability of an area, as well as the presence of retail amenities and the performance of the housing market (Center for Transit Oriented Design 2010).

There are essentially three transit corridor types: destination connector, commuter, and district circulator (Fig. 4.7). This is a useful generalization, yet actual corridors tend to have a more complex structure and are usually composed of a mix of types. Destination connectors accommodate ridership in both directions throughout the day because they serve employment centres and other public or residential destinations. Yet, the most significant contribution to the planning of TODs at the corridor level is that it benefits not only the region but also the towns along them.
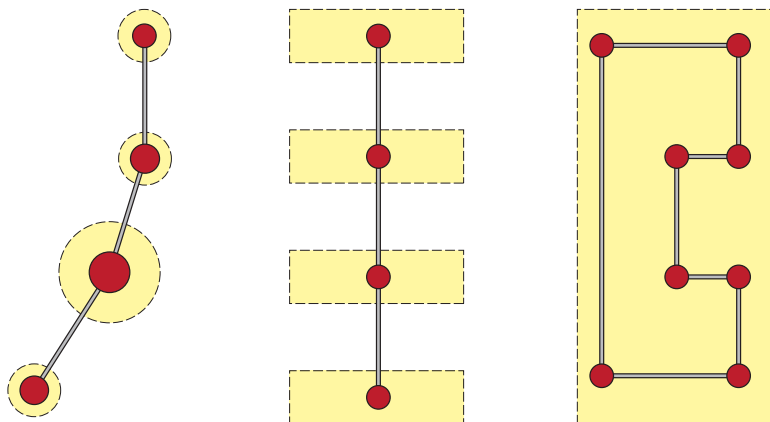
Fig. 4.7 There are essentially three transit corridor types: destination connector (right), commuter (middle), and district circulator (left)

To summarize, development around new or existing stations can facilitate the sustainable and efficient mobility of people and can contribute to the renewal of town cores. People are more likely to choose public transit if they can easily walk to stations at the beginning and end of their destination, which can be achieved through increased densities, mixed-uses, and pedestrian-oriented design.

4.4 Planning Active Transportation

Active transportation encourages a network of connected cycling/walking paths, streets with bike lanes, pedestrian priority at intersections, and links between cul-de-sacs. It is also argued that people who walk or use public transit to reach destinations, such as parks, workplaces, or shops, are also healthier. In addition, it is also assumed that compared to those living in car-oriented areas, residents of walkable neighbourhoods are more likely to know or trust their neighbours and be socially and politically engaged, which are fundamental aspects of a good community. Moreover, a successful active transport network is emission-free, reduces commuting costs, enhances street life, and increases public safety (Southwarth and Ben-Joseph 1997).

As illustrated in Fig. 4.8, making streets in town centres more walkable and encouraging active mobility interventions at the street level can include reducing speed limits, making safer routes to schools, creating traffic-calming measures, and using shared use paths, off-road trails, clear wayfinding, and end-of-trip facilities such as bicycle parking and racks at workplaces (Rohrer et al. 2004). Cyclist- and pedestrian-oriented design should be well-integrated with public transit, as people are more likely to choose the latter if they can easily walk between destinations at the beginning and end of their trip. As was mentioned above, various ways of enhancing connections to transit stations are through increased densities,

Fig. 4.8   The measures shown here can be introduced to slow traffic in small town centres

pedestrianizing the downtown core, paths with barriers to protect from weather elements, and capitalizing on natural beauty to enhance the pedestrian experience (Besser and Dannenberg 2005).

Active transportation could complement a *Park and Ride* system, whereby parking facilities are built to formalize and make readily available the option of multi-modal travel such as cycling, carpooling, walking, and using public transit (Park and Ride 2009). These facilities are generally located at transit centres or rail stations and can range from surface lots to multi-storey car parks. The key objective of *Park and Ride* is to intercept commuters in low-occupancy cars prior to reaching their destination and transfer them to other modes of transit. Effectively, this increases alternatives to driving by reducing the vehicle miles of travel, shifting parking away from the town's centre, and relieving neighbourhoods of uncontrolled informal parking. Such facilities can feature bicycle storage (shown in Fig. 4.9), short-term parking areas for drop-offs, and amenities such as waiting areas, benches, and retail (Handy and Xing 2011).

In terms of potential issues, there are significant challenges in integrating active transport in small town. These can include issues pertaining to land-use patterns and local infrastructure, mainly because these are generally car-oriented. While this poses physical barriers, there are also numerous problems relating to the entrenched attitudes about automobile use and the perceived dangers of walking or cycling, especially in winter when the enthusiasm to spend time outdoors is dampened. Moreover, regulating right-of-way and road standards to accommodate walkways and bicycle lanes may require retrofitting through street redesign (Evans-Cowley 2006).

Fig. 4.9 Bike storage facilities near a transit stop in Haarlem, the Netherlands

During the winter months, small towns in Nordic climates face significant physical and attitudinal barriers to transportation, including snow build-up, slippery or uncleared sidewalks, short daylight hours, and stiff wind (McKechnie n.d). To circumvent winter and facilitate mobility, municipalities can adopt bioclimatic design principles, which include wind protection, shelter, lighting, and "sun pockets" among others. Furthermore, policies should prioritize the clearing of sidewalks for pathways and bike lanes, as well as provide heated bus shelters and ensure adequate street lighting. Active transportation can be encouraged by adopting seasonally appropriate modes that capitalize on the climatic conditions and complement walking, such as cross-country skiing or ice-skating on frozen canals and rivers. However, for the latter to be successful, attitudinal barriers must be overcome, and the prevailing mentality that "winter is a time to settle indoors" must be altered.

The belief that a cold climate is bad is common among adults, and those who do commute by foot or bicycle in the winter are very few in number. While some cities have attempted to mitigate the harsh winter conditions by creating underground passages, building enclosed pedestrian bridges, or by connecting skywalks between buildings, small towns must find cost-effective solutions. Attitudes can be nudged in "soft" ways, such as making studded tires and special clothing available and affordable to cyclists or encouraging walkers to purchase antislip devices for their winter boots.

In summary, land-use planning plays a central role in how communities function. It should not be viewed in isolation but should rather closely integrate appropriate active transport planning and public transit to enhance mobility as well as the safety

and well-being of pedestrians and cyclists. Town centres can benefit from active transportation to revitalize their centre by attracting more people to live, work, and play in those areas.

4.5   Introducing Public Transit

In small communities, the absence of a large population shifts the conditions under which public transit generally operates (Improving Travel 2009). As a result, the paradigm and the method under which public transit can be introduced needs to be approached innovatively. In small towns, it can be a combination of a formal system that uses conventional buses supported by a variety of "social transportation" services for groups with reduced mobility, such as seniors, people with disabilities, or young children. Moreover, alternative modes such as "vanpool services" that are similar to ridesharing but involve more passengers per vehicle can supplement public transit and lower transport costs for individuals (Fig. 4.10). This section discusses public transit and how it can enhance connectivity while strengthening the core of small and rural towns.

In addition to the environmental benefits stemming from the reduction of greenhouse gases, the fundamental benefit of public transport in small towns is its accessibility and affordability. In essence, it offers an alternative to private automobiles for those who cannot afford it or are with limited freedom of mobility, such as

Fig. 4.10 "Vanpool services" that are similar to ridesharing like this one in Middlebury, Vermont, can supplement public transit and lower transport costs

Fig. 4.11 A contemporary solution to the lack of public transportation in small towns can be shared transportation such as the Car2Go network

seniors, individuals on low incomes, or school children. Additionally, an effective transit system can revive small town centres as it enables employers to tap into labour markets by improving the mobility of workers both within and adjacent to the community. This is especially important for more isolated employers such as ski resorts or agribusinesses. Furthermore, local stores and services can benefit from increased footfall and a larger customer base as a result of increased mobility, which is particularly facilitated when transit routes traverse the town centre.

On the other hand, small towns face numerous challenges in creating successful transit networks. Dispersed, low-density land uses make fixed routes less effective and flexible routes more costly as there are vast distances to cover. In addition, harsh climatic conditions reduce the demand for public transit as individuals are less patient to wait outdoors.

"Social transportation services" can consist of cost-saving small vans or cars that are funded by non-profit institutions, charitable organizations, or voluntary donations. Another common contemporary solution is shared transportation such as the Car2Go network (Fig. 4.11). The challenge with these modes of transportation is demographic, as towns must adapt to the growing population of seniors. Moreover, inexpensive parking and little-to-no congestion reduces the incentive to use public transit over private cars, and funding constraints limit the reach and efficacy of the system. Other challenges include the diversity of needs of different transit audiences. For example, it is known that seniors generally travel outside peak hours, while youth demand will be higher in the evenings and weekends.
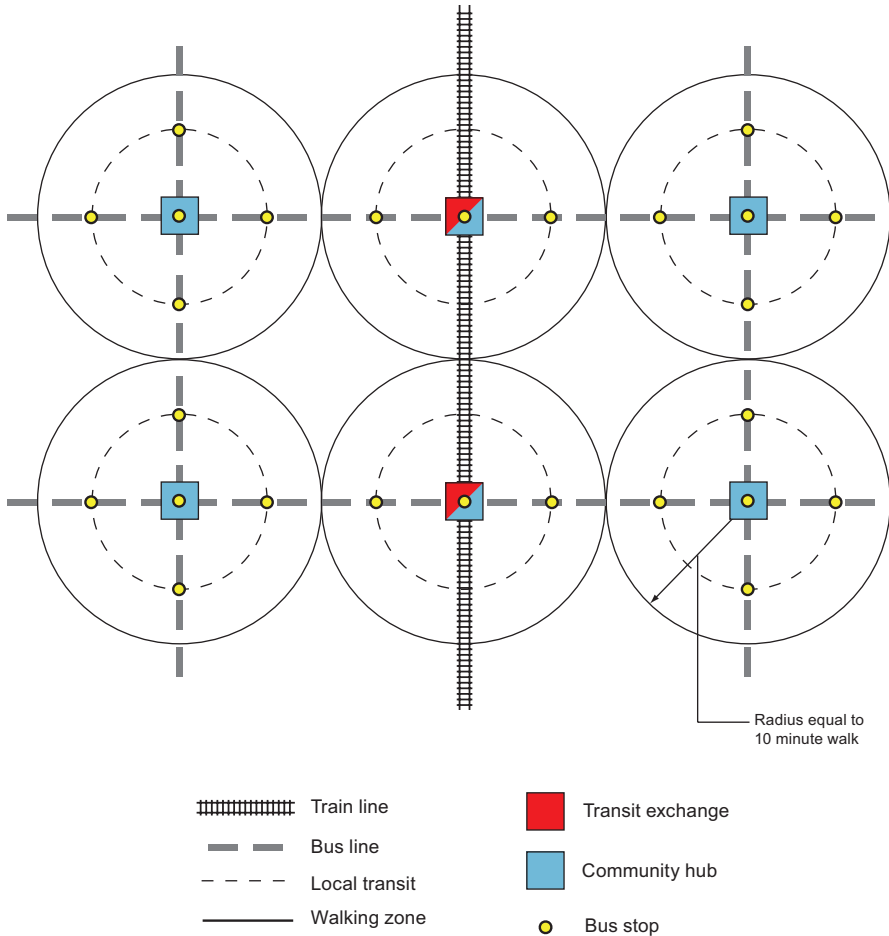
Fig. 4.12 A sustainable public transit system may easily and directly link a variety of modes of transportation as well as pedestrian and cycling networks

With the aforementioned limitations in mind, a sustainable public transit system should link several modes of transit with pedestrian and cycling networks and be conveniently located near shops and services so as to form a community hub that is affordable and accessible to all (Fig. 4.12). It should also be supplemented by safe crossing points; provide shelter, seating, signage, information, and lighting; and have surveillance from surrounding development. Having higher residential density near stops is essential for transit to be economically viable in small towns, since low-density developments and dispersed destinations pose significant challenges. Public transit is the most effective within and between small towns when these traditional principles are preserved.

Zero-emission buses, including electric and hybrid, can generate long-term environmental benefits by reducing CO_2 emissions and improving air quality (Investing

Fig. 4.13 A bus rapid transit stop near Vijfhuizen, the Netherlands

in 2014). Though expensive to implement, municipalities could seek assistance from government subsidies to offset initial costs. Additionally, bus rapid transit (illustrated in Fig. 4.13) offers affordability and flexibility. The *Canadian Urban Transit Association* has described the bus rapid transit as one that combines stations, vehicles, running ways, and a flexible operating plan into a high-quality, customer-focused service that is fast, reliable, comfortable, and cost-efficient (Bus Rapid Transit 2007).

4.6   Parking Strategies in Towns' Centres

In small towns with limited or no public transit, residents must drive to destinations and park their vehicles. Commonly, a typical shop will provide three to five parking spaces per thousand square foot of floor area (93 m^2). In commercial settings, it has become commonplace to recess rows of storefronts from the street and have parking lots between them and the roads (Fig. 4.14). This configuration is not pedestrian-friendly since it does not give foot traffic a clear opportunity to view the shops and be active. In general, commercial areas that accommodate bicycles as a means to reach them need fewer parking spaces. The saved land could then be used for recreational activities or landscaping (Litman 1999).

Some parking lots in town centres are overdesigned to accommodate the amount of cars during peak use but remain vacant in the rest of the time. A way to reduce

Fig. 4.14 Covered sidewalks create pedestrian-friendly activity

the amount of space dedicated to parking would be to have the same lot used by several establishments. For example, a breakfast restaurant and a pub located next to each other will likely have different peak hours, but be relatively empty during the remaining time. Instead of each place having its own lot, these types of businesses could share a single parking lot. It may also be appropriate to add landscape features to parking lots and turn them into places where people socialize even for a brief moment (Fig. 4.15). It will also lower the *urban heat island*, whereby a hard surface area becomes significantly warmer than a landscape patch.

In addition to parking cars, lots can include more uses when appropriately located or planned. For example, a terrace of a restaurant can be extended into a parking lot during peak use in summer months. If a building has a large blank wall set next to a parking lot, it may be projected on to become a makeshift drive-in theatre. A lesser used lot can host garage sales, farmers' markets, and charity car washes or accommodate communal types of gatherings.

The parking lot could also be on a different elevation than the actual building to become more secluded. It might also be advisable to install speed bumps and

Fig. 4.15   Treed parking lots can soften the landscape and lower urban heat islands

Fig. 4.16   Speed bumps and special paving materials in parking areas will alert drivers and lower speed

suitable signage in the lots or to switch up paving materials so that drivers are alert and drive at a lower speed while entering (Fig. 4.16). Considering that parking lots have significant foot traffic from both pedestrians and vehicles, it is imperative that the slow speed be respected.

In mixed-use settings where apartments are built above commerce, there are different ways to accommodate indoor parking without making them expensive, jeopardizing their appearance, or building a separate parking structure. However, the most effective solution is shared indoor underground parking with limited points of access. It is easiest to set up this type of arrangement underneath the end unit closest to the curb to facilitate access. The access roads to the underground structure may be accessible to multiple users which would lower the cost (Childs 1999).

4.7   Utilities and Services

When considering roadway design or redesign in town centres, it is important to keep in mind the most relevant factors. These can include cost of construction and maintenance, quality of materials, safety, right of ways, the amount of available parking, and the road utility. This overall utility refers to the number and kind of vehicles that will be using the road. Typically, the width of the street depends on the average width of a motor vehicle, but unfortunately, in many municipalities, this common sense is not applied. Local street widths that once measured 24 ft (7.3 m) have gradually expanded to 30–36 ft (9–11 m) today.

It has been recommended that roads with low speed and low volume of traffic, as is the case in small towns, have a street width of 18–22 ft (5.5–6.7 m) across (NAHB 1987). It is not necessary in these locations to have two moving lanes of traffic per roadway. These dimensions provide enough space for two cars to be parked on either side of the road, one moving lane, and for a car to pull to the side if they are conceding passage to another vehicle. Transitioning to a single moving lane may be a minor inconvenience in some towns, but it offers major savings: reducing the span of a street by only 4 ft (1.2 m) could lead to a cost savings of at least 15% (NAHB 1987). If it is possible to reduce or eliminate the two parking lanes on either side of a street, it would lead to further savings. These alternative road designs are illustrated in Fig. 4.17.

It may also be worthwhile to consider reducing the size of sidewalks or integrating them with the street as illustrated in Fig. 4.18. In some small towns, it is not necessary to have sidewalks on both sides of the street because there is no sufficient foot traffic. However, sidewalks on both sides of the street must be built in areas with the most foot traffic such as around schools, shops, playgrounds, public transit stations, and the paths linking them to residential sectors. In a highly populated and bustling area, having a 5-ft (1.5 m)-wide sidewalk is needed to accommodate all the people, whereas a 3-ft (1 m)-wide sidewalk would suffice just as easily in zones with reduced traffic (Hinshaw et al. 1998).

There are several elements that affect the planning of a community with limited resources. On the small scale, a network of sidewalks connects individual houses, businesses, and select locations to each other. However, it is the *infrastructure* which refers to the visible and non-visible networks that include roads, highways, bridges, waste and water treatment plants, power, drainage, and freshwater pipes. The quality of these utilities must be maintained and their cost kept down.
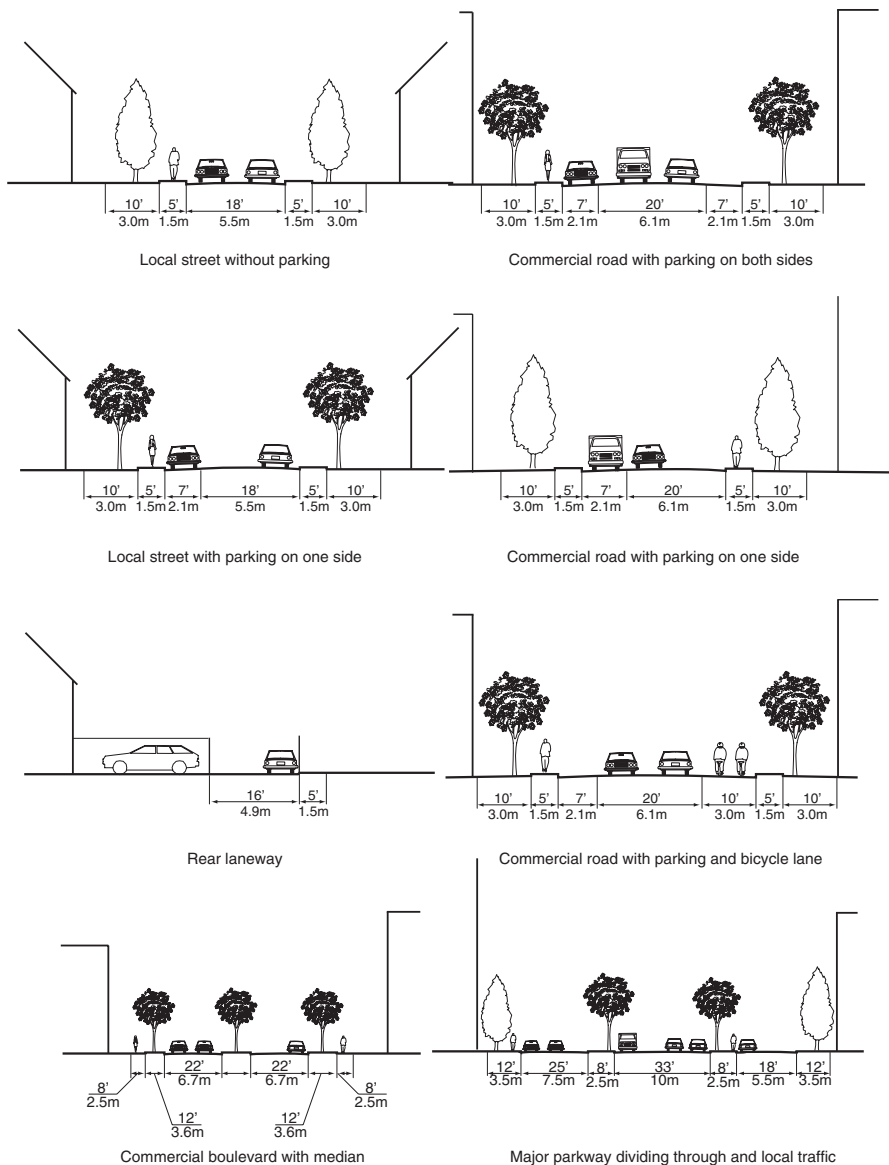
Fig. 4.17 Alternative road width for high-density areas

To ensure proper drainage of soil, it is important to install an efficient *storm drainage system* around the foundation of all built structures to direct water towards catch basins in the street. From there, the accumulated water is carried through pipes to larger bodies of water like rivers or lakes. Trying to minimize cost without sacrificing efficiency requires that the pipes be well taken care of, the number of street manholes kept to a minimum, reductionist piping used whenever possible,

Fig. 4.18 Sidewalk and street at the same level

and most importantly that soil is properly graded. Grading the soil so that the water will flow by virtue of gravity saves an immense amount of energy in purification plants. In some places, it may be appropriate to install a two-tiered system; residential sectors would have a network that can handle regular amounts of rainwater, whereas another more heavy-duty system would be set around major traffic arteries and commercial areas (CMHC 1981).

A town could also introduce retaining ponds and wetlands to store the accumulated rainwater, which may also be used for recreation so as to reduce operating costs (Fig. 4.19). A system of ditches may also be set up along main roads to lead rainwater to these ponds. The conventional designs for manholes and pipes may also be revised to make way for PVC pipes in the place of metal or reinforced concrete (HUD 1987). Installing pipes made of corrosion-resistant material will be more effective when the pipes are carrying waste water. It used to be that manholes could be spaced apart by no more than 200 ft (61 m), but this distance has since been extended to nearly 800 ft (a quarter kilometre).

A curvilinear design of pipes would save money by reducing the number of necessary manholes (Fig. 4.20). The use of septic tanks may also be preferential if the soil permits. To reduce the amount of pipes needed, separate buildings may have their pipes converge before reaching the main sewer line. Conversely, the reverse process may be used for the installation of water lines where the main line has a pipe connected to it and then diverges into smaller pipes once it is as close as possible to the building. A single pipe would branch off using a Y or T connection (HUD 1987).

Fig. 4.19 A town could also introduce retaining ponds and wetlands to store the accumulated rainwater which may be used for recreation

Conventional   Curved laying method
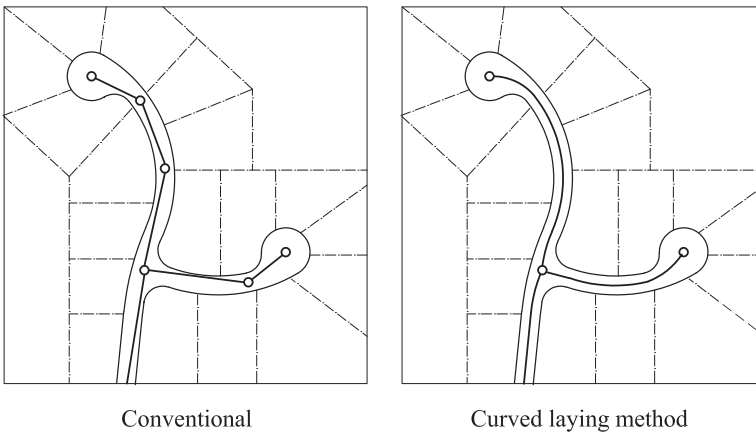
Fig. 4.20 By employing curved storm-sewer pipe laying method, the number of manholes can be reduced

While designing support systems for all the utilities, it is important to consider not only present but future uses. Most utilities' conduits such as television, internet, telephone, electricity, and gas are installed underground. To increase the system's affordability, it would be in the town's best interest to split the installation costs by having higher-density settings. It is common practice to occupy one of four slots with utilities under the street and to leave the other four as "room to grow." If the

number of slots is decreased, then the width of roads can be downsized as well. Also, it is worthwhile to construct concrete-encased duct banks underneath sidewalks with manholes. That way, the utilities installed may be serviced without deconstructing the sidewalks and then paying to rebuild them afterwards.

4.8 Renewing Centre with Improved Mobility

4.8.1 Westlock, Alberta

The decline of Westlock's core in the province of Alberta, Canada, led to the realization that a makeover was needed. With a population of about 5000, the town's leadership recognized that it needed to modernize its core to remain competitive with neighbouring communities. Historically, its economy was driven mainly by grain export and being a service centre to the area's farming communities. In more recent times, Westlock's economy was propelled by small enterprises who served the wider region. Though it boasts relatively stable employment, the community's small population remained stagnated, and additional employment opportunities proved to be a challenge. It is with this context that I was invited to advise the town and prepare a plan for its renewal.

The work began with a study of the existing conditions (Figs. 4.21 and 4.22). We recognized from the outset that the current land use that was assigned to the core

Fig. 4.21 Images of downtown Westlock, Alberta, Canada

Fig. 4.22 Aerial photos of Westlock

was sufficiently supportive of its commerce. The structures were a mix of low-rise, turn-of-the-century Western- and modern-styled buildings. Post-World War II low-rise residential units in the area were covered with wood siding or brick. The streets were laid out in a gridiron form with ample parking, and most residents took advantage of the area's high walkability and ease of access between the different amenities. In addition, we identified a few empty lots with potential for future commercial or residential development.

A close scrutiny also identified a few challenges in the town's layout that were counterintuitive to its best interests. First, Westlock is bisected by a highway that runs through it, so the downtown area is actually not located in the geographical centre of town. There are also a number of businesses and industrial buildings along the highway, which undermine the core by drawing customers away. Also, there are very few apartment buildings in downtown. If the town wishes to grow its population, it will need to attract more young people by offering affordable housing in the area set for renewal. Westlock also needs to update its image and start advertising its many positive attributes, such as its museums and overall quality of life.

At the end of a design process, we presented the town with a proposal detailing how it could be retooled to inspire future growth. Key principles behind the new development would be the establishment of a town identity grounded in its urban history, further enhancement of its walkability and mobility, and creation of new commercial offerings. To achieve this, Westlock's main street would need to be

Fig. 4.23 A proposed land-use plan for downtown Westlock

redesigned, as well as 100 Avenue, its second largest street. In addition, we pro-
posed that the core needed a civic square and gathering space, the empty lots should
be filled, and the heritage buildings in the area need to be identified and improved
(Figs. 4.23, 4.24, 4.25 and 4.26).

First on the agenda was the creation of a civic square at the end of 100 Avenue
and the relocation of the Town Hall. To connect it to the rest of town, a walkway will
extend from the square, following the contours of the train tracks and past the grain
silos. The silos will be repainted and turned into a point of interest for residents and
tourists. An important thing was to make sure all points of attraction are reachable
and the journey is comfortable. Therefore, sidewalks will be expanded, the street
furnished, upper addition to low-rise buildings permitted, and trees planted. To
improve the overall appearance of the centre, the facades of buildings will follow
newly introduced guidelines regulated by the town's planning department. The pro-
cess will include the explicit use of certain materials, maintaining the current urban
and building scale as well as streetscape.

	Industrial		Linear park
	Existing building		Residential
	Proposed building		Square
	Parking		Rail line

0 25 50 75 100 125m

Fig. 4.24 A proposed intervention plan for Westlock's downtown

As was previously mentioned, to encourage new apartment buildings in the downtown core, an incentive program to attract investors and businesses was recommended. The reconstruction of the existing museums or the creation of a new museum may also bring about an increase in tourism. Westlock could also host summer movies and concerts in its new park as well as organize a music and lightshow against the grain elevators to celebrate the place's agricultural heritage. They could also look into the development of after-hour activities by supporting local pubs, cafes, and cinemas. Ideally, a committee would be set up to supervise the implementation of the proposal by a group composed of business owners, citizens, and investors. This committee could also ensure that the environmental sustainability of the town be maintained by setting up bike lanes along high-traffic streets, installing solar-powered panels, exploring the possibility of a shuttle bus, establishing a recycling program, or even implementing eco-friendly street furniture.
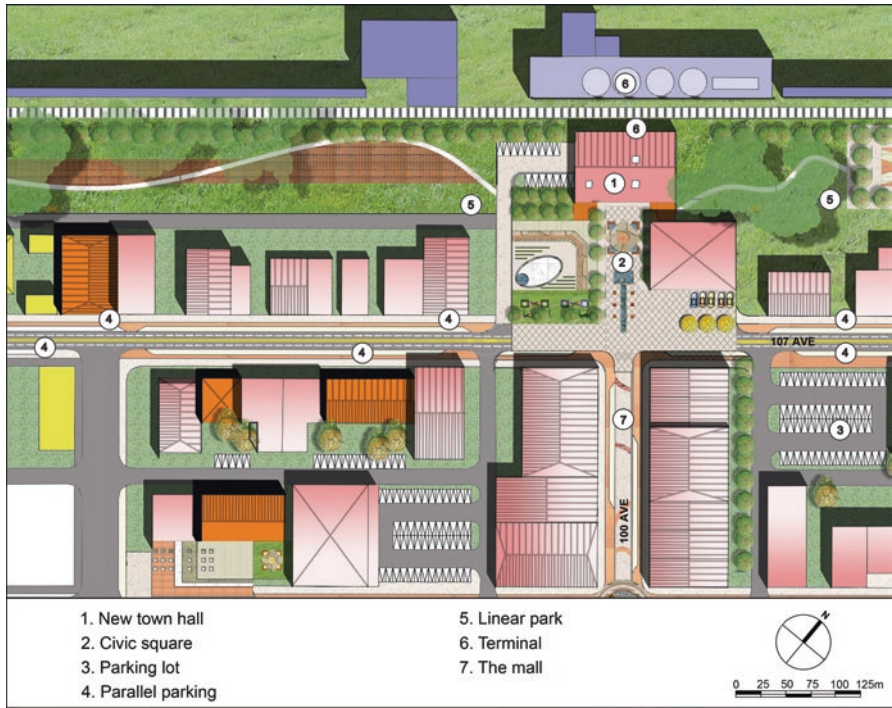
1. New town hall
2. Civic square
3. Parking lot
4. Parallel parking
5. Linear park
6. Terminal
7. The mall

0 25 50 75 100 125m

Fig. 4.25 A proposed new civic square

Existing grain elevators

Proposed new city hall and painted grain elevators

Fig. 4.26 Existing and proposed painted grain elevator and a new city hall

Fig. 4.27 Images of Ilderton

4.8.2   Ilderton, Ontario

Ilderton is a small community in the larger rural municipality of Middlesex Centre in the province of Ontario, Canada. It is a home to about 2000 residents who live in a low-density setting. The population has been increasing and housing was constructed in the periphery. Anchored in agriculture, the centre of the village has an appeal reminiscent of the nineteenth century Victorian era while still maintaining the charms of a small rural community (Figs. 4.27, 4.28, 4.29 and 4.30). There are many vacant lots in downtown, and this has led to my invitation to propose a master plan for the area's urban renewal.

Fig. 4.28 Aerial photo of Ilderton

At the outset of the planning process, we recognized that the main street is occupied by many commercial buildings and offices, while the western portion of town features a curling club and a community centre. The remaining amenities are dispersed throughout the village, including the fire station, library, churches, and institutional services' buildings. There are well-used, narrow footpaths that line the arterial streets that require improvement to maximize walkability. There is also an immediate need for bike lanes to be introduced around Ilderton to improve mobility. As anchors, we saw the focus of Ilderton's renewal as the maintenance of its nature trail, the encouragement of a new urban landscape, the exploration of new sustainable practices, and most importantly the strengthening of its village's core.

Along with the variety of established commercial and residential buildings, the town of Ilderton can boost several positive attributes. It has a beautiful nature trail, many lots with the potential for future development, a number of historic buildings, and residential districts both to the north and south of the centre. In addition, the University of Western Ontario is to open its school of medicine and dentistry nearby. However, these factors do not completely compensate for the town's fragmentation from its central road or its non-pedestrian-friendly configuration. Too many of the facilities are scattered on the periphery of the core, too far set back from the road, or
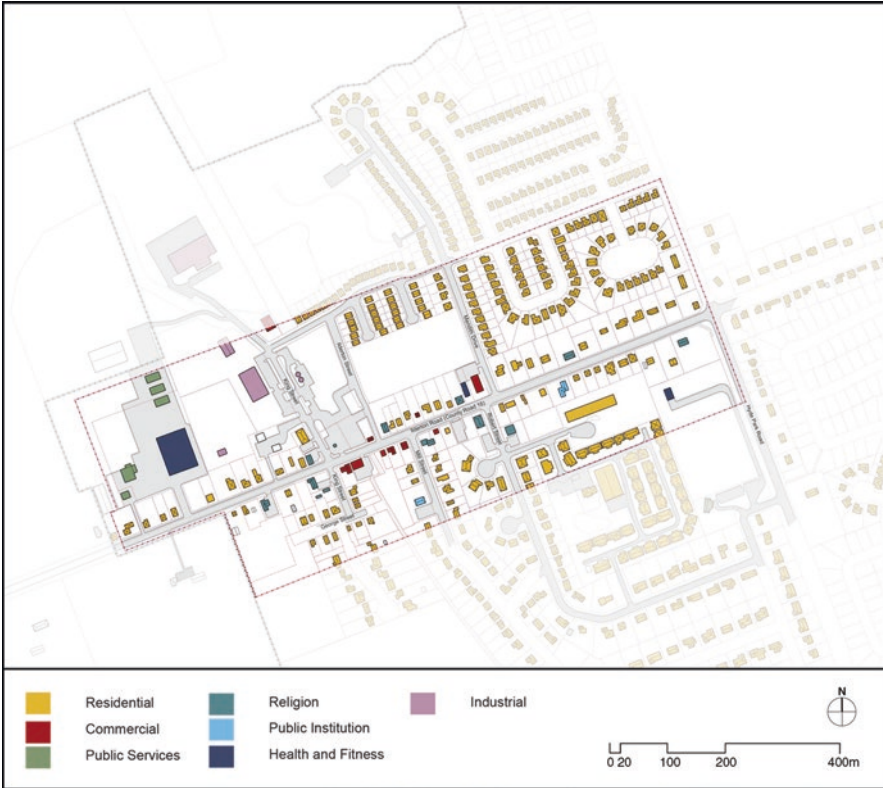
Fig. 4.29 Current land uses in the study area

simply run down. The main arterial street of the village, Ilderton Road, has low-rise buildings and far too few residents. The low-rise buildings completely obstruct the possibility of having both business and residents to live above them.

To give the centre a facelift, several procedures were recommended (Figs. 4.31, 4.32, 4.33, and 4.34). Foremost was Ilderton's need to increase its population. New businesses in the village will not succeed if they do not have sufficient clientele. It would also help the local economy if the town attracted a wider range of stores to it. Further, the buildings must be mixed-use. To improve mobility, there should be more off-street parking available in the core. This would unclutter some of the road-way and free up space that could be better used to set up a network of bicycle paths and to provide better pedestrian crossings. The overall movement of people around the town should be prioritized and given the most attention because it is imperative to the success of the area on its commerce.

It was also recognized that the streets need to be pedestrian-friendly through widening of sidewalk, tree planting, better paving, and installation of benches. If Ilderton wishes to attract more tourists, then it will need to improve traffic conditions along busy street. This could include introducing traffic-calming measures along Ilderton Road or by establishing a public transit system to connect the village
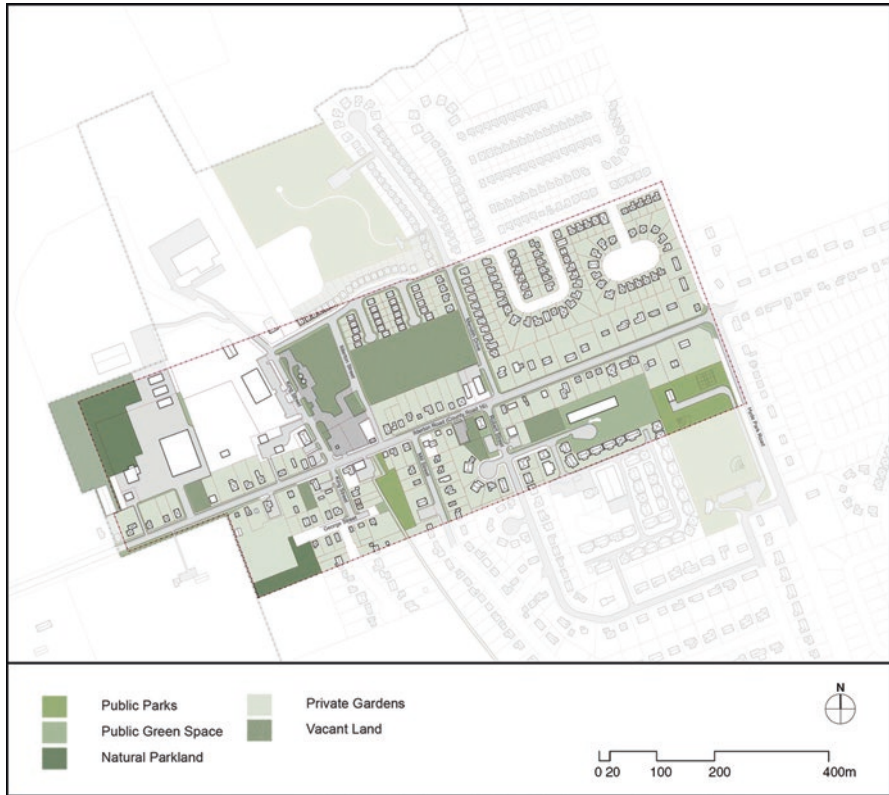
Fig. 4.30 Open spaces in the study area

to the nearby city of London and thus make it accessible to all. These procedures set the stage for the establishment of a greener community and help create a new identity for Ilderton—a rural community with an appeal of a modern town.

The detailed objectives of the proposal offered additional improvements. One of them was the introduction of sidewalk features at intersections to improve pedestrians' safety and add visual interest to the street. To further encourage the adoption of healthy pedestrian activity, there should be more investment in vehicular traffic-calming measures. The nature trail, one of Ilderton's main attractions, should be expanded to follow the old railway line. Ideally, these pathways would also connect to the different neighbourhoods.

4.9   Final Thoughts

Small towns are commonly not well-served by public transport, especially given their sprawling urban form and low demand for public transit. The latter is caused in part by low population, high rates of car ownership, and harsh climatic conditions, factors which together render public transportation unappealing and

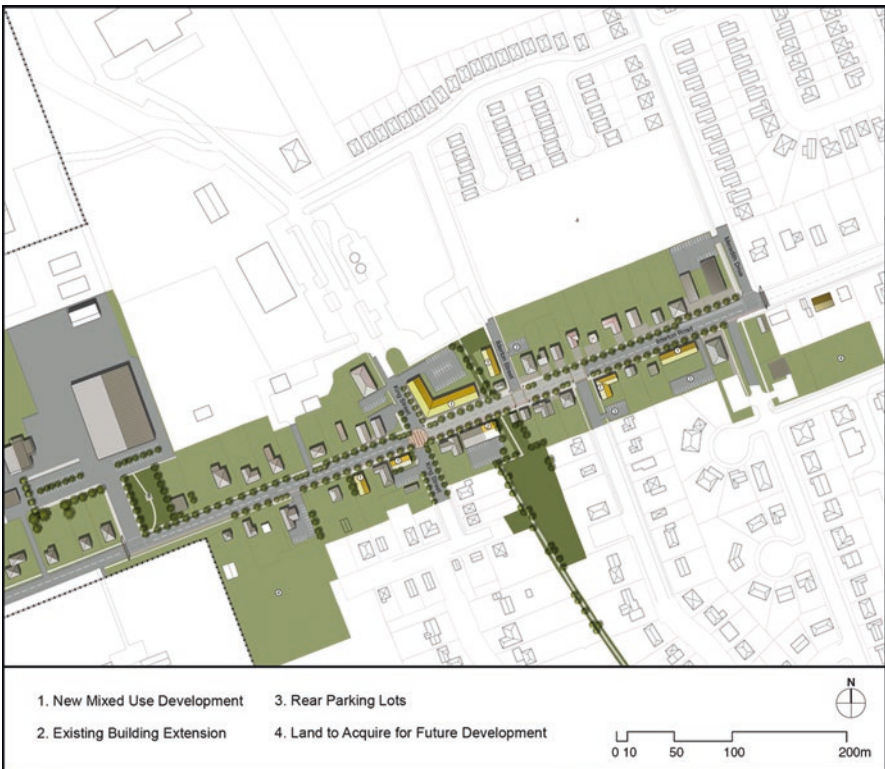**Fig. 4.31** Conceptual approach to the site development

Fig. 4.32 A plan showing minimum intervention

1. Medium Density Housing Development   3. Silo Park
2. Residential Lanes   4. Nature Trail Extension

Fig. 4.33 A plan showing medium intervention

impractical. However, the prevalence of private automobiles as the preferred mode of transportation in these regions has hurt human health by contributing to the isolation, loneliness, and obesity of inhabitants. Additionally, the ageing of the nation simultaneously makes mobility more difficult for the average citizen and places further pressure on municipal transport services given the degree to which they are used by elderly citizens.

An integrated approach to community development is a key to long-term prosperity, mobility, and well-being, and solutions can be drawn from *smart growth* guidelines, TOD, active transportation, and sustainable public transit systems. When combined and used as tools of urban renewal, these principles hold the potential to restore a sense of place, community, and identity in small town cores. Enhancing the pedestrian experience and creating incentives for commuters to choose alternative modes of transport can alter entrenched attitudes about automobile use and the perceived dangers of walking and cycling. The key is to draw people to the town core and facilitate movement between nodes, solutions that work to both restore economic vitality and create strong social ties among residents.
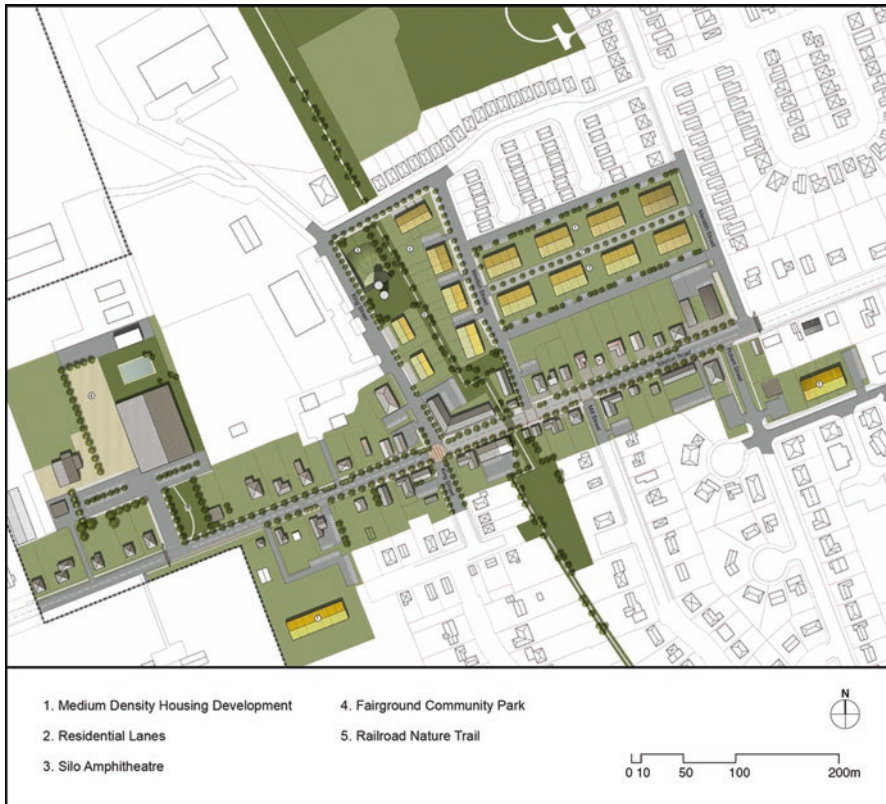
1. Medium Density Housing Development   4. Fairground Community Park
2. Residential Lanes   5. Railroad Nature Trail
3. Silo Amphitheatre

0 10   50   100   200m

N

Fig. 4.34 A plan showing maximum intervention

References

Besser, L. M., & Dannenberg, A. M. (2005). Walking to public transit: Steps to help meet physical activity recommendations. *American Journal of Preventive Medicine, 29*(4), 273–280.

Budapest Közlekedési Központ (BKK). (2016). *Urban Public Transport Museum Szentendre*. Budapest: BKV Zrt. Calthorpe 1993.

Calthorpe, P. (1993). *The next American metropolis*. New York: Princeton Architectural Press.

Canada Mortgage, & Housing Corporation (CMHC). (1981). *Residential site development advisory document*. Ottawa: CMHC.

Canadian Urban Transit Association. (2007). *Bus rapid transit: A Canadian perspective*. Issue Paper, 25.

Center for Transit-Oriented Design. (2010). *TOD: 203 Transit corridors and TOD*. Retrieved November 21, 2016, from http://reconnectingamerican.org/assets/Uploads/HSR-in-American-Complete.pdf

Childs, M. (1999). *Parking spaces: A design, implementation, and use manual for architects, planners, and engineers*. New York: McGraw-Hill.

Evans-Cowley, J. (2006). Sidewalk planning and policies in small cities. *Journal of Urban Planning and Development, 132*(2), 71–75.

Franyo, L. (1995). *Budapest cultural avenue*. Budapest: Horizont Informatika Ltd.

György, M. (1999). *Szentendre in olden times and today; tourist guide*. Szentendre: Miakich Gábor, Mayor.

Handy, S. L., & Xing, Y. (2011). Factors correlated with bicycle commuting: A study in six small U.S. cities. *International Journal of Sustainable Transportations, 5*(2), 91–110.

Hinshaw, M., Scarfone, A., & Donnelly, J. (1998). *Model code provisions, urban streets & subdivisions*. Olympia: Washington State Community Trade and Economic Development.

Housing and Urban Development (HUD) (1987). *Affordable residential construction: A guide for home builders*. Washington, DC.

Ignjatovic, J. (1952). *Respektus Vasza: Regeny*. Noviszad: Testveriseg-Egyseg.

Kelbaugh, D. (1989). *The pedestrian pocketbook*. Washington, DC: University of Washington Press.

Litman, T. (1999, November). *Parking requirement impacts on housing and affordability*. Victoria: Victoria Transport Policy.

McKechnie, B. (n.d.). *Influencing travel behavior in a winter city*. Resource Conservation Manitoba. Retrieved November 21, 2016, from http://www.wintercities.com/Resources/articles/McKechnie_Travel.pdf

Miklós, V-N. (2000). *Szentendre then and now*. Széchenyi: Európai Regionális Fejlesztési Alap.

National Association of Home Builders (NAHB). (1987). *Reducing home-building costs with OVE design and construction*. Upper Marlboro: NAHB Research Foundation.

Park and Ride (2009). *Transportation planning branch, position paper*. City of Edmonton: Edmonton, Canada.

Rohrer, J., Pierce, J. R., Jr., & Denison, A. (2004). Walkability and self-rated health in primary care patients. *BMC Family Practice, 5*, 29–35.

Southwarth, M., & Ben-Joseph, E. (1997). *Streets and the shaping of towns and cities*. New York: McGraw-Hill.

Southworth, M. (1997). Walkable suburbs? An evaluation of neotraditional communities at the urban edge. *Journal of the American Planning Association, 63*, 1.

Transport Canada. (2009). *Improving travel in small towns and rural communities*. Transport Canada Publications, T22–184/2009E.

Van der Ryn, S., & Calthorpe, P. (1986). *Sustainable communities: A new design synthesis for cities, suburbs and towns*. San Francisco: Sierra Club Books.

Dwelling in the Core

5

Due to contemporary lifestyle changes and a rise in the number of new household types, dwelling options in small town centres need to be reimagined. Single-parent families, seniors, and those who work from home are all examples of homeowners who are seeking more innovative accommodation to meet their needs.

This chapter discusses housing strategies in towns' centres and identifies inventive dwelling choices that respect both contemporary social trends and sustainable planning principles. The demands of social transformations and sustainability together reveal a key strategic trend: that will increase density in small town centres. Additionally, the chapter illustrates techniques to create more sustainable dwellings that reduce energy consumption, resource use, and operational costs.

5.1   A Place of Reference

With a population of about one million inhabitants, the city of Santiago de Queretaro in the Mexican state of Queretaro is, of course, not a small town. Yet, due to a unique planning and architectural character, its historic centre makes it feel like one. This is in large part due to the municipal authorities managing a housing shortage in the area by converting rundown buildings into residences and to infill housing (Fig. 5.1).

Located 132 miles (210 km) from the capital of Mexico City and founded in 1531, Santiago de Queretaro was at the centre of the national independence movement from Spain in the early nineteenth century (INEGI 2005). Due to the city's historic importance, architectural heritage, location, and economic development in rapidly developing industries—to say nothing of its recognitions as the metropolitan area with the best quality of life and as the safest city in Mexico—it has seen a large influx of new residents since (insert year or time period of some sort here) (Garduno 2011). Additionally, in 1996 the city centre was declared a UNESCO world heritage site that led to the introduction of many constraints regarding alterations to historic buildings.

Fig. 5.1 Images of Santiago de Queretaro, in the state of Queretaro, Mexico

One of the main aims of the city's plan is to encourage the creation of residential developments that are integrated with pre-existing utilities and infrastructure, thus improving the quality of life for all residents. This presented an opportunity to explore the advantages of infill and adaptable housing in the centre. Conservation, integration, and diversification guided this retooling of the urban fabric in the city (Garduno 2011).

The proposed strategies consisted of four key tenets. First, the strategies will support developments that are integrated into the components of the existing urban structure that already have the appropriate services and utilities. Second, they will promote good-quality construction that uses appropriate materials and efficient building processes. Third, they will strive to adapt housing to specific demographic, social, and place needs. Lastly, funding options will be provided by formal authorities such as the city for acquiring, self-constructing, and improving dwellings.

5.2   New Households, New Housing

In many Western nations, new household forms are on the rise, and more and more people are seeking homes as seniors, single-parent families, or singles. However, these groups have seen difficulties finding suitable accommodations in the market-place due to a lack of housing diversity. Offering a mix of dwelling types and land
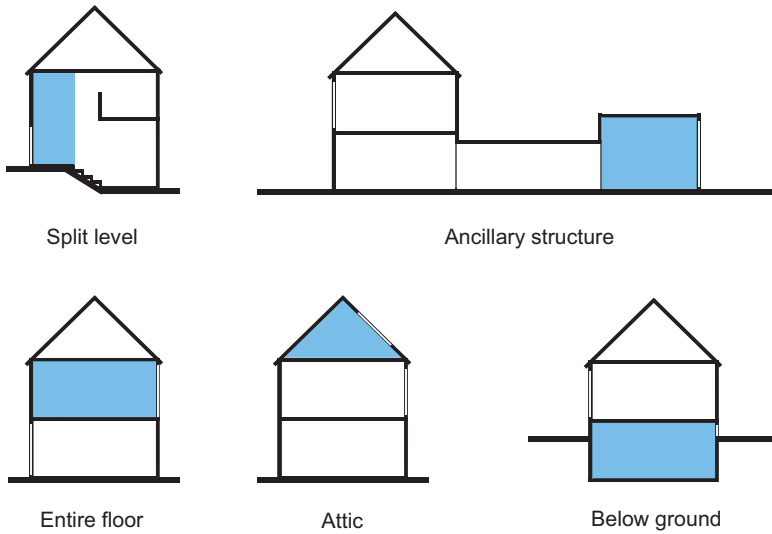
Fig. 5.2 Possible locations of an office in a home

uses enables people with a range of incomes to establish a mutual support system. Especially if located in the town's core, these mixed dwelling types can act as a draw for both the young and the old, thus creating an age spectrum that enhances sustainability. A variety of newly built units and alterations can be made to existing homes in a town's centre to better meet the needs of new living styles. In what follows, four such designs will be discussed: live-work residences, dwellings that facilitate ageing in place, homes for multigenerational living, and small homes.

5.2.1   Live-Work Residences

Live-work residences have become increasingly popular since the digital revolution of the 1980s, where home-based businesses started emerging. Integrating living and working space can be challenging, but the most important tool in creating an effective work space is separation, which is ultimately dependent on the office use and the number of employees. Suitable options for separation include having the work space occupy an entire floor or split level, using removable partitions, or having the office as an ancillary structure (Fig. 5.2). The advantage of removable partitions is the flexibility that they offer—the office can be relocated as family or business needs change. However, they do not offer as much privacy as other methods of separation, an issue which may pose a challenge for some (Redemske 2012).

When the office space requires clients to visit, or will have a large number of employees, it is often desirable to have a separate entrance to the office that is not connected to the living space. This is most easily accomplished in ancillary structures or where the business occupies an entire level. When planning a live-work residence,

offices should ideally be placed on the facade with the most sun exposure to enhance productivity and well-being. Further planning strategies in the office may include "activity zones". It is a way to create environments where employees can move around, thereby increasing communication, which can be important to encourage spontaneous discussion and the emergence of ideas (Becker and Steele 1995).

5.2.2   Ageing in Place

Another type of home that makes for a more sustainable community is the dwelling that facilitates *ageing in place*. Ageing in place is a design concept that creates barrier-free living for all ages, mobility, and health conditions. In particular, these homes address the needs and wants of the elderly and those with reduced mobility, the majority of whom would prefer to stay in their homes instead of living in a care facility. Houses designed for ageing in place reduce the need for costly support from government and families, especially since the average life expectancy has dramatically increased. This is important for countries that have sizable ageing populations, such as Japan and Italy. Ageing in place addresses the human need for independence, which is considered one of the four fundamental aspirations of people and can often be lost when considering the elderly or those with reduced mobility (Lawlor and Thomas 2008).

Design considerations made early on in the planning stage can make it easier to age in place, rather than making the changes only when they are necessary. Small decisions especially can have a large impact, such as choosing door frames that can accommodate the future use of walkers and wheelchairs or providing the structural support necessary for the future installation of grab bars in bathrooms. Fall prevention is a key design issue for ageing in place, so the removal of obstacles, elimination of joints between flooring materials, allowance for ample circulation space, avoidance of slippery floor coverings, and a focus on main living spaces on one level are all imperative design strategies. There are many innovative and assistive technologies available for more complicated rooms like the kitchen and bathroom, such as cabinets that may be lowered to be easily reached and remote control technologies for various functions (Fig. 5.3). Large, well-placed windows and balconies are important in ageing in place homes because they can reduce feelings of isolation in old age.

5.2.3   Multigenerational Dwellings

Multigenerational dwellings are homes designed to accommodate the needs of families that span more than two generations. This type of home was in favour in pre-industrial times and is being reintroduced due to contemporary demographic shifts. They can foster a mutual support system between the elderly, middle-aged, and youth. Children can benefit from the additional care from their grandparents if their parents may be busy at work, and grandparents are provided with a sense of purpose
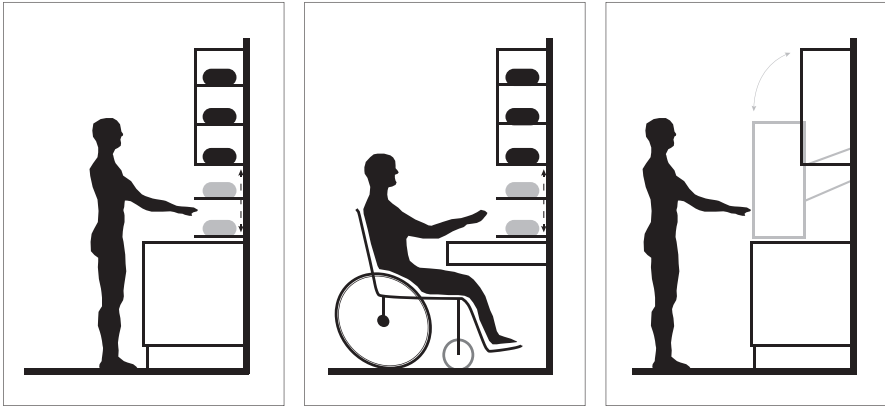
Fig. 5.3 There are many innovative fixtures available for seniors such as kitchen cabinets that can be lowered
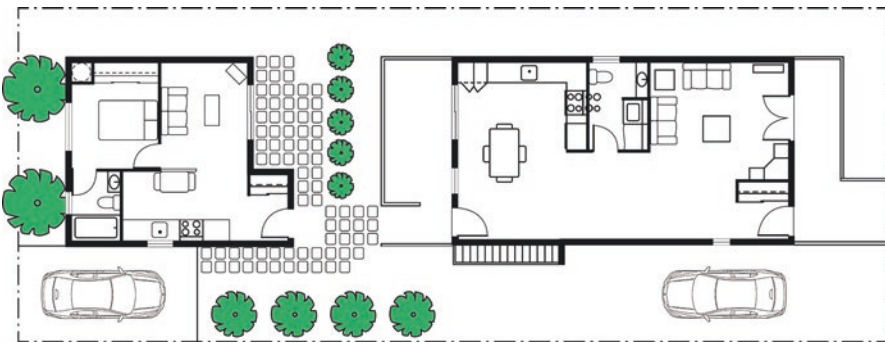

Fig. 5.4 A garden suite in the rear of a home

and may benefit from additional healthcare from their children or children-in-law. Traditional multigenerational homes, however, do not meet the needs of many modern families due to their lack of privacy. New design concepts separate family units so each household can live independently if they choose to. This also makes future sale or lease of units more feasible. Separate entrances are suggested to avoid disturbance due to generational lifestyles. It is also important to differentiate between public and private spaces in multigenerational homes, especially since senior citizens value private space to increase their feelings of independence (Parker 2000).

There are four primary types of homes which successfully facilitate multigenerational living, the first of which is the *garden* or *granny suite* (Fig. 5.4). This is a self-contained living unit that is located behind or to the side of the primary dwelling and is linked with a deck or path. Garden suites can be easily relocated at later stages or fully linked with the main dwelling if desired. Two more very similar designs for multigenerational living are bi-family dwellings and plex units. *Bi-family dwellings* are a side-by-side arrangement which do not have internal connections
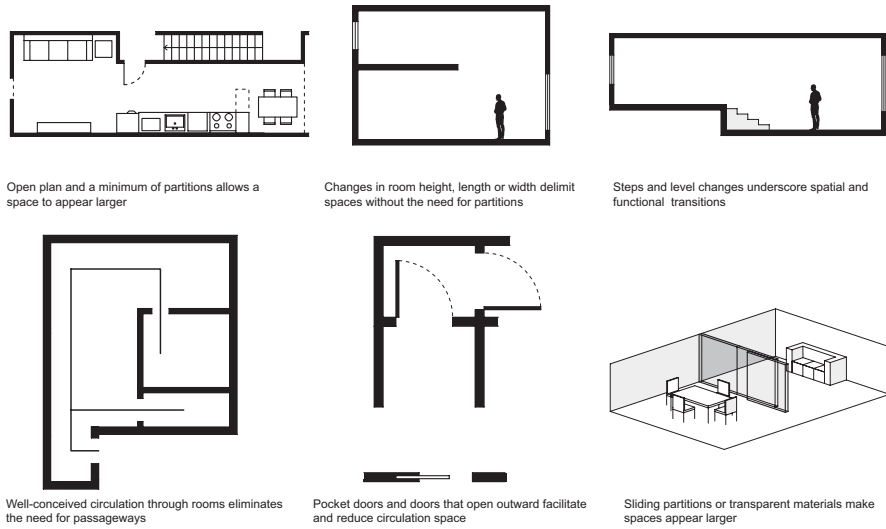
Open plan and a minimum of partitions allows a space to appear larger

Changes in room height, length or width delimit spaces without the need for partitions

Steps and level changes underscore spatial and functional transitions

Well-conceived circulation through rooms eliminates the need for passageways

Pocket doors and doors that open outward facilitate and reduce circulation space

Sliding partitions or transparent materials make spaces appear larger

Fig. 5.5 Design strategies for making small homes and spaces feel larger

but share a facade. *Plex units* are based on a similar idea, but dwellings are stacked vertically with each having their own street access. They may or may not be linked internally but can be joined through a rear staircase. A fourth variety of multigenerational home is achieved by incorporating an *accessory apartment* into a home. This is where a small apartment is situated in, or cornered off, from the primary living space. The two can be attached, but it is recommended that each have their own street access to reduce disruptions. Accessory apartments are the most integrated form of multigenerational living but are the least adaptable option for resale (Newman 2010).

5.2.4   Small Homes

Small homes are another style of dwelling that can be very conducive to living in a town's core. They were initially developed as a result of high housing and heating costs, as well as environmental consciousness. To be considered a small dwelling, it must not exceed 500 ft^2 (56 m^2). Small dwellings were already common in many Asian and European cities but began gaining popularity elsewhere after the economic crisis of 2008 due to their low operational costs (Burney 2010). Considerations of light, circulation, material choice, and furnishings must all be looked at to expand spatial perception and avoid occupant crowding (Fig. 5.5). Open floor plans are beneficial in small homes because they can create more adaptable, multipurpose living spaces. Open plans also eliminate the need for single-use spaces like hallways and can allow light to travel more freely in the interior. When partitions are necessary, it is recommended that transparent ones be used to allow the perception of

Fig. 5.6 Window placement, unit alignment, and landscaping can aid in reducing the perception of crowdedness

more space and lightness. Similar principles are used for staircases in small homes. Minimal materials are often chosen to reduce their visual effect. Stair location should also be carefully considered to avoid wasted space. Built-in storage is often necessary in small spaces and can be creatively integrated into walls and furniture. Storage can also act as a multipurpose partition if needed.

5.3   Dwellings for Small Towns' Centre

Living in a town centre offers many desirable aspects to a variety of families. Commonly, being close to amenities is on the wish list of prospective homeowners. Small town centres can provide a sense of community and feelings of being rooted in a unique cultural setting. Better integration and variety of housing types, such as units suitable for seniors and young households, can attract extended families to facilitate a mutual support system and create sustainable neighbourhoods. New houses in town centres, however, will need to be constructed in more dense formations than those on the town's edge.

Though higher-density living is more sustainable, some homebuyers are wary of the thought. However, it seems their fears are more concerned with the *perception* of density rather than the density itself. Factors such as dwelling type, lot size, building size, relation to parking, and the nature of the street all affect density perception (Knack 1998). As illustrated in Fig. 5.6, windows' placement, unit alignment, landscaping, and differentiation between public and private areas can also aid

Fig. 5.7 Mixed-use dwellings are common in the heart of old areas

in reducing the perception of crowdedness. The main goals in planning higher-density living are to increase feelings of privacy and lessen the perception of density. These goals combined with innovative techniques to increase density can provide a variety of advantages to living in a town centre.

5.3.1 Mixed-Use Buildings

One planning strategy often employed for dwelling in a town core is mixed-use buildings (Fig. 5.7). These types of buildings offer the core greater variety and higher density while also reducing the distance between housing, workplaces, and various amenities to create more walkable and bikeable neighbourhoods. Well-designed mixed-use neighbourhoods can also foster a stronger neighbourhood character and sense of place, which is an important draw for many in small towns and should be preserved whenever possible (Beyer 2010).

5.3.2 Zero-Lot-Line

Apart from mixed-use zoning, there are other strategies that can be utilized to create comfortable higher-density neighbourhoods. Different lot variations can increase density and sustainability for neighbourhoods of single-family detached homes.

Fig. 5.8 A zero-lot-line design like the one shown here creates more usable space on an overall smaller lot, making it a more sustainable option for new neighbourhood developments

The zero-lot-line is a variation on conventional residential lots for detached homes, where the wall of the dwelling is placed directly against the edge of the lot line as illustrated in Fig. 5.8. The zero-lot-line creates more usable space on an overall smaller lot, making it a more sustainable option for new neighbourhood developments. Another lot variation that increases density is Z-lot housing. Homes are placed on an angle on an irregular Z-shaped lot, with garages and driveways at the rear of the lot. This exposes more of the building's facades to the street and creates more liveable space at the front of the lot. Z-lots allow for the street facade to not be dominated by garage doors but can instead have a more human scale.

5.3.3 Town and Terraced Housing

Clustering housing units increases dwelling density and can open up more opportunities to create sustainable neighbourhoods. The units can be single-family detached homes, semi-attached dwellings, or row houses as illustrated in Fig. 5.9. The goal with clustering is to concentrate homes in one part of a development and preserve natural areas in another. The density is often concentrated around shared outdoor spaces, but each property has their own smaller private outdoor space as well. Clustering units reduces the land needed for development, especially when the

Fig. 5.9 Clustering units into townhouses reduces the land needed for development and as a result the cost

dwellings are attached. Attached dwellings help contribute to energy management as well. Sharing walls can reduce heat loss in winter and can conserve on air conditioning in summer because the hot or cold air is less likely to be lost to the surroundings. In fact, semi-detached homes have been found to be up to 36% more efficient than detached homes and row houses up to 64% more efficient than detached homes (Thomas 2005).

5.3.4   Narrow Homes

Narrow homes are another form of dwelling with an array of advantages (Fig. 5.10). Narrow homes are classified as typically having a width of less than 25 ft (7.5 m). Because of their small size, these homes are less expensive to maintain and are more sustainable with land use. In addition, they speak to the shrinking family size and rising energy costs so are becoming a more popular housing option. Narrow homes may be detached, semi-detached, or part of a row, but every variety shares design aspects that minimize their environmental footprint and maximize their efficiency and functionality. For example, row houses often take advantage of passive solar heat gain by having their longer facades with lots of windows that face north or

Fig. 5.10 Narrow homes may be detached, semi-detached, or part of a row, but every variety shares design aspects that minimize their environmental footprint and maximize their efficiency and functionality

south and having the opposite wall have fewer openings and sufficient insulation to minimize heat loss. Narrow dwellings can be made to feel larger through strategic window placement, providing porches and balconies as a link to the outside and having an open-concept layout.

Another key design principle to develop denser housing in the core is to introduce taller structures with smaller footprints (Fig. 5.11). A small footprint consumes less land and increases density with more floors on the same foundation, which can also reduce infrastructure costs. However, the height and proportions of these buildings should be reflective of the town's existing character to fit with the place's identity.

5.4   Sustainable and Resource Efficient Homes

Due to the increasing levels of environmental conscience, rising energy bills, and the desire to reduce carbon footprints, there has been demand for homes to reflect these notions. A variety of new techniques have increased energy efficiency, allowing some homes to exist completely free from the power grid and even contribute energy to it. Innovative technologies include a variety of methods that make homes more sustainable and resource-efficient, with little or no difference on how families live.

Fig. 5.11 A key design principle in developing denser housing in the core is to create taller structures with smaller footprints

5.4.1   Net-Zero Homes

Net-zero buildings are one example of incredibly resource-efficient design. For a dwelling to be considered a "net-zero" home, it must fulfil two conditions: it must produce and return as much energy to the local power grid as it consumes, and it must not produce any carbon dioxide (Fig. 5.12). Net-zero dwellings can be either completely off-grid, where batteries are used to store energy during low-production times, or they can be grid-tied, meaning they draw and supply energy to and from the local power grid. For this type of house to exist completely free of carbon dioxide production, they must use systems such as photovoltaic cells and wind turbines to produce electricity rather than typical methods which use fossil fuels (Tanha 2010). The building's location will likely be the deciding factor of the energy production method, based on the local sun and wind patterns. To make the dwelling more efficient, these electricity production methods should be combined with other heat-production methods, like geothermal pumps and solar hot water vacuum tubes that can reduce the amount of energy needed to heat the dwelling, thus making it a more efficient system.

It is important for net-zero homes to consider the method used to heat and cool the structure. Typical mechanical systems account for over 55% of overall energy consumption, so net-zero housing can only be successful if their heating and cooling takes advantages of natural systems (Baumann 2009). Examples of natural methods that can be used to heat and cool the dwelling include insulation, wastewater heat recovery, window type and quality, natural ventilation, building envelope,
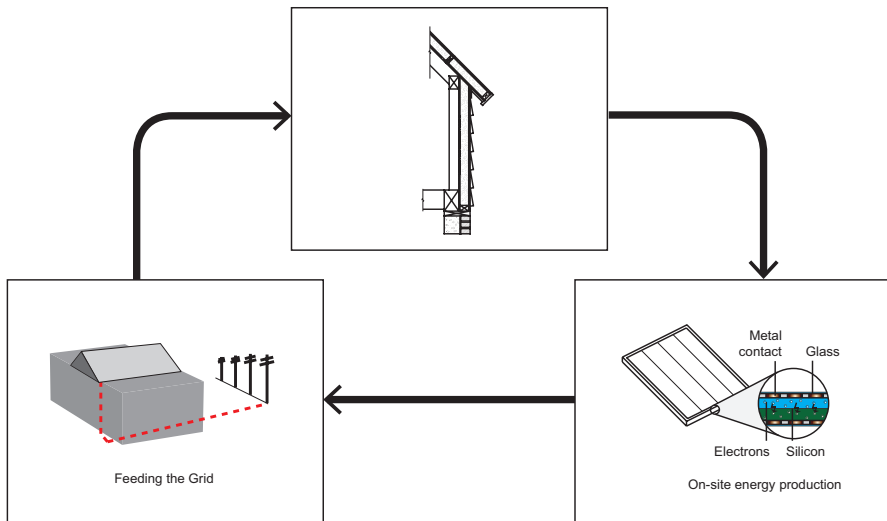
Fig. 5.12 To be considered a "net-zero home", a dwelling must fulfil two conditions: it must produce and return as much energy to the local power grid as it consumes, and it must not produce any carbon dioxide

green roofs, and thermal storage areas. The dwelling's size and orientation are also important planning considerations that can reduce energy consumption by taking advantage of passive solar gain, indoor airflow, and natural shading.

Net-zero homes need to have good insulation to reduce air leakage. This can be achieved through traditional methods of combining different types of insulation or through more innovative techniques such as thick-wall, wall-and-strap, double-wall, and truss-walls. Because of the tightly insulated membrane these methods produce, it is important to keep fresh air circulating in the structure through the use of heating, ventilation, and air conditioning (HVAC) systems or heat recovery ventilation (HRV) (Fig. 5.13). HRV systems recover heat as it flows outside and convert it to new, fresh air which then re-enters the building to provide air circulation and increased climate control.

Window and door choice is an important consideration in these types of dwellings, as they can considerably improve energy efficiency. Double- or triple-paned windows and doors made of krypton gas-filled, low- emissivity glass are most widely chosen due to their high thermal performance. This type of glass is known to be up to four times as efficient as traditional double-paned glass (Macht 2010). More expensive and innovative alternatives include electrochromic or thermochromic glass, which contains glazing that can change from transparent to opaque in order to control glare and sun penetration into the home.

Not only is the physical choice of window important for net-zero homes, but window placement should also be considered. Thoughtful placement can provide natural ventilation, which is a key aspect of net-zero homes. It is based on the principle that warm air is less dense than cool air, so placing some windows high
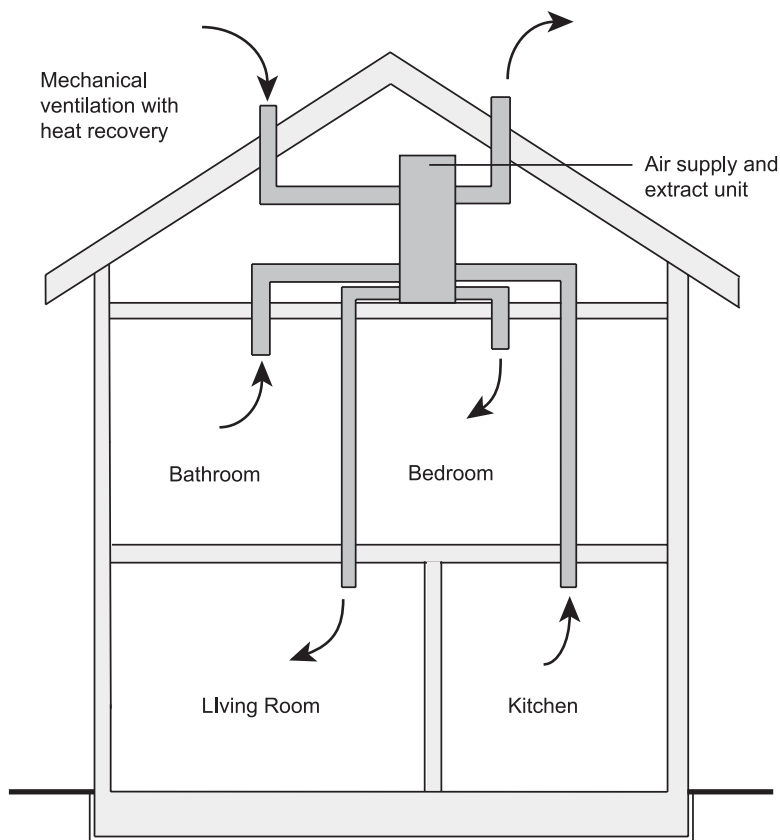
Fig. 5.13 Location of a heat recovery ventilation (HRV) in a home

and some windows low in the building can take advantage of a natural air cycle (Tanha 2010).

Thanks to new inventions and computing techniques, net-zero home design and maintenance can be made more feasible. For example, calculation of wind and solar patterns, shadow and heat loss, and power consumption and production are all useful tools for homeowners to make living sustainably an easier choice.

5.4.2   Water-Efficient Homes

Global concerns with water shortages and conservation of this precious resource have led to the development of a variety of technologies to reduce water consumption in the home. Combinations of many small changes can have a considerable impact on minimizing water usage as a whole. These measures can also be cost-saving for homeowners, which is an added benefit.

One small change that can have an enormous combined effect is converting to more efficient toilet fixtures. Conventional toilets currently account for 27% of total water usage. This figure can be reduced by over 20% by replacing conventional systems with more water-efficient models (Schaeffer 2005; Johnston and Gibson 2008). Several options exist at varying prices and levels of efficiency. A popular choice is the dual-flush toilet fixture, which provides a low-flush option to preserve water as well as a standard-flush option. A second choice is the pressure-assisted flush toilet, which uses a build-up of compressed air or water from the previous flush to aid in flushing without using more water than necessary. An alternative to flushing toilets is the composting toilet, which does not use any water. Instead, waste is collected in a well-ventilated chamber where it converts to compost over time.

Converting to low-flow shower heads and faucets is another simple change that reduces water consumption. These faucets exist in both aerating and non-aerating models. The aerating option uses small air bubbles to create a high-pressure spray with less water consumption. Wherever possible, high-efficiency appliances should be chosen for the home. High-efficiency dishwashers can save up to 1600 gallons (6060 L) of water over its lifetime (Energy Star Home 2016). Front-loading washing machines are also known to be slightly more efficient with water consumption than alternative top-loading models.

Many water distributors actually distribute water at twice the pressure that is required for appliances and taps to function. This level of pressure is often unnecessary, and water can be saved without losing function by installing restrictors or pressure-reducing valves (EPA 2011; CMHC 2011). These inventions reduce water rates from the water mains to conserve. Restrictors are installed on individual taps and faucets, whereas pressure-reducing valves are installed at the water main to reduce the overall pressure supplied to the home.

Mains water usage, which is water supplied and treated locally, can be reduced by supplementing it with grey water or rainwater collection (Johnston and Gibson 2008). Grey water is water that is recycled in the home. It is waste water which is collected after having been used by appliances and is recycled for use in a secondary manner such as toilet flushing or outdoor irrigation (Fig. 5.14). There are systems available to distribute grey water in a clean, safe manner, but they are largely underused. Methods of harvesting rainwater to be used in or out of the home are available in some areas but unfortunately are still being tested because many places lack the plumbing regulations to allow these installations.

Along with these technologies to reduce water consumption, homeowner habits can largely contribute to efficient water usage. Shorter showers, waiting to run full loads of laundry and dishes, and being mindful not to leave taps running excessively are all ways to save water.

5.4.3 Designing for Passive and Active Solar Gains

Dwellings that are designed to take advantage of solar energy also contribute to the home's sustainability. These homes can either be designed for active or passive solar gain. Active solar systems use mechanical means to generate either solar energy or
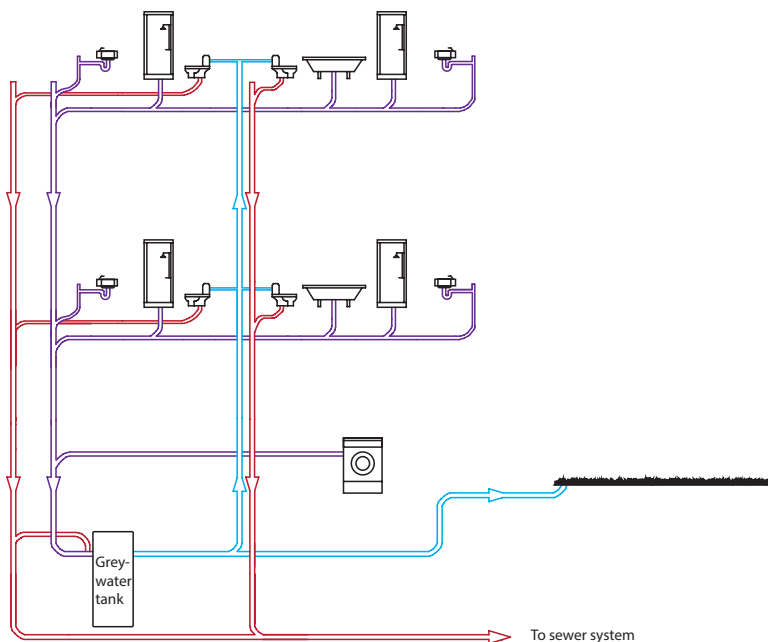
Fig. 5.14 A grey water collection and recycling plumbing system

thermal energy. Dwellings with passive solar gain, like the one illustrated in
Fig. 5.15, gather and utilize the sun's energy and enhance their ventilation without
the use of mechanical means (Sustainable Sources 2011a).

Technologies for active solar systems have come down considerably in price
since their initial emergence to the market, which has made them increasingly com-
petitive with conventional power systems. Their payoff period has become as low as
5–15 years (Strongman 2008). The most common active solar system is the photo-
voltaic cell, but these have already begun to be phased out by thin-film solar sheets.
Thin-film solar sheets are slightly less effective than the photovoltaic cells but are
thinner, more versatile, more aesthetically pleasing, and less expensive, thus making
them a more viable option for many homeowners.

The method of electricity production is of paramount importance to solar-
powered dwellings. Production occurs when solar radiation excites the electrons
within a semiconducting material, such as silicon, and subsequently generates a
direct current. Three common systems that use this production method are mono-
crystalline photovoltaic panels, polycrystalline photovoltaic panels, and thin-film
solar panels (Fig. 5.16) (Sassi 2006; Quantum Solar Power 2011). The method of
energy storage depends largely on whether or not the house is connected to the grid.
This will determine whether the house uses battery storage or whether it will require
additional hardware.

Active thermal solar collectors are another common, low-cost system that can
have many applications. These systems gather radiated heat from the sun and
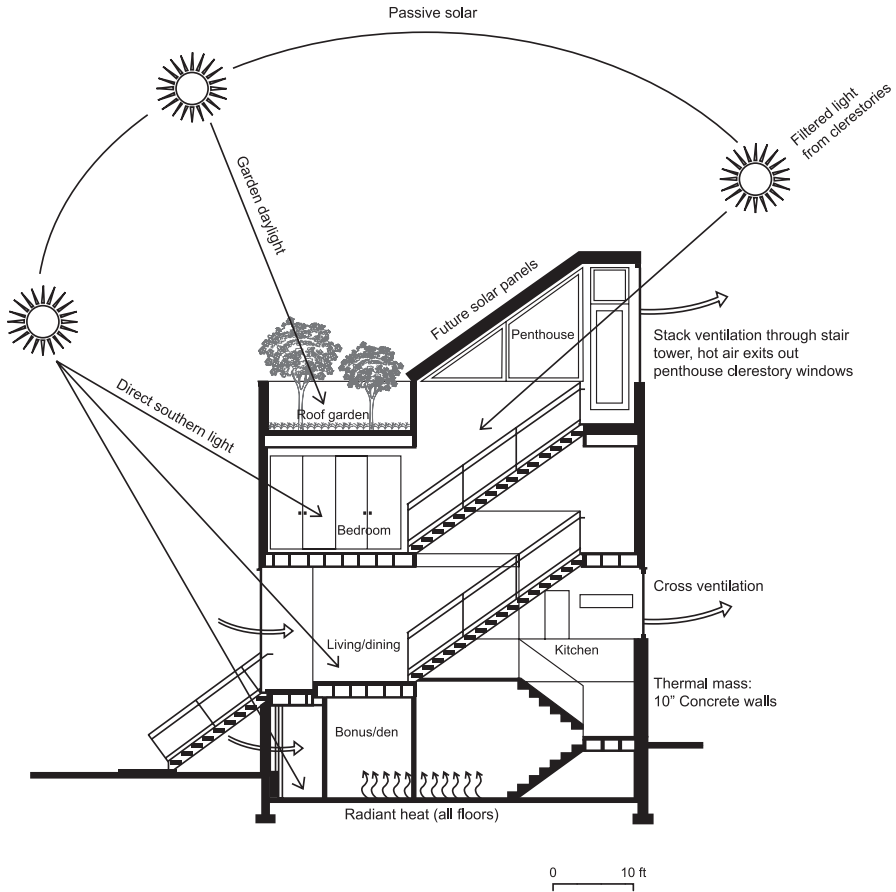
Fig. 5.15   A home designed for passive solar gain

distribute it through the use of air or water. Active air-based collectors typically use a perforated cladding made of dark unglazed metal plating which replaces the exterior siding of the home. They have thousands of small perforations which draw air inside through the use of fans. The warmth of the sun causes it to heat up, and the heat is then transferred to a 0.03-inch (1 mm)-thick air cushion. The warm air is then drawn into the building and is circulated using an HVAC system or is stored in a thermal well.

Active water-based collectors are a second type of thermal solar collector, which use either a flat-plate collector or an evacuated-tube collector (Strongman 2008; Sassi 2006). The flat-plate collector method is more common, which uses a series of copper tubes passed inside a glass-covered metal frame which forms an insulated box (Johnston and Gibson 2010). This is heated by the sun and heats up the water in the tubes. The evacuated-tube collector system is a more advanced and efficient technology which uses a series of parallel glass tubes filled with small amounts of

Fig. 5.16   Solar panels near the town of Middlebury, Vermont, US

Fig. 5.17   The evacuated-tube collector system is an efficient technology which uses a series of parallel glass tubes filled with small amounts of antifreeze sealed in a small central copper pipe

antifreeze sealed in a small central copper pipe (Fig. 5.17). When heated by the sun, the antifreeze converts to steam which rises to the top where it transfers its heat to collector heads before condensing back into liquid to be reheated. This system is more effective than the flat-plate collector because the sun can heat up more surface area on the tubes compared to the flat surface of the flat-plate collector. Once the water has been heated, it can be distributed in the dwelling through radiant floor, hot water baseboards or radiators, or central forced-air system through the use of a liquid-to-air heat exchanger (U.S. Department of Energy 2016).

Proper orientation of the dwelling is important for active solar systems because this can maximize sun exposure and minimize unwanted shadows on collectors. Solar tracking devices are an invention that can also be used to orient collection methods to follow the sun's path and maximize exposure. Houses designed for passive solar gain take advantage of natural sun exposure and shading to heat and cool the structure. By taking full advantage of the sun's light and heat, energy consumption can be reduced by up to 30 or 40% (California Energy Commission 2011). As is true for active solar gain, houses designed for passive solar gain also rely heavily on their orientation on the site. The structure should be oriented so that a long facade faces true South (or North if in the Southern Hemisphere) in order to take advantage of the sun from 9 am to 3 pm in the cold season (Sustainable Sources 2011b).

Primary living spaces, such as the living room, kitchen, and bedrooms, require the most light and heat and should thus be placed on walls that have the largest windows and greatest sun exposure. To reduce heat loss from the northern facade, only 5–10% of the facade should be fenestrated. Spaces that require less light and heat such as utility spaces should be placed on this wall as a result. Topography should also be considered in the house siting so that hills and other surroundings do not block the sun's path. This is especially important to consider in winter months when the sun is considerably lower in the sky than in summer months.

In addition to direct gain, passive heating can be achieved through a variety of techniques once the dwelling is properly insulated. One such method is through inherent thermal mass; walls that have a high thermal mass can take advantage of the sun's radiant energy by storing it. The wall thickness should not exceed 6 inch (15 cm) because the heat from the sun cannot be transmitted more than 4–6 inch (10–15 cm) (Sustainable Sources 2011b).

Trombe wall and *roof pond* systems are two more methods of passive solar gain which take advantage of indirect heat gain by placing a thermal mass between the sun and the living areas. Trombe walls are walls which have a small air gap between a glazing and a dark metal absorber attached to the façade (Fig. 5.18). Cool air from the building enters through a small opening in the bottom of the wall. The air gets heated by the sun, causing it to rise to the top of the wall where it re-enters the building via a second small opening. It is important to close these openings during the night to slow the cooling of the thermal mass. Roof pond systems use plastic or fibreglass containers covered by glazing which are filled with 6–12 inch (15–30 cm) of water. The sun heats the water, which then slowly transfers heat to the structure beneath it. It is important to note that this system may require drainage or added roof support. Heat may also be gained passively by using a thermosiphon, which is a water-based solar heater that relies on natural convection to move water from collectors to a storage tank (Johnston and Gibson 2010).

Passive cooling techniques are important for this type of dwelling during the hot summer months. One way to allow for passive cooling is through the use of strategically placed vegetation for shading. Deciduous trees provide excellent shade in the summer and are known to reduce the ambient temperature around the dwelling while still allowing light and heat to reach the home when they are bare in the winter. Sun shades and overhangs are also effective passive cooling methods, which can
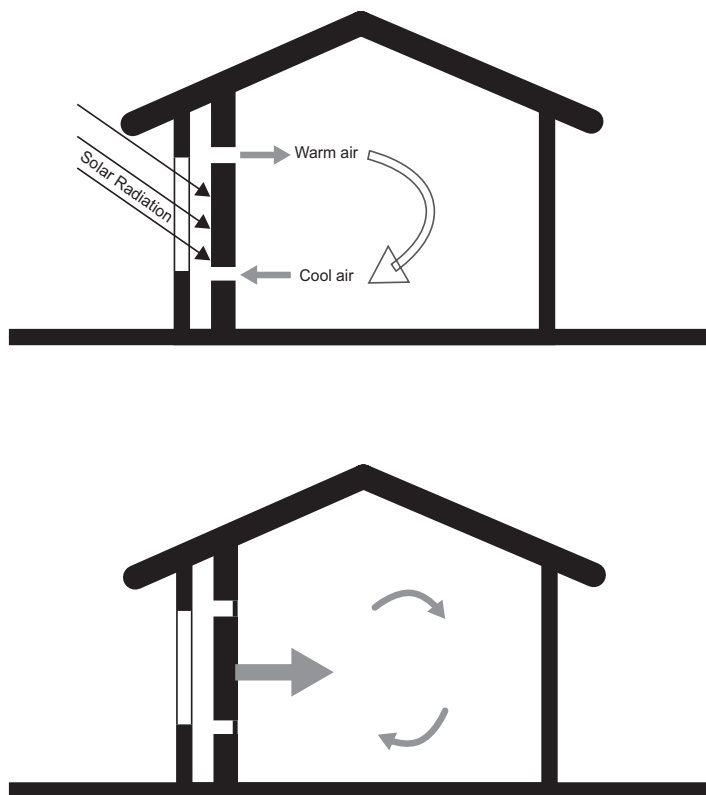
Fig. 5.18 Trombe wall system is a method of passive solar gain which takes advantage of indirect heat gain by placing a thermal mass between the sun and the living areas

be designed to block the high summer sun, yet still allow the lower winter light into the home. The introduction of new types of glass is another method used to block light in the summer and allow it to pass through during the winter. Electrochromic glass uses an electric pulse to turn opaque and reflective, and thermochromic glass passively tints according to sun exposure.

Passive cooling can also be achieved through natural ventilation methods such as *thermal chimneys*. The thermal chimney effect provides a path for hot air in a dwelling to rise through stairwells and vertical spaces, which then finally escapes out the chimney. This creates a vacuum in the house that draws in fresh, cool air through ground-floor windows (Sustainable Sources 2011b).

5.4.4   Green Roofs

Houses featuring green roofs are a fourth variety of sustainable, resource-efficient homes. Green roofs are an age-old concept that has recently been combined with

Extensive

Semi-intensive

Intensive

Plants & mulch

Growing media

Integrated irrigation & drainage mat

Waterproof protection

Waterproofing

Substrate
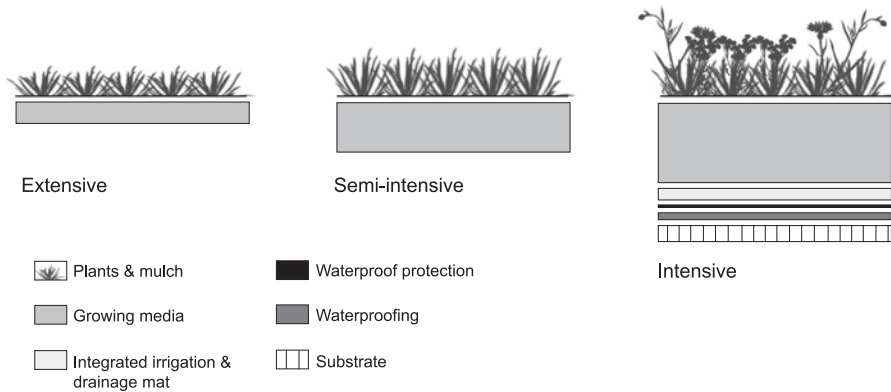
Fig. 5.19 Before building a green roof, it is important first to determine the "intensity" or the thickness of the vegetative and protective layers

contemporary technologies to combat the environmental challenges related to traditional roofing systems. There are a variety of different green roof types that can be built on either flat or pitched roofs, making them easy to fit the user's needs.

It is simpler to build green roofs on pitched surfaces due to their natural drainage. The pitch is often less than 20°, but some companies advertise roofs with pitches up to 45° (FlorDepot 2011a, b). Pitches this steep would require methods to prevent soil slippage such as synthetic lattice vegetation mats, horizontal strapping, battens, or grids. Green roofs on flat roofs may be more desirable because they can incorporate terraces but are typically more expensive to incorporate drainage systems and structural considerations.

Before building, it is important to first determine the "intensity" or the thickness of the vegetative and protective layers of the green roof (Fig. 5.19). This is largely dependent on the variety of plants that will be grown and whether or not people will be walking on a terrace around the green roof. To this extent, there are three levels of intensity for green roofs. The first is *extensive roofs* which are simple, light-weight, and low maintenance. Extensive roofs generally do not require additional structural support due to the minimal substrate depth, ranging between 2 and 6 inch (5–15 cm) (Landreville 2005). This type of roof is best covered with resilient indigenous vegetation that does not require human interaction (GreenRoofs 2011).

Extensive roofs offer the best benefit-to-cost ratio in temperate climates and are the most common choice for green roofs. *Semi-intensive* green roofs are quite similar to extensive roofs, with the only difference being the substrate depth, which ranges between 4 and 8 inch (10–20 cm) in order to accommodate a larger selection of plants. The larger substrate depth absorbs more rainwater which then cools the roof through evapotranspiration and acts as a larger thermal mass in order to more effectively moderate the dwelling temperature (Johnston and Gibson 2008). Last are *intensive roofs*, which can act as both a garden and a terrace. These require additional structural support due to the added weight of people, and a thicker substrate, between 8 and 24 inch (20–60 cm). Intensive roofs likely require irrigation

methods, fertilization, and ongoing maintenance in order to function properly (Peck and Kuhn 2008).

Regardless of the level of intensity, the general layout and components of green roofs are similar in principle. They can be constructed over any typical roofing material like wood, steel, or concrete, as long as the roof is structurally designed for the desired garden. The first layer over the structure is the most important, acting as the waterproofing membrane. This is typically constructed from a material such as PVC, thermal polyolefin, rubber, polymer-modified bituminous sheet membranes, liquid-applied rubberized asphalt, or coal-tar pitch (Miller 2010). If the chosen membrane cannot withstand root and biological attack, a root protection barrier is laid next. This is especially important for organic oil-based materials which can be broken down by roots. Next, a drainage procedure is implemented. For flat roofs, a minimum slope of 0.25 inch per linear foot (2.1 cm per linear meter) is recommended. This leads to drains being placed halfway between structural supports, which should be combined with subsurface pipes, gutters, and downspouts for proper drainage. Apart from a correct slope, however, a drainage layer such as gravel or a synthetic sheet is required which will shed water. The final layer is the substrate, which can range in composition from gravel and sand to thick organic soil, depending on the roof intensity.

Once constructed, green roofs can be expected to last two or three times longer than conventional roofs and can even be used to grow food for the home. They can also help improve air quality by removing pollution like carbon dioxide. These reasons highlight the sustainability of green roofs in comparison to their conventional alternatives.

5.5   Housing in the Centre

5.5.1   Komoka, Ontario

Komoka is a small hamlet in the municipality of Middlesex Centre outside the city of London in the province of Ontario, Canada (Fig. 5.20). Considered a bedroom community to London, Komoka has a population of 1190 inch 1.2 miles^2 (1.9 km^2). The hamlet enjoys close proximity to a provincial park, natural lakes, and agricultural land and crosses three rail lines. Since the 1990s the municipality has witnessed growth, most notably being the development of new low-density subdivisions ever closer to the city of London. As this trend is set to continue, the municipality considered building a neighbourhood around the new wellness centre in Komoka (Fig. 5.21). As a result, I was invited to propose a plan for the land. While the specific objectives were gathered from a consultation with members of the community and council, the general mandate was for a mixed-use residential town centre based on sustainable principles.

Komoka's urban roots date back to 1798 when the first British settlers arrived and established mills powered by the nearby Thames River. When the Great Western Railway was constructed in 1857, it acted as a catalyst for development in the area

Fig. 5.20   Images of Komoka, Ontario, Canada

and prompted hotel and residential construction. Gravel deposits and the harvesting of dense forests of red and yellow pine also brought prosperity to the area. Today, Komoka has two senior residences, two schools, and a community centre. It still acts as a railway crossing point but is no longer the hub it once was, and the hotels have long since gone. The addition of a wellness centre to this community, which houses sports facilities and a library, was the inspiration for the development of a new neighbourhood.

Main objectives during the design process of this new neighbourhood included meeting Leadership in Energy and Environmental Design (LEED) criteria and creating a walkable community with many pedestrian and bike paths to reduce automobile dependency (Fig. 5.22). Medium-density, mixed-use, and diverse housing was to be provided to accommodate people of all ages with easy connections between dwellings, commercial centres, and the wellness centre. A final objective was to consider the site's natural features in combination with landscaping to provide recreational areas and places for urban agriculture.

Fig. 5.21 The site is located between the neighbourhoods of Komoka and Kilworth

In the planning of the Komoka's neighbourhood and town centre, key tenets included considering cultural, civic, and recreational activities while following low-impact development principles. Overall, a sustainable plan was implemented for the neighbourhood. Wider ranges of dwelling types were used to draw a diverse crowd to the community. The majority of residences would be medium-density single- and multifamily townhouses made affordable to first-time buyers. Apartment buildings located in close proximity to the wellness centre were designed to provide affordable accommodation for seniors, and a small percentage of the land in the north of the site was dedicated to single-family detached homes. The goal was to have a medium-density community of between four and nine units per hectare (Figs. 5.23 and 5.24).

The addition of rows of nearby shops, amenities, and cafes acted as a tourist draw in conjunction with the wellness centre while also servicing the new residents. Architectural guidelines were put in place to offer cohesive design principles to the variety of dwelling types, and recreational areas for family gathering or events were added to foster a sense of community (Figs. 5.25 and 5.26). This included the addition of a civic square in the southwest corner of the community to act as the town centre. Environmental recommendations were also introduced to make the neighbourhood more sustainable, such as composting and recycling centres, shared amenities, rainwater collection, community and private gardens, green roofs, and farmers' markets.

The master planning of the town of Komoka serves as an example for how to effectively manage dwellings in the core. Density considerations combined with the notion of a new community fitting into an existing urban and geographic setting are

Location: 1-10 points

Compact development: 1-6 points

Reduced automobile dependency: 1-7 points

Mixed-use neighborhood: 1-4 points

Bike network and storage: 1 point

Mixed income diverse communities: 1-7 points

Walkable streets: 1-2 points

Building energy efficiency, solar orientation and on-site renewable energy: 2-6 points
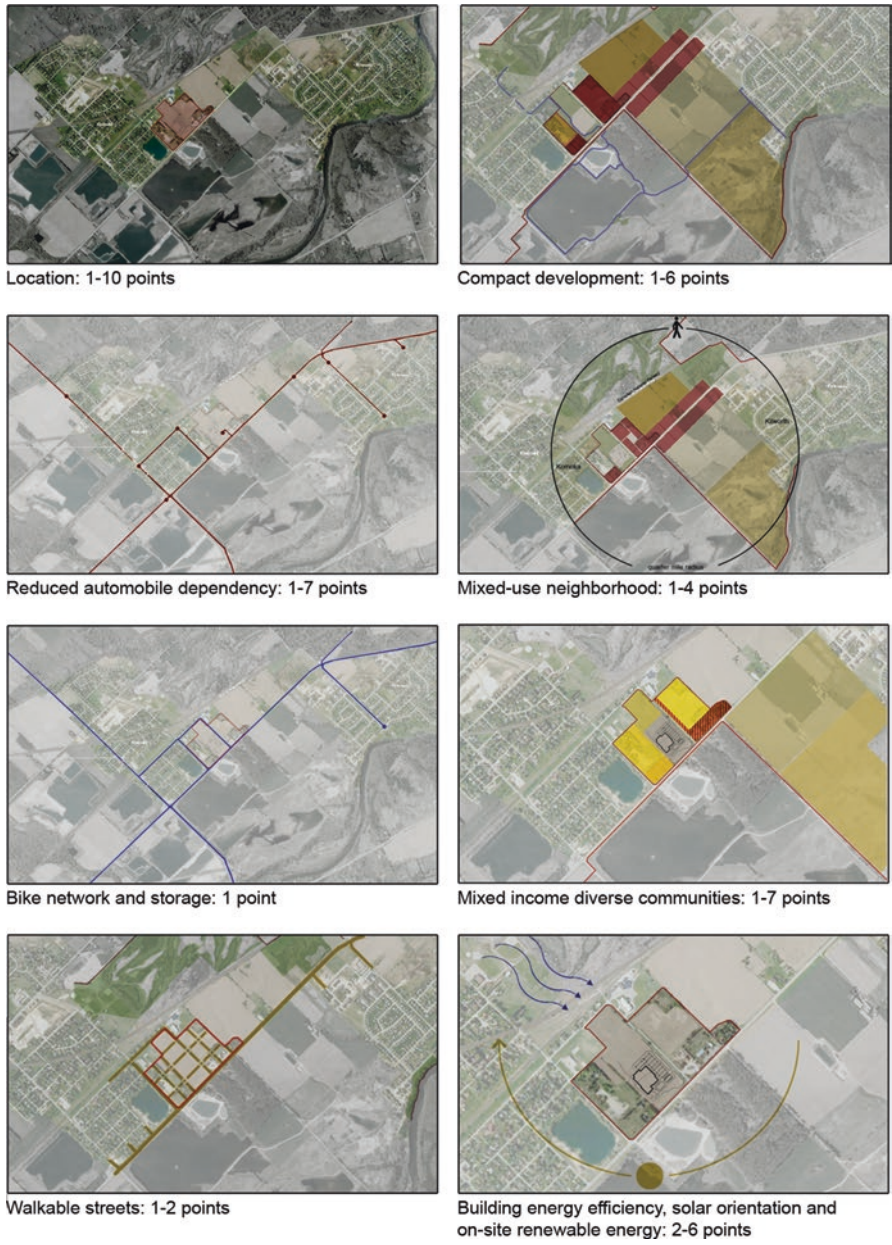
Fig. 5.22 Some LEED criteria that guided the project's environmental performance and their ratings
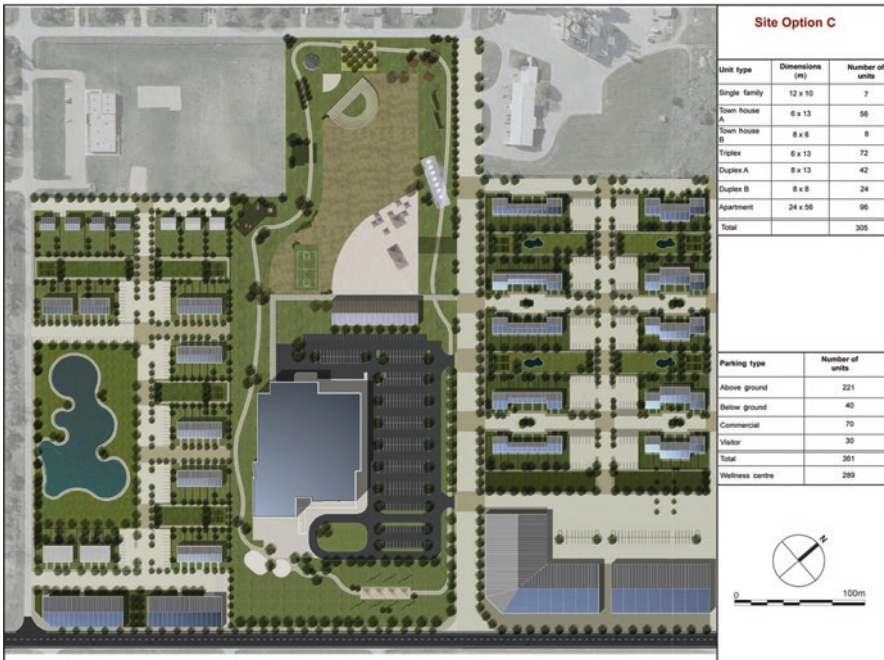
Fig. 5.23 Site plan

part of what make the town planning successful. Komoka also outlines a variety of benefits, including bringing prosperity and social sustainability to a neighbourhood through the accommodation of a diverse age range. Benefits of living in a town core are exemplified through the proximity to natural and built features and the sense of community that is fostered.

5.5.2   Iqaluit, Nunavut

Until the nineteenth century, the Canadian north was the focus of early explorers and was populated by First Nations. By 1914, the Hudson's Bay Company began setting up trading posts throughout Canada's Arctic. In World War II, the Americans built an air base in Iqaluit, Nunavut (formerly Frobisher Bay), which brought growth to the area. The base was turned over to the Canadian government in the 1950s, which populated the area and drew southerners who needed basic amenities. Expansion continued in the 1970s with the addition of traits of a modern town such as a school, hospital, homes, and hotels. In 1999, Iqaluit became the capital of Nunavut, a territory that occupies one-fifth of Canada's land mass and assumes its own governance and cultural identity (Fig. 5.27).

   The planning of a neighbourhood in Iqaluit offered me very different planning challenges and considerations than conventional neighbourhoods located farther south. Located in the barren landscape of Baffin Island, Iqaluit is home to 6000,

Fig. 5.24 The common green area

many of whom are Innu—the aboriginals who inhabit the area. Due to its high northern location, the neighbourhood in Iqaluit posed logistical challenges in the planning stage (Fig. 5.28). Extremely cold temperatures require that the construction season be very short and call for materials to be shipped via ferry during the thawed season. To be efficient, all buildings needed to be designed as a "kit of parts" and rapidly assembled upon delivery. Energy costs are also very expensive in the North and must be kept to a minimum. The lack of trees means that the structures themselves need to act as wind barriers for each other and should be raised off the ground to create a crawl space for wind and snow to blow through rather than accumulating beside the building. Sunlight in northern communities is of utmost importance and also must be considered in the planning phase. The angle of incoming sun in the North remains so low that it reaches a maximum when hitting vertical surfaces, unlike in southern communities where the maximum is reached when hitting horizontal surfaces. It is important to capture and focus the sunlight on these vertical surfaces to create thermally appropriate microclimates.

The community site in Iqaluit was located at an interesting and diverse part of the city, close to the water's edge and near city amenities. The site was developed to accommodate medium-density housing that was safe for children and snow

Fig. 5.25 Guidelines for some of the project's environmental features

machines alike (Figs. 5.29, 5.30, 5.31, and 5.32). Dwelling facades and finishes were done in vibrant colours that were present in the work of local Innu artists. The buildings were oriented to consider wind direction, solar exposure, and shelter. Flexibility was incorporated in the design of the dwellings to better suit the needs of the inhabitants and the community. Private entrances to homes were included to foster feelings of personalization. Communal spaces were incorporated in the neighbourhood to allow for children's play spaces and gathering spaces for soapstone carving—a favourite pastime of the locals. The notion of demarcating property does not exist in the North, so property lines were not enclosed with fences. This allows neighbours to pass through each other's property for ease of access to amenities or hunting and fishing sites.

The planning of this northern community demonstrates the importance of careful planning for small neighbourhoods. With such a small population, it is important to provide places in the community to foster relationships and build a community support system. This can be achieved, in part, by providing dwelling in the core. This allows easy access to amenities and proximity to important social spaces in a community.
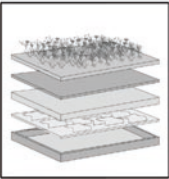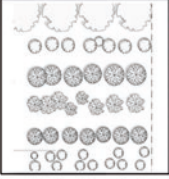
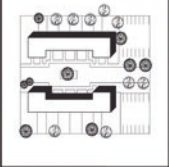| Location	Guide	Illustration
Community Gardens	**Intent** Promote community-based agriculture, improve nutrition with fresh produce, support small farms local economy. Permanent and viable spaces for community gardens and agriculture. **Guidelines** Provide solar access, fencing, watering systems, garden bed enhancements, secure tool storage and pedestrian access. The project will ensure that these spaces are owned and managed by an entity that includes residents using the space.	
Private Gardens	**Intent** To encourage healthy living and improve nutrition through increased access to fresh produce. **Guidelines** The projects will establish *convenants, conditions, and restrictions* (CC&R), which will state that the growing is not prohibited in the project area. This will allow use of private greenhouses and food production in front and back yards, balconies, and rooftops.	
Green Roofs	**Intent** To promote the social, economical, and environmental benefits of green roofs. **Guidelines** The project will permit rooftop gardens for growing fruit, vegetables, herbs, and flowers.	
Farmer's Market	**Intent** Improve nutrition with increased access to fresh produce, support small farms and local economy. **Guidelines** The project will housea farmer's market that will operate oncea week for 5 months a year. Only items grown within 241 km of site may be sold. The market must have firm commitment from farmers and vendors to meet above requirements.	

Fig. 5.26 Guidelines for the project's additional environmental features

5.6 Final Thoughts

The last half century witnessed a multitude of enormous societal shifts including economic swings, technological innovation, global warming, and demographic change. Under these circumstances, post-World War II mass-housing solutions have proven incompatible with the needs of contemporary households. It is evident that dwellings in the centres of small towns need to be reconsidered. As I have detailed here, innovative planning principles that offer sustainable solutions are already being put in place to create desirable communities in town centres in places like Komoka and Iqaluit. By following these examples and the techniques outlined in this chapter, the dwellings in town cores can be rejuvenated through sustainable planning to suit to the needs of contemporary life.

Fig. 5.27   Images of Iqaluit, Nunavut, Canada
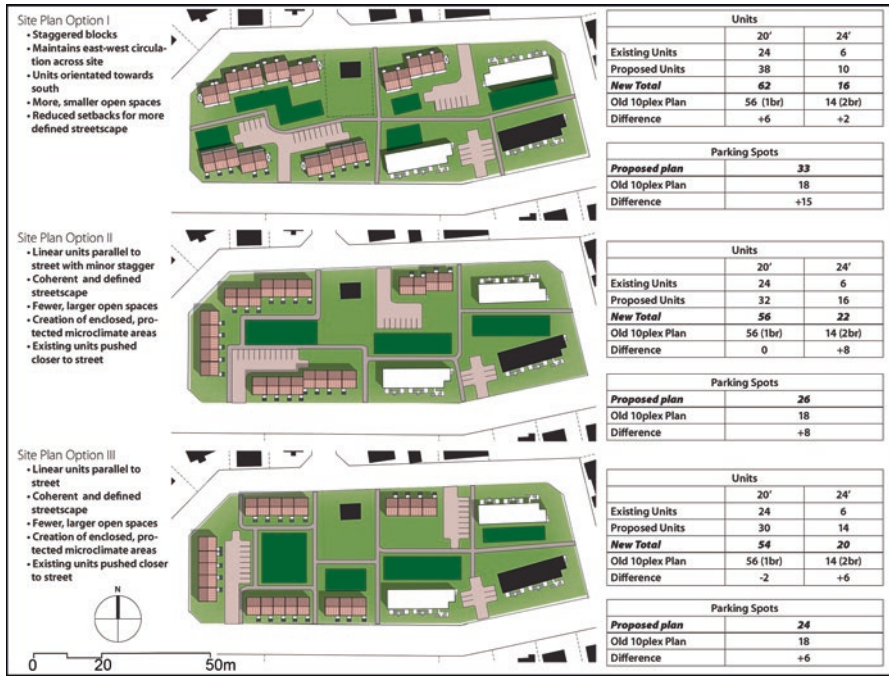

Fig. 5.28   The project's site and the surrounding views

Site Plan Option I	Units		
		20'	24'
• Staggered blocks	Existing Units	24	6
• Maintains east-west circulation across site	Proposed Units	38	10
• Units orientated towards south	New Total	62	16
• More, smaller open spaces	Old 10plex Plan	56 (1br)	14 (2br)
• Reduced setbacks for more defined streetscape	Difference	+6	+2

Parking Spots	
Proposed plan	33
Old 10plex Plan	18
Difference	+15

Site Plan Option II	Units		
		20'	24'
• Linear units parallel to street with minor stagger	Existing Units	24	6
• Coherent and defined streetscape	Proposed Units	32	16
• Fewer, larger open spaces	New Total	56	22
• Creation of enclosed, protected microclimate areas	Old 10plex Plan	56 (1br)	14 (2br)
• Existing units pushed closer to street	Difference	0	+8

Parking Spots	
Proposed plan	26
Old 10plex Plan	18
Difference	+8

Site Plan Option III	Units		
		20'	24'
• Linear units parallel to street	Existing Units	24	6
• Coherent and defined streetscape	Proposed Units	30	14
• Fewer, larger open spaces	New Total	54	20
• Creation of enclosed, protected microclimate areas	Old 10plex Plan	56 (1br)	14 (2br)
• Existing units pushed closer to street	Difference	-2	+6

Parking Spots	
Proposed plan	24
Old 10plex Plan	18
Difference	+6

0   20   50m

Fig. 5.29   Alternative planning proposals and their quantifiable attributes

Fig. 5.30   Key planning principles

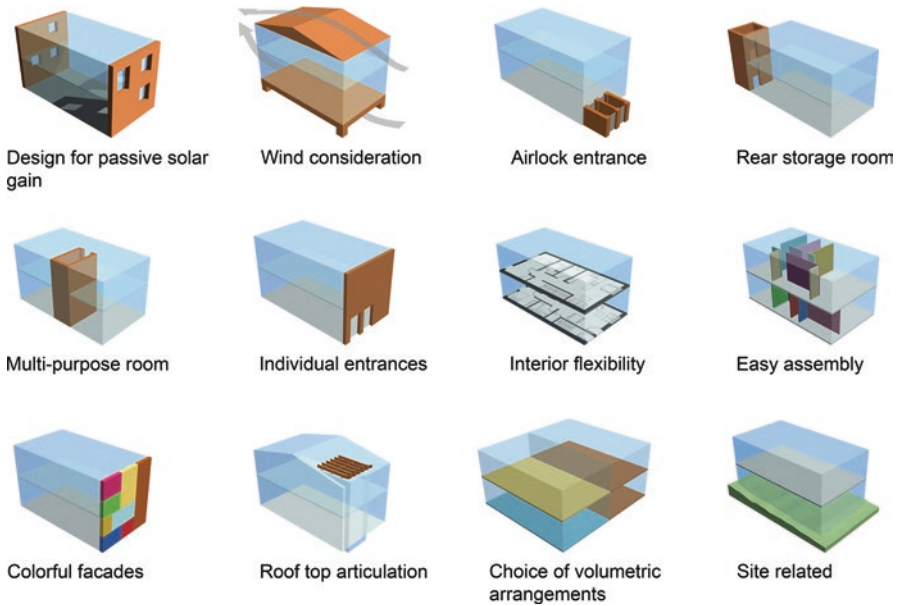|			
Design for passive solar gain	Wind consideration	Airlock entrance	Rear storage room
Multi-purpose room	Individual entrances	Interior flexibility	Easy assembly
Colorful facades	Roof top articulation	Choice of volumetric arrangements	Site related

Fig. 5.31 Key principles of the dwellings' design

Fig. 5.32 Rendering of a row

References

Baumann, O. (2009). *Integrated design–delivery and operations of net-zero energy buildings* [Powerpoint presentation]. U.S. Department of Energy. Retrieved November 21, 2016, from http://www.prod.solardecathlon.gov/past/pdfs/09_workshops/09_integrated_design.pdf

Becker, F., & Steele, F. (1995). *Workplace by design*. San Francisco: Jossey-Bass.

Beyer, P. (2010). Mixed-use zoning. In V. Prosper (Ed.), *Livable New York* (1st ed.). Albany: State Office for the Aging. section II.2.g.

Burney, T. (2010, February). Good things come in small packages. *Builder*.

California Energy Commission. (2011). *Passive solar design: Proper orientation*. Retrieved Jun 25, 2011, from http://www.consumerenergycenter.org/home/construction/solardesign/orientation.html (site discontinued).

Canadian Mortgage and Housing Corporation (CMHC). (2011). *Install water conserving fixtures*. Retrieved November 21, 2016 from https://www.cmhc-schl.gc.ca/en/inpr/bude/himu/inbu/upload/65642-W.pdfEnergy

Environmental Protection Agency (EPA). (2011). *WaterSense: Outdoor water use in the United States*. Retrieved July 7, 2016 from http://www.epa.gov/WaterSense/pubs/outdoor.html

FlorDepot International. (2011a). *Pitch roofs up to 20 degrees*. Retrieved July 12, 2011, from http://www.flordepot.co.uk/pitchroofs/pitchroofsupto20grad.html

FlorDepot International. (2011b). *Pitch roofs up to 45 degrees*. Retrieved July 12, 2011, from http://www.flordepot.co.uk/pitchroofs0/pitchroofsupto45grad.html

Garduno, M. (2011). *Historical districts: Adaptable housing.* Unpublished M. Arch Report for McGill University, School of Architecture.

GreenRoofs. (2011). *Greenroofs 101*. Retrieved November 21, 2016, http://www.greenroofs.com/

Instituto Nacional de Estadística y Geografía (INEGI). (2005). In M. Garduno, *Historical districts: Adaptable housing*. Unpublished M. Arch Report. McGill University, School of Architecture.

Johnston, D., & Gibson, S. (2008). *Green from the ground up: Sustainable, healthy, and energy-efficient home construction*. Newtown: The Taunton Press.

Johnston, D., & Gibson, S. (2010). *Toward a zero energy home: A complete guide to energy self-sufficiency at home*. Newtown: The Taunton Press.

Knack, R. E. (1998). Rules made to be broken. *Planning, 53*(11), 16–21.

Landreville, M. (2005). *Toitures vertes a la montrealaise: Rapport de recherché sure l'implantation de toits vertes a Montreal*. Montreal: Societe de developpement communautaire de Montreal.

Lawlor, D., & Thomas, M. A. (2008). *Residential design for aging in place*. New Jersey: Wiley.

Macht, W. P. (2010, July/August 2010). Modular net-zero-energy townhouses. *Urban Land*.

Miller, C. (2010). *Extensive green roofs. Whole building design guide: National Institute of Building Sciences*. Retrieved November 21, 2016, from www.wbdg.org/resources/greenroofs.php

Newman, S. (2010). *Under one roof again: All grown up and (re)learning to live together happily*. Guilford: Lyons Press.

Parker, K. (2000). *Multi-generational living: Design for ageing*. In IFA Fourth Global Conference on Ageing (Vol. 25, pp. 90–100). Summarized in Journal Ageing International, 1999–2000.

Peck, S., & Kuhn, M. (2008). *CMHC design guidelines for green roofs.* Retrieved July 12, 2011, from www.cmhc.ca/en/inpr/bude/himu/coedar/loader.cfm?url=/commonspot/security/getfile.cfm&PageID=70146

Quantum Solar Power. (2011). *A comparison of PV technologies.* Retrieved 21 Jun 2012 from http://quantumsp.com/solar-energy/a-comparison-of-pv-technologies/

Redemske, M. R. (2012). Home office deduction. *Journal of Accountancy, 213*(1), 20.

Sassi, P. (2006). *Strategies for sustainable architecture*. Abingdon: Taylor & Francis.

Schaeffer, J. (2005). *The real goods solar living sourcebook: Your complete guide to renewable energy technologies and Sustainable Living* (12th ed.). Gabriola Island: New Society Publishers.

Star. (2016). *Dishwashers for consumers*. Retrieved May 6, 2016, from https://www.energystar.gov/products/appliances/dishwashers

Strongman, C. (2008). *The sustainable home: The essential guide to eco building, renovation and decoration*. London: Merrell Publishers.

Sustainable Sources. (2011a). *Passive solar design.* Retrieved November 21, 2016, from http://passivesolar.sustainablesources.com/

Sustainable Sources. (2011b). *Solar hot water, heating and cooling systems*. Retrieved November 21, 2016, from http://solarheatcool.sustainablesources.com/

Tanha, A. (2010). *Net-zero apartment buildings.* Unpublished M. Arch Report, McGill University, School of Architecture.

Thomas, R. (Ed.). (2005). *Sustainable urban design: An environmental approach.* London: Spon Press.

U.S. Department of Energy. (2016). *Active solar heating.* Retrieved November 21, 2016, from http://energy.gov/energysaver/active-solar-heating

Preserving the Old

<div style="text-align:right">**6**</div>

With the right planning, a town's downtown core can be a dynamic place where the past and present are linked to the future and where heritage is shared and celebrated. The preservation of older buildings must be understood as the guarding of cultural identity itself, in addition to being simply an integral part of any building process. This chapter relates concepts of *rehabilitation* and *heritage* to sustainability. It also explores the evolution of heritage conservation in small towns and offers guidelines for the successful preservation of buildings and urban spaces. It concludes with case studies that illustrate the importance of weaving together the old and the new.

6.1   A Place of Reference

A place where new and old buildings were weaved seamlessly together is Evora in Portugal. The small town, with a population of 50,000, is located 95 miles (150 km) southeast of Lisbon and is the capital of the Alto Alentejo region—home to many rich agricultural plains (Valverde 2013). The place's beginning dates back to the Neolithic period, as demonstrated by the many megalithic monuments that remain. However, it was the Romans who initially transformed Evora into a city (Fig. 6.1).

The settlement was also ruled by the Visigoths after 414 and the Moors between 713 and 1165. However, the town reached its golden age in the fifteenth century when it became the home of Portuguese kings (UNESCO 2016). Yet, the city's influence faded in the eighteenth century when its university was forcefully closed once the Jesuits were expelled. Some conservation activity was attempted in the nineteenth century, but by the time of the Portuguese revolution in the 1970s, Evora was simply left as a quiet rural town that was neglected in terms of its heritage and building fabric.

In 1974, after the Portuguese revolution, a new local democratic government was formed in Evora. At this time, the city faced two major challenges: the basic social and infrastructural needs of people had to be met, while the potential for

Fig. 6.1 Images of Evora, Portugal

conservation and protection of cultural heritage needed to be addressed to promote development. The new municipal government inherited the extensive yet rundown urban heritage within the city walls (Brooks 2008).

A multifaceted development strategy was developed and implemented to combine preservation and conservation of the urban architectural heritage while simultaneously executing a series of measures to meet the most pressing social needs. This was all done while still carefully considering the urban design process. As a result of these efforts, in the two decades that followed the Portuguese revolution, Evora realized a complementarity between urban heritage conservation and integrated development planning (Brooks 2008). A key in the success of this long-term strategy was for Evora to seek World Heritage Listing in 1986 for their historic town. This international recognition gave locals greater pride and encouraged them to support the municipality's efforts to preserve what gave it World Heritage character in the first place. Obtaining this status also increased the city's tourist profile, which aided in raising funds and recognition.

The development strategy proceeded with detailed conservation efforts and plans for reuse within the historic city centre. Planning controls were implemented to prevent the suburban spread of these developments. Throughout the process, there was a strong and continuous involvement of local citizens to ensure the plan moved forward nicely. On a whole, improvements to the urban fabric took place simultaneously within the historic core and the surrounding areas.

6.2 The Evolution of Heritage Conservation in Small Towns

An historic overview demonstrates that the construction of new buildings has not always begun with the massive clearance of old structures. In fact, clearing entire sites for land development is a relatively new phenomenon (Ouf 2001). In a contemporary sustainable context, instead of demolishing, rehabilitation of old buildings can be viewed as a large-scale recycling effort. Rather than discarding the old structures, they can be retooled and returned to use.

Similar strategies can be applied to neighbourhoods that have been neglected or abandoned due to unfortunate circumstances or simply due to the passage of time. Urban form can and should be seen as a reflection of cultural identity, continuity, and heritage. Heritage is the notion that the built environment is a dynamic place where processes are ongoing and where the past and the present are linked to the future, as was the case in Bergen, Norway (Fig. 6.2). Design for change, and renewal as a result, should therefore be an integral part of any urban process.

Regardless of physical location, vernacular architectural styles of communities are an important part of the rooting process. Notably, these styles help places develop a collective identity and a sense of place as shown in Ypres, Belgium (Fig. 6.3). The "sense of place" perspective on heritage combines two important principles of preservation: uniformity and relationship. Instead of focusing on specific individual buildings, this view takes into account the unique qualities of a place as a whole. It recognizes that attractive communities are organic when they develop upon evolving social and built foundations. The significance of this view is evident in trends which extend historic building legislation to the protection of the entire areas, which reflects a growing awareness that buildings alone lose meaning when they are isolated among modern structures. Greater value is created when buildings are related to each other by respecting the key design features of old buildings (Knox and Marston 2001).

To maintain a sense of place in heritage communities, rehabilitation and restoration techniques are often employed. Rehabilitation is defined as the process of making possible a compatible contemporary use for a historic place through repair, alterations, and/or additions while protecting its historic or cultural value (Parks Canada 2003). The process of rehabilitation is essentially the replacement of missing historic features with accurate replicas or new designs that are compatible with the original style and is the preferred treatment when repair or replacement of features is required.

Fig. 6.2 This project in Bergen, Norway, that dates back to centuries has been continuously renewed and remains in use today

Fig. 6.3 The restoration of the city of Ypres, Belgium, after World War I preserved the place's original urban and architectural character

Alternatively, restoration is defined as the process of accurately revealing or recovering the state of a historic place as it appeared at a particular period in its history. Restoration involves removing features from other periods and reconstructing missing features from the restoration period. It is the most appropriate method when there is substantial historic information to carry out the work or when the significance of the historic period critically outweighs the loss of existing materials, features, and spaces from other periods. Restoring and rehabilitating heritage buildings promote social and environmental sustainability within a community.

The conviction that old buildings should be preserved has evolved through successive eras. People historically perceived ancient structures as reflections of human continuity, as an enduring extension of the past, and thus as symbols to be retained. Old civilizations were consciously conserved, and old structures were well incorporated into urban development. However, perceptions of old buildings in later centuries changed, since they were no longer seen as having connections with contemporary designs. As a result, many buildings and neighbourhoods were bulldozed so developers could begin with a fresh slate. Recently, however, the cultural and economic benefits offered by heritage buildings have been recognized, and these buildings have once again been conserved (Earl 1996).

To understand and appreciate the values of heritage, it is important to know when and how historic conservation of buildings and communities was introduced. From as early as the first century BCE, the Roman author, architect, and engineer Marcus Vitruvius Pollio (known commonly as Vitruvius) compiled a manual of guiding principles for building and maintenance practices. *De architectura* set out guidelines that were aimed at ensuring that new constructions were harmoniously integrated with the existing built environment. The manual emphasized that appropriate designs were dependent on the knowledge of the architect, because without an extensive background on the local history, they could lose the symbolic meaning of urban and architectural elements during building and construction (Jokilehto 1999).

Another important step in the evolution of heritage and conservation was the notion of custodianship. This evolved from the idea of stewardship in the Romantic Movement, which was ultimately embedded in the restoration of the Roman Forum in 1812 (Fig. 6.4). Custodianship was a social concept that implied a civic responsibility towards built heritage (Earl 1996). However, it still treated heritage as an isolated phenomenon, so despite concerns of human destruction, the built heritage traditions were not integrated into new design endeavours.

Buildings that were conserved in this time were few and often stood isolated from each other. The stylistic restoration of the nineteenth century aspired to make use of and preserve old architectural elements. Buildings recaptured their economic importance, and restoration to a stylistic unity increased an area's prestige. Investors quickly discovered that history could be sold, but the stylistic movement was short lived as tastes changed rapidly (Boyer 1995). As of lately, several strategies have been used to reconcile heritage preservation with the efficiency of the modern development. Buildings should be functional while also being historically respectful (Jacobs and Scholliers 2003). The development of the "sense of place" perspective previously mentioned is another modern notion, which encapsulates the current views on heritage preservation.

Fig. 6.4 In the 1812 restoration plan for the Roman Forum's archaeological area, ancient monuments were restored and became the focal points

The question of what constitutes a heritage building and what should be preserved is a highly debated topic. In general, the characteristics which distinguish heritage buildings from many contemporary structures are the attention to detail in the craftsmanship (Fig. 6.5). Paying attention to and investing in details were possible in a time of low construction and material costs. Even modest structures attempted to fit the building in its surroundings and respect the urban context. Some modern architects introduced beautifully expressed cleanliness and simplicity of forms such as Le Corbusier's Villa Savoye or Walter Gropius' 1926 Bauhaus building, but many later structures took advantage of the simplicity that this style offered and introduced repetition and sameness to cities. As a result, many modern constructions are unlikely to be preserved in years to come due to their repetitive nature and lesser attention to detail. So it is imperative that well-crafted old buildings from centuries past are appreciated as place-making tools and continuing manifestations of who we are.

6.3   The Value of "Old": Advantages and Challenges

The value associated with preserving heritage structures and communities is unquantifiable. According to James Martin Fitch, who founded the first historic preservation training programme at Columbia University in 1964, "preservation is now seen as being in the forefront of urban regeneration" (Focus on Preservation 1991). It is also considered to have a great cultural responsibility. Preservation of

Fig. 6.5 In proper urban and architectural restoration, attention should be paid to details like the ones shown here

historic elements can offer the potential to renew small town centres through strengthening community identity and cohesiveness, as well as revitalizing the local economy by attracting tourists and producing revenue. Establishing a sense of place and developing a tourist industry are two of many major advantages of heritage preservation, some of which are visible in the city of Lecce in Italy (Fig. 6.6). Though it is an undeniably important process, there are challenges associated with preserving old structures. Economic feasibility is often a deterrent when these kinds of projects are proposed, but the outcome is often worth the investment.

An important advantage of preserving heritage buildings is how they can establish a community identity. Old buildings embody history by offering glimpses of the world in previous generations (Focus on Preservation 1991). These heritage buildings and their surrounding landscapes are characteristics inherited from history and play important roles in establishing the feel and liveability of a town (Knox and

Fig. 6.6 The many Baroque-styled buildings attract tourists to the city of Lecce, Italy

Mayer 2013). A collective sense of place will be founded upon history, geography, climate, building materials, and urban plan, among other factors such as those embedded in the city of Matera, Italy (Fig. 6.7).

Though some of these factors cannot be altered at all by people, heritage conservation efforts can be ongoing. This has the power to renew small town cores and compensate for the placelessness and loss of character brought on by sprawling urban growth and big-box retailers. Preserving the old makes it possible to create heritage for tomorrow while conserving the traditions of the past. Community identity achieved through heritage preservation has the potential to strengthen neighbourhood bonds and improve the liveability of an area.

A second positive aspect of historic preservation is the opportunity it provides to start or expand a tourist industry. By examining some of the most visited cities in world, it is clear that there is a bond between local traditions, heritage buildings, and tourists since these cities almost certainly have a characteristic style of building vernacular to that place from an earlier time (Fig. 6.8). Tourist money has been a factor that has allowed buildings or neighbourhoods to be revitalized even when they were dismissed and ready to be demolished by locals.

A strategy for preservation of historic buildings that can simultaneously attract tourist attention is called "adaptive use" . Jane Jacobs argues that when a building designed for one use is put to a completely different use, its value deepens, and it can become an admirable, enjoyable, and ingenious adaptation (Jacobs 1993). The slight misfit of adaptive use can give buildings drama and invite people to experience their creative reuse and originality (Fig. 6.9). Attracting visitors to a town's historic sites can help restore the economic vitality of the town centre. It can even

Fig. 6.7 The buildings of Matera, Italy, establish a collective sense of place

Fig. 6.8 Tourists are attracted to the town Volterra, Italy, to see its alabaster artisans' work

Fig. 6.9 Tourists are attracted to Robert Owen's New Lanark community in Scotland to learn about the genesis of social reform

help save historic buildings, but it is important that the town is able to handle the influx of people while continuing to maintain its heritage value.

In addition to establishing community identity and developing or furthering tourist industry, there are a variety of other advantages associated with heritage preservation. One such advantage is environmental sustainability. Performing efficiency upgrades on existing structures is generally considered to be more sustainable than the creation of new buildings, which generate unsustainable amounts of construction waste (Fig. 6.10) (Truro Community Plan 2010). A study conducted by the National Trust for Historic Preservation illustrated how building reuse in almost all cases offered environmental savings over demolition and new development (Preservation Green Lab 2011). In fact, many older buildings are energy efficient enough that they can be brought up to within 80% of state-of-the-art efficiency with inexpensive work performed on the windows and roof (Brand 1994). In addition to environmental advantages, further benefits of preservation over demolition include a shorter construction timeframe, less disruption to the site and the neighbourhood, and the benefit of existing public services (i.e. utilities) that can be utilized at no added expense.

Despite these numerous advantages, there are a number of limitations that impede the potential success of heritage preservation projects. As is the case with
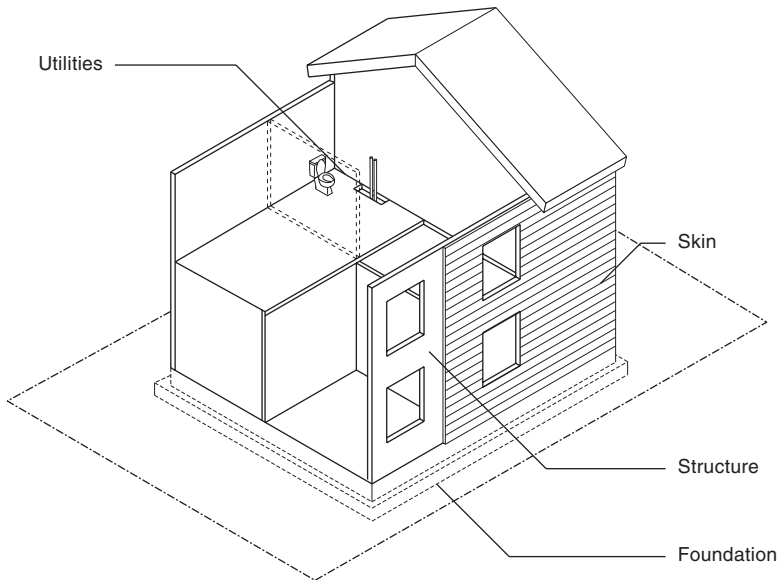
Fig. 6.10   To make the future restoration process of buildings efficient, they must be designed for easy replacements of their parts by seeing them as subcomponents

any development project, economic feasibility must be considered. Though old buildings can often be purchased relatively inexpensively, their rehabilitation can be a costly process. However, some preservationists will argue that despite the expense of rehabilitation, it is still significantly less than that of a comparable new construction (Rypkema 1992). Regardless, developers faced with the high cost of rehabilitation may be deterred from undertaking the project.

Though, it is worth noting that if the cost of rehabilitation for the old building exceeds its expected market value, the public is often willing to "sweeten the numbers" with tax credits, low-cost loans, and other incentives (Brand 1994). In addition to economic considerations, challenges are also faced in the construction process of these projects. Heritage buildings need to be restored with great care to avoid weathering and degradation of facades and to match the careful construction used at the time of their initial construction, as was the case in Casole d'Elsa, Italy (Fig. 6.11). This often poses problems when the restoration is put on a modern fast-track construction schedule, which can compromise the durability of repairs.

To summarize, even though the modern notion has been to "wipe the slate clean" and start fresh with new building developments, it is clear that preserving and rehabilitating heritage structures offer numerous benefits to the community. They offer a sense of place, which can attract tourists to revitalize the local economy, and their preservation is more environmentally sustainable than demolishing them to start fresh. Challenges are of course inevitable, but the advantages of keeping historic buildings deeply outweigh any downsides or challenges faced along the way.

Fig. 6.11 Heritage buildings need to be restored with great care to avoid weathering and degradation of facades and to match the careful construction used at the time of their initial construction as was the case in the centre of Casole d'Elsa, Italy

Fig. 6.12 By creating attractive and affordable housing close to amenities, an area can be renewed to offer a multitude of opportunities both for the residents and the surrounding community as was the case in North Vancouver, British Columbia, Canada

6.4   Infill Housing

Infill housing is the construction of new dwellings on lots that are already within a developed area but that are vacant or were never used (Fig. 6.12). Taking advantage of these empty spaces in downtown is of paramount importance to limiting urban sprawl and can create attractive and affordable housing close to amenities. Thus, infill housing can renew a place and offer a multitude of opportunities both for the residents and the surrounding community.

Due to the nature of their construction, there are several challenges that infill developments face. However, if these challenges are considered early on in the development's planning stage, they can often be resolved. One challenge is receiving a local government approval, which can be a long process since existing regulations are not always in place to accommodate these new structures. Additionally, bylaws are commonly enacted for new projects away from towns' centre and can often be inflexible when it comes to infill housing.

A second problem faced by infill developments is the community's acceptance. Neighbours object to introduction of higher-density housing because they fear it

will change the appearance of a place or cause traffic safety problems. This is why it is important to initiate communication between developers and neighbours from the project's outset. Finally, the site itself can pose challenges. Usually when land has remained vacant in an otherwise developed area, there is good reason for it. Urban sites can be more difficult to develop than suburban land since they can often have irregular shapes, are in close proximity to neighbouring buildings, or need decontamination following past industrial use.

Townhouses are a popular and suitable housing type for infill developments, largely because they can house large numbers of people without introducing tall apartment buildings. They are also an affordable alternative to detached dwellings, which may be appealing to first time buyers, singles, or empty-nesters looking to downsize. In addition, they can successfully provide higher-density dwellings in developed areas surrounding downtowns (Fig. 6.13). This means homeowners can benefit from reduced infrastructure costs since the sites are already serviced with roads, utilities, public transportation, and access to commercial amenities. Other issues such as material handling, parking, and construction equipment can also be a challenge to coordinate. However, despite these challenges that townhouse developments may face, they truly offer many opportunities and the potential to repair the social and urban fabric of a small town without fundamentally altering the place's character.

However, given the extreme variation and diverse nature of infill projects, there is no exact formula to determine the optimal density of a project. For public transportation, the general rule is a minimum of seven dwellings per acre (17 units per hectare) for a bus to run every 30 min (Duany et al. 2000). However, studies have also indicated that low-rise schemes below 80 bedrooms per acre (200 per hectare) can produce high levels of satisfaction for homeowners (Duany et al. 2000). Another strategy to maintain high density and resident satisfaction is to create a balanced blend of user age groups within a development. Higher-density infill housing allows communities to participate in their own rehabilitation. Filling up vacant lots or dilapidated buildings removes community eyesores, increases the property value of adjacent lots, and aids in limiting urban sprawl.

A second major benefit offered by infill developments is their ability to accommodate affordable housing in an integrated manner. It is clear that projects which consolidate an area's poor into one development have the tendency to create impoverished areas which perpetuate (rather than solve) a region's housing problem. Infill projects can avoid this problem through the introduction of affordable housing into existing communities in a more gradual and dispersed manner. Duany et al. (2000) suggest introducing affordable housing into a community in a ratio of 1:10, where one unit of affordable housing is provided for every ten units of regular market housing. According to Duany et al., this distribution can provide models for the poor while militating against the close mindedness of the wealthy. This strategy of implementing low-cost housing requires a greater investment, since each unit is designed to fit into its particular site, and the small scale of the project often offers few opportunities for mass production savings. The investment, however, is necessary to create housing that is socially sustainable and well integrated into the existing community.
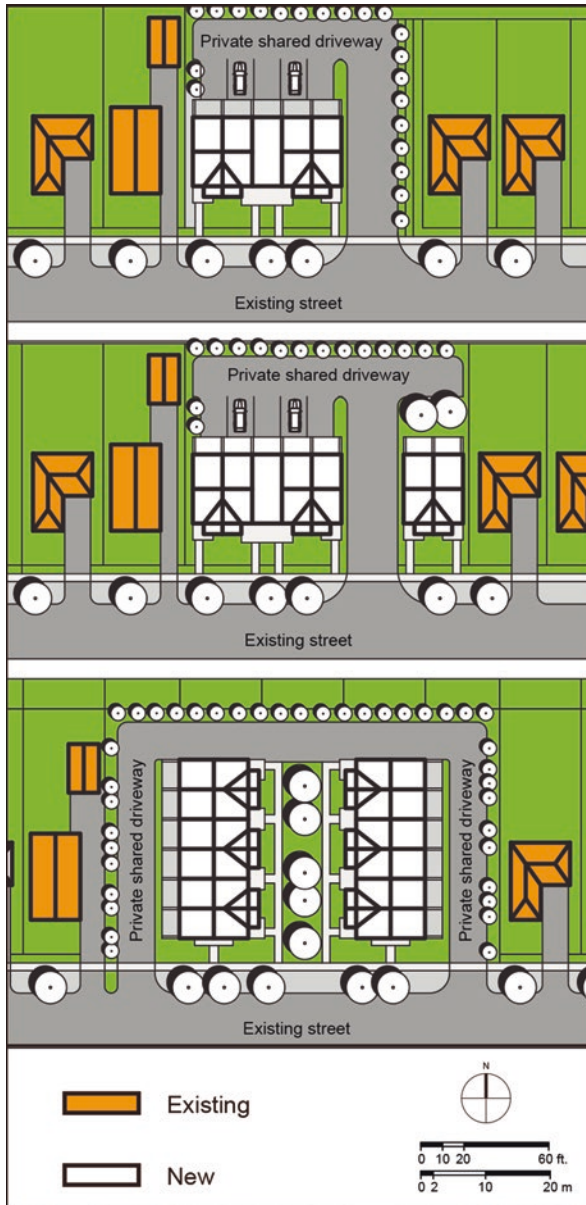
Fig. 6.13 When properly planned, townhouses offer many opportunities to repair the social and urban fabric of a small town without fundamentally altering the place's character
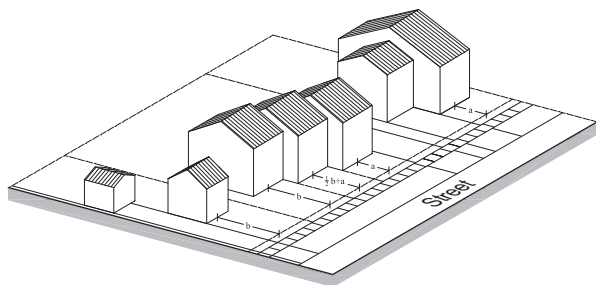
Fig. 6.14 For infill developments to be successful, they must be well integrated with their surrounding and fit with both the urban fabric and the surrounding architectural style of neighbouring buildings

For infill developments to be successful, they must be well integrated with their surroundings. To be accepted in an existing neighbourhood, infill housing projects need to fit with both the urban fabric and the surrounding architectural style of neighbouring buildings (Fig. 6.14). Some cities such as Norfolk in the American state of Virginia have created design guidelines to aid with the integration of these projects (Urban Design Associates 2003). They set out general requirements that address many urban and architectural issues that need to be considered. These guidelines not only promote good design but can streamline the approval process for infill projects and reassure neighbours that their community will house a suitable development.

To enhance the urban plan of a place, it is especially important to consider urban fit when townhouses are introduced to a community with detached homes since visual continuity may not always be possible. Streets can be considered the threads which complement the old and the new, and as such, their continuation better ensures an urban fit. Existing streets should be used to access the new development, but when this is not possible, local street patterns can be repeated or extended into the project in order to maintain a sort of continuity.

Whenever possible, new dwellings of infill sites should take their addresses from existing streets. If new ones are necessary, they should be laid out in a manner which reduces the impact of additional traffic. Similarly, public sidewalks should be extended to match the surface materials of the existing neighbourhood. Trees, landscaping, decorative paving, streetlights, pedestrian lighting, and street furniture on the new streets should also reflect those on the existing streets.

Maintaining the privacy and quality of life of the development's neighbours is another aspect of urban fit. For example, new dwellings should not decrease the amount of sunlight that neighbouring properties receive, and the windows and balconies of new homes should not look into adjacent yards or windows. In addition, large, noisy, or unsightly services and utilities of the new development should be located a distance away to minimize their impact on the street and remain out of sight from neighbouring dwellings.

Fig. 6.15 A designer may recognize the predominant style of a place but preferably should not mimic or repeat the existing architectural patterns

Not only do infill sites need to consider the urban fit; they must also consider the architectural fit. Continuing the existing urban patterns and respecting the adjoining properties are not enough to ensure an infill property will thrive in its neighbourhood; the architectural patterns and character of the area also need to be considered. A designer should recognize the predominant style of the place but should not mimic or repeat the existing architectural patterns as shown in Fig. 6.15. Instead, they should be utilized as a basis for contemporary but visually related detail in the new dwellings (Kinnis 1997). In other words, infill housing should resemble rather than replicate adjacent structures.

There are a variety of factors that designers should consider to encourage an architectural fit. First, the overall height and volume of the dwellings should be similar to those of the neighbourhood. Placing large, tall dwellings in an area of predominantly small homes can visually dominate the community. Another consideration is that the setbacks of the infill project should reflect those of the neighbouring structures or be the average setback of the adjoining properties to ensure a proper

scale in the neighbourhood. Materials, windows, doors, roof slopes and shapes, and architectural details should also reflect the area's character. Even considerations such as the proportion of windows to solid walls on facades should be considered (Moyes 1997). Though these design guidelines can sometimes seem restrictive, they help infill projects achieve architectural unity. Creative thinking needs to be employed with design guidelines to ensure a proper integration into the community.

6.5   Principles and Strategies of Historic Preservation

Establishing a set of guidelines can ensure that new small- and large-scale developments or alterations to existing buildings remain compatible with the urban and architectural context of a town (Fig. 6.16). These strategies for preservation should encourage designs to enhance the visual continuity of the streetscape and complement the existing character of the downtown, where most heritage buildings are traditionally found (Town of Richmond Hill n.d.). The intention should not be to establish a character but instead to complement existing designs.

When considering heritage preservation for a large area, uniform rules cannot usually be applied. Building communities takes many years, so several building types and styles are likely to have been used in construction. Working on a large scale, it is important to decipher the overarching architectural language of a place. This investigative process begins by tracing the life cycle of the buildings. Familiarity with the date of construction can lead to knowledge of the style and construction techniques used. Knowing the designer and builder of a structure can be of importance too, since firms are known to often use similar patterns in their constructions. Brand advocates studying communities and buildings the way that historians study the past: diachronically, with a view of changes over time, as opposed to synchronically which regards only a single point in time (1994).

To ensure fluid integration of heritage preservation on a small scale, designers use a variety of strategies. To begin, the study of exterior features in a small town can reveal the range and type of components that should be respected as the process of preservation begins. Specific elements to be studied include cladding materials and colours, decorative wood and brickwork, porch design, and window and door styles. If historic features have become deteriorated, it is always preferable to repair them rather than replace whenever possible. However, if replacement is truly necessary, it should match the original as closely as possible with regard to style, colour, texture, and material. It is especially important to maintain material continuity in small downtown cores, as traditionally there was a limited range of building materials used in the town's core. Historic elements of buildings in heritage towns are physical records of place, and, as such, care must be taken to not create a false sense of historical development by adding or confusing features found in other places or times.

Reversibility and legibility are two more key principles in heritage conservation. Reversibility implies that new additions to historic buildings should preserve the original form and integrity of the building but should also be restored to the original conditions if desired at a later point in time (Fig. 6.17). Legibility, on the other hand,

NOTABLE EXAMPLES	ILLUSTRATIONS	GUIDELINES
LOWER FLOOR OPENING — Large Opening / Small Opening / Mixed	a (PERMITTED / NOT PERMITTED) b (PERMITTED / NOT PERMITTED) c (PERMITTED / NOT PERMITTED)	**a** Large openings of a commercial unit at lower floor should be divided into equal size divisions and respect the scale of their upper floor openings. No large glass curtain walls and reflective glasses are allowed. **b** Small openings of commercial units at lower floor should respect or repeat the scale and the rhythm of their upper floor openings. Big window should be divided and no narrow horizontal design is allowed as illustrated. **c** Entrance door frame should be at the same height as the upper frame of its adjacent windows. Panel and solid entrance door is not permitted on a commercial unit.
UPPER FLOOR OPENING	Min Max Min Max Min Max 1/2h 1/4L 1/2h 1/4L 1/2h 1/4L **Window shapes and heights at uppermost level** 1:1.6 2:1.6 1:1.6 2:1.6 1:1 1:1.5 1:2 1:1.5 1:2 **Window proportion (W : H)**	**Window Articulation** • All windows at the attic floor should have a decorative frame. • Frame shape and design shall correspond to neighboring buildings. • Decorative frame should not be taller than one-half of the height of the window or shorter than one-quarter of the height of the window. • All widows should be rectangular and oriented vertically. • Window proportion should respect the guidline pattern. • All front facades shall have no more than a 60% area of glazed opening or less than 30%. • No reflective glass is permitted.
ENTRANCE	a b c d	**a** Recommended entrance design a: Entrance located in the center of a modern style **b** Recommended entrance design b: Entrance located in the center of a traditional style **c** Recommended entrance design c: Entrance located off center of a modern style **d** Recommended entrance design d: Entrance located off center of a traditional style
ROOF AND PARAPET	**Permitted Dormer Types** **Silhouette Pattern** **Roof slope** (>30° / <45°)	**Permitted Dormer Types** Four varieties of dormer are permitted at roof level. The design of dormer should respect the architectural context of downtown area. **Silhouette Pattern** Six varieties of parapet silhouette are permitted in the commercial district. The design of the cornice shall respect the local vocabulary and the neighboring buildings. **Roof Slope** 1. The slope of the roof addressing the street shall be greater than 30. 2. The slope of the roof addressing the rear of the unit shall not access 45.

Fig. 6.16 Establishing a set of guidelines can ensure that new small- and large-scale developments or alterations to existing buildings remain compatible with the urban and architectural context of a town
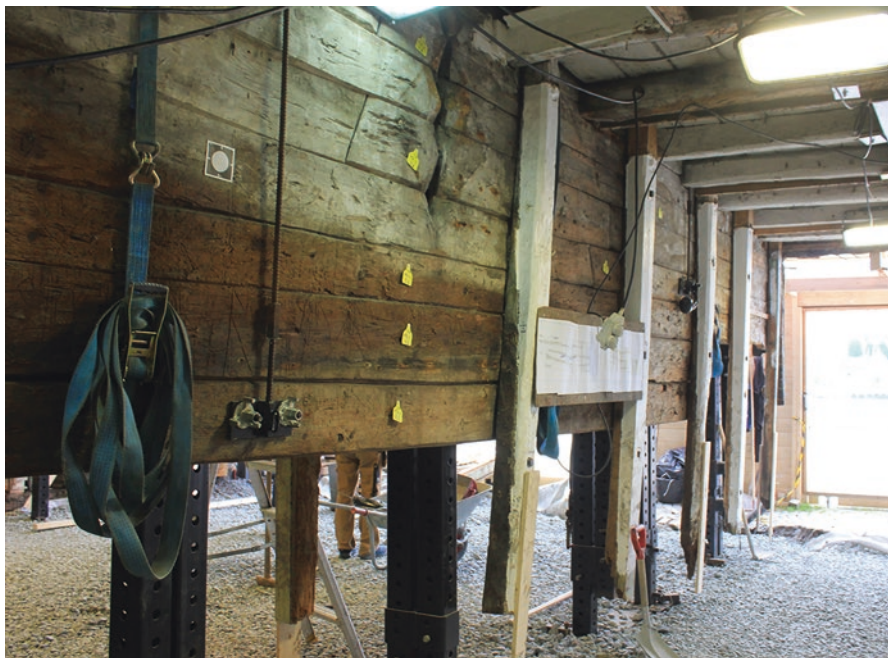
Fig. 6.17   It is imperative that old structures be upgraded to meet modern construction standards

relates to new work being distinguishable from historic precedents. New additions or extensions to heritage buildings should not blur the line between past and present.

Though it is important to consider the original state of heritage buildings, it is also imperative that these old structures are integrated with other civic priorities so they can meet the needs of a modern society. For example, many historic buildings do not meet contemporary safety requirements, energy efficiency standards, or accessibility needs. During preservation and rehabilitation, care should be taken in an attempt to incorporate these modern notions while preserving the character of the historic structure. Often small changes can make a big difference to accommodate these modern needs, especially if the strategies of reversibility and legibility are used in the process.

Though the importance of preserving heritage communities and buildings is undisputed, there can be serious problems associated with upgrading the housing stock of lower- or working-class neighbourhoods. Rehabilitating such neighbourhoods can often result in increased property taxes and higher rent, which can both lead to gentrification and the displacement of lower socio-economic groups (Archer 1991). This sparked a controversy surrounding gentrification, where preservationists were accused of elitism and neighbourhood disruption. As a result, there has recently been a growing interest in projects aimed at lower- and middle-income groups sponsored by preservation groups. These groups have led efforts

which creatively address issues faced by low-income housing in historic neighbourhoods. The primary goal of their efforts is to encourage preservation while avoiding gentrification and displacement.

One strategy which has proven to be an effective stand against gentrification is to call for active participation from neighbourhood organizations in the purchase, restoration, and continued ownership of vacant houses and rental buildings. Involvement from local banks, city governments, and insurance companies means that the ownership of rental units remains in the hands of neighbourhood organizations to ensure affordable housing can remain available even if properties appreciate, thanks to their rehabilitation (Archer 1991). Along with this strategy, displacement can be avoided by promoting a diverse population of homeowners in rehabilitated neighbourhoods, making it more socially sustainable. Further, lower-income groups are less likely to be displaced in rehabilitated heritage neighbourhoods if employment opportunities can be woven into the neighbourhood through the incorporation of mixed-use buildings.

When communities allow their buildings to fall into disrepair, the social, cultural, and economic fabric of the neighbourhood are eroded. Rehabilitation and restoration can be catalysts for change by strengthening community identity and reconnecting individuals to historic roots, but care must be taken to not displace members of these neighbourhoods. By restoring rather than demolishing, the built environment can be left better than it was found, using resources wisely for today's needs while being mindful of the needs of future generations (Knox and Mayer 2013).

6.6 New Interventions in Old Places

6.6.1 Lethbridge, Alberta

Lethbridge, Alberta, is a small prairie city located 2 h south of Calgary and 1 h north of the USA border. It is situated in the heart of a large trading area, with close proximity to the Canadian Rockies and tremendous community pride. Lethbridge has some of Western Canada's mildest winters and warmest summers due to steady Chinook winds. In fact, Lethbridge has 320 days of sunshine a year and is in the top 10 Canadian cities with the highest number of hot, sunny days year round (City of Lethbridge 2016). The city is home to two modern post-secondary institutions (the University of Lethbridge and Lethbridge College) which is rare for a community of its size. The city's smaller size, low cost of living, and high quality of life make Lethbridge a desirable place for many to live and work (CMHC 2016).

Despite the warm weather and community pride, the city of Lethbridge faced a variety of challenges that called for the redevelopment of its core. Among these challenges were the improper scale of buildings, some unfriendly streets for pedestrian use, the fact that local commerce was out of step with the times, and underused features such as an existing lane system, the Lethbridge Centre mall, and Galt Garden, a green open space in the heart of the area (Figs. 6.18, 6.19, and 6.20). Strategies for the city's redevelopment included populating the downtown,

Fig. 6.18 Images of downtown Lethbridge

attracting visitors to the charming city centre as a destination, and better engaging the community with the city. It was within this context that led to my team's invitation to propose a plan for downtown renewal.

The first step in Lethbridge's redevelopment process was to gather historic community data. Detailed facade studies were performed on many of Lethbridge's main streets and were then compared to historical photos of the same streetscape from decades past (Fig. 6.21). After gathering insight on the city's history, a three-phased master plan was proposed to rejuvenate the town (Fig. 6.22). In general, the plan focused on the design of new structures and additions to existing buildings centralized around Galt Garden.

The focus of Lethbridge's first stage of redevelopment was on the creation of coherent street facades. Specifically, the goal was to restore and retain historic facades or rebuild new ones along the streets that enclose Galt Garden. This was made possible through the study of historic documentation and photographs of the city.

Fig. 6.19 Aerial view of downtown Lethbridge
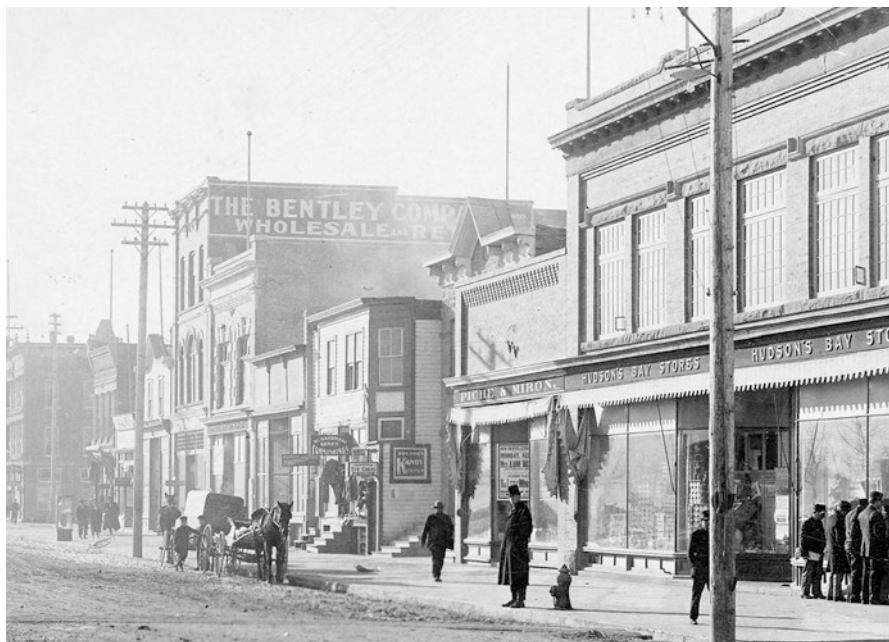
Fig. 6.20 A street in downtown Lethbridge circa 1930

Fig. 6.21 A study of existing buildings' design patterns

The second phase of the city's redevelopment strove to integrate the development of commercial and infill housing in the historic city. Three main streets were to be developed as an extension of phase one's progress. Infill housing developments were to be built, which would utilize the back lane concept to integrate the downtown. Successful integration of infill housing would act to rejuvenate the downtown

1. Shopping Mall
2. Galt Garden
   (Wind Sculpture Garden)
3. Chinook Casino
4. China Town
5. Pioneers' Interpretive Centre
   (Old Centre Rail Station)
6. Aboriginal Art Gallery
7. IGA Supermarket
8. Farmers' Market
9. Theatre
10. Convention Centre
11. Community Service
12. The U of L Art Centre
13. Flea Market

Master Plan

Old Building   Restored Building   New Building
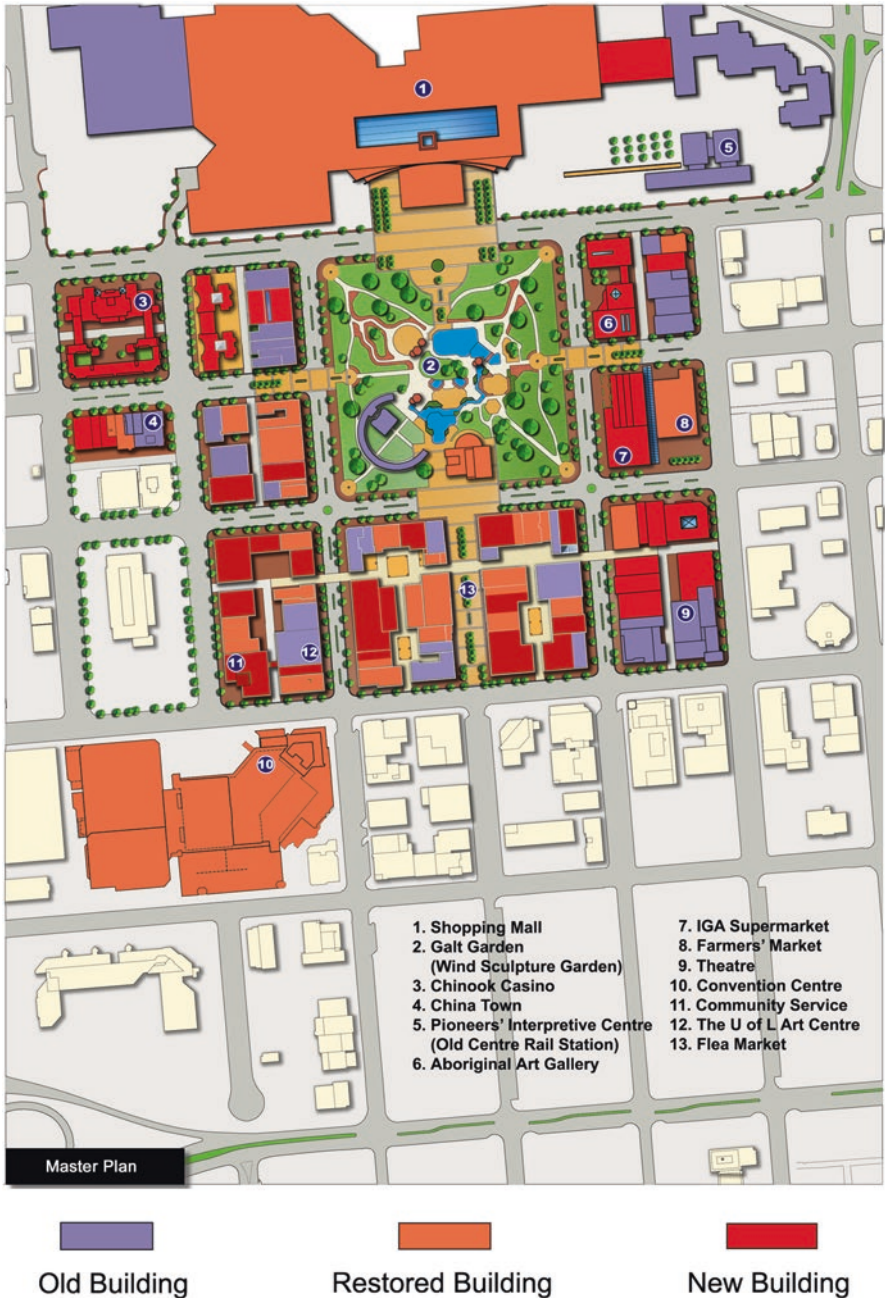
Fig. 6.22 Proposed master plan

and, combined with the close proximity to new commercial areas, could revitalize the city's economy.

The third and final phase of Lethbridge's redevelopment plan was to reinforce connection in the community. This will be achieved by creating a link between the shopping mall north side and the convention centre which used to be Lethbridge Centre Mall. The completion of this final stage will hopefully bring about positive change and rejuvenation to Lethbridge's downtown.

Throughout all three development phases, special attention was paid to building and planning details to ensure the proposed changes would achieve an urban and architectural fit. Developers were particularly concerned with roof shape and height, entrances and doors, window style, brick style and colour, and an overall pattern and rhythm in the town's streetscapes. As for general planning principles, care was taken to ensure consideration of season and wind—Lethbridge faces strong Chinook winds—as well as plantings and light and street or square features in the community.

To aid in a cohesive and well-designed development strategy, the area surrounding Galt Garden was divided into nine blocks that were individually considered for how to best redesign them for maximum community satisfaction depending on their location and assets (Figs. 6.23, 6.24, 6.25, 6.26, and 6.27). Each block was given a development plan following the three phases outlined previously. The subdivision of the larger development area allowed greater attention to be paid to individual block's features and attractions. This allowed developers to work on a more human scale and therefore engage more with the community. Careful consideration of blocks' features included highlighting heritage buildings, promoting modern attractions such as museums and commercial centres, and providing access to the city's unique features.

The redevelopment plan for Lethbridge is one that was carefully considered and strove to weave heritage with modern needs. By its projected completion, Lethbridge will be a more engaging and desirable place to work and visit. This strategy of redevelopment, which works in small blocks and over a series of phases, is a model that allows for community engagement, more gradual change, and reflection in the design process.

6.6.2   Cornwall, Ontario (Conversion)

This project involved conversion of a city block in Cornwall, Ontario, from industrial to residential use while maintaining the historical attributes of the building. The area was originally part of the city's industrial hub, housing mostly textile fabrication mills (Fig. 6.28). With an industrial decline, the area's fortune also vanished and the surrounding neighbourhood deteriorated, with once bustling buildings remaining idle. Unlike the other structures in the district, ours remained active as it became a place for metal fabrication.

The mandate was to study the urban potential and offer design alternatives for the entire block while preserving the architectural character of the area (Figs. 6.29 and 6.30). In the second phase, we converted a three-storey industrial structure into

Fig. 6.23 A typical block with intervention

Fig. 6.24 An elevation study showing insertion of new buildings into existing block

Fig. 6.25 A guide for façade restoration

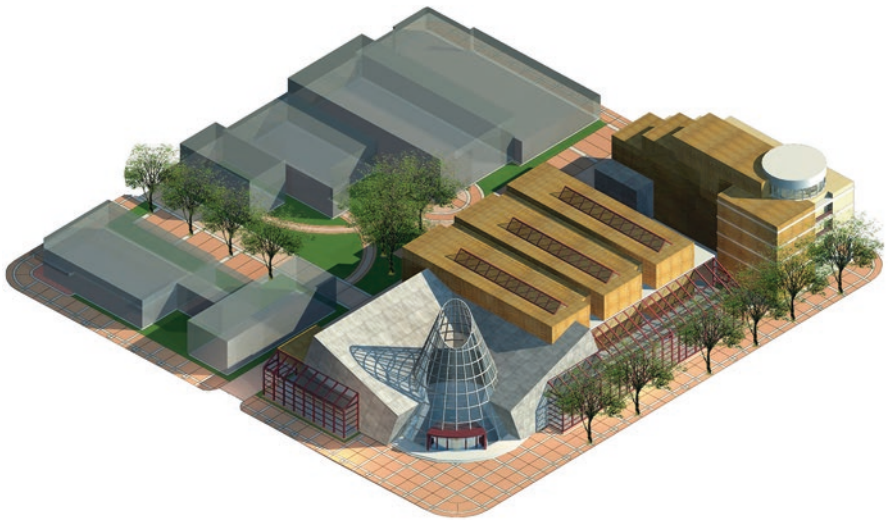**Fig. 6.26** A rendering showing a restored façade in a street context

Fig. 6.27 A proposal for a museum for aboriginal Canadians on one of the blocks

Fig. 6.28 Aerial view of the Cornwall conversion site

Fig. 6.29 Views of the site

Fig. 6.30 View of the site and the surrounding area

residential while maintaining the building's character. Several observations were made at the outset of the study.

The site is located in proximity to the St. Lawrence Seaway. From the existing building and future structures, residents will get a clear view of the water, a view which is highly attractive during all seasons. The study area is also located two city blocks away from Montreal Road—a commercial hub which provides many services and a short drive away from Pitt Street, Cornwall's main street.

The site houses several structures, most of which were constructed for industrial use either in the distant or recent past. Yet, the majority of the site is vacant and offers several development opportunities. A wooden structure, which is currently used as a storage space, faces William Street but is of little heritage value and can be demolished. A historic house clad with brick is located in the northwest part of the property. It was said to house the person who supervised the passage of boats in a canal that once ran through the site. Portions of the structure look like an addition, yet in general the exterior of the structure seems to be in good condition, and the building can be integrated with future plans.

In the first phase of the design, we have developed three urban alternatives, which ranged from maximum intervention/development to a minimum where fewer units have been proposed (Fig. 6.31). The first proposal anticipates maximum use of the site and the introduction of high-density development, most of which will be in

Fig. 6.31 The three proposed development options

the form of apartments. Our objective was to give each of the buildings a maximum unobstructed view of the Seaway. Therefore, we placed a six- to eight-storey apartment building at the southeast corner and extended the long structure by offering additional units. Townhouses may be placed at the northern part.

In the second proposal, we gradually reduced the density by introducing more townhouses. However, most of the key design principles remained identical to the first proposal. All the dwellings will now face the Seaway, leaving the central part of the property "green". Since most of the buildings have been concentrated near the southern border, a big gap (possibly landscaped) will be left in the north. A much larger open space will be left between the buildings and the northern border.

In the third proposal, we included more townhouses, assuming that there would be future demand for them rather than condominium apartments. All the structures are sited parallel to the Seaway Road. Area for parking will be made available near Edward Street, as well as near William Street. Underground parking will be provided under both townhouse projects. A large open space, similar to the first proposal, will be left between the build area and William Street, and the entire area will be landscaped appropriately.

At the second phase of the project, we undertook the conversion of an industrial building to a residential one, located at the eastern side of the property. The building was built to carry heavy loads at the early part of the twentieth century of concrete columns and slabs. There are very few, if any, details worth preserving. The northern façade, which might have been connected to another structure, is partially cladded with cement block. The link between the southern façade and the long building to the south has been demolished in recent years, leaving visible damage and marks on the brickwork. Study of the bay's dimensions demonstrates that one bay size can accommodate a one-bedroom unit.

The design of the building was approached as the creation of a menu of options that offer a variety of alternatives within the envelope of each floor. The entrance to the lower parking level was designed at the north-east corner. The dimensions of each bay permit parking of two cars for a total of 26 stalls. The elevator was also designed to reach that level. Space was also allocated in the floor's core for a mechanical room and locker space.

In general, the entrance floor can accommodate one-, two-, or three-bedroom units (Fig. 6.32). We recommend that the majority be two-bedroom units, the second largest group be one bedroom, and the fewest be three-bedroom flats. In the
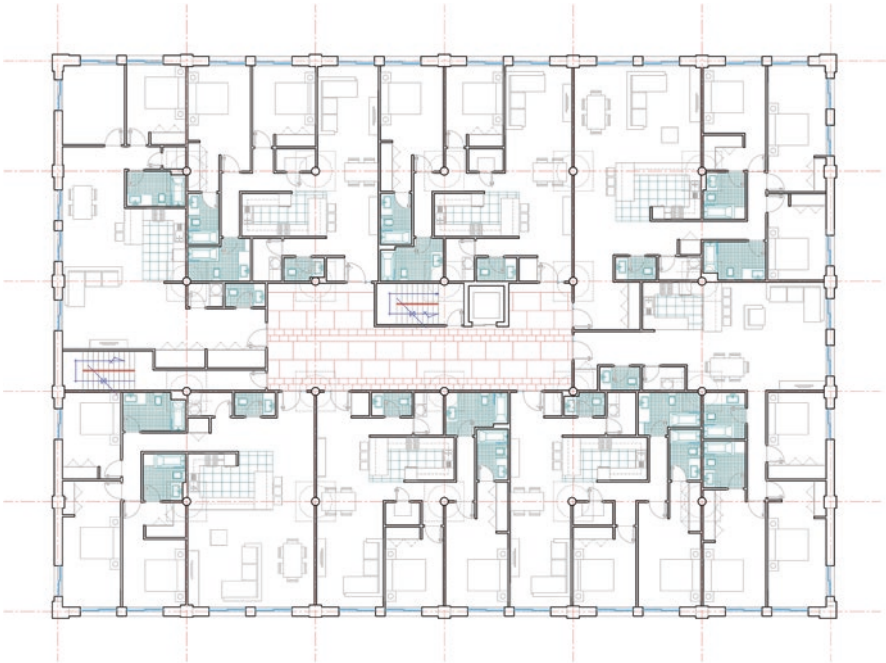
Fig. 6.32 A typical floor plan in the converted building

entrance level, we also provided the option of having a recreational space (i.e. gym) or alternatively another dwelling unit. When the floor is designed with dwelling units only, it can contain between six and eight dwelling units. The floor can be divided into several unit types and sizes, which will generate between eight and ten dwelling units depending on the desired division. We have designed four penthouse units, which will offer large terraces and a spectacular view of the Seaway and the project's open space.

It is clear that extensive brickwork needs to be done on the building's exterior. Much of the removed brick can be cleaned on-site and reused. It is recommended that the cement blocks on the northern façade be replaced with brick. Extensive brick pointing and alterations of the southern façade also need to be done. In addition, the building's large area permits introduction of balconies on most of the units (Fig. 6.33).

6.7 Final Thoughts

Heritage—the notion that the past and present are linked to the future—must be considered when renewing downtown centres. A town's core is often home to many historic structures, such as buildings, that can offer a sense of place to a community while also supporting a town's economy through tourism revenue. The preservation of these structures, however, needs to be regarded as a deliberate effort to preserve

Fig. 6.33 Exterior and interior renderings of the converted building

cultural identity and continuity as well as an inherent part of the building process. The importance of preserving heritage structures must be balanced with a town's modern needs in order for it to thrive. It is clear that weaving together heritage structures and spaces with modern developments in small town centres has numerous benefits for the community. This integration preserves local history while recognizing the needs of a modern society.

Preserving heritage is a sustainable practice, both socially and environmentally. Though there is a price tag associated with historic rehabilitation, the redevelopment strategies of the towns of Lethbridge and Cornwall prove that the ongoing existence of these buildings can provide an unquantifiable wealth for the community. These structures have the power to offer a sense of place for inhabitants and can offset the cost of their preservation by attracting revenue from tourists.

References

Archer, M. C. (1991). Where we stand: Preservation issues in the 1990s. *The Public Historian, 13*(4), 25–40. Retrieved November 21, 2016, from http://www.jstor.org/stable/3378099

Boyer, C. (1995). City of collective memory: Its historical imagery and architectural elements. In A. V. Moudon & W. Attoe (Eds.), *Urban design: Reshaping our cities* (pp. 82–83). Seattle: University of Washington Press.

Brand, S. (1994). *How buildings learn: What happens after they're built*. New York: Viking.

Brooks, G. (2008). *Exploiting the benefits of world heritage listing. City spaces – Tourist places* (pp. 341–353). Oxford: Butterworth-Heinemann.

Canada Mortgage and Housing Corporation (CMHC). (2016). *City of Lethbridge.* Retrieved July 16,2016, from www.cmhc-schl.gc.ca

Canada's Historic Places. (2003). *Standards and guidelines for the conservation of historic places in Canada*. Retrieved November 21, 2016, from http://www.historicplaces.ca/media/7209/sandg_en.pdf

City of Lethbridge. (2016). *About Lethbridge*. Retrieved from November 21, 2016 from www.lethbridge.ca

Duany, A., Plater-Zyberk, E., & Speck, J. (2000). *Suburban nation: The rise of sprawl and the decline of the American Dream*. New York: North Point Press.

Earl, J. (1996). *Building conservation philosophy*. Reading: The College of Estate Management.

Focus on Preservation. (1991). *Architectural record*, 152.

Insall, D. (1968). *Chester – A study in conservation.* Report to the Ministry of Housing and Local Government and City and County of Chester (p. 1). London: HMSO.

Jacobs, J. (1993). *The death and life of great American cities* (pp. 253–254). New York: Random House.

Jacobs, M., & Scholliers, P. (2003). *Eating out in Europe: Picnics, gourmet dining and snacks since the late eighteenth century*. Oxford: Berg.

Jokilehto, J. (1999). *A history of architectural conservation*. Oxford: Butterworth-Heinemann.

Kinnis, R. (1997). *Small-lot single family infill housing, City of Victoria*. Report prepared for the Federation of Canadian Municipalities, Canadian Home Builders' Association, Canadian Housing and Renewal Association and Canada Mortgage and Housing Corporation. Ottawa: Federation of Canadian Municipalities.

Knox, P. L., & Marston, S. A. (2001). *Places and regions in global context: Human geography*. Upper Saddle River: Prentice Hall.

Knox, P., & Mayer, H. (2013). Inherited identities: Built form and sense of place. In *In Small town sustainability: Economic, social, and environmental innovation*. Berlin: Walter de Gruyter.

Mageean, A. (1999). Assessing the impact of urban conservation policy and practice: The Chester experience 1955–96. *Planning Perspectives, 14*, 69–97.

Ministry of Housing and Local Government. (1967). *Preservation and change*. London: HMSO. 1967, preface.

Moyes, R. E. (1997). *Zoning standards and design guidelines for infill housing and redevelopment, City of Saint John*. Report prepared for the Federation of Canadian Municipalities, Canadian Home Builders' Association, Canadian Housing and Renewal Association and Canada Mortgage and Housing Corporation. Ottawa: Federation of Canadian Municipalities.

Ouf, A. (2001). Authenticity and the sense of place in urban design. *Journal of Urban Design, 6*(1), 73–86.

Preservation Green Lab. (2011). *The greenest building: Quantifying the environmental value of building reuse*. National Trust for Historic Preservation. Retrieved November 21, 2016, from http://www.preservationnation.org/information-center/sustainable-communities/green-lab/lca/The_Greenest_Building_lowres.pdf

Rypkema, D. D. (1992). Making renovation feasible: Architects and the myths about rehabilitation economics. *Architectural Record, 180*(1), 26–28.

Town of Richmond Hill. (n.d.). *A guide to building and facade restoration for the town of Richmod Hill*. Retrieved November 21, 2016, from https://www.richmondhill.ca/en/index.aspx

Truro Community Plan. (2010). *Town of Truro Community Sustainability Plan*. Planning and Development services. Retrieved November 21, 2016, from http://www.truro.ca/pln/13-community-sustainability-plan/file.html

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2016). Historic Centre of Évora. Retrieved July 20, 2016, from http://whc.unesco.org/

Urban Design Associates. (2003). *A pattern book for Norfolk Neighborhoods.* A Report published by the City of Norfolk.

Valverde, J. C. (2013). *Evora and the Central Alentejo* (pp. 6–15). Alcobendas: Mendes Moreira.

Wealth Generation by Design

7

In recent times, some small towns have witnessed economic decline as jobs move on to other locations. Others have experienced downturn due to shifting national and regional economic circumstances. Rethinking and retooling local economies in the face of these economic shifts is necessary for the revitalization of small towns. A key strategy by which to achieve this goal is to regard town centres as wealth generators by design, of which requires foresight and proper planning. This chapter illustrates such methods for reconfiguring urban, geographic, and economic assets to generate wealth and will also reflect on how communities can attract visitors to encourage and support local commerce.

7.1 A Place of Reference

The British town of Skipton, population 15,000, offers a unique appeal to residents and visitors alike (Fig. 7.1). This can be attributed to the marriage of a bustling, living market town which has evolved naturally over centuries and through being a place that has retained its historic character. Despite the many economic challenges faced by small towns, Skipton has been able to exist and thrive as a result of utilizing urban renewal strategies as a tool for economic uplift.

The name of the town is derived from the Anglo-Saxon words *sceap*, meaning "sheep", and *tun*, meaning "town". In 1204, Skipton was granted a charter to allow a weekly market to be held for the trading of sheep and woollen goods. The town has held onto this tradition for over nine centuries, and the market continues to run today though it is no longer solely focused on the trade of sheep. Market days in Skipton are currently held 4 days a week on the town's historic High Street. These events attract many visitors and locals alike, including farmers who still come from miles away to trade their sheep. As a celebration of their unique heritage, the Skipton market hosts an annual Sheep Day festival on the first Sunday of every June. Sheep are brought back to the town's High Street and a variety of crafts and food round out

Fig. 7.1 Images of Skipton, UK

the celebration, which makes it one of the town's major tourist attractions. Fortunately, Skipton has been able to successfully maintain this charming, niche market of sheep-based industry that appeals to locals and visitors alike.

Aside from sheep trade, the town is steeped in a rich heritage with many historic buildings. One such example is the High Corn Mill from 1310, which is one of the oldest mills in North Yorkshire. It used to provide the corn for all of Skipton, but since 2007 it has been converted and redesigned into retail and office units (High Corn Mill 2016). One mill building, however, was left entirely untouched as an authentic heritage site. Another notable heritage building is the medieval Skipton Castle dating back to 1090, which is one of the best-preserved castles in the country. It sits on prime real estate at the top of High Street. In 2008, the UK Academy of Urbanism voted Skipton's High Street as "the best shopping spot in Britain" (Brown 2008). This central street offers a diverse mixture of independent and national shops and has been able to retain its individuality and unique character over the town's long history. Many main streets in similar small towns have undergone renewal to adapt to modern needs, but have often times ended up looking very similar to each other and so have lost their sense of place as a result. Skipton has been able to adapt while retaining its old-world charm due to careful consideration of heritage preservation.

The geographic location of Skipton also comes with benefits to the town. Namely, it is referred to as "the Gateway to the Dales" because of its close proximity to the Yorkshire Dales, which is home to small, picturesque towns. In addition, the area features a protected site—the Yorkshire Dales National Park—to preserve the area's natural beauty. Skipton is the closest and largest town to most of the smaller villages

in the Dales, so it attracts numerous visitors and shoppers, especially on market days. The continued success of Skipton is also partly thanks to its transportation connections, both via water and roadways.

In summary, the town of Skipton has been able to both survive and thrive because of thoughtful consideration of its heritage. A combination of preserving historic buildings, converting heritage structures to meet modern needs, and continuing historic traditions has been successful strategies for economic uplift in the town.

7.2   Unique Economic Landscapes Affecting Small Towns

Jane Jacobs (1969) referred to cities as "places that produce wealth". Indeed, many communities are engaged in activities with the goal of improving the economic standing of the city through additional development either as individuals or through community effort. Economic development is a process of change that aims to increase wealth by raising citizen's incomes, improving the accessibility of local services, and reducing unemployment rates (Lapping et al. 1989). For such economic development to be successful, it is important for the towns' people to work towards a common goal by charting their own futures. This is especially true for small or rural towns, who are faced with unique economic challenges and characteristics that are not shared with large cities.

A variety of factors contribute to the unique economic landscape of small towns, which at times offers opportunities but can also pose some challenges. Historically, small and rural towns' economies were dependent on the basic resources at their disposal. According to Daniels (1991), small urban communities functioned as service providers for nearby farm owners, as well as processing and shipping points for farm commodities, timber, and minerals (Fig. 7.2). In general, and as pointed out in Chap. 1, the original primary industry of a small town has typically been dependent on the town's location, the resources available in the surrounding area, and the local hierarchical economic organization (Weber and Rahe 2010). Some small towns have to rely heavily on nearby larger cities for their economic well-being, while others can remain more independent. Generally, for those small towns to be economically independent, they had to have major transportation links with main manufacturing hubs (often via water or rail lines).

The economic structure of small towns was majorly transformed after the Industrial Revolution.

The population influx of urban hubs led to the development of a number of smaller centres, particularly along transportation routes. The development of new machine-based production was beneficial for the economies of some small towns, but was quite detrimental to others. Further transformation to small town economies ensued after World War II. New industrial production methods, the amalgamation of small family farms into single larger entities, and the evolution of the interstate highway system and ease of air travel were harmful to some small town economies but allowed others to thrive.

Fig. 7.2 Many small towns functioned as service providers for nearby farm owners. In these towns, the shopkeepers often lived above their stores like in these homes in Leiden, the Netherlands

Many towns which had formed long-standing partnerships with one employer or were largely dependent on only a few resources saw their industries close when the products were no longer in demand. Alternatively, some companies were tempted by incentives offered by other municipalities and subsequently moved away, leaving behind a gaping hole in a place's economy. The bigger challenge was for economic developers of small and rural towns with a nineteenth century economic, political, and small town urban pattern to switch to the shopping centre culture and public service requirements of larger firms and a mobile population (Fox 1962). Under these conditions, and also largely as a result of the entrepreneurial skills and the town's governance structure, some communities were able to retool their economy, while others stood still or shrank further. The small size of these communities was clearly a disadvantage in this regard. They lacked the means to diversify economically, were unable to take pre-emptive measures, and could not act quickly when downturns did occur (Hibbard and Davis 1986).

The trend of globalization in the 1980s marked the beginning of another major economic transformation with drastic effects on the economies of small towns. The interconnectedness of the world's economies and the formation of trade agreements increased competition between countries and cities. Much to the dismay of many small towns, globalization also made it easier and more convenient for companies who produced labour-intensive products to relocate overseas to be able to manufacture in low-wage countries. As a result, industries that used to be the core of their town's economic well-being were forced to either shut their doors or relocate to

Fig. 7.3 Some farmers attempted to transition from agriculture to tourism, like the owner of this building near Volterra, Italy, who runs a guest house

other cities and countries. This left many small towns frantically looking for replacements and desperate to rebuild their economy.

However, change associated with this era was able to benefit a few small edge towns. Some head offices or manufacturing facilities that used to exist in big cities were drawn to suburban towns due to the cheaper land, lower taxes, proximity to highways, and affordable housing available for employees. Edge towns, however, are a particular case; while they have access to major transportation routes, this is not often the case for small, rural towns. These more distant towns have had to find alternate ways to retool their economies.

Another economic challenge faced by small towns can be related to the nature of the residents themselves. Some families have spent generations in the same small town and may have conservative values regarding their community. The transition from agriculture to light industry or tourism can be hard to adapt to, and residents may be unwilling to alter their beloved townscape even if it may provide benefits to their economy. An example of transformation is illustrated in Fig. 7.3.

New challenges to come are bound to affect the economies of small towns once again. Economic fluctuations, the retirement of the baby boom generation, and the need to address environmental issues like climate change are likely to have an impact on the economies of all communities. Strategies for small towns to combat issues such as these may include creating jobs to support local enterprises and

Fig. 7.4 The vast former Arnold Print Works factory in North Adams is now the home of the Massachusetts Museum of Contemporary Art (MASS MoCA), one of the largest centres for contemporary visual art and performing arts in the USA

consume products to promote economic sustainability or to diversify their economies to avoid heavy reliance on a single employer or resource. Though, faced with these new challenges, small towns may be forced to review their current strategies or devise new ones to continue to thrive.

7.3 Creating and Attracting Contemporary Industries

The economies of small towns can often be categorized in a variety of ways, ranging from service, single industry, and tourist or resource-based. The stability of these types of economies varies greatly. While service-based economies are relatively stable, tourist industries are likely only seasonal, and single industry or resource-based economies are prone to economic downturns. Despite the categorization of a place's economy, it is of paramount importance to establish an overall sustainable economic footing to ensure lasting prosperity. A variety of strategies to create contemporary industries and economic stability will be discussed; however it is important to note that the adoption of any recommended economic strategy for a small town is largely dependent on the culture of the place. Thus, generalization cannot be used.

Reliance on a single employer or industry has proven to be harmful to countless small towns. As a result, diversification is often regarded as a necessary approach to meet current economic challenges, a process that was implemented by the former Arnold Print Works factory in North Adams, Massachusetts, USA (Fig. 7.4). By choosing new areas of activity, the town's existing assets are likely to be highlighted as prime areas of opportunities to exploit. For example, a charming downtown, proximity to a major transportation route, or nearness to several other cities may be assets in diversifying a place's economy while working with existing opportunities. The aim overall is to find a niche in which the town can become a local or regional leader and which can be carried on passionately over time. Exploiting a niche market can ensure lasting prosperity for a town, as it can be more permanent than the ups and downs of a single company's economy.

Two examples of small towns that successfully created a niche to improve their economy are Elliot Lake in Ontario, Canada, and Beechworth, Australia. After the downturn of uranium-mining industries between 1990 and 1991, on which Elliot Lake's economy was dependent on, the town faced the most rapid decline in population of any small Canadian municipality. The town's action committee decided that their town must become balanced and diversified, independent of the mining industry, and avoid the boom-and-bust cycle they had just experienced. As such, they decided to aggressively pursue the retirement business as a key future industry because they were able to negotiate the acquisition of 1400 housing units from the mining companies. Daniels (1989) says seniors are an important source of internal and external combustion in small towns, as they often contribute a steady stream of cash transfers in the form of purchasing goods and services. Elliot Lake has since become the senior citizen capital of Canada, attracting 3600 retirees to the area which has effectively turned their economy around.

The town of Beechworth, located in the north-east of Victoria, Australia, also successfully created a niche market for themselves after the town had become stagnant due to reliance on government service employment. In 1984, Tom O'Toole returned to his hometown of Beechworth and purchased a struggling bakery. The Beechworth Bakery then became a phenomenal success and synonymous with the success of the town. O'Toole's vision became a national business icon in Australia and revitalized the town. Despite the town's location 3 h away from a capital city and not on a major highway, the place has since become a major tourism centre and has grown in population and employment opportunity. Beechworth illustrates the impact that a single business can have on the revitalization of a town. A similar strategy was employed near the town of Zhouzhuang, China, where a silk-producing factory attracts visitors interested in the process (Fig. 7.5).

Other than finding a niche market for a small town, another strategy to increase economic stability can be to exploit the town centre, which is often a central artery for the community. Enriching the town's population and attracting those who can initiate enterprises or work in them is a valuable step to achieving economic sustainability. Young people especially are seen as vital to the economic prosperity of a town, as they are known to contribute to and possess the drive needed to start new enterprises. They are also likely to be attracted to the availability of affordable housing and a unique lifestyle that offers alternatives to the fast rhythm of a big city. With this in mind, establishing new and affordable housing types in the town centre can attract a younger population which in turn will use the core as an incubator for new businesses.

Mixed-use buildings may be especially attractive in this scenario. The combination of residential and commercial uses may be a draw for young people who do not wish to commute to work or do not have access to a car of their own. They also have the potential to offer a unique lifestyle that many young people look for, because living in downtown is likely more appealing and more affordable for a younger population. Apartments in these buildings might be the places in which start-up enterprises will take advantage of low rent or lower taxes.

Fig. 7.5 A silk-producing factory near the town of Zhouzhuang, China, attracts visitors interested in the process to become the area's main tourist attraction

A final strategy to create contemporary industries and more stable economies is to take advantage of new technological advances of the digital age. Currently, technology is seen to be one of the most significant drivers of town centre change. People have realized the benefits technology can offer to small towns and are beginning to take advantage of the numerous opportunities it offers. Advances in the digital age have revolutionized entrepreneurship and can allow for small towns to attract young and creative companies (Fig. 7.6). New businesses may be established with fresh and creative visions which have the potential to revitalize a town. This can be made feasible by introducing modern infrastructure, such as increased production of local electricity utilities to attract data-processing companies (Spence 2015).

Taking advantage of the invention of wireless Internet access may also be beneficial to towns. Free WiFi access from hotspots throughout the town can encourage decentralization and attract workers facing higher costs of living in urban areas (Fig. 7.7). Access to wireless Internet has also made it possible for companies and individuals to conduct business across the globe without leaving the comfort of their hometown. This can be especially important in small towns, which can offer cheaper real estate costs to companies who can operate their businesses from anywhere. Additionally, utilizing new location-based energy sources such as geothermal and

Fig. 7.6 The Pinetum Pavilion in the Broughton Hall Estate, Skipton, UK, from which companies work long distance taking advantage of digital communication

wind technologies can help to alleviate the costs of imported power in more isolated towns, which would help the community's economy overall.

Improving access to technology is also an asset to the older age groups. The elderly, who are becoming an increasingly significant cohort in small and rural towns, are able to benefit from digital medical technologies that enable remote monitoring and diagnosis. This can provide them with a sense of independence and can make them feel safe staying in their homes instead of moving into a care facility. They can also benefit from access to distance education and activities upon retirement regardless of location. However, one needs to be cognizant of the fact that this may also be a threat to traditional retail stores on the High Street, as has been seen through the closing of many music, video, and bookstores in town centres (Miller 2012).

7.4   Developing a Tourist Industry

To diversify their economies, some towns were forced to explore other areas of wealth generation when the economic pillars upon which they were initially founded upon declined (TSC Western Canada n.d.). Many towns turned to tourism as a diversification strategy.

In general, the tourist industry involves the activities of people who travel and lodge away from their home for business or pleasure. Travel has become increasingly popular and more accessible in recent decades thanks in part to the construction of interstate highways, as well as the proliferation of and competition among

Fig. 7.7 The town of
Sintra, Portugal, offers
citywide free WiFi access

airline companies—this in addition to the various planning and booking conve-
niences of the digital age.

Investing in tourism of any variety can offer a wealth of wide-ranging benefits
to a town. To begin, tourism is an industry that can offer significant economic
potential to large and small places alike. According to the Commission on
Sustainable Development (1999) , travel and tourism are some of the world's larg-
est industries and create jobs across national and regional economies. In 1998,
tourism directly and indirectly generated 11.7% of the GDP and nearly 200 million
jobs worldwide. Tourism can also be referred to as an "added value" industry
because of its inherent ties to a number of other related markets. For example, a
traveller will likely stay in a hotel, dine at restaurants, and visit shops and other
historic or cultural venues (Fig. 7.8).

Additionally, tourism is unique from other land-based industries because it
imports the market to the product. This makes it the only industry that has a positive
net flow of funds from wealthier to poorer regions and from urban to rural areas.
Another benefit of tourism is that compared to other sectors, it is a clean industry. If
it continues to be developed and managed successfully, it can have minimal envi-
ronmental impact and will not disturb quality of life in communities. A final added
benefit of tourism, especially related to nature-based tourism, is that it can draw

Fig. 7.8 The D-Day landing beaches of Normandy, France, continue to be a major international tourist attraction in the region
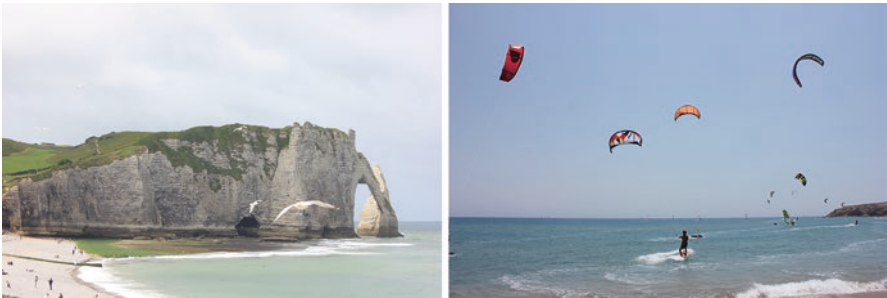
Fig. 7.9 The picturesque beaches of northern France and strong winds on the island of Rhodes draw local and international tourists and surfers

attention to and educate tourists and residents on environmental concerns in the area, such as resource conservation and ecologically sensitive areas (Fig. 7.9).

Various kinds of tourism exist that can be uniquely adapted to small towns. One of these includes *agrotourism*, which is related to staying or working on a farm. There is also *culinary tourism*, which is travel focused on eating or cooking, as well as *educational tourism* whereby tourists attend courses or *cultural tourism* which involves taking part in local events. *Ecotourism*, *religious tourism*, *wildlife tourism*, and *heritage tourism* are all additional types of these unique tourist sectors

Types of tourism	Types of tourists	Length of stay	Accommodation	Mode of travel	Draws
• Business	• Business	• Pass through	• Camp ground	• Air	• Sporting event
• Eco/wild life	• Personal travel	• Day trip	• Hostel	• Ground/public	• Cultural event
• Cultural	• Group	• Several days	• B&B	• Recreational vehicle	• Natural beauty
• Sports		• Prolonged stay	• Budget hotel	• Own car	• Shopping
• Culinary			• Luxury hotel		• Heritage buildings
• Heritage/religion					

Fig. 7.10 Key determinants of a tourist industry

Fig. 7.11 The scenic view of Norway's fjords attracts cruise boats to fuel the economy of small towns

(Figs. 7.10, 7.11, and 7.12). Each of these activities will manifest itself differently in the town and will require different support services in the community.

Capitalizing on existing heritage or religious assets in the town's centre can be a significant draw and has become an important drive of development (Gunn 2002). Built heritage tourism is driven by a desire to experience a place with buildings of particular historic or architectural value. For example, Canadian Heritage lists natural history attractions, craft centres and workshops, performing arts, theme parks, festivals, stately and ancestral homes, and attractions to do with the manufacturing industry as different categories of heritage attraction which implicate built heritage through sense of place. Heritage tourism offers a key advantage over other kinds of tourism, being that entrepreneurs can benefit without putting in large investments for the value that historic attractions contribute. It is a relatively low-cost variety of tourism compared to other infrastructure projects such as ski resorts or theme parks.

Fig. 7.12 The Village of Gerberoy, in the Picardie region of France, attracts tourists who come to see the village's roses and take part in the Rose Festival

Despite the numerous direct and indirect positive contributions that tourism can offer to small towns, there can be negative consequences as well. Sometimes at the local level, economic growth may become the priority over preserving historic resources (Jamieson n.d.). The commodification of a community's attracting features can result in degradation and loss of identity for the town. Tourism can also at times be exploitative and damaging to other cultural or environmental assets, which is more sever in rural or isolated areas over denser urban areas because visitors are more visible in the town.

In some cases, when a municipal investment in tourism fails to bring noticeable benefits to the town in the short term, it can trigger animosity in the community towards endeavours in the tourism industry. Acceptance of tourism can also drop sharply when potential negative consequences of tourism development, such as crime, parking problems, traffic, and loss of the local "sense of place", appear in a community overwhelmed with tourists.

Several steps and actions can be recommended in the process of establishing tourism in a small town which already has a budding industry or wishes to start off a new enterprise. This process should begin by examining the town's assets and evaluating whether or not there is a foundation upon which a tourism industry can be established. The second step should be to determine the amount of public and private funds that would need to be invested and then to find out whether the town could sustain such resources in terms of both time and money. If a decision to move forward is made, it is imperative that key stakeholders are on board. Town

Fig. 7.13 The turning of Stratford, Ontario, into one of Canada's prominent theatre centres also made it a major tourist attraction

leadership, administrative staff, and major contributing private enterprises should all take part in setting short- and long-term strategies and tasks for the vision of the town's future to remain cohesive. The plan must also be brought to the attention of the general public, particularly when funds are being spent.

When looking for assets that can become the anchors of a tourist industry, decisions will likely be dependent on budget. If there are limited resources available, the town should consider improving on assets that are already in place. For example, old market structure can be improved or expanded to become the core of regional draw, or music or theatre venue can be expanded and be brought to the attention of national audiences. In fact, this was the case in establishing the small town of Stratford, Ontario, as Canada's theatre capital (Fig. 7.13). Yet, if a foundation does not exist for a tourism industry to be established upon, one can be created, but this will naturally take more time, and the type of industries involved in this will likely be dependent on the resources the town wishes to invest. Finally, as is the case with any industry, it is important to brand and advertise new tourism endeavours (Fig. 7.14). No tourist industry in a town can succeed without letting outsiders know about it, so various media networks should be used to spread the word for events or new attractions.

Despite the current popularity and success of the tourism industry, it appears as though the peak of tourism is yet to come. The "baby boom" generation has travel

Fig. 7.14 Key aspects of a branding process

Identify/ Define
Target
Audience

Craft a Relevant
Brand/ Message

Adjust
Message

BRANDING

Broadcast
Message

Follow
Reaction/
Test Effectiveness
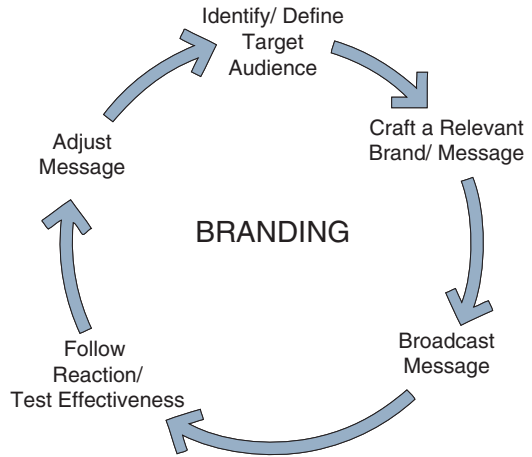
Fig. 7.15 Webcam technology lets people watch live action of spots around the world like this intersection in Jackson, Wyoming

placed at the top of their list for most desired activities in retirement. In addition, travel has become easier in recent decades, thanks to the construction of inter-state highways, the proliferation of and competition among airline companies, and the digital age has made business and leisure tourism more simple and accessible (Fig. 7.15). It is clear why many small towns are more seriously considering the feasibility of this industry.

Fig. 7.16 Images of Langford

Tourism has the potential to generate wealth and bring physical upgrades to the core of small towns, as well as new ideas and information that could benefit locals. It is also an opportunity to strengthen civic pride and increase community engagement as visitors appreciate the local assets such as scenery, heritage, and culture, which can sometimes be taken for granted by locals, thereby reinforcing local pride.

7.5   Generating Wealth in Small Towns

7.5.1   Langford, British Columbia

The City of Langford is located in Western Canada, on the southern end of Vancouver Island in the province of British Columbia, Canada. It is one of the West Shore Municipalities in the Capital Region District with an area of 10,245 acres (4146 ha) and has a population of 27,000. Langford is linked to the capital of Victoria by highway and bus service. The land that Langford sits upon was once used by First Nations as hunting and gathering grounds. In 1851, it was one of four Hudson's Bay trading company farms established by Captain Edward Langford, upon which the place was named. Langford was incorporated as a Municipal District in 1992 and officially gained city status in 2003 (Fig. 7.16).

Langford faced a variety of challenges, but thanks to a clear transformation strategy by the city's leaders, they were able to successfully turn their fortunes around

and build a sustainable economy. One such problem Langford had was that their economy was largely agriculture-based until the city's incorporation. After the city's incorporation, when Langford had a population of 16,000, the community's land use was largely devoted to single-family homes on large lots without sanitary sewers and on small commercial areas and farms. There were not many paved streets with sidewalks or street lights. Langford had a lack of local commerce, and as a result, most residents drove into the city of Victoria to shop. A second challenge Langford faced was the negative reputation they built as a community. Unemployment, at a rate of 25%, combined with rampant vandalism contributed to the town earning a poor regional reputation (Wicks 2008).

Langford's success and transformation have said to be mainly attributed to the city's location as well as uncommon initiatives undertaken by the city's leaders with direct effect on its core. The council's strategy for transformation was three-fold. First, they would increase the tax base by attracting and allocating more land for commercial and industrial enterprises. Then, they would invest the additional revenues in improving the community's appearance and image with special attention paid to downtown. Finally, they planned to undertake selected large-scale community improvement projects, such as the addition of new parks and trails (Buchan 2005).

As for the city's location playing part in its transformation, the fact that the Trans-Canada Highway and Sooke Road both intersect Langford helped to make the city a prime commercial area. The emergence of large format retail outlets as the leading shopping trend in the 1990s and their search for an attractive location made Langford a prime target for a variety of large "box retailers" such as Costco, Walmart, and The Home Depot. Additionally, Langford's leaders led an initiative to reduce taxes and create a pro-development environment, which also helped these large retailers settle in their city.

As a result of these stores opening, the city generated additional tax revenue which rose from 9.8% in 1997 to 15.9% in 2004 (Fig. 7.17). Of this increased revenue, the large retail stores accounted for a considerable two-thirds (Buchan 2005). The same attitude was also taken to attract developers of large-scale housing developments. The Westhill and Bear Mountain, high-end communities and resorts which also feature a hotel and two world-class golf courses, are prime examples. They added residents to the community, attracted tourists, and generated an estimated 1000 new jobs.

As a result of strategic investment, innovative thinking, and responsible management, the money generated by these new additions to Langford's economy generated further enhancements of the city's appearance and specifically its centre. The city that used to be considered quite visually unfavourable became an attractive location. Factors contributing to Langford's new, improved appearance included sidewalk expansion, repaving, and the establishment of a pedestrian mall which created a "village" atmosphere in the downtown. The initiatives discussed diversified the city's economy, put Langford on a more sustainable economic footing, and reduced the number of residents who would travel to Victoria to shop. This contributed to the reduction of the city's overall carbon footprint.

Fig. 7.17 Employment
rate in Langford
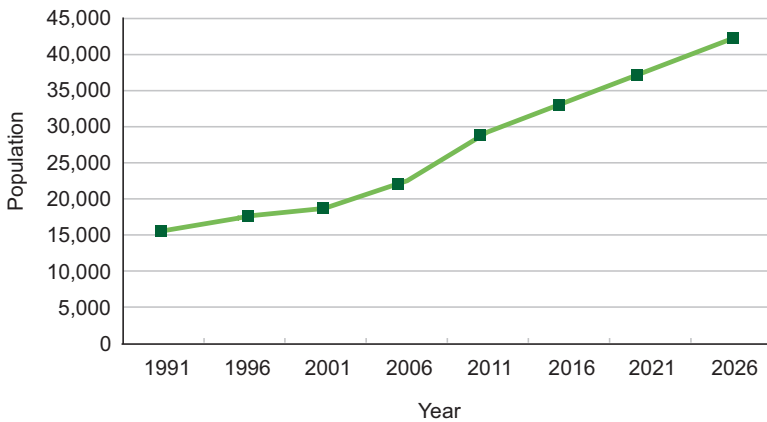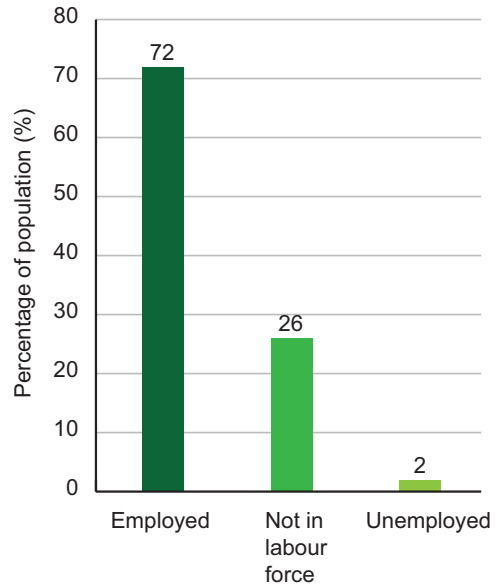
Fig. 7.18 Langford population growth and projection 1991–2026

An increase in Langford's population meant that a critical pool of clientele was established, from which both small and large businesses in the city could benefit (Figs. 7.18 and 7.19). Redevelopment of old neighbourhoods in the city and the addition of two free-of-charge trolley lines were two additional strategic instruments used in Langford's transformation. These initiatives were unique in their scope, as well as in the rapidity of their execution. As a result, they were able to create the economic cycle that most communities strive to achieve: an ongoing and stable stream of revenue was established, and investment in further improving lifestyles, amenities, and urban conditions was possible. In its official community plan,
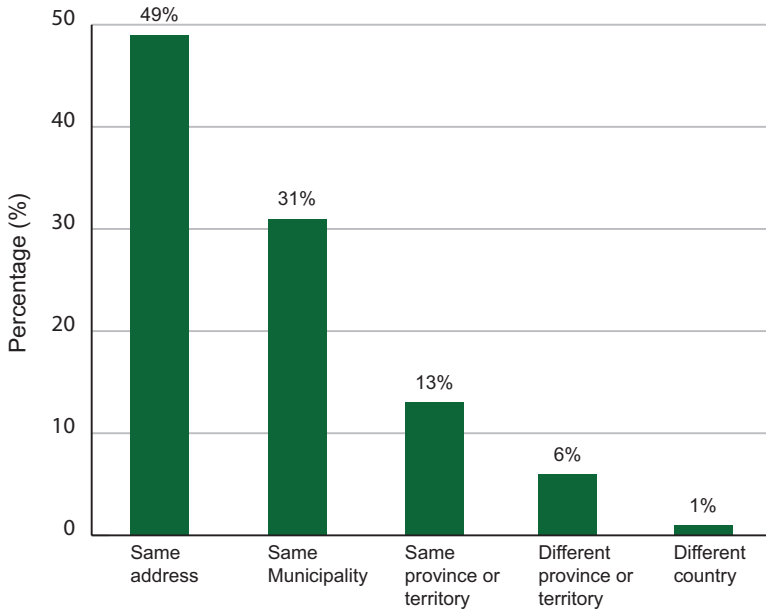
Fig. 7.19 Mobility rate of Langford's citizens

the City of Langford set smart growth standards as its key objective. The intention was to organize development areas near or in neighbourhoods to avoid long commutes by residents to their places of employment.

Another important factor which contributed to Langford's success was the addition of residential construction. Densification took place primarily in the downtown core, where single-family homes were replaced with low- or mid-rise apartment buildings, many of which had commercial uses on the ground floor. Thoughtful initiatives and policies allowed Langford to have a range of housing types at a range of different costs for all types of homeowners, as well as expanding the stock of affordable rental units. This allowed for better accommodation of some of the 19% population increase between 2001 and 2006 and was able to avoid city sprawl while attracting young homeowners. The city benefitted from these housing initiatives because they brought in clientele needed to support local commerce in the city core.

Additionally, Langford also responded to the need for affordable housing in their community. In an award-winning Affordable Housing policy, the city addressed the need for lower-cost housing by requiring that 10% of all new units be rezoned as small lots or small units. The city also took initiatives to introduce affordable rental housing policies, as is seen in the Westhills Master Plan. Finally, Langford also required that one in every ten single-family units in new developments be subsidized and constructed by the developer (City of Langford 2010). By working closely with developers, the city was also able to introduce some innovative housing types, such as very small units and secondary suites or accessory structures. These helped to keep costs down. Other initiatives involved reducing planning standards such as

Fig. 7.20 The fly wheel of
Langford's economic
prosperity
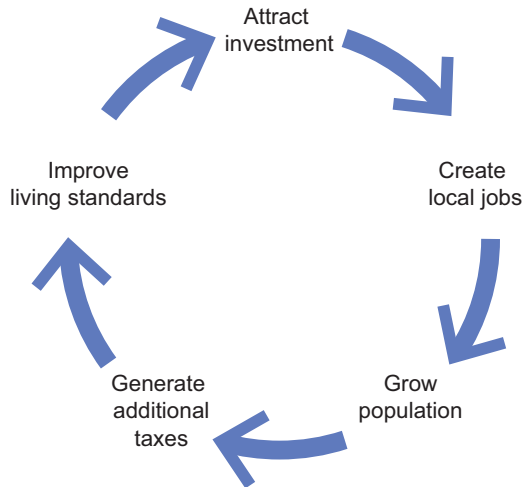
narrower roads and smaller setbacks. This contributed to higher densification and
cost reduction as a result.

Having continuous revenue stream, keeping taxes down, and supporting afford-
able housing initiatives resulted in an increased population and ongoing improve-
ment in the standards of living for Langford residents. Langford's economy is now
prosperous and stable, and there is a greater sense of place for the community than
ever before (Figs. 7.20, 7.21, 7.22, and 7.23).

7.5.2 Peace River, Alberta

Peace River is a small town of just 6000 residents in the northern part of the prov-
ince of Alberta, Canada. Named after the river that runs through it, the town is
located 302 miles (486 km) away from the capital of Edmonton and 123 miles
(198 km) from the city of Grande Prairie. It is also the meeting point of the Smoky
and Heart rivers. Peace River used to be somewhat isolated and inaccessible in its
beginnings at the turn of the century. Now, it is linked to other urban areas via
highways and also has an airport used primarily by chartered flights and private
planes (Fig. 7.24).

The town of Peace River was originally established to service traders, missionar-
ies, and, in later years, the surrounding farming communities. The city planning was
based on a gridiron street layout with roads oriented parallel and perpendicular to
the river (Fig. 7.25). Despite its name, the Peace River was not always kind to the
town as flooding was a common problem (Fig. 7.26). Eventually, the town grew
outwards from Main Street, which has continued to serve as the principal commer-
cial core over the years. Despite the harsh winter winds and floods, the town did not
adopt a compact urban form, but instead continued to develop along the north-west
valley where land was available. A protective berm was constructed along the bank
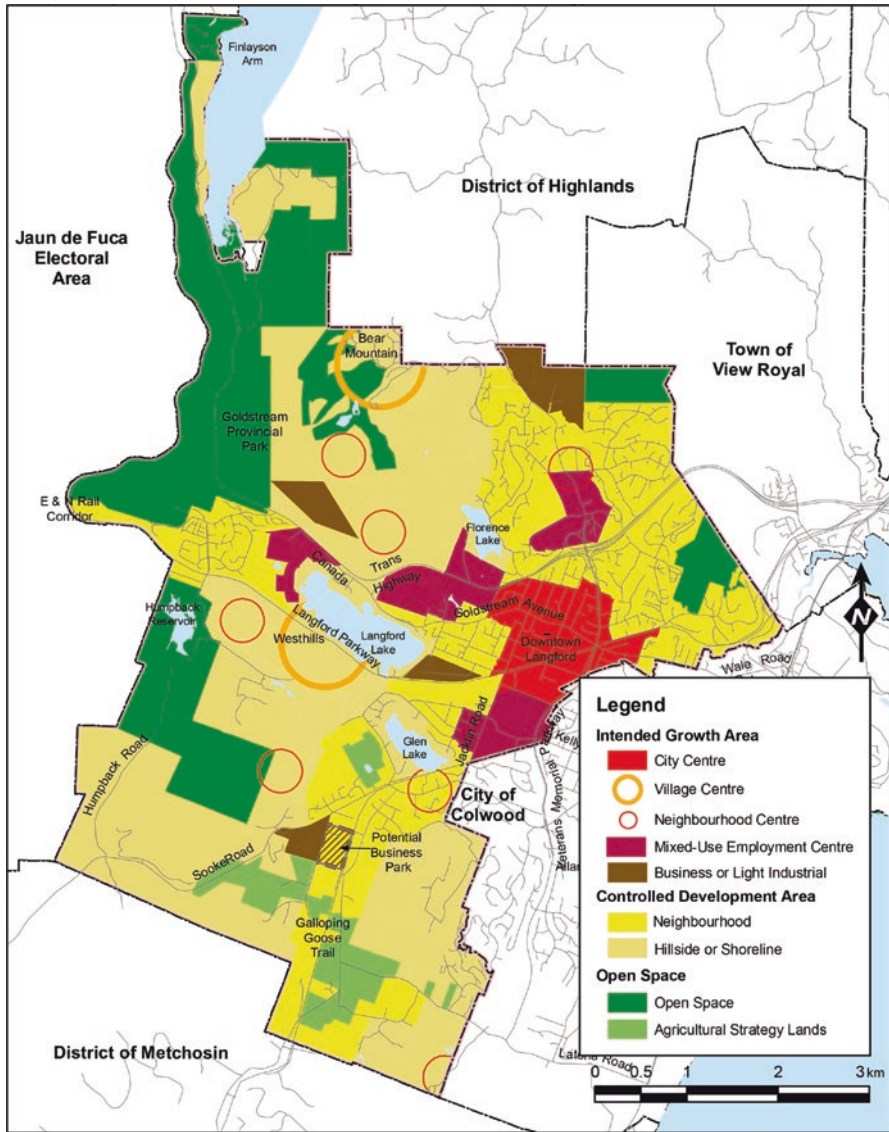
Fig. 7.21 Langford's municipal boundaries and its intended growth area

of the river due to flooding problems, but this did not help to foster a riverside pedestrian experience of any kind.

The downtown of Peace River had a healthy blend of business and residential spaces in close proximity to each other (Fig. 7.27). In later periods of growth, additional homes were constructed around the downtown and especially south of the Heart River. Through waves of immigration and growth spurts after World War II,
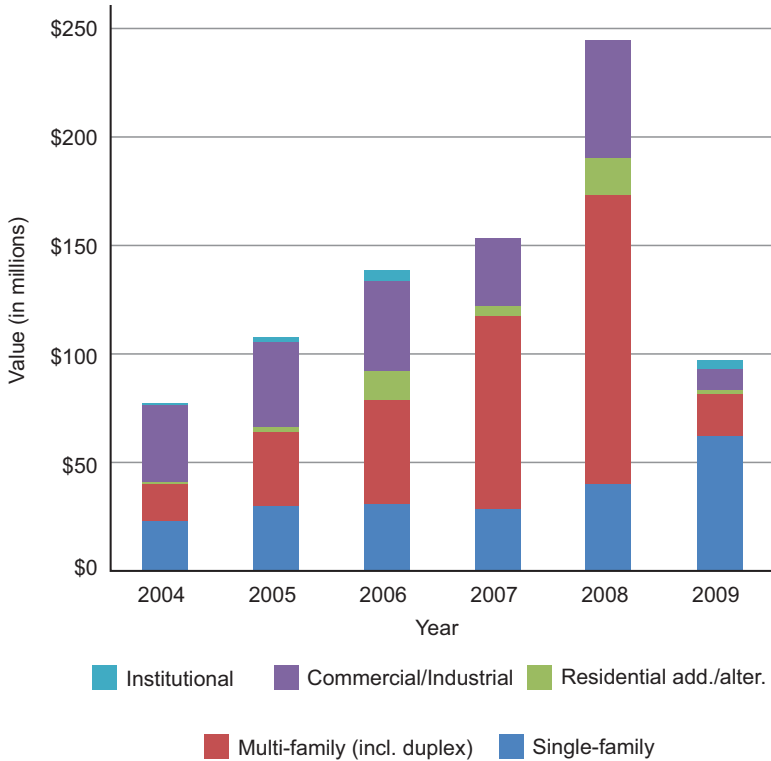
Fig. 7.22 Langford's annual construction value by type of buildings

building on the western bank of the Peace River also took place. The most common housing type was single-family detached dwellings, but some townhouses and low-rise apartment buildings were constructed in later years. Lumber was the predominant façade material seen in the area, but due to the town's population and economic expansion, masonry buildings were constructed later to offer a sense of permanence.

The town faced a series of challenges that eventually led to the decline of Peace River and called for a strategy of regeneration. First, a new commercial centre was built on the edge of town, which forced several businesses in the core to close or move to the new commercial area. The core of Peace River suffered on a whole from the development of large commercial stores. Another area of concern for the town was their dependence on few key industries. Their economic base needed to be broadened which led to the exploration of a tourist industry that could take advantage of the area's natural beauty. There was also desire to improve Peace River's "sense of place" and to create natural meeting places for both residents and visitors. Additional barriers in the city include stagnant population growth, lack of human scale, outdated businesses giving the place a poor image, and lack of access to the
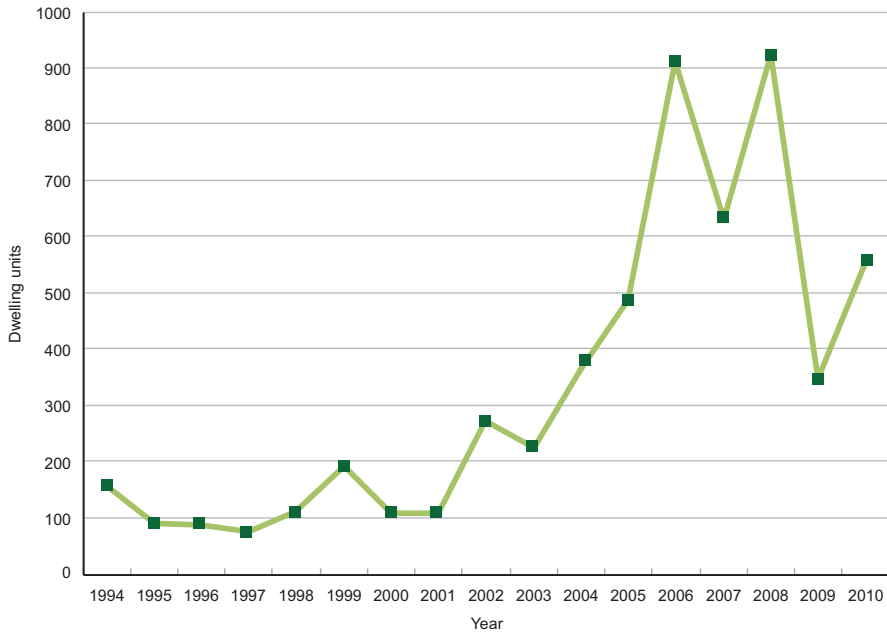
Fig. 7.23   Housing starts in Langford 1994–2010

river. It was within this context that led to my invitation to propose a renewal plan for downtown (Figs. 7.28 and 7.29).

Despite the challenges faced by the city, a variety of assets and opportunities were identified that could be used to the town's benefit. To begin, the geographical location of the area within a valley and with a breathtaking vista of surrounding forested mountains makes its natural beauty a great asset. As well, Peace River's downtown still acts as a draw thanks to its hotels, restaurants, government buildings, banks, and offices. It offers a pedestrian-friendly character thanks to wide sidewalks facing storefronts. Though not many residents actually live in the downtown, surrounding neighbourhoods offer a patronage base to the local businesses. The Main Street has plenty of parking nearby, is a close walk to the place's edges, and offers investment opportunities to commercial and residential developers due to the existence of a number of centrally located vacant lots.

With these challenges and opportunities identified, a proposal was made to help Peace River generate wealth and renew the core. One main goal of this proposal was to make the town (especially the core) more welcoming to residents and out-of-town visitors. There needed to be a population increase in the downtown, which was to be encouraged through a system of grants and incentives, and residential construction which would primarily target young families. New housing projects would be three or four storeys tall with on-site parking, either on or below ground. The neighbourhoods surrounding downtown would be connected to the core by a safe network of bike paths.

Fig. 7.24 Aerial view of Peace River
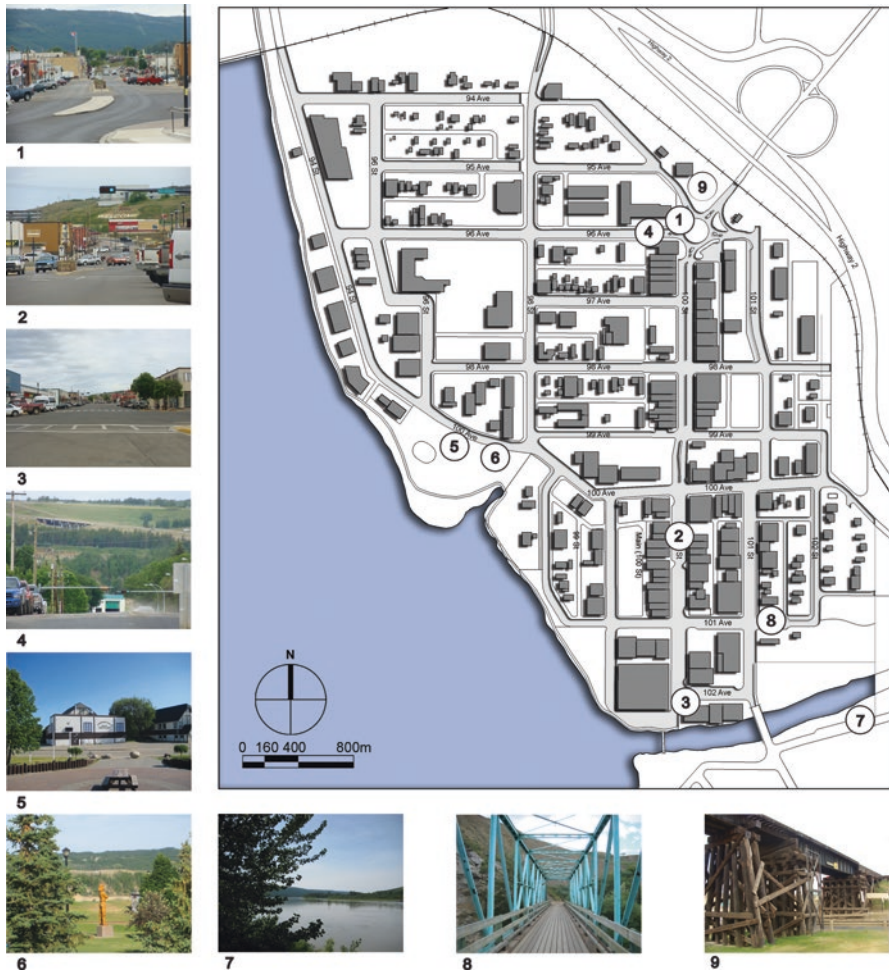
Fig. 7.25   Plan and images of Peace River's core area

Fig. 7.26   Flooding in Peace River in 1935. The white building in the centre is the town's old fire hall
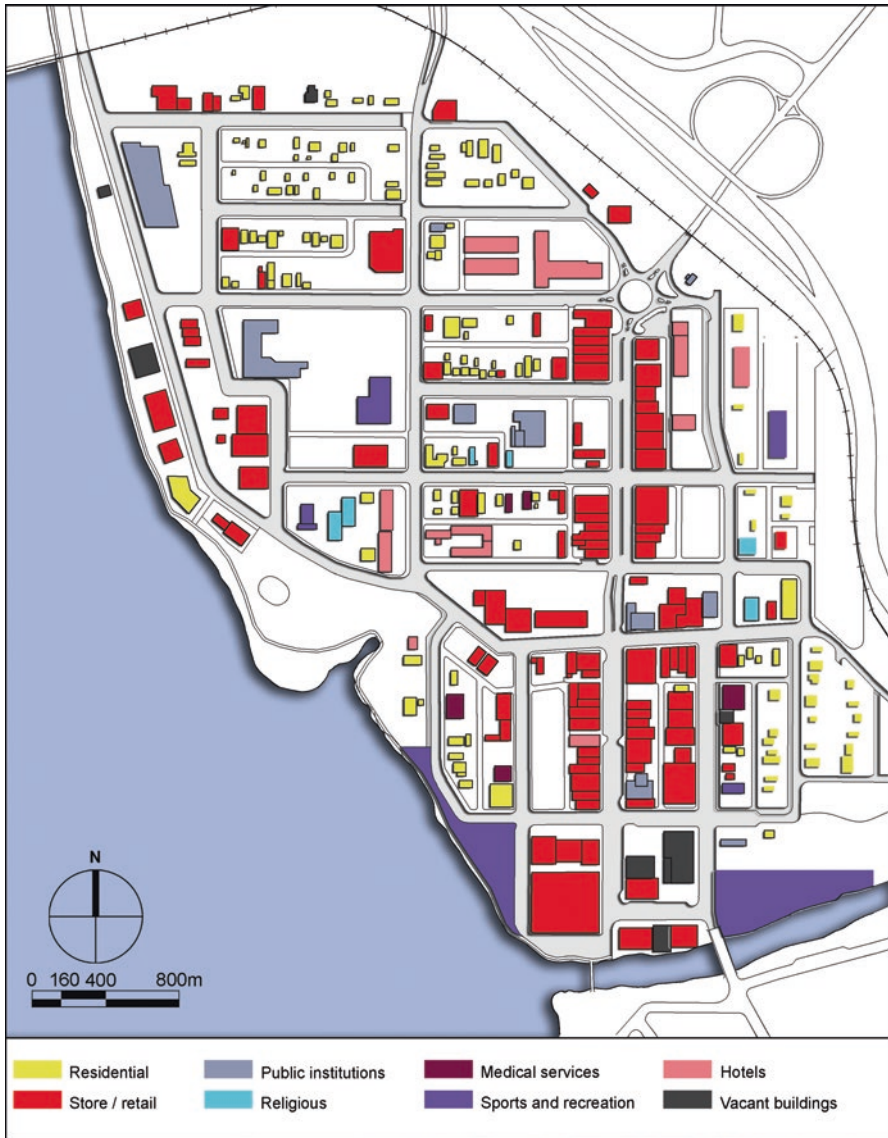
Fig. 7.27 Current land use in Peace River's core

An imperative component to the proposal was connecting the town to the river (Figs. 7.30 and 7.31). Links would be provided through land strips to offer pedestrian and vehicle access. A new harbour front would be developed with the inclusion of a marina. The area facing the river would feature mixed-use buildings of four- to six-storey apartment buildings constructed above businesses. Main Street would be livened up to increase its draw and offer meeting places. To achieve this, a segment
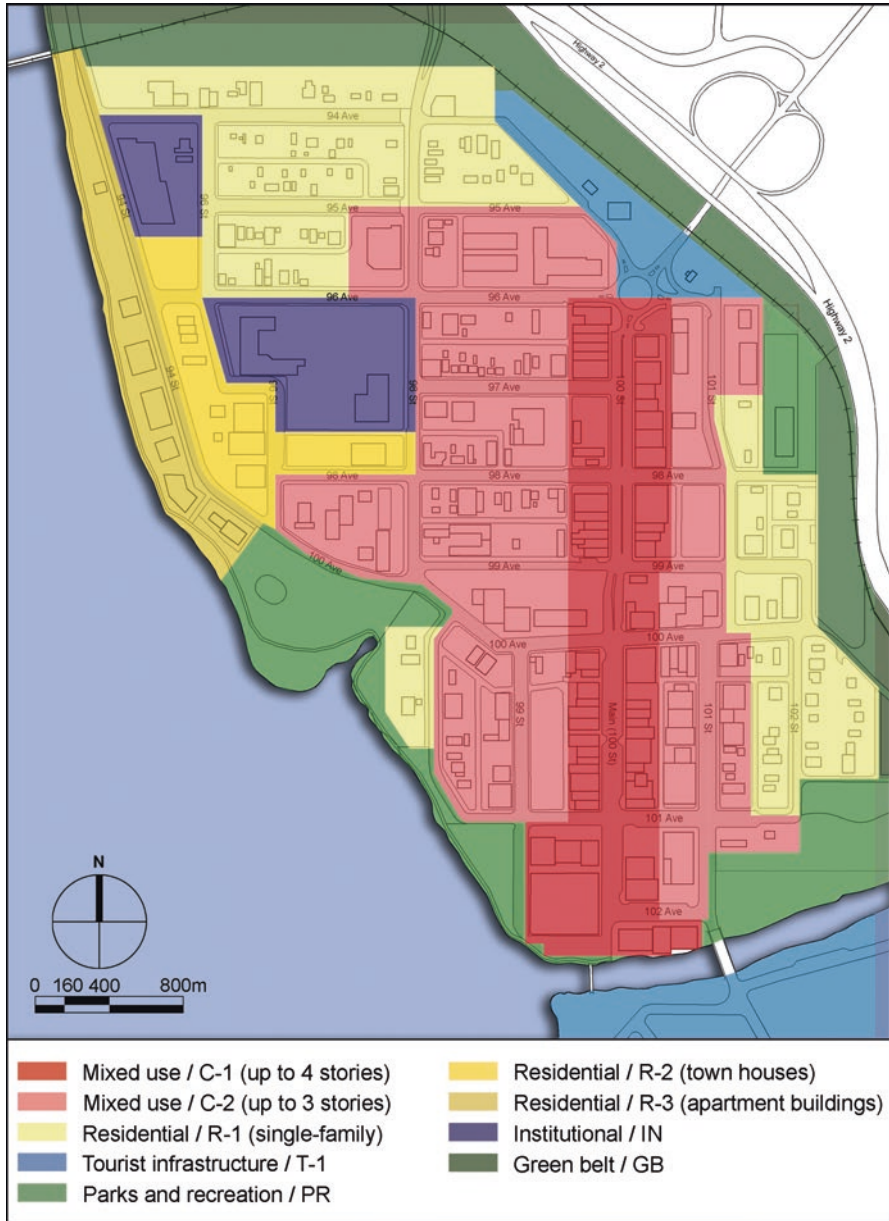
Fig. 7.28 Proposed land uses in the core

would be redesigned to offer large awnings and street furniture. In order to encourage tourism in Peace River, one of the main entrances to the core in the north of the city would be developed as a welcome and heritage site to publically display the town's history. Last, a ballpark would be converted to new festival grounds

	Main street anchors		Civic square		Farmers market		Harbour front
	Pedestrain mall		Festival square		Heritage / tourism core	••••	Riverside path
	Residential R-2		Green belt		Residential R-3		Conventions centre
	Major commercial area	⦚⦚⦚⦚	Connections to river	▐▐▐▐	Connection to amphitheater	⌇⌇⌇⌇	Riverside development

Fig. 7.29 Conceptual renewal plan for Peace River

complete with seating and a stage. A week-long festival could then be initiated and promoted both regionally and provincially to increase tourism.

The changes suggested in the proposal, combined with the existing assets in the town and its breathtaking natural beauty, have the potential to rejuvenate the city's economy and residents' quality of life. Taking advantage of such an important

Fig. 7.30 A detailed development plan
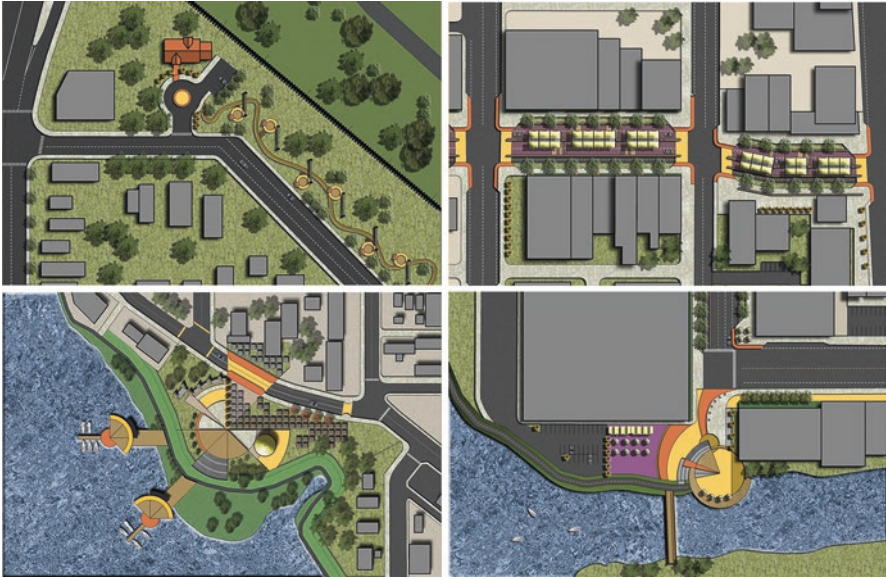
Fig. 7.31 Close-ups of the area's design: the welcome area (top left) festival square on Main Street (top right), a civic square (bottom left), the opening to the river at the bottom of main street (bottom right)

natural asset like the Peace River was an opportunity that was missed in the town's initial development, but it can act as a tourist draw while also rejuvenating the livelihood of the town's core.

7.6   Final Thoughts

While small towns used to be able to thrive relatively independently, some have recently faced economic decline. This is often because their main industries have relocated overseas or are otherwise challenged by ever-changing national and international economic systems. This calls for an urgent need to redesign local economies in the face of these changes. Regarding the town centre as a new wealth generator by design can often be an effective strategy for small towns, but it requires much foresight and proper planning to be done successfully.

Though many small towns have faced economic challenges in recent decades given their dependence on single industries and company relocation, there are proven strategies which can be implemented to generate wealth and stabilize their economic footing. These strategies require careful planning and consideration so as not to disrupt the cultural character of a town or residents' sense of place, but often need urgent implementation in the face of these challenges of the modern economy. Considerations including the discovery of niche markets, the encouragement of tourism in the area, the utilization of modern technological advances, and the

physical retooling a town's centre to attract diverse populations and businesses are all strategies which have proven to be successful options. It is important, however, for towns to create their own economic strategies: success is largely dependent on the character and unique attributes of a place.

References

Brown, J. (2008). Vibrant Yorkshire Dales town has best high street in Britain. *The Independent*. Retrieved November 21, 2016, from http://www.independent.co.uk/news/uk/this-britain/vibrant-yorkshire-dales-town-has-best-high-street-in-britain-1038866.html

Buchan, R. (2005). *Using land development to finance community development*. Paper presented at the Planning Institute of British Columbia Conference, Victoria, BC, April 19–22.

City of Langford. (2010). *Affordable housing, park & amenity contribution policy*. City of Langford, BC.

Commission on Sustainable Development. (1999). *Tourism and sustainable development: The global importance of tourism*. Seventh Session. UN DESA: New York.

Daniels, T. (1989). Small town economic development: Growth or survival? *Journal of Planning Literature, 4*(4), 413–429.

Daniels, T. L. (1991). The goals and values of local economic development strategies in rural America. *Agriculture and Human Values, 8*(3), 3–9.

Fox, K. A. (1962). Area economic attraction models. *Journal of Farm Economics, 44*(1), 1–34.

Gunn, C. (2002). *Built heritage: Assessing a tourism resource*. Ottawa: The Heritage Canada Foundation.

Hibbard, M., & Davis, L. (1986). When the going gets tough: Economic reality in the cultural myths of small town America. *Journal of the American Planning Association, 52*, 419–428.

High Corn Mill. (2016). *Real estate.* Retrieved November 21, 2016, from http://highcornmill.co.uk/

Jacobs, J. (1969). *The economy of cities*. New York: Random House.

Jamieson, W. (n.d.). Planning for small town cultural tourism. *ICOMOS Canada*.

Lapping, M., Daniels, T., & Keller, J. (1989). *Rural planning and development in the United States*. New York: Guilford Publications.

Miller, J. (2012). *Town centre futures 2020.* An experian marketing services white paper in partnership with ATCM. Experian Marketing Services.

Spence, R. (2015). How to keep small towns from disappearing. *Financial Post.*

Tourism Standards Consortium (TSC) Western Canada. (n.d.). *Transforming communities through tourism: A handbook for community*. Retrieved November 21, 2016, from http://linkbc.ca/

Weber, B., & Rahe, M. (2010). Wealth creation and rural-urban linkages: An exploratory study of economic flows in two natural resource-rich regions. *Wealth Creation in Rural Communities.* Ford Foundation.

Wicks, M. (2008). *Dispatches Langford*. Westshore: The Art of Island Living.

Town Centres as Communal Living Rooms

8

In an era marked by the rise of digital communication and social media, establishing more opportunities for face-to-face contact in the heart of communities is essential to having vibrant and liveable small towns. This chapter reflects on the unique social dynamics of smaller communities and the physical conditions that affect personal interactions and proposes innovative ways to promote communication between residents. Mention will also be given to methods that often offer opportunities to preserve cultural traditions, such as the display of public art.

8.1   A Place of Reference

The town of Honfleur sits on the Normandy coast in the north of France, located at the mouth of the Seine River. Its small size, a population that has hovered around 9000, is one of its many appeals for locals and tourists alike (Riding 1992). The town is nestled between two round hills and contains a maze of narrow streets crowded around the Vieux Bassin (or Old Port), which initially provided the town its livelihood. From the eleventh century, Honfleur was assigned the role of a fortress town to prevent hostile ships from entering too far into the estuary. Throughout the Ancien Régime prior to the French Revolution of 1789, ship owners from Honfleur prospered from trade relations, most notably with North America. One of the most famed explorers from this port was Samuel de Champlain, who founded the city of Quebec in Canada (Fig. 8.1).

With their fortunes, well-off families constructed narrow tall residences reaching up to seven storeys, which packed tightly around the port. These homes feature slate roofs and in some cases slate facades that date back to the sixteenth century. A front-row home overlooking the vessels was considered a distinct privilege at this time, as the basin was, and remains, the heart of the town (CRT Normandie 2016; Riding 1992).

Fig. 8.1 Images of Honfleur, France

Plenty of galleries, museums, narrow cobblestone streets, and bustling cafes made Honfleur a tourist attraction while simultaneously establishing a unique sense of place. Being only a 2-h drive from Paris or a short trip across the bridge from the nearby city of Le Havre, the city also offers a comfortable, welcoming, and accessible lifestyle to its residents. This is achieved through a variety of factors: the centralized meeting place and lifeblood of the town, as well as the area around the Old Port which draws people together and encourages social interaction in an attractive setting. The weekly markets enhance these connections and also provide opportunity for interaction between locals and visitors. Additionally, the mixed-use heritage buildings surrounding the basin further the feelings of an integrated community. Combined residential and commercial buildings can ensure that the town centre has activity coming and going all throughout the day, thereby creating a more vibrant and bustling core.

Another aspect of life in Honfleur that unifies the town around the harbour is the city's festivals throughout the year. They celebrate trades that bring them their livelihood and are a big part of life in Honfleur—fishing, shrimping, and sailing. In the autumn, the city enjoys their annual shrimp festival. The all-day festivities are located around the port and feature a shrimp-peeling competition. In June there is a sailor's festival: an occasion for local sailors to adorn their boats with flowers and sail to the estuary for a priest's blessing. The following day, the whole town parades up to the Chapelle Notre-Dame de Grace for a ceremony and festival to follow (Spengler 2016). These festivals provide an outlet for local pride in the city and are a great way for the community to come together. Local businesses surrounding the port thrive during festival times due to the increased traffic.

Fig. 8.2   Dining in Trani, a "Slow City" in Italy

8.2   Social Dynamics in Small Communities

The reduced population size in small towns has a considerable impact on their social attributes and leads to a more familiar and close-knit community of residents in many cases. Fewer places to meet, compared to the abundance of possibilities offered in a city, result in more frequent chance encounters between locals. These can offer close-knit relations that are invaluable in times of need. For example, in many farming communities, the farmers are known to offer a helping hand to each other in the busy seasons. A mutual support system is common in small towns; however there may also be resentment in the community by members who may dislike the lack of privacy or anonymity.

"Social capital" and "human capital" are terms used by social scientists to refer to community behavioural attributes. Social capital is described by Putnam (in Svendson 2010) as being the outward-looking open networks that encompass people across diverse social cleavages. It has also been suggested that social capital is about people meeting, getting to know each other, and helping one another out in various ways (Svendson 2010). An illustrative example of this is found in the Slow Cities movement (Fig. 8.2). This movement includes communities with populations of less than 50,000 that accept certain principles to enhance their overall sense of well-being. The term "well-being" is all-encompassing and refers to the economic, social, spiritual, and health-related conditions experienced by a group.

Meeting places, especially in small towns, are a socio-spatial attribute; they provide the places for comfortable human interaction to take place (Fig. 8.3). Without

Fig. 8.3 Meeting places provide locations for comfortable human interaction

them, there would be less opportunity for communal encounters, which are essential for proper societal functioning. American sociologist James Coleman (1988) argues that if people do not spend time together, there will be fewer opportunities for the transfer of knowledge, material, learning, cooperation, and trust. With the invention of information and communication tools and the rise of social media, Williams (2006) has suggested that opportunities for face-to-face meetings between people have diminished. Though the power of the Internet, Skype, and other social media conversations cannot be discounted, they have altered the patterns of communication. The digital age has been able to offer people and communities powerful tools to connect with others no matter the physical distance separating them. Despite this, a visit to a local café where these digital services are popularly used reveals that patrons still enjoy the physical company of others while attending to their digital services. Despite all the technological advances, there is something to be said about personal encounters that are not so easily replaceable.

Some researchers have drawn a link between well-developed social capital and a place's creativity, urban growth, and economic performance. The mark of successful small towns is that their leaders regarded community development as economic development. For example, this is achieved through encouraging leadership and youth entrepreneurial activity. Leaders balance short-term economic gain with longer-term community goals, and as a result people learn from each other (Lambe 2008; Feldman 1994).

Fig. 8.4 Civic centre in the heart of Honfleur, France

People can be "drawn" to a place for different reasons, but a common factor are the amenities the place has to offer. These include cultural attractions such as museums, concert halls, attractive architecture, and innovative urban planning (Fig. 8.4). Therefore, creating suitable meeting places for information exchange has been seen to be a direct contributor to a place's economic prosperity. Svendson (2010) argues that regular face-to-face meetings also involve an increased formation of human capital and will ultimately contribute to economic and social sustainability.

Another factor to consider when discussing a place's well-being is public health. This includes both physical and mental health, which can be affected by the way a place is planned. Gidlow et al. (2010) and Baum et al. (2009) both argue that a person's mental health is improved overall when they are socially active, feel supported, safe, and can trust their neighbours. These studies often regard key indicators of social capital, such as trust and participation, as predictors of physical health as well. As an example, residents who live in a walkable neighbourhood have an improved chance of being active on a daily basis. Certain characteristics of neighbourhoods, such as housing type, levels of crowding, noise, indoor air quality, and natural light, have been suggested to have a direct effect on mental health (Evans 2003). Meanwhile, crowdedness and high density can diminish supportive relationships in a community. However, there are positive social attributes associated with the built environment as well (Fig. 8.5). These include natural areas, visual prospects, and the inclusion of places to generate activity such as markets and streetscaping.

Two groups that are especially important to consider when discussing social relations in small or rural towns are the young and the old. Younger generations can

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┌─────────────────────────────────────────────────────────┐
│          Social attributes of homes and communities      │
└─────────────────────────────────────────────────────────┘
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┌──────────────┐     ┌──────────────┐     ┌──────────────┐
│   Dwellings  │     │ Neighborhood │     │     City     │
└──────────────┘     └──────────────┘     └──────────────┘
```

- Type of dwelling
- Crowding
- Natural light
- Indoor air
- Sun exposure
- Privacy
- Views

- Noise
- Open spaces
- Walkability
- places for interactions
- Play area
- activities generators

- Public transit
- Bikes & pedestrian lanes
- Landscaping & streetscaping
- Visual aspects
- Gathering places
- Natural features
- Cultural & public art

Fig. 8.5 Determinants influencing social attribute of dwellings, neighbourhoods, and cities

Fig. 8.6 Outdoor winter playing in Westlock, Alberta, and summer in Middlesex Centre, Ontario, Canada

offer a vibrancy and fresh take on life that is often appreciated in smaller communities. Elderly populations, on the other hand, are becoming increasingly numerous in small towns and tend to respect tradition and a slower pace to life. The varying social needs of these populations can be accommodated with different types of meeting places and communal areas.

Adolescents tend to prefer having a secluded space in the natural environment to facilitate their personal and sought-after privacy. Access to congregation areas and open spaces are highly valued as a way to foster freedom through playing and experimenting. Towns that lack access to these kinds of places or that locate them away from residences deprive adolescents of various freedoms and opportunities.

Children, compared to teenagers or adults, have different perceptions of space (Fig. 8.6). Several researchers have found that younger people value locations where they can engage in sports or physical activities due to the objects or meeting spots that the place has. They dislike places that have features they would perceive as posing a social or physical threat to their safety (Castonguay and Jutras 2009). Small

Fig. 8.7 Seniors' gathering in Matera, Italy

towns often offer more natural outdoor play areas that are liked by children and are not as common in big cities.

In the case of seniors, Andrews and Phillips (2005) have suggested that attachment to a place allows this generation to draw meaning, security, and a sense of identity that facilitates lifecycle adjustment (Fig. 8.7). A number of seniors age in place in their own homes, which is not only cost-effective but is also beneficial from a communal point of view. It is especially important for them to have a strong support system, which can be strengthened by providing meeting places tailored to this age group. Wiles et al. (2009) coined the term "social space" when studying places preferred by seniors. They suggest that these spaces are multilayered, well-connected, accessible, imaginative, emotional, and symbolic. Seniors who do not drive will unlikely be able to reach places not served by public transit on a regular basis.

Small towns can offer residents strong feelings of community and trust, but it is important to foster these feelings by including appropriate meeting places and social gathering spaces for the whole population. Face-to-face interaction and knowing your neighbours are desirable, defining characteristics for many in small towns.

8.3   Master Planning for Social Interaction

For many residents of small towns and mid-sized cities, one of the attractions of living in such a place is closeness and sense of community. Residents appreciate knowing their neighbours, feeling safe, and having a mutual support system at their
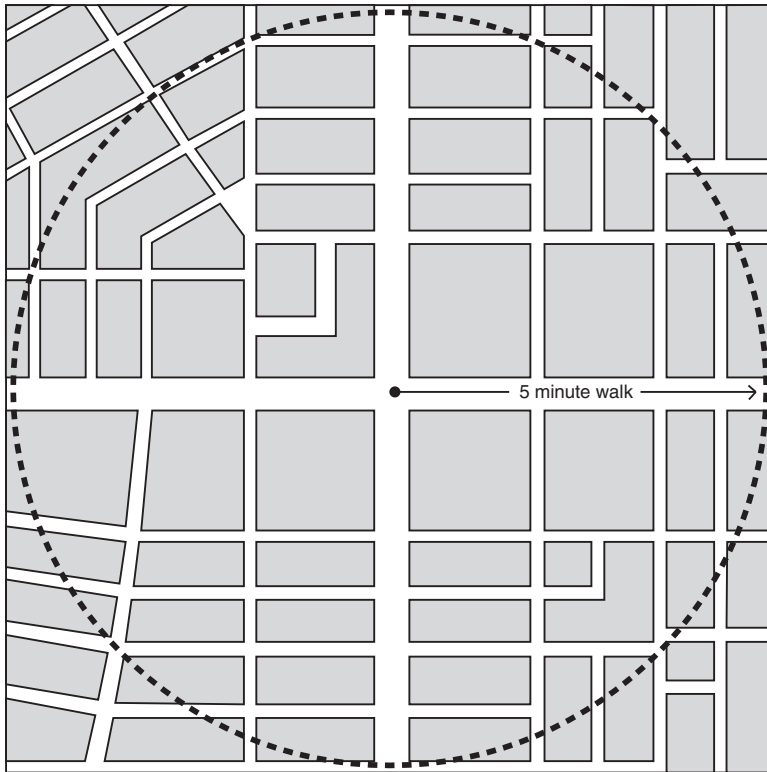
Fig. 8.8 A 5-min walk would be a comfortable distance in the centre for people of all ages and in all weather conditions

disposal. The overall physical environment of towns can have considerable effect on the social interaction between its citizens.

In general, master planning is the practice of providing a vision for the built environment of a community that envisions physical conditions and their social ramifications. It encompasses a wide range of topics such as zoning, density, open spaces, economic development, historic and cultural considerations, and walkability (Fig. 8.8). The master plan of a community has a direct relationship to its citizens, no matter if they live, work, or own a business there (City of Trenton 2016). Though master planning deals with an expansive range of topics, the focus will be on the design for greater social interaction in communities, and a variety of strategies will be discussed here.

One consideration of master planning is to facilitate social interaction and ensure that there are suitable meeting places for all. For younger members of the community, these will include parks, play structures, and recreational areas, whereas adults will appreciate social spaces such as cafes, restaurants, or quiet benches (Fig. 8.9). It is important, however, to also provide meeting places that will bring together people of all ages. This may be in the form of a central city square, main street, large
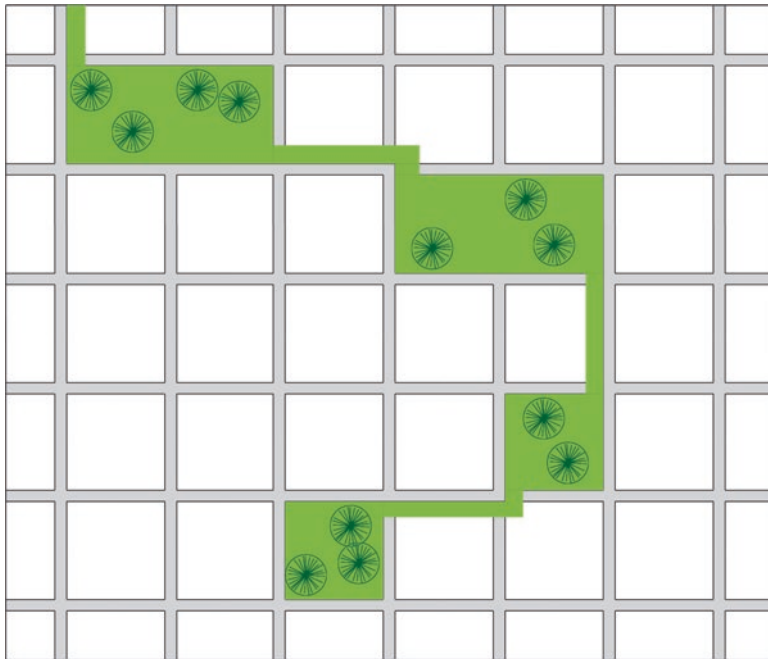
Large open spaces can be linked to form a network

Fig. 8.9 Public open spaces can be connected to become a network of green spaces

outdoor park, or farmer's market. Improving social interaction through the mixing of age groups can help foster a mutually beneficial support system in the community. For this to make the most impact in a community, it is imperative to make the town's meeting places fully accessible wherever possible. The addition of ramps, elevators, and other aspects of universal accessibility will make all members of the community feel welcome and able to access social spaces no matter their age, income, or ability (City of St. Albert 2013).

Providing mixed-use buildings in a town's core can be another strategy to benefit social interactions. The same buildings can have retail on the ground floor and office or residential spaces on the floors above. The buildings in the core should be taller to provide visual interest and a more urban character. Living and working in close proximity can ensure the town core is vibrant and full of character for more hours of the day. Cafes, restaurants, and shops on the ground floor, coupled with the comings and goings of residents above, make for a welcoming and pleasant experience in the town core.

Civic institutions should be integrated with commerce and recreation to create what is known as "a complete place" (Fig. 8.10). Bigger civic structures such as the city hall or library should be placed around a central square and have special architectural elements to enhance their presence. A civic square that houses small commercial services and amenities, like a day care or post office, can be located in

Fig. 8.10 Civic institutions should be integrated with commerce and recreation buildings to create what is known as "complete places"
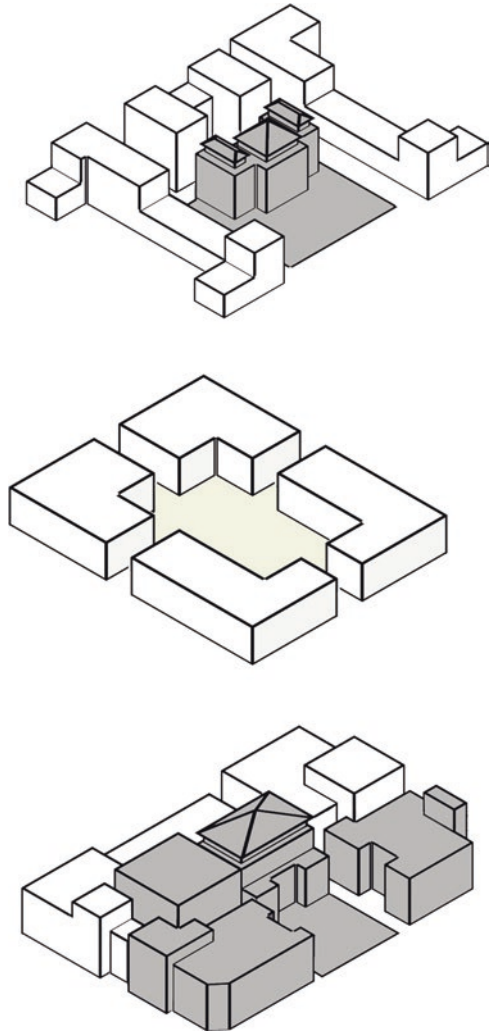
lower-density neighbourhoods. This effectively forms a convenience centre and will help people meet and develop a sense of communal ownership. Schools should be regarded as a focal point of a neighbourhood, as they can double as playgrounds, libraries, and meeting places. Schools should stay connected to, or be part of, residential areas and neighbourhood centres but should also be located away from arterial roads.

Planning a town to ensure easy connectivity from the edges to the core via pedestrian paths, bicycle routes, and public transportation is another way to improve social interaction. In addition, buildings can be planned to form public spaces to walk through and gather in (Fig. 8.11). This will draw residents to the social centre of the town, even without access to a car. Further, providing opportunities for

Negative Space

Adding buildings, trees, walls or
fences enhances space enclosure

Too enclosed

Creating links with surrounding
open space
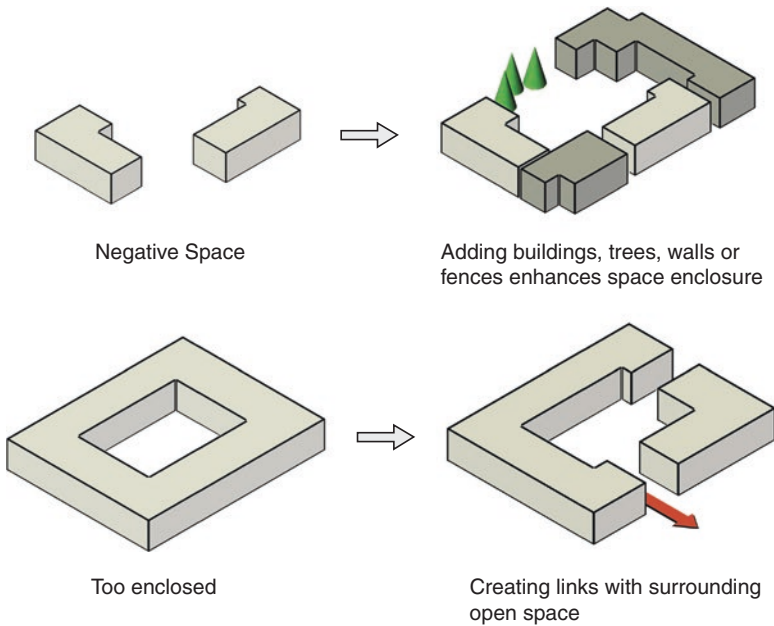
Fig. 8.11 Buildings can be planned to form public spaces to walk through and gather in

healthy lifestyles such as walking or cycling encourages community members to
spend time outside with their friends, families, and neighbours. Streets stemming
from the city's core should have reduced traffic or be pedestrianized altogether to be
more welcoming and people-friendly. It is much easier and more pleasant to be able
to stroll side-by-side down a wide street and carry on a pleasant conversation com-
pared to walking on a narrow sidewalk with traffic rushing nearby.

Considering density in a town's master plan can also facilitate a more welcoming
community. The City of St. Albert's Social Master Plan (2013) has suggested that
advocating for the development of mixed density housing in new neighbourhoods
will reduce the opposition to affordable housing options. This will bring together a
variety of demographics in a neighbourhood and can reduce social segregation.
Housing options should also be diverse and accessible to accommodate a wide
range of family types and incomes (Town of Drayton Valley 2015).

If a town has a notable natural feature, such as being on the water's edge
(Fig. 8.12) or having a picturesque view, this can be taken advantage of to improve
social capital. Residents often take pride in the natural beauty of their town and
would like to appreciate it. By developing walking paths, benches, parks, and other
outdoor meeting places surrounding these outdoor features, people will be drawn
there to spend time with their friends and families. This also promotes a healthy
outdoor lifestyle and can improve physical activity.

Since many small towns require a high level of commitment from community
volunteers for their social events, it is imperative to provide a common location to

Fig. 8.12 If a town has a notable natural feature such as being on the water's edge or having a picturesque view, this can be taken advantage of to improve the place's social attributes

house volunteers and organizations. It is also important to consider the details of a community to make it vibrant and welcoming to residents and visitors. This includes attractive streetscaping, lighting, benches, and cohesive architectural guidelines. Residents can bond over the shared feeling that they have a "sense of place" in their community.

8.4   The Importance of Third Places, Place Making, and Public Art

One of the many qualities that distinguish a town from a city is its restricted variety of social opportunities. For example, there are often few locations like civic squares and main streets in which to congregate in small or rural towns.

To make matters worse, some communities have seen the disappearance of good social spots in recent years. They have been replaced by what Zukin (1998) refers to as a "landscape of consumption". Small towns have become dependent on property developers to create destination retail, the likes of which have unfortunately taken the place of good, old-fashioned meeting places.

Places deemed to be good meeting spots often share similar characteristics. They do not function as containers of social activities, but will often generate them. For example, a treed square streetscape with benches, as illustrated in Fig. 8.13, offers people a place to spend time in, initiate a conversation, and watch others. The Project for Public Spaces (PPS) (2011) identified four elements to help

Fig. 8.13 A treed square with benches offers people a place to spend time in, initiate a conversation, and watch others

communities evaluate places: sociability, uses and activities, access and linkages, as well as comfort and images. Gehl suggests that cities should be regarded as meeting places and be designed to the human scale and senses and that successful public spaces offer protection, comfort, and enjoyment (2010). When public spaces use one-size-fits-all designs or are created to offer a quick fix, they generally end up poor-looking and go underused.

Relaxed, large-scale social gathering places have played an important role in communities throughout history and all across the world. These open public squares formed an integral part of the urban and cultural heritage of many societies and played a critical role in the genesis of commerce, the emergence of democracy, and the vitality of civic life (Fig. 8.14). Bearing different names in different countries, the square is known as the Agora in Greek towns, the Plaza in Spanish cities, Piazza in Italy, Village Green in settlements with feudal pasts, and Market Squares in others. No matter the name, they all refer to the physical clearance in the heart of a city, which in truth can take on any shape.

In *The Wisdom of Cities*, Crowhurst and Lennard (2002) argue that squares offer a sort of "outdoor living room" for citizens to meet that is instrumental in fostering strong community relations (Fig. 8.15). They suggest that these meeting places provide a school for social learning, exercise of responsibility, and development of a sense of community and democracy. However, despite the numerous advantages of traditional squares, they were often not possible to achieve in contemporary small town settings. The planning of these towns rarely called for such places, since the low population density could not support much commerce under apartments, and a configuration of detached low-rise dwellings was inadequate to lend suitable urban

Fig. 8.14 Open public squares formed an integral part of the urban and cultural heritage of many societies and played a critical role in the vitality of civic life

Fig. 8.15 Large gathering places offer a sort of "outdoor living room" for citizens to meet that is instrumental in fostering strong relations in the community as well as a sense of security
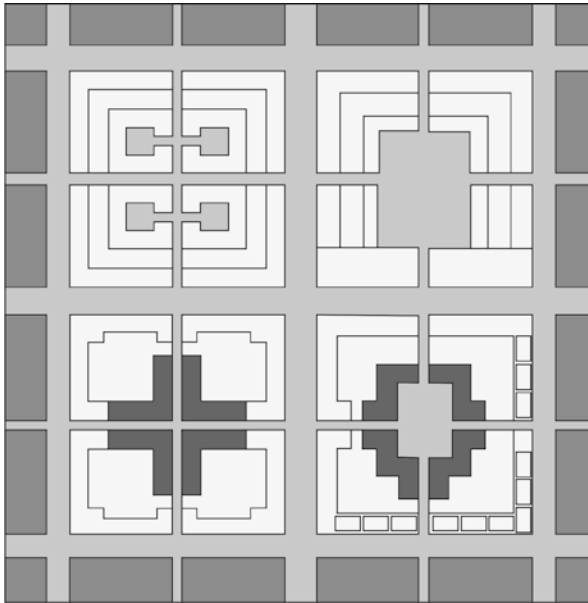
Fig. 8.16 Typology of public spaces created by buildings

scale to begin with. Instead, town planners implemented golf courses, public parks, and shopping malls to take the place of the village green. Unfortunately, none of these amenities could replace the face-to-face encounters, the mixing of age groups, or the symbolic quality that traditional squares offer.

A variety of attributes have been recognized by designers that make a successful public square. To begin, if a choice of location is given in the early planning stages, a square should have a central location in the city that is accessible by foot or bike from the town's edges. The roads leading to the square should be pedestrian friendly, with reduced vehicular traffic. When a square is designed with pedestrians in mind and car traffic is minimized or prohibited altogether, it will make the place welcoming and people-friendly.

Renaissance architect Albert Battista looked at scale and suggested a proportion of one to six as being the most suitable for public squares to foster a proper human scale that contributes to a sense of place and comfort. These proportions were deemed most appropriate since the viewing distance from the centre easily allows for enjoyment of all the surrounding buildings (Moughtin 1992). With this ratio, Battista suggested each side of a square surrounded by three-storey buildings would be 180–230 ft (54–68 m) long, and each side of a place with four-storey buildings would measure 240–300 ft (72–90 m). This makes the square a sufficient size to house large crowds, but also offers a feeling of intimacy.

Another valuable contributor to a square's good design is the type of buildings enclosing it as illustrated in Fig. 8.16. The preferred choice is properly scaled buildings with commerce on the ground level and residences above. The patrons of the

Fig. 8.17 A "third place" in Deauville, France

lower level stores, cafes, and restaurants combined with upper floor dwellers will animate the area. Having a central feature in a square such as a fountain or statue gives the place a focal point. It is important to remember that, in small towns, proper scale has to guide all planning decisions since there are fewer people.

Small gathering places are also integral to the creation of human capital and reinforcement of social bonds among citizens. Ray Oldenburg (1989) refers to such spots as "third places" in his book *The Great Good Place.* First and second places refer to our homes and places of work, both of which are sites of routine and, at times, regimented schedules. Third places, on the other hand, are places where we can shed our usual being and relax. These places can include pubs, cafes, diners, or bookstores and are characterized by the patrons not being tied to a particular schedule, but are welcome to come and go as they please (Fig. 8.17).

At a third place, the patrons' wealth, social status, and educational backgrounds are of little importance. Rather, the charm and the flavour of patrons' personalities, irrespective of their station in life, is what counts (Oldenburg 1989). The priority of third places is the comfort and happiness of the patrons. Tolbert et al. (2002) found that third places are a vehicle of civic welfare both in metropolitan and non-metropolitan small towns. With the rise of social media in this era, one wonders whether digital interaction is eroding the appeal of third places such as coffee shops, pubs, and parks. It has no doubt had an effect on the logistical ease of coordinating communication, but face-to-face encounters cannot be replaced so easily.

Public art is another valued feature of squares and other civic places, which Florida (in Riddle 2008) suggests has the potential to "highlight a community's soul, history and uniqueness" if it is tied to the place. German public artist Bonifatius

Fig. 8.18 Public art, like this one on the entry road to the town of Sintra, Portugal, promotes contact and communication and can stimulate debate and dialogue among community members

Stirnberg is convinced that public art stimulates play, creativity, and imagination among children in a community. It promotes contact and communication and can stimulate debate and dialogue among community members (Fig. 8.18). Often the space surrounding public art accommodates people by providing steps, ledges, and benched for people to sit or lean on to appreciate, admire, and reflect upon the art in front of them. Public art has been said to bring the various factions of society together by stimulating curiosity and interest in heritage (Stirnberg 1985).

   There are a variety of benefits that public art can offer to small towns. To begin, it provides free and accessible art to all in the community while creating a dynamic townscape. It can also act as a key component of attractiveness and identity in the town, as public art is often a celebration of a community's past, present, and future. Investment in public art can also strengthen the local economy and is a reflection of a progressive municipality (City of Nanaimo 2010).

Fig. 8.19   Images of St. Isidore, Alberta, Canada

8.5   Socializing in the Centre

8.5.1   St. Isidore, Alberta

The hamlet of St. Isidore, located in the Northern Sunrise County in the province of
Alberta, Canada, is quite small in terms of area and population but not in the sense
of pride or ownership (Fig. 8.19). The citizens form a unique, tightly-knit commu-
nity with a culture that is rooted in their French-Canadian heritage and agriculture.
The hamlet was founded in 1953 when a small group of residents moved from
Quebec to establish a cooperative farming venture in the area east of Peace River.
St. Isidore is currently situated next to two major highways. The 1950s saw the area
open up to agriculture, and further development took place in the 1960s with the
establishment of a co-op store, church, school, and service station. Both the larger
county and the hamlet of St. Isidore have experienced population fluctuations in the
decades since the town's founding. St. Isidore had sustainable growth throughout
the 1980s, but has slowed in recent years; in 2005, their population was 175. Based
on a growth scenario, it is anticipated that their population may rise to a number
between 292 and 323 residents by the year 2025. These projections effectively
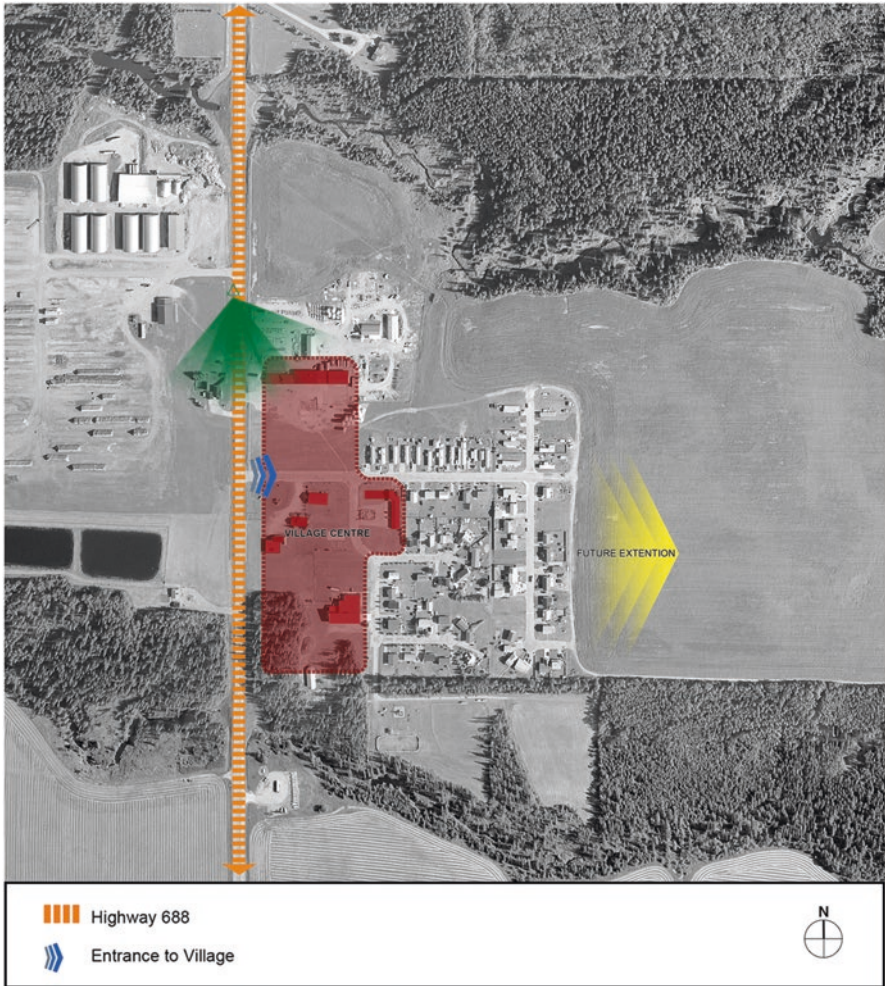
Fig. 8.20 Access roads to the community

provide the starting point for future land needs and land development programmes to be determined.

St. Isidore has a plan typical for the time of its foundation. The main street, Ave des Compagnons, leads from the entrance of the community to its heart (Fig. 8.20). Commercial and industrial facilities are located on one side of the road, and several institutional and communal facilities are on the other (Figs. 8.21 and 8.22). Dwellings in the community are placed around small cul-de-sacs. There is an industrial plant off the highway as well, but the town is surrounded by agricultural and forested land which gives the place picturesque views. The nearby town of Peace River also serves as a commercial and service hub to St. Isidore.

Fig. 8.21 Existing land use

This proud community was on the verge of a transition and needed to make some changes if they wanted to continue to live and grow sustainably. Economic, demographic, cultural, and environmental aspects needed to be considered in the future planning of the hamlet. Key findings from a visit to St. Isidore outlined a variety of challenges faced by the community—issues addressed in a proposal that followed for the town's regeneration (Figs. 8.23 and 8.24).

To begin, the population size and growth pattern of St. Isidore was sufficient, but it was not sustainable in the long term. This is especially due to the reliance of many local social institutions on high volunteer involvement, so it was important that an effort be made to attract more families who share the community's heritage and
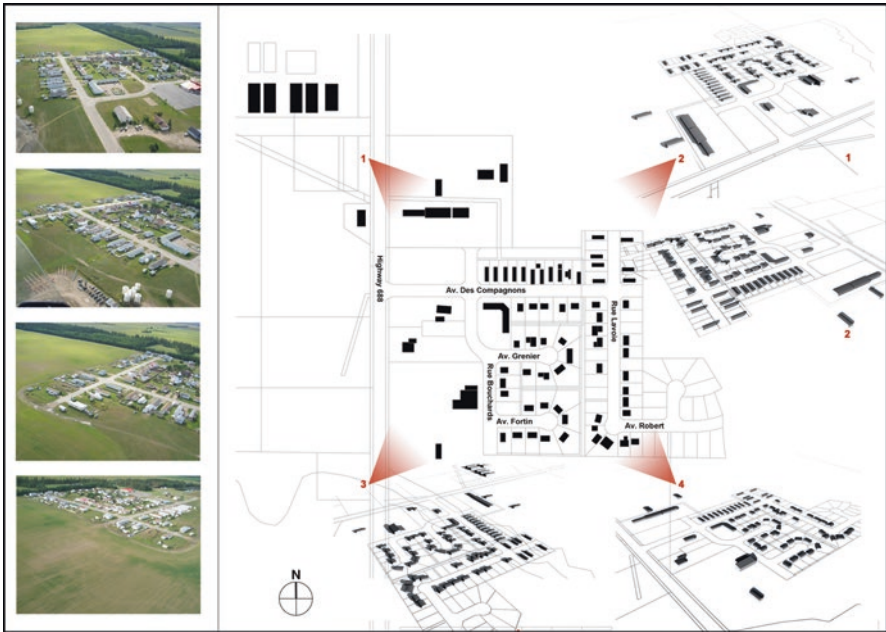
Fig. 8.22 Aerial views
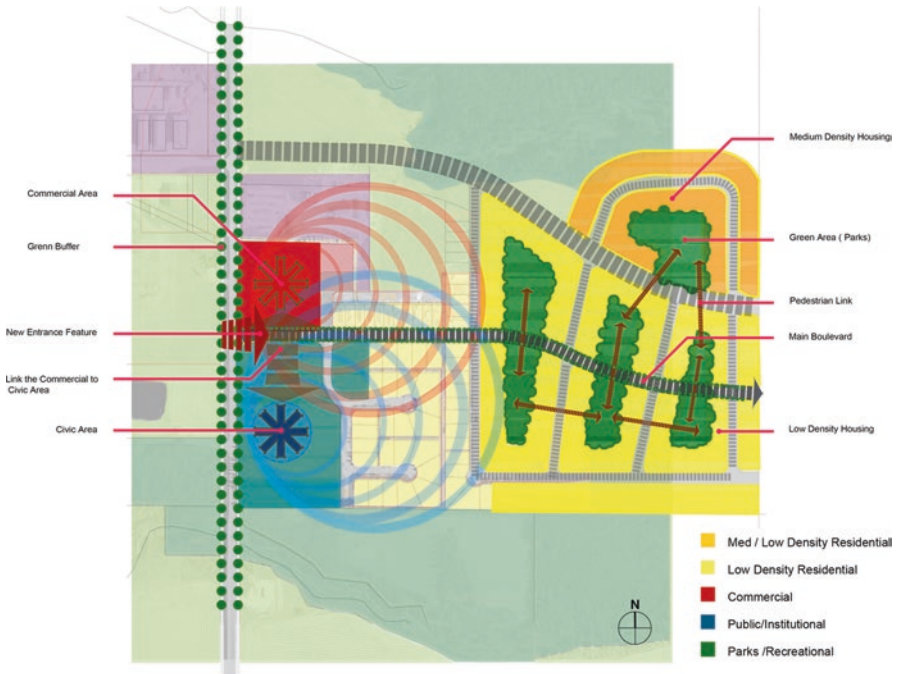
Fig. 8.23 Conceptual development diagram
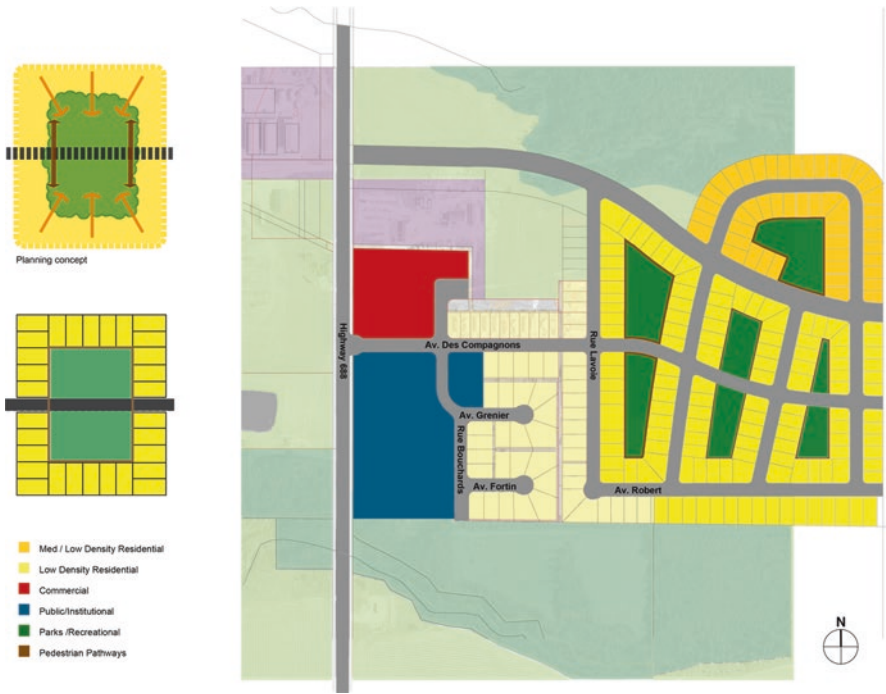
Fig. 8.24 A proposed master plan

culture. If more young families were going to be attracted, then more affordable housing should be provided to accommodate them. Further, the population-age breakdown demonstrates that in the coming years, there would be a need for a care facility for dependent seniors. Physical and economic plans should be made to accommodate this as soon as possible.

The cultural centre in the community should be expanded to accommodate additional activities, since the centre could act as a social and cultural hub to become a draw for future residents. Another finding was that the hamlet's urban development pattern attempted to replicate suburban communities rather than develop a unique layout appropriate to their rural setting. Additionally, the Village Centre was in need of urban redesign; there was no coherent sense of place, and it did not provide a strong gathering point. The appearance of the village entrance should also be improved to create a better first impression.

With these findings in mind, a series of resulting objectives was constructed for the retooling of the community. One main objective was to work on urban design to foster a strong sense of place and offer a communal focal point. Another goal was to make the place walkable with a defined centre. Space would be allocated for the design of a new senior's centre, and an expansion would be designed for the existing cultural centre. The village's curb appeal would be improved to make the area more attractive to the local population as well as visitors. It was also important that the

retooling was designed with sustainability in mind. Environmental, economic, societal, and cultural aspects were given equal importance in the planning of the place.

Considering the challenges and improvements that should be made to the community, in addition to the objectives and sustainable development plan set out, a detailed proposal was set out for St. Isidore's redevelopment. To begin, two "nodes" would be established as central areas. One node would act as the commercial core, and one would act as the civic core. A commercial structure and the senior's centre would be inserted to enrich these respective nodes. The idea was to create a series of small squares linked together through a walkable pathway to connect these two major urban nodes.

Since the people of St. Isidore are very proud of their heritage, the institutions of the village's culture were to be further developed. The expansion of the cultural centre would be part of this and would house a museum featuring a gathering place such as a café or small restaurant to meet after hours. To enhance the visual appeal of the hamlet and offer a better sense of place, small changes would be made to the streetscape. Existing parking lots would be hidden by trees and shrubs, and new parking lots would ideally be located behind buildings to minimize their visibility from the street. Building colours would be chosen that are appropriate to the area's character, and street furniture would be added in such a way to take advantage of shade in the summer and sunlight in the winter months. Trees, public art, and bicycle racks would also be included to add visual appeal and encourage the community to spend more time outside (Figs. 8.25 and 8.26).

With the sustainable development plan and changes outlined in the proposal, the town of St. Isidore was supplied with the tools and insight they needed to effectively retool their community for long-term success. Considering many aspects of life—economic as well as cultural and social—the proposal ensures sustainability and an overall higher quality of life for the community. The plan to implement the proposal through a series of phases will allow the town the opportunity to make changes without causing shock to the way of life of long-time residents in the community.

8.5.2 Nampa, Alberta

The hamlet of Nampa, located in the province of Alberta's Northern Sunrise County, was founded in 1916 as a community of farmers, the owners, and harvesters of the surrounding land (Fig. 8.27). The urban evolution of the place is typical of rural communities of its size and location, whose roots are anchored in agriculture. Gradually, more dwellings were added to the town along with the services needed by a growing population, such as shops, garages, and a school (Fig. 8.28).

Highway 2, which leads to the capital of Edmonton and Southern Alberta, was the road around which the community's evolution took place (Fig. 8.29). It was, and to a certain degree still is, a main street. Once the traffic intensified along this route, businesses along the highway such as a hotel, trucking company, and gas station sprung up. The road eventually lost its small town charm, so the role of the main street was largely assumed by 100th Ave (Fig. 8.30). A rail line also bisects the

Fig. 8.25 A plan showing the civic (bottom) and the commercial centres (top)
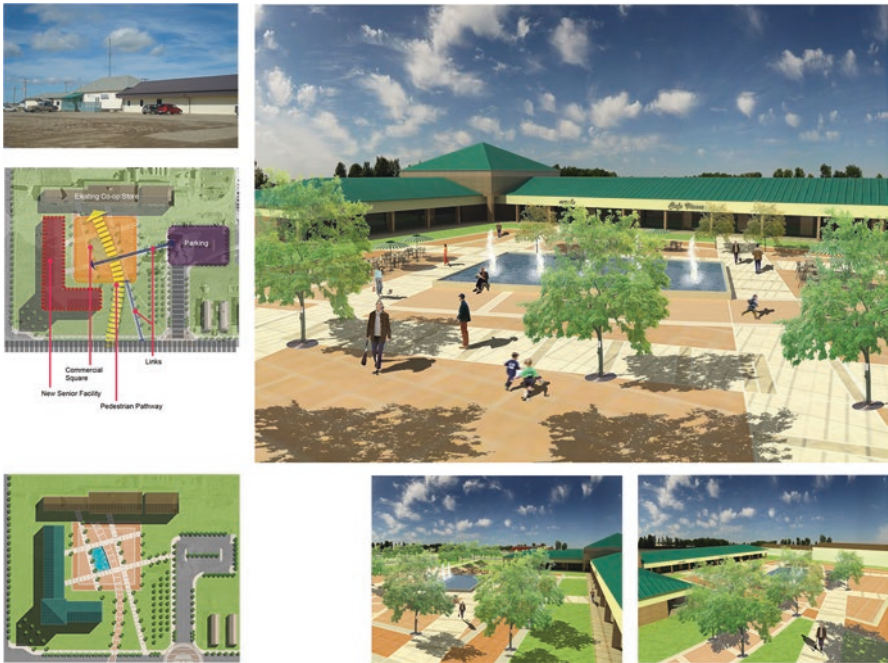
Fig. 8.26 Plans and renderings of the new commercial centre

Fig. 8.27 Images of Nampa, Alberta, Canada

Fig. 8.28 Community's landmarks

Fig. 8.29 Current land uses
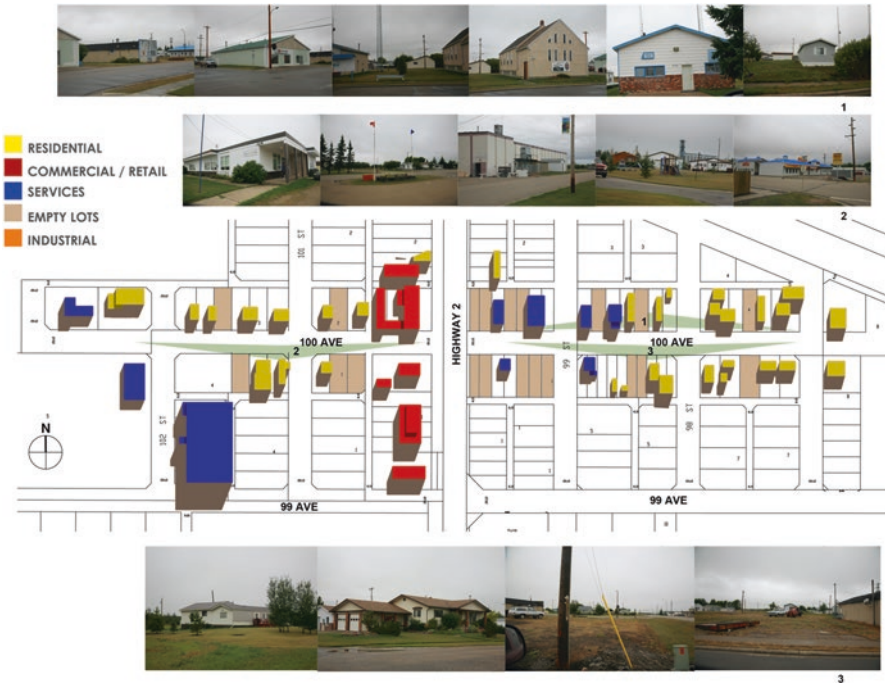
Fig. 8.30 Elevations of buildings on 100th Ave

community, which serves local industries and also transports goods to and from the south. This, along with the proximity of Nampa to the town of Peace River, makes the village a potential economic hub.

In the time between the early 1960s to the early 1990s, the village experienced a period of steady growth. At its peak, Nampa had 500 residents. This population size was sufficient to address the town's needs and to maintain a reasonable level of services, yet a continuous population decline put some of the establishments that offer daily economic and social services at risk. The age breakdown of the population is similar to other communities in Canada and Alberta. There are large numbers of "baby boomers" who are closely followed by people over the age of 65. The number of young people and school-aged children has declined in recent years, which is alarming to the community since they are the demographic most likely to contribute their volunteer efforts to ensure that popular social establishments and programmes will continue to function.

Most of Nampa's dwellings are single-family detached homes, lined up along a gridiron network. There are homes located on both sides of Highway 2. The past few years saw an increase in the number of mobile homes in the community, which are currently the most affordable housing type in Alberta. However, these types of homes take away from the sense of permanency that many wish to see in their community. Another change in recent years was that surrounding farmland was
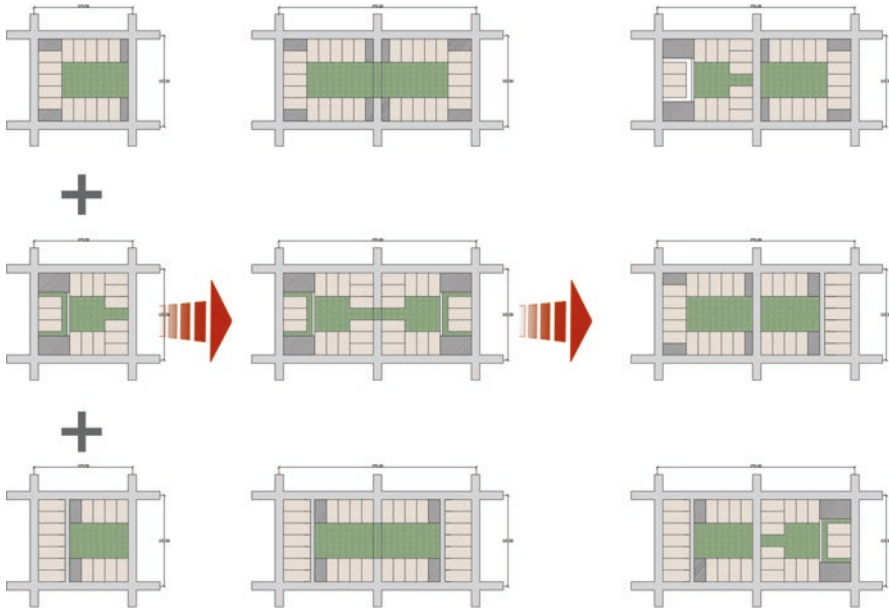
Fig. 8.31 Conceptual approach to new block's design

converted into residential land, and a new subdivision was created, though it did not attract many newcomers to the community. There are very few high-density dwellings in Nampa, and hardly any rental units, which should be added to diversify the housing stock.

Traditionally, the area's economy was based on offering services to farming activities in the surrounding farms. Commercial establishments served both the local population and those residing nearby. Industrial activities in the community were centred around businesses along Highway 2, such as the gas station and trucking company, as well as a grain elevator and a company which packages cut hay to sell abroad.

The desire for change among residents, as well as a series of key findings from a visit to the community, made it clear that the community was in need of change and rejuvenation. One key finding was that there was an urgent need and a desire on the part of seniors living individually to move into a local care facility. The hamlet also did not seem to attract a significant number of young families. In such a small community, where volunteers are essential to the place's vitality and social livelihood, an effort to attract a younger demographic should be a priority. It was found that the closing of the hotel along Highway 2 was an indication of economic decline, so more needed to be done to attract new businesses and support existing ones. Additionally, the physical appearance of the town required upgrading, especially in the centre (Figs. 8.31 and 8.32).

Considering the desires of the community as well as the challenges exposed in the visit to Nampa, some objectives were made for the town's retooling. A major

Fig. 8.32 Proposed master plan

objective was to design for sustainability in all aspects of life—economically, socially, culturally, and environmentally. Additional objectives were to create a better fit between the master plan of the town and its core. Curb appeal would be improved by introducing better landscaping and streetscaping. Land would also be allocated to the addition of future homes, including primarily mid-density, affordable accommodation.

In the existing urban context, Nampa follows a basic pattern of 330×330 ft (100×100 m) "blocks" and uses a similar road system. The proposed pattern language uses this basic lot, but attempts to organize them in a more logical way to consider parking and open spaces. There are three main proposed pattern units according to the village context that can be combined in different ways to fit various situations. Between each block, open spaces can be connected to form larger open spaces. These new blocks allow for a better fit between master planning and the core of the town. The streetscape of 100th Avenue will be improved to highlight its role as the new main street in Nampa. This will be achieved by expanding sidewalks, planting new trees, and adding lights, benches, and public art. This, along with the
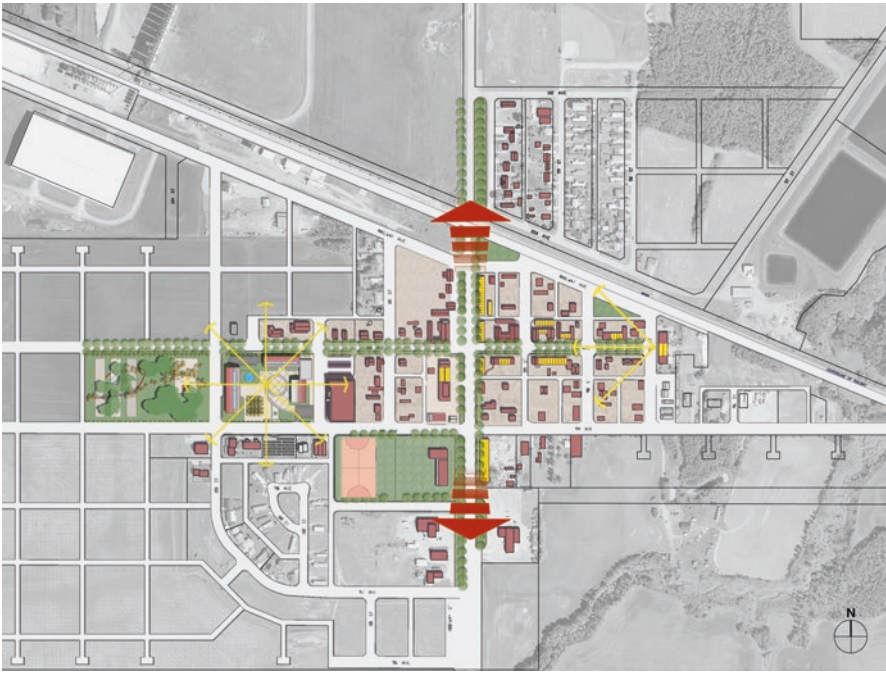
Fig. 8.33 The principal approach to community development was to strengthen the place's two main streets

creation of a new civic square, will help develop a cultural heart for the town (Figs. 8.33, 8.34, and 8.35).

   To make the entrance to the community more welcoming, it was essential to devise a plan for empty lots. Such methods included constructing new buildings or inserting gardens, as well as improving the curb appeal of the hamlet. In essence, this will enhance civic pride and create a more appealing community for residents and visitors. Construction of the senior's centre and the addition of a new housing development of primarily mid-density affordable homes targeted at young families will ensure a sustainable community for a range of age demographics. The addition of bike lanes and the implementation of a farmer's market will further community engagement and offer the possibility of the town exploring opportunities in tourism.

8.6   Final Thoughts

Thanks to the increasing popularity of and access to digital communications, residents of small or rural towns have more opportunity for face-to-face contact in the heart of their cities. These interactions are important to foster social ties in the
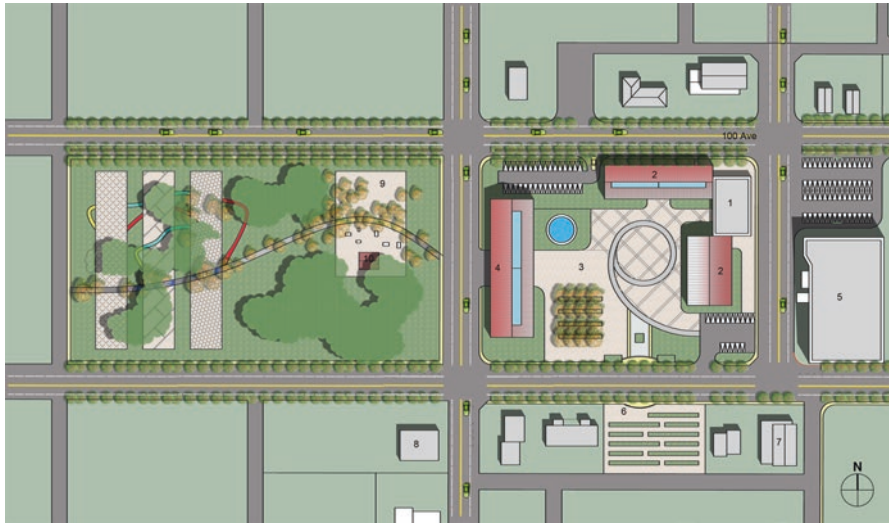
Fig. 8.34   Part of the proposal was to develop a new town centre

BIRDS' EYE VIEW OF VILLAGE CENTRE

Fig. 8.35   An overview of Nampa's new town centre

community and to create vibrant and liveable small towns. In other words, these places are often characterized by their close-knit and friendly social networks, which make them vibrant and exciting places to live despite their small size. Though small towns face challenges that larger cities do not have to be concerned with—for instance, they face economic downturn if their economies lack diversity—they also have solutions which are unique to places of their size. Creating town centres that function as communal living rooms is one such solution and a

very powerful one. Renewing a town's core by way of congregation and social activity can return prosperity to towns facing hardship. Bringing people together in central meeting places, ensuring social sustainability, and fostering social support systems are imperative aspects of this strategy. Additionally, vibrant social towns are attractive for outsiders to visit, and so creating strong social networks in a town can improve tourism in the area.

References

Andrews, G. J., & Phillips, D. R. (2005). *Aging and place: Perspective, policy, practice*. London: Routledge.

Baum, F. E., Ziersch, A. M., Zhang, G., & Osborne, K. (2009). Do perceived neighbourhood cohesion and safety contribute to neighbourhood differences in health? *Journal of Epidemiology and Community Health, 15*, 925–934.

Castonguay, G., & Jutras, S. (2009). Children's appreciation of outdoor places in a poor neighbourhood. *Journal of Environmental Psychology, 29*, 101–109.

City of Nanaimo. (2010). *Community plan for public art.* Retrieved November 21, 2016, from https://www.nanaimo.ca/assets/Departments/Parks~Rec~Culture/Art~in~Public~Places/communityplanforpublicart.pdf

City of St. Albert. (2013). *Cultivating a community for all: St. Albert's social master plan.* Retrieved November 21, 2016, from https://stalbert.ca/global/images/uploads/SocialMasterPlan_2013.pdf

City of Trenton. (2016). *What is a Master Plan.* Department of Housing and Economic Development. Retrieved November 21, 2016, from http://www.trenton250.org/learn/planning-101/what-is-a-master-plan/

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94*, 95–121.

Comité Régional du Tourisme (CRT) Normandie. (2016). *Honfleur.* Retrieved November 21, 2016, from http://en.normandie-tourisme.fr/normandy-tourism-1-2.html

Crowhurst, S. H., & Lennard, H. L. (2002). *The wisdom of cities*. Carmel: International.

Evans, G. W. (2003). The built environment and mental health. *Journal of Urban Health, 80*(4), 536–555.

Feldman, M. (1994). *The geography of innovation*. Boston: Kluwer.

Gehl, J. (2010). *Cities for people*. Washington, DC: Island Press.

Gidlow, C., Cochrane, T., Davey, R. C., Smith, G., & Fairburn, J. (2010). Relative importance of physical and social aspects of perceived neighbourhood environment for self-reported health. *Preventive Medicine, 51*, 157–163.

Lambe, W. (2008). *Small towns big ideas: Case studies in small town community economic development*. UNC School of Government, N.C. Rural Economic Development Center.

Moughtin, C. (1992). *Urban design: Street and square*. Oxford: Butterworth-Heinemann.

Oldenburg, R. (1989). *The great good place*. New York: Marlowe.

Project for Public Spaces (PPS). (2011). *What is a great civic space?* Retrieved November 21, 2016, http://www.pps.org/reference/benefits_public_spaces/

Riddle, M. (2008). Interview with Richard Florida. *Public Art Review, 20*(1), 52.

Riding, A. (1992). In Honfleur, the essence of Normandy. *New York Times.* Retrieved November 21, 2016, from http://www.nytimes.com/1992/06/14/travel/in-honfleur-the-essence-of-normandy.html?pagewanted=all

Spengler, T. (2016). *History and tourism in Honfleur, France*. USA Today Travel Tips. Retrieved June day, 2016 from http://traveltips.usatoday.com/history-tourism-honfleur-france-54598.html

Stirnberg, B. (1985). Excerpts from a presentation of his work by the sculptor, at the First International Making Cities Livable Conference, Venice, Italy.

Svendson, G. L. H. (2010). Socio-spatial planning in the creation of bridging social capital: The importance of multifunctional centers for intergroup networks and integration. *International Journal of Social Inquiry, 3*(2), 45–73.

Tolbert, C. M., Irwin, M. D., Lyson, T. A., & Nucci, A. R. (2002). Civic community in small-town America: How civic welfare is influenced by local capitalism and civic engagement. *Rural Sociology, 67*, 90–113.

Town of Drayton Valley. (2015). *Community sustainability plan 2015–2019*. Retrieved November 21, 2016, from http://draytonvalley.ca/wp-content/uploads/2014/09/Apr.-2015-FINAL-DV-Sustainability-Report-2015-2019.pdf

Wiles, J. L., Allen, R. E. S., Palmer, A. J., Hayman, K. J., Keeling, S., & Kerse, N. (2009). Older people and their social spaces: A study of well-being and attachment to place in Aotearoa New Zealand. *Social Sciences & Medicine, 68*, 664–671.

Williams, D. (2006). Why game studies now? Gamers don't bowl alone. *Games and Culture, 1*, 13–16.

Zukin, S. (1998). Urban lifestyles: Diversity and standardisation in spaces of consumption. *Urban studies, 35*(5/6), 825.

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Fig. 1.6 After Alter, L. (2009) "Graph of the Day: Driving vs. Residential Density," www.treehugger.com/files/2009/04/driving-vs-density.php. Accessed May, 2016

Fig. 1.10 After Blakely, E. J. (1983). *Community Attitudes Toward Change*. Paper presented at the American Collegiate Schools of Planning Conference, San Francisco, October

Fig. 7.18 City of Langford, (2010). "Affordable Housing, Park & Amenity Contribution Policy," December 20

Fig. 7.22 City of Langford, (2010). "Affordable Housing, Park & Amenity Contribution Policy," December 20

Fig. 7.23 After BC Stats (2011). *British Columbia Housing Starts for Urban Areas and Communities*. http://www.bcstats.gov.bc.ca/Files/3ed931fc-b3c2-4aaa-bda8-4c2611afe9e4/HousingStarts.pdf Accessed January 2017

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Bibliography

Adams, R. M. (1960). The origins of cities. *New York: The Scientific American, 203*, 153–168. Lampard 1965.

Alessa, L., Kliskey, A., Lammers, R., Arp, C., White, D., Hinzman, L., & Busey, R. (2008). The arctic water resource vulnerability index: An integrated assessment tool for community resilience and vulnerability with respect to freshwater. *Environmental management, 42*(3), 523–541.

Andrews, G. J., & Phillips, D. R. (2005). *Aging and place: Perspective, policy, practice*. London: Routledge.

Archer, M. C. (1991). Where we stand: Preservation issues in the 1990s. *The Public Historian, 13*(4), 25–40. Retrieved November 21, 2016, from http://www.jstor.org/stable/3378099.

Arsenault, L., & Reid, J.W. (2005). *Welcoming winter: Changing the climate of planning.* Annual Conference, Faculty of Architecture and Planning, DalHousie University.

Baird, R. L., & Hall, G. (1998). *Beaconsfield and Beaurepaire: A chronicle of the city of Beaconsfield and the District of Beaurepaire*. Montreal: Harpell Printing.

Baum, F. E., Ziersch, A. M., Zhang, G., & Osborne, K. (2009). Do perceived neighbourhood cohesion and safety contribute to neighbourhood differences in health? *Journal of Epidemiology and Community Health, 15*, 925–934.

Baumann, O. (2009). *Integrated design – delivery and operations of net-zero energy buildings* [Powerpoint presentation]. U.S. Department of Energy. Retrieved November 21, 2016, from http://www.prod.solardecathlon.gov/past/pdfs/09_workshops/09_integrated_design.pdf

Beaumont, C., & Tucker, L. (2002). *Big-box Sprawl (and how to control it)*. National Trust for Historic Preservation.

Becker, F., & Steele, F. (1995). *Workplace by design*. San Francisco: Jossey-Bass.

Besser, L. M., & Dannenberg, A. M. (2005). Walking to public transit: Steps to help meet physical activity recommendations. *American Journal of Preventive Medicine, 29*(4), 273–280.

Beyer, P. (2010). Mixed-use zoning. In V. Prosper (Ed.), *Livable New York* (1st ed.). Albany: State Office for the Aging. section II.2.g.

Bilgili, B. C., & Gökyer, E. (2012). *Urban green space system planning*. INTECH Open Access Publisher, London, UK.

Boyer, C. (1995). City of collective memory: Its historical imagery and architectural elements. In A. V. Moudon & W. Attoe (Eds.), *Urban design: Reshaping our cities* (pp. 82–83). Seattle: University of Washington Press.

Bradford, S. (1991, January). For starters. Builders, 170.

Bramley, G., Dempsey, N., Power, S., Brown, C., & Watkins, D. (2009). Social sustainability and urban form: Evidence from five British cities. *Environment and Planning A, 41*(9), 2125–2142.

Brand, S. (1994). *How buildings learn: What happens after they're built*. New York: Viking.

Breen, A., & Rigby, D. (1994). *Waterfronts: Cities reclaim their edge*. New York: McGraw-Hill.

Brennan, C. K., & Hoene, C. (2007). Demographic changes in America's small cities, 1990–2000. In B. Ofori-Amoah (Ed.), *Beyond the metropolis: Urban geography as if small cities mattered* (p. 69). Lanham: University Press of America.

Bressi, T. W. (2002). *The seaside debates*. New York: Rizzoli.

Brooks, G. (2008). *Exploiting the benefits of world heritage listing. City spaces – tourist places* (pp. 341–353). Oxford: Butterworth-Heinemann.

Brown, J. (2008) Vibrant Yorkshire Dales town has best high street in Britain. *The Independent*. Retrieved November 21, 2016, from http://www.independent.co.uk/news/uk/this-britain/vibrant-yorkshire-dales-town-has-best-high-street-in-britain-1038866.html

Brown, R. D. (2010). *Design with microclimate: The secret to comfortable outdoor space*. Washington, DC: Island Press.

Buchan, R. (2005, April 19–22) *Using land development to finance community development*. Paper presented at the Planning Institute of British Columbia Conference, Victoria, BC.

Budapest Közlekedési Központ (BKK). (2016). *Urban public transport museum Szentendre*. Budapest: BKV Zrt. Calthorpe 1993.

Burney, T. (2010, February). Good things come in small packages. *Builder.*

California Energy Commission. (2011). *Passive solar design: Proper orientation*. Retrieved June 25, 2011, from http://www.consumerenergycenter.org/home/construction/solardesign/orientation.html (site discontinued).

Calthorpe, P. (1993). *The next American metropolis*. New York: Princeton Architectural Press.

Canada Mortgage and Housing Corporation (CMHC). (1981). *Residential site development advisory document*. Ottawa: CMHC.

Canada Mortgage and Housing Corporation (CMHC). (2000). *Practice for sustainable communities*. Ottawa: CMHC.

Canada Mortgage and Housing Corporation (CMHC). (2016). *City of Lethbridge.* Retrieved July 16, 2016, from www.cmhc-schl.gc.ca

Canada's Historic Places. (2003). *Standards and guidelines for the conservation of historic places in Canada*. Retrieved November 21, 2016, from http://www.historicplaces.ca/media/7209/sandg_en.pdf

Canadian Centre for Justice Statistics. (2006). *Victimization and offending among the aboriginal population in Canada*. Ottawa: Statistics Canada Catalogue no. 85-002-XPE, 26(3).

Canadian Mortgage and Housing Corporation (CMHC). (1983). *Problem land: Building in a flood-risk area*. Ottawa.

Canadian Mortgage and Housing Corporation (CMHC). (2011). *Install water conserving fixtures*. Retrieved November 21, 2016 from https://www.cmhc-schl.gc.ca/en/inpr/bude/himu/inbu/upload/65642-W.pdf

Canadian Urban Transit Association. (2007). *Bus rapid transit: A Canadian perspective*. Issue Paper, 25.

Carson, R. (1962). *Silent spring*. Boston: Houghton Mifflin.

Castonguay, G., & Jutras, S. (2009). Children's appreciation of outdoor places in a poor neighbourhood. *Journal of Environmental Psychology, 29*, 101–109.

Center for Transit-Oriented Design. (2010). *TOD: 203 transit corridors and TOD.* Retrieved November 21, 2016, from http://reconnectingamerican.org/assets/Uploads/HSR-in-American-Complete.pdf

Childs, M. (1999). *Parking spaces: A design, implementation, and use manual for architects, planners, and engineers*. New York: McGraw-Hill.

City of Fort Saskatchewan. (2009). *City of Fort Saskatchewan downtown area redevelopment plan*. Fort Saskatchewan: Government of City of Fort Saskatchewan.

City of Langford. (2010). *Affordable housing, park & amenity contribution policy*. City of Langford, BC.

City of Lethbridge. (2016). *About Lethbridge.* Retrieved from November 21, 2016 from www.lethbridge.ca

City of Nanaimo. (2010). *Community plan for public art.* Retrieved November 21, 2016, from https://www.nanaimo.ca/assets/Departments/Parks~Rec~Culture/Art~in~Public~Places/communityplanforpublicart.pdf

City of St. Albert. (2013). *Cultivating a community for all: St. Albert's social master plan.* Retrieved November 21, 2016, from https://stalbert.ca/global/images/uploads/SocialMasterPlan_2013.pdf

City of Trenton. (2016). *What is a master plan.* Department of Housing and Economic Development. Retrieved November 21, 2016, from http://www.trenton250.org/learn/planning-101/what-is-a-master-plan/

Clawson, R. (1972). Social needs and the urban-marine environment. In J. F. Peel Brahtz (Ed.), *Coastal zone management: Multiple use with conservation* (pp. 85–96). New York: Wiley-Interscience.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology, 94,* 95–121.

Comité Régional du Tourisme (CRT) Normandie. (2016). *Honfleur.* Retrieved November 21, 2016, from http://en.normandie-tourisme.fr/normandy-tourism-1-2.html

Commission on Sustainable Development. (1999) *Tourism and sustainable development: The global importance of tourism.* Seventh Session. New York: UN DESA

Corbett, J., & Corbett, M. (2000). *Designing sustainable communities: Learning for village homes.* Washington, DC: Island Press.

Courtaulds Fibres Canada. (1993). *Souvenir book of the Courtaulds in Cornwall.* Cornwall: Courtaulds Fibres Canada.

Cowan, R., Hill, D., & Campbell, K. (2005). *Start with the park: A guide to creating sustainable urban green spaces in areas of housing growth and renewal.* London: CABE Space.

Crowhurst, S. H., & Lennard, H. L. (2002). *The wisdom of cities.* Carmel: International.

Daniels, T. (1989). Small town economic development: Growth or survival? *Journal of Planning Literature, 4*(4), 413–429.

Daniels, T. L. (1991). The goals and values of local economic development strategies in rural America. *Agriculture and Human Values, 8*(3), 3–9.

De la Torre, R., & Miller, D. L. (1987). *Fisheries: The evaluation of design, material and placement optimums* (pp. 582–589). Mexico: Gulf and Caribbean Fisheries Institute.

Duany, A., Plater-Zyberk, E., & Speck, J. (2000). *Suburban nation: The rise of sprawl and the decline of the American dream.* New York: North Point Press.

Earl, J. (1996). *Building conservation philosophy.* Reading: The College of Estate Management.

Ecomare. (2015). Visit Ecomare; the Centre for Nature and Marine Life on Texel. Ecomare Official Website CC-BY-NC. Retrieved May 15, 2016, from http://www.ecomare.nl/en/

Energy Star. (2016). *Dishwashers for consumers.* Retrieved May 6, 2016, from https://www.energystar.gov/products/appliances/dishwashers

England, J. (1980). Residential land and prices in the city. *Habitation 23*(3), 13–19.

Environmental Protection Agency (EPA). (2011). *WaterSense: Outdoor water use in the United States.* Retrieved July 7, 2016 from http://www.epa.gov/WaterSense/pubs/outdoor.html

Erickson, M. (2015). *Fort Saskatchewan 2015 population and demographics.* Fort Saskatchewan: Infogram.

European Union. (2011). *Cities of tomorrow: Challenges, visions, ways forward.* Brussels: European Commission, Directorate General for Regional Policy.

Evans, G. (2003). The built environment and mental health. *Journal of Urban Health, 80*(4), 536–555. https://doi.org/10.1093/jurban/jtg063.

Evans-Cowley, J. (2006). Sidewalk planning and policies in small cities. *Journal of Urban Planning and Development, 132*(2), 71–75.

Feldman, M. (1994). *The geography of innovation.* Boston: Kluwer.

Filion, P. (2010). Growth and decline in the Canadian urban system: The impact of emerging economic, policy and demographic trends. *GeoJournal, 75*(6), 517–538.

FlorDepot International. (2011a). *Pitch roofs up to 20 degrees.* Retrieved July 12, 2011, from http://www.flordepot.co.uk/pitchroofs/pitchroofsupto20grad.html

FlorDepot International. (2011b). *Pitch roofs up to 45 degrees.* Retrieved July 12, 2011, from http://www.flordepot.co.uk/pitchroofs0/pitchroofsupto45grad.html

Focus on Preservation. (1991). *Architectural record.* 152.

Fox, K. A. (1962). Area economic attraction models. *Journal of Farm Economics, 44*(1), 1–34.

Franyo, L. (1995). *Budapest cultural avenue.* Budapest: Horizont Informatika Ltd.

French, P. E. (2005). Policy, management and political activities: A current evaluation of mayors and managers in small cities and towns. *The Social Science Journal, 42*(4), 499–510.

Frost, P. M. (1981). Old Montreal – Vieux Montreal: Geographical essays. In D. B. Frost (Ed.), *Montreal, geographical essays* (pp. 69–91). Montreal: Concordia University.

Garduno, M. (2011). *Historical districts: Adaptable housing.* Unpublished M. Arch Report for McGill University, School of Architecture.

Garreau, J. (1991). *Edge City: Life on the new frontier*. New Jersey: Anchor Books.

Gehl, J. (2010). *Cities for people*. Washington, DC: Island Press.

Gidlow, C., Cochrane, T., Davey, R. C., Smith, G., & Fairburn, J. (2010). Relative importance of physical and social aspects of perceived neighbourhood environment for self-reported health. *Preventive Medicine, 51*, 157–163.

Global Footprint Network. (2014). *How the ecological footprint works* (p. 2). Geneva: International Environment House.

Gorgolewski, M., Komisar, J., & Nasr, J. (2011). *Carrot City: Creating places for urban agriculture*. New York: The Monacelli Press.

Gravel, D., & Bouchard, V. (1999). *LaSalle then and now*. Montreal: Cavelier-de-LaSalle Historical Society.

GreenRoofs. (2011). Greenroofs 101. Retrieved November 21, 2016, from http://www.greenroofs.com/

Gunn, C. (2002). *Built heritage: Assessing a tourism resource*. Ottawa: The Heritage Canada Foundation.

György, M. (1999). *Szentendre in olden times and today; tourist guide*. Szentendre: Miakich Gábor, Mayor.

Handy, S. L., & Xing, Y. (2011). Factors correlated with bicycle commuting: A study in six small U.S. cities. *International Journal of Sustainable Transportations, 5*(2), 91–110.

Hibbard, M., & Davis, L. (1986). When the going gets tough: Economic reality in the cultural myths of small town America. *Journal of the American Planning Association, 52*, 419–428.

High Corn Mill. (2016). *Real estate*. Retrieved November 21, 2016, from http://highcornmill.co.uk/

Hinshaw, M., Scarfone, A., & Donnelly, J. (1998). *Model code provisions, urban streets & subdivisions*. Olympia: Washington State Community Trade and Economic Development.

Historic Preservation. (n.d.). *43*(2), 6–9.

Holden, E. (2004). Ecological footprints and sustainable urban form. *Journal of Housing and the Built Environment, 19*, 91–109.

Hopkins, R. (2008). *The transition handbook*. Totnes: Green Books.

Howard, E. (1902). *Garden cities of tomorrow (original 1898 title: Tomorrow: A peaceful path to real reform)*. London: Swan Sonnenschein & Co..

Hyndman, J., Schuurman, N., & Fiedler, R. (2006). Size matters: Attracting new immigrants to Canadian cities. *New York: Journal of International Migration and Integration, 7*, 1–25.

Ignjatovic, J. (1952). *Respektus Vasza: Regeny*. Noviszad: Testveriseg-Egyseg.

Insall, D. (1968). *Chester – a study in conservation. Report to the ministry of housing and local government and city and county of Chester* (p. 1). London: HMSO.

Instituto Nacional de Estadística y Geografía (INEGI). (2005). In: Garduno M (Ed.), *Historical districts: Adaptable housing*. Unpublished M. Arch Report McGill University, School of Architecture.

Jaakkola, M. (2007). *Yleista Porvoosta*. Porvoo: City of Porvoo, Finland.

Jabareen, Y. R. (2006). Sustainable urban forms: Their typologies, models, and concepts. *Journal of Planning Education and Research, 26*(1), 38–52. Kostof (1991).

Jacobs, J. (1969). *The economy of cities*. New York: Random House.

Jacobs, J. (1993). *The death and life of great American cities* (pp. 253–254). New York: Random House.

Jacobs, M., & Scholliers, P. (2003). *Eating out in Europe: Picnics, gourmet dining and snacks since the late eighteenth century*. Oxford: Berg.

Jamieson, W. (n.d.). *Planning for small town cultural tourism*. ICOMOS Canada.

Johnston, D., & Gibson, S. (2008). *Green from the ground up: Sustainable, healthy, and energy-efficient home construction*. Newtown: The Taunton Press.

Johnston, D., & Gibson, S. (2010). *Toward a zero energy home: A complete guide to energy self-sufficiency at home*. Newtown: The Taunton Press.

Jokilehto, J. (1999). *A history of architectural conservation*. Oxford: Butterworth-Heinemann.

Kehew, R. (2011). Urban patterns for sustainable development: Towards a green economy. *UN-Habitat*.

Kelbaugh, D. (1989). *The pedestrian pocketbook*. Washington, DC: University of Washington Press.

Kibert, C. J. (1999). The promises and limits of sustainability. In C. J. Kibert (Ed.), *Reshaping the built environment: Ecology, ethics and economics*. Washington, DC: Island Press. 1999. 9–38.

Kinnis, R. (1997). *Small-lot single family infill housing, City of Victoria. Report prepared for the Federation of Canadian Municipalities, Canadian Home Builders' Association, Canadian Housing and Renewal Association and Canada Mortgage and Housing Corporation*. Ottawa: Federation of Canadian Municipalities.

Knack, R. E. (1998). Rules made to be broken. *Planning, 53*(11), 16–21.

Knox, P. L., & Marston, S. A. (2001a). *Places and regions in global context: Human geography* (2nd ed.). New Jersey: Prentice Hall.

Knox, P. L., & Marston, S. A. (2001b). *Places and regions in global context: Human geography*. New Jersey: Prentice Hall.

Knox, P. L., & Mayer, H. (2009). *Small town sustainability*. Basel: Birkhauser Verlag AG.

Knox, P., & Mayer, H. (2013) Inherited identities: Built form and sense of place. In *Small town sustainability: Economic, social, and environmental innovation*. Walter de Gruyter, Germany.

Kostoff, S. (1991). *The city shaped*. New York: Bulfinch Press.

Kyte, E. (1983). *From royal township to industrial city: Cornwall 1784–1984*. Belleville: Mika Publishing.

Lambe, W. (2008). *Small towns big ideas: Case studies in small town community economic development*. UNC School of Government, N.C. Rural Economic Development Center.

Landreville, M. (2005). *Toitures vertes a la montrealaise: Rapport de recherché sure l'implantation de toits vertes a Montreal*. Montreal: Societe de developpement communautaire de Montreal.

Lanzi, L. A. (1831). *History of painting in upper and lower Italy, volume I in II*. Italy: J. Hatchard and Son.

Lapping, M., Daniels, T., & Keller, J. (1989). *Rural planning and development in the United States*. New York: Guilford Publications.

Lawlor, D., & Thomas, M. A. (2008). *Residential design for aging in place*. New Jersey: Wiley.

Linteau, P. A. (1991). *Quebec since 1930*. Toronto: James Lorimer & Company.

Litman, T. (1999). *Parking requirement impacts on housing and affordability*. Victoria Transport Policy, November.

Logan, T. (1976). The Americanization of German zoning. *Journal of the American Institute of Planners, 42*(4), 377–385.

Lynch, K. (1960). *The image of the city*. Cambridge, MA: MIT Press.

Lynd, R. S., & Lynd, H. M. (1929). *Middletown: A study in contemporary American culture*. New York: Harcourt, Brace, and Company.

Macfadyen, D. (1933). *Sir Ebenezer Howard and the town planning movement*. Manchester: Manchester University Press.

Macht, W. P. (2010, July/August). Modular net-zero-energy townhouses. *Urban land*.

Macionis, J., & Parrillo, V. (2014). *Cities and urban life* (2nd ed.). New Jersey: Prentice Hill. 2001. Global Footprint Network.

Mageean, A. (1999). Assessing the impact of urban conservation policy and practice: The Chester experience 1955–96. *Planning Perspectives, 14*, 69–97.

Marshall, B. (2013). *Facts & figures of the Canadian mining industry*. The Mining Association of Canada (MAC). Retrieved November 21, 2016 from http://mining.ca/sites/default/files/documents/FactsandFigures2013.pdf

Marshall Macklin Monaghan Ltd. (1992). *Achieving infrastructure cost efficiency/effectiveness through alternative planning approaches.* University of Western Ontario, Prepared for Canada Mortgage and Housing Corporation (CMHC).

McBride, J. R., & Jacobs, D. F. (1985). Pre-settlement forest structure as a factor in urban forest development. *Urban Ecology, 9*, 3–4. 1986. 245–266. Todd.

McCullough, A. B. (1992). *The primary textile industry in Canada, history and heritage*. Ottawa: Minister of Supply and Services, Canada.

McDonald, R. I. (2008). Global urbanization: Can ecologists identity a sustainable way forward? *Frontiers in Ecology and the Environment, 6*(2), 99–104.

McKechnie, B. (n.d.) *Influencing travel behavior in a winter city*. Resource Conservation Manitoba. Retrieved November 21, 2016, from http://www.wintercities.com/Resources/articles/McKechnie_Travel.pdf

Miklós, V-N. (2000). *Szentendre then and now*. Széchenyi: Európai Regionális Fejlesztési Alap.

Miller, C. (2010). *Extensive green roofs. Whole building design guide*. National Institute of Building Sciences. Retrieved November 21, 2016, from www.wbdg.org/resources/greenroofs.php

Miller, J. (2012). *Town centre futures 2020.* An Experian Marketing Services white paper in partnership with ATCM. Experian Marketing Services.

Ministry of Housing and Local Government. (1967). *Preservation and change*. London: HMSO. 1967, preface.

Moughtin, C. (1992). *Urban design: Street and square*. Oxford: Butterworth-Heinemann.

Moughtin, C. (2003). *Urban design: Street and square*. Great Britain: Architectural Press.

Moyes, R. E. (1997). *Zoning standards and design guidelines for infill housing and redevelopment, City of Saint John. Report prepared for the Federation of Canadian Municipalities, Canadian Home Builders' Association, Canadian Housing and Renewal Association and Canada Mortgage and Housing Corporation*. Ottawa: Federation of Canadian Municipalities.

Mumford, L. (1961). *The city in history: Its origins, its transformations, and its prospects*. New York: Harcourt.

Nakamura, Y. (1989). *A method for dynamic characteristics estimations of subsurface using microtremors on the ground surface* (pp. 25–33). Washington, DC: Quarterly Report.

National Association of Home Builders (NAHB). (1987). *Reducing home-building costs with OVE design and construction*. Upper Marlboro: NAHB Research Foundation.

Natural Resources Canada. (2008). *Deforestation in Canada – What are the facts?* Retrieved November 21, 2016, from http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/28159.pdf

Newman, S. (2010). *Under one roof again: All grown up and (re)learning to live together happily*. Guilford: Lyons Press.

Numbers, M. J. (1995). Sitting a house: Proper sitting and design strategies enhance energy efficiency. *Fine Homebuilding, 93*, 40–45.

Ofori-Amoah, B. (2007). *Beyond the metropolis: Urban geography as if small cities mattered*. Lanham: University Press of America.

Oldenburg, R. (1989). *The great good place*. New York: Marlowe.

Ouf, A. (2001). Authenticity and the sense of place in urban design. *Journal of Urban Design, 6*(1), 73–86.

Park and Ride (2009). *Transportation planning branch, position paper*. City of Edmonton: Edmonton, Canada.

Parker, K. (2000). Multi-generational living: Design for ageing. IFA fourth global conference on ageing. *Journal Ageing International*. 1999–2000, *25*, 90–100.

Peck, S., & M. Kuhn. (2008). *CMHC design guidelines for green roofs*. http://www.cmhc-schl.gc.ca/en/inpr/bude/himu/coedar/upload/Design-Guidelines-for-Green-Roofs.pdf. Accessed November 25, 2014.

Preservation Green Lab. (2011). *The greenest building: Quantifying the environmental value of building reuse.* National Trust for Historic Preservation. Retrieved November 21, 2016, from http://www.preservationnation.org/information-center/sustainable-communities/green-lab/lca/The_Greenest_Building_lowres.pdf

Pressman, N. E. (1996). Sustainable winter cities: Future directions for planning, policy and design. *Atmospheric Environment, 30*(3), 521–529.

Project for Public Spaces (PPS). (2011). *What is a great civic space?* Retrieved November 21, 2016, http://www.pps.org/reference/benefits_public_spaces/

Quantum Solar Power. (2011). *A comparison of PV technologies*. Retrieved June 21, 2012 from http://quantumsp.com/solar-energy/a-comparison-of-pv-technologies/

Redemske, M. R. (2012). Home office deduction. *Journal of Accountancy., 213*(1), 20.

Rees, W. E. (1992). *Ecological footprints and appropriated carrying capacity: What urban economics leaves out, Environment and Urbanization*. Vancouver: School of Community and Regional Planning.

Reimer, B. (2009). *Rural Canada: Challenges and opportunities*. Report prepared for the Federation of Canadian Municipalities.

Riddle, M. (2008). Interview with Richard Florida. *Public Art Review, 20*(1), 52.

Riding, A. (1992). In Honfleur, the essence of Normandy. *New York Times.* Retrieved November 21, 2016, from http://www.nytimes.com/1992/06/14/travel/in-honfleur-the-essence-of-normandy.html?pagewanted=all

Robertson, K. (1999). Can small-city downtowns remain viable? A national study of development issues and strategies. *Journal of the American Planning Association, 65*(3), 270–283.

Rodrigues, J. F., Domingos, T. M., & Marques, A. P. (2006). *Carbon responsibility and embodied emissions: Theory and measurement*. New York: Routledge, Taylor & Francis Group.

Rohrer, J., Pierce, J. R., Jr., & Denison, A. (2004). Walkability and self-rated health in primary care patients. *BMC Family Practice, 5*, 29–35.

Rypkema, D. D. (1992). Making renovation feasible: Architects and the myths about rehabilitation economics. *Architectural Record, 180*(1), 26–28.

Sassi, P. (2006). *Strategies for sustainable architecture*. Abingdon: Taylor & Francis.

Schaeffer, J. (2005). *The real goods solar living sourcebook: Your complete guide to renewable energy technologies and sustainable living* (12th ed.). Gabriola Island: New Society Publishers.

Schumacher, E. F. (1973). *Small is beautiful: Economics as if people mattered*. New York: Harper & Row.

Smith, K. L. (2008). You say you want a devolution? Lessons from the main street program. *Local Economy, 23*(1), 85–92.

Southwarth, M., & Ben-Joseph, E. (1997). *Streets and the shaping of towns and cities*. New York: McGraw-Hill.

Southworth, M. (1997). Walkable suburbs? An evaluation of neotraditional communities at the urban edge. *Journal of the American Planning Association, 63*, 1.

Sparre, L. (1897). *The Iris factory*. Porvoo: Sparre Self-Publishing.

Spence, R. (2015). How to keep small towns from disappearing. *Financial Post.*

Spengler, T. (2016). History and tourism in Honfleur, France. *USA Today Travel Tips*. Retrieved June day, 2016 from http://traveltips.usatoday.com/history-tourism-honfleur-france-54598.html

Statistics Canada. (2011). *From urban areas to population centres*. Retrieved November 21, 2016, from: http://www.statcan.gc.ca/subjects-sujets/standard-norme/sgc-cgt/notice-avis/sgc-cgt-06-eng.htm

Statistics Canada. (2015). *National Household Survey (NHS) profile, Markham, T, Ontario, 2011*. Ottawa: Office of the Auditor General.

Statistics Netherlands (CBS). (2001). *Bevolkingskernen in Nederland 2001*. Texel: CBS.

Stein, C. S. (1949). Toward new towns for America. *The Town Planning Review, 20*(3), 203–282.

Stirnberg, B. (1985). Excerpts from a presentation of his work by the sculptor, at the first international making cities livable conference, Venice, Italy.

Strongman, C. (2008). *The sustainable home: The essential guide to eco building, renovation and decoration*. London: Merrell Publishers.

Sustainable Sources. (2011a). *Passive solar design.* Retrieved November 21, 2016, from http://passivesolar.sustainablesources.com/

Sustainable Sources. (2011b). *Solar hot water, heating and cooling systems*. Retrieved November 21, 2016, from http://solarheatcool.sustainablesources.com/

Svendson, G. L. H. (2010). Socio-spatial planning in the creation of bridging social capital: The importance of multifunctional centers for intergroup networks and integration. *International Journal of Social Inquiry, 3*(2), 45–73.

Tabuchi, T., Thiesse, J. F., & Zeng, D. Z. (2005). On the number and size of cities. *Journal of Economic Geography, 5*(4), 423–448.

Tanha, A. (2010). *Net-zero apartment buildings.* Unpublished M. Arch Report, McGill University, School of Architecture.

The Why Factory. (2010). *Green dream*. Rotterdam: NAi Publishers. in association with MVRDV, The Why Factory, and Delft University of Technology.

Thomas, R. (Ed.). (2005). *Sustainable urban design: An environmental approach*. London: Spon Press.

Todd, K. W. (1985). *Site, space, and structure*. New York: Reinhold Company.

Tolbert, C. M., Irwin, M. D., Lyson, T. A., & Nucci, A. R. (2002). Civic community in small-town America: How civic welfare is influenced by local capitalism and civic engagement. *Rural Sociology, 67*, 90–113.

Tourism Standards Consortium (TSC) Western Canada. (n.d.). *Transforming communities through tourism: A handbook for community*. Retrieved November 21, 2016, from http://linkbc.ca/

Town of Drayton Valley. (2015). *Community sustainability plan 2015–2019*. Retrieved November 21, 2016, from http://draytonvalley.ca/wp-content/uploads/2014/09/Apr.-2015-FINAL-DV-Sustainability-Report-2015-2019.pdf

Town of Richmond Hill. (n.d.). *A guide to building and facade restoration for the town of Richmod Hill.* Retrieved November 21, 2016, from https://www.richmondhill.ca/en/index.aspx

Transport Canada. (2009). *Improving travel in small towns & rural communities*. Transport Canada Publications, T22-184/2009E.

Truro Community Plan. (2010). *Town of Truro community sustainability plan.* Planning and Development Services. Retrieved November 21, 2016, from http://www.truro.ca/pln/13-community-sustainability-plan/file.html

U.S. Census Bureau. (2009). *Americans spend more than 100 hours commuting to work each year*. Census Bureau Reports. Retrieved May 1, 2013, from http://www.census.gov/Press-Release/www/releases/archives/american_community_survey_acs/004487.html (site discontinued).

U.S. Department of Energy. (2016). *Active solar heating.* N.p., Retrieved May 9, 2016, from http://energy.gov/energysaver/active-solar-heating

United Nations. (2002). *World population ageing: 1950–2050.* United Nations, Department of Economic and Social Affairs, Population Division

United Nations Educational, Scientific and Cultural Organization (UNESCO). (2016). *Historic Centre of Évora*. Retrieved July, 20, 2016 from http://whc.unesco.org/

Unwin, R. (1909). *Town planning in practice: An introduction to the art of designing cities and suburbs*. London: Adelphi Terrace.

Urban Design Associates. (2003). *A pattern book for norfolk neighborhoods.* A Report published by the City of Norfolk.

Valverde, J. C. (2013). *Evora and the central Alentejo* (pp. 6–15). Alcobendas: Mendes Moreira.

Van Bohemen, H. D., & Bekker, G. J. (1991). *Shaping and management of banks and bank protection structures of state-owned waters*. Wageningen: Centre for Agricultural Publishing and Documentation.

Van der Ryn, S., & Calthorpe, P. (1986). *Sustainable communities: A new design synthesis for cities, suburbs and towns*. San Francisco: Sierra Club Books.

Ver Ploeg, M., Mancino, L., Todd, J. E., Clay, D. M., & Scharadin, B. (2015). *Where do Americans usually shop for food and how do they travel to get there? Initial findings from the national household food acquisition and purchase survey*. Washington, DC: U.S. Department of Agriculture (USDA).

Weber, B., & Rahe, M. (2010) *Wealth creation and rural-urban linkages: An exploratory study of economic flows in two natural resource-rich regions*. Wealth Creation in Rural Communities. Ford Foundation.

Wheeler, S. M. (2004). *Planning for sustainability: Creating livable, equitable, and ecological communities*. Oxon: Routledge.

Wicks, M. (2008). *Dispatches Langford*. Westshore: The Art of Island Living.

Wiles, J. L., Allen, R. E. S., Palmer, A. J., Hayman, K. J., Keeling, S., & Kerse, N. (2009). Older people and their social spaces: A study of well-being and attachment to place in Aotearoa New Zealand. *Social Sciences & Medicine, 68*, 664–671.

Williams, D. (2006). Why game studies now? Gamers don't bowl alone. *Games and Culture, 1*, 13–16.

Wolf, K. L. (2007). The environmental psychology of shopping: Assessing the value of trees. *California: Research Review Berkeley Lab's Public Information Department, 14*(3), 36–43.

World Commission on Environment and Development (WCED). (1987). *Our common future*. Oslo: General Assembly of the United Nations.

Zelov, C., & Cousineau, P. (1999). Why is architecture oblivious to the environment? An interview with Ian Mcharg. In F. A. Stitt (Ed.), *Ecological design handbook: sustainable strategies for architecture, landscape architecture, interior design, and planning* (pp. 17–21). New York: McGraw-Hill.

Zukin, S. (1998). Urban lifestyles: Diversity and standardisation in spaces of consumption. *Urban studies, 35*(5/6), 825.

Zupancic, T., Westmacott, C., & Bulthuis, M. (2015). *The impact of green space on heat and air pollution in urban communities: A meta-narrative systematic review* (p. 67). Vancouver: David Suzuki Foundation.

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