

Laneway Infill
Re-Creating an Urban Housing Typology

by
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Author's Declaration I hereby declare that I am the sole author of this thesis.
This is a true copy of the thesis, including any required final revisions, as accepted by
my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract This thesis proposes an incremental response to the challenge of creating increased density within urban residential communities. Responding to the growing need for smaller urban dwellings, and the projected needs caused by future urban population growth, it suggests that infill housing on historic residential lanes and alleys could continue the tradition of small-scale, adaptive, and gradual change along these often-forgotten corridors of older North American cities, and specifically in Hamilton, Ontario.

Incremental intensification through laneway housing represents a ground-oriented, modern, and unique housing typology with scale, texture, and ways of living that bring added diversity to the city. With a strategic approach, these houses can generate reinvestment in historic neighbourhoods without destroying the existing urban fabric.

Planning reforms, economic realities, and design considerations are analyzed through literature reviews, case studies, and original field research on the laneways in Hamilton, Ontario. Application of the findings establishes incremental laneway housing as a viable catalyst for achieving urban renewal and increased densification in mid-sized North American cities.

Acknowledgements

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dedicated to my husband, Graham.

I want to run
I want to hide
I want to tear down the walls
That hold me inside
I want to reach out
And touch the flame
Where the streets have no name

I want to feel sunlight on my face
I see the dust cloud disappear
Without a trace
I want to take shelter from the poison rain
Where the streets have no name

Where the streets have no name
Where the streets have no name
We're still building
Then burning down love
Burning down love
And when I go there
I go there with you
It's all I can do.

from *Where the Streets Have No Name*,
by U2 / *The Joshua Tree*, 1987

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Canada is one of the most urbanized countries in the world – 80% of Canadians live in urban communities.

Vancouver has the densest population in Canada, followed by Montreal, Toronto, Mississauga, and then Hamilton.

Hamilton is expected to grow by between 40,000 and 200,000 people in the next 25 years. Over 60% of households in Hamilton have only one or two people. Less than 1% of the land in lower Hamilton is considered 'vacant'.

By 2031, 8% of residential development in Hamilton is expected to be on prime agricultural land. Laneway

housing is an existing typology which has not been allowed in most urban areas since the 1950s. Today, there are over 35 inhabited laneway houses in Hamilton.

There are approximately 70 kilometers of laneways in Hamilton, and most of the adjacent land is underused.

Block densities could be increased by up to 67% in some areas by laneway housing infill, and must be handled with *finesse*.



0.01 This Hamilton laneway in the Kirkendall neighbourhood is a verdant urban passage.

“The English word alley derives directly from the French allée and earlier from Medieval Latin aleia, a passage. The modern alley, defined as a passage between buildings, relates to the gardenesque allée, a long avenue bordered by trees. The modern alley is almost always thought of as giving access to the rear of buildings. Hence the word takes on a malevolent and sordid meaning.”

-Phyllis Andersen, historian

Introduction Many North American cities are reconsidering their housing needs in light of urban growth patterns, major demographic shifts, and the desire to create more sustainable communities. Politicians, economists, developers, preservationists, architects, and planners have all generated ideas ranging from adaptations of suburban sprawl to highly-dense urban areas and parks. Missing from these suggestions is variety in the form of an historic urban vocabulary. This thesis proposes the re-creation of an urban housing typology which has been ignored in most discussions for the past sixty years – the laneway house.

Infill housing on lane-oriented sites allows for increased density, increased security in an urban grey area, the re-utilization of existing urban infrastructure, and variety in building type, morphology, and scale. Most historic urban neighbourhoods have examples of vernacular laneway housing. This thesis surveys cities with contemporary practices of laneway infill, along with the economic factors, regulatory reforms, and design considerations which have enabled the re-emergence of this housing type.

Laneway infill will form part of an urban infrastructure, and its adoption implies embarking on a long-term development strategy applicable to established cities. This thesis suggests practical solutions incorporating this type of urban problem-solving, taking optimal aesthetic and spatial advantage of unique urban sites. Choosing the mid-sized city of Hamilton, Ontario, as a case study, it identifies logical places for incremental laneway infill within the existing urban fabric. Learning from other North American cities, this thesis encourages the creation of a policy framework which implements sustainable urban values that are strategic, incremental, and perhaps, unexpected.



0.02 New rear-lot incremental infill in Vancouver, British Columbia.



“It is time to revise rules that make difficult the re-subdivision of urban lands into more effective layouts and to look at hidden alleys for their potentials as good places to live.”

- Grady Clay, Right Before Your Eyes



0.03 & 0.04 Incremental infill in New Zealand cities such as Wellington has increased the density of urban areas with new ground-oriented housing.

Incremental intensification

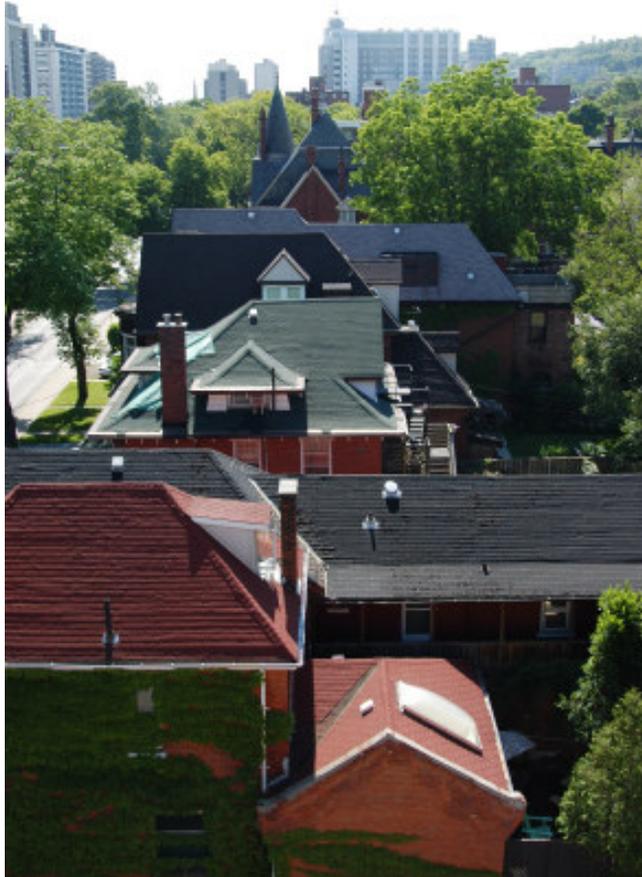
In 1978, Barton Myers identified the difference between the “pervasive, uni-centered, high-density/high-rise North American city with its sprawling suburban periphery”¹ and what he has coined “thoughtful urbanity” with a more even distribution of densities. To Myers, thoughtful incremental intensification included: “urban renewal, urban consolidation, reuse of existing structures, respect for the existing fabric, design reconciliation of old and new structures, neighbourhood preservation, and infill housing.”²

Where large-scale projects can turn their back on a neighbourhood, eroding its coherence, the intent of incremental intensification is to enhance its surroundings. Rather than start over with large-scale redevelopment, an incremental approach can help recharge the existing urban fabric, benefiting whole communities. Prior to the development of municipal planning regulations, infill housing would often occur in areas which were desirable to live, with large lots and the appropriate economic conditions to permit development. While there are examples of lane-oriented housing in most Canadian cities, this form of incremental growth has been mostly halted since the 1950s.

Today, there is a growing debate in Canada over the viability of laneway housing, receiving considerable coverage in the media. Cities have been slow to adopt these principles and, in some cases, have entirely resisted. Barton Myers’ sentiment that a city should “fill in before spreading out” speaks of a future where thoughtful urbanity in the scale of laneway housing will be a part of a sustainable plan for city growth.



- 4 - laneway infill



0.06 Rooftop view of Hamilton's Durand neighbourhood reveals many existing layers of intensification in Hamilton's urban fabric.

0.05 Satellite map of Hamilton area (opposite page).

Hamilton, Ontario, as a case study This thesis focuses on Hamilton, Ontario, as a case study for investigating what an infill strategy would look like in a mid-size North American city. Hamilton has not yet been studied in this context. The city's demographic makeup, economic situation, and morphology are typical of many mid-sized cities. It is intended that the typological propositions in this thesis could be applied to other cities across North America.

Hamilton's urban fabric has great potential to incorporate a laneway house infill strategy. The city is home to over 70 kilometers of laneways, most of which are underused. This thesis suggests revisions to municipal regulations, a framework for determining suitable infill sites, and a new vocabulary for this housing type. Tests of these patterns are conducted in three Hamilton block studies.

Hamilton and other mid-sized cities can strategically incorporate laneway housing to help meet future housing needs -- Hamilton has been cited in provincial projections for up to 80,000 new households in the next 25 years. Implementing a plan which incorporates laneway infill will support typological diversity, encourage more sustainable ways of living, and foster the growth of enduring cities.

Thesis methodology and structure

This thesis is a contribution to the ongoing debate about the future shape of cities. Supported by North American research, it presents a vision for incrementally integrating new infill into existing cities. It focuses on the design and planning considerations of laneway infill and examines the various qualities this housing typology can add to the urban fabric. The thesis is divided into six parts:

- 01** The issues, trends, and theories which support growth that is incremental, urban, and small-scale. Some of these issues include population growth, changing demographics, cultural trends, and urban spatial dynamics and movements. Included in the discussion for Part One is a summary of various theoretical frameworks and resources which have added to the foundation of this thesis.
- 02** Discussion of contemporary regulatory issues related to laneway housing as well as a discussion of economic and design considerations which have been identified through precedent studies. Part Two concludes with case studies of contemporary incremental intensification from various North American cities.
- 03** A study of the morphological conditions in Hamilton's urban fabric, including projected municipal growth targets. Part Three also includes a survey of Hamilton's laneways and existing laneway housing.
- 04** The various emerging patterns in laneway housing relevant to Hamilton, along with six prototypical infill house designs.
- 05** Test cases for incremental intensification in three different Hamilton neighbourhoods with a range of infill densities.
- 06** Conclusion with results of these analyses, and recommendations on how findings could be applied to other North American cities.

Glossary

Accessory Dwelling Unit (ADU) An ADU is either a new building, addition, or an existing building conversion (such as a garage) that creates additional residential density in a community without significant visible change. It can be attached to an existing house, but are often ADUs detached from the original house structure. ADUs occur without lot severance and are often rented or built for an elderly parent or adult child.

Coach house conversion A common form of adaptive reuse in areas with existing coach houses. Some coach house conversions also include an addition. Conversions range from simple inhabited structures to creative luxury adaptations to functional live/work units.

Density (hph) In this study, residential density will be defined by the average number of households per hectare (hph). This figure is created by dividing the approximate number of households by the physical area of a particular residential community, including supporting public streets and alleyways.

Garden apartment In this thesis, a garden apartment is a portable, self-contained dwelling that is temporarily located on the property of an existing single-family home. A garden apartment is generally intended to house one or two people, often retired parents or grandparents.

Glossary

Infill housing Infill housing includes new residential development built on unused or underutilized land. Infill housing can range from a single house to a multi-unit development

Intensification A Canadian term, first introduced with affordable housing discussions in the 1980s to denote strategies to increase the residential utility of a specific land parcel or community. Intensification strategies include infill, redevelopment, adaptive re-use, and suburban densification.

Landscape The landscape of a particular laneway.

Laneway *Laneway, alley* and *back alley* are all used interchangeably in this thesis. This thesis focuses on laneways in residential districts that act as secondary streets.

Laneway house A laneway house is a detached residential dwelling located on a small, severed lot accessed from and oriented to a laneway.

Secondary suite A secondary suite, also called an in-law suite, granny flat, or basement apartment, is a self-contained second living unit which is incorporated into or attached to an existing house. Recent legislation in Ontario has made secondary suite conversion legal in all single-family housing units.

0 | Issues and Trends Public support of incremental intensification, particularly laneway housing, has been minimal in recent decades. One reason for this may be what Michael Martin defines as a suburban complex: as more people grow up in the suburbs there becomes “a nation of consumers who are unlikely to have ever lived in a dwelling backing up to an alley”³ and thus there is difficulty in understanding the potential for this form of development.



1.01 A laneway in Montreal displays a local artist's work.

There have been many trends in Canadian society which are prompting a new look at these underused spaces. Some of these trends include population growth, increasing immigration, and decreasing household size. While municipal and provincial governments have begun to encourage intensification with regulation such as the *Greenbelt Act* and the *Places to Grow Act* in Ontario, other factors such as the local economy and bylaw reform also play a major role.

This section will look at these societal trends and movements in urban planning which would benefit from the re-introduction of laneway housing in Canadian cities.

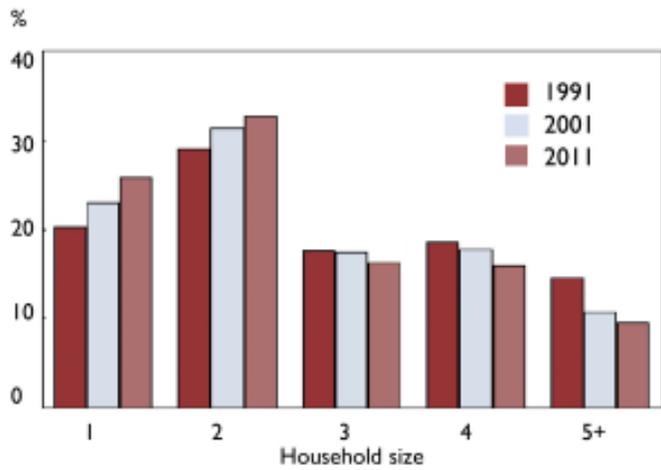


1.02 Regional Growth Plan for the Greater Golden Horseshoe.

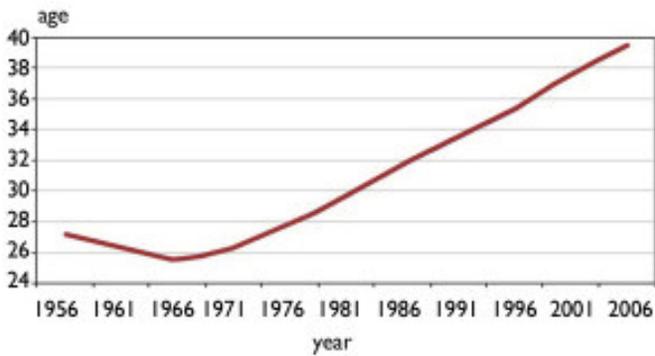
1.1 Population growth Canada has the fastest growth rate of any G8 country, with new immigrants accounting for 75% of all population growth in Canada between 2001 and 2006. Population growth is concentrated in cities, particularly around Toronto, Vancouver, and Calgary to the point that Canada has become one of the world's most urban nations. Indeed, the Greater Golden Horseshoe⁴ (GGH) around Lake Ontario is expected to grow by four million new inhabitants in the next 25 years.

Canada's current urban housing stock is not large enough to meet the growing demand for housing, and cities are actively creating growth plans to guide future development. In Ontario, the *Places to Grow Act* has created benchmarks for municipalities in the GGH such as a requirement of forty percent intensification in new residential development after 2015.

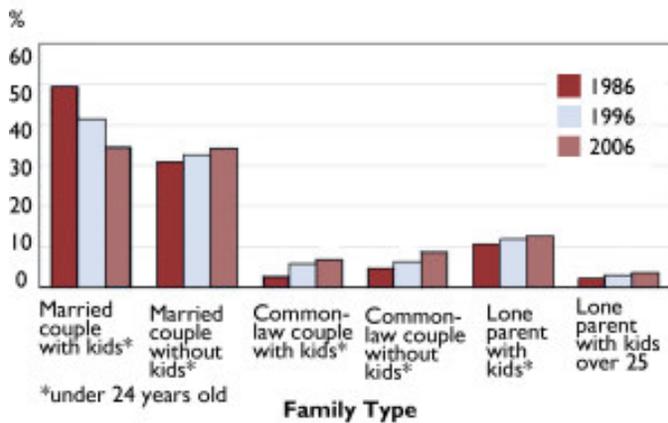
The Ontario *Places to Grow Growth Plan* won the prestigious American Planning Association "Daniel Burnham Award" for most outstanding Smart Growth planning in 2006. The Province now intends to work with the 25 major urban areas identified as "growth centres" in the Plan to direct infrastructure investment and to give incentive to Smart Growth developments. The adjacent *Places to Grow Growth Plan* map identifies these growth centres within the GGH.



I.03 Canadian Household Size 1981 - 2001.



I.04 Canadian Median Age 1956 - 2006.

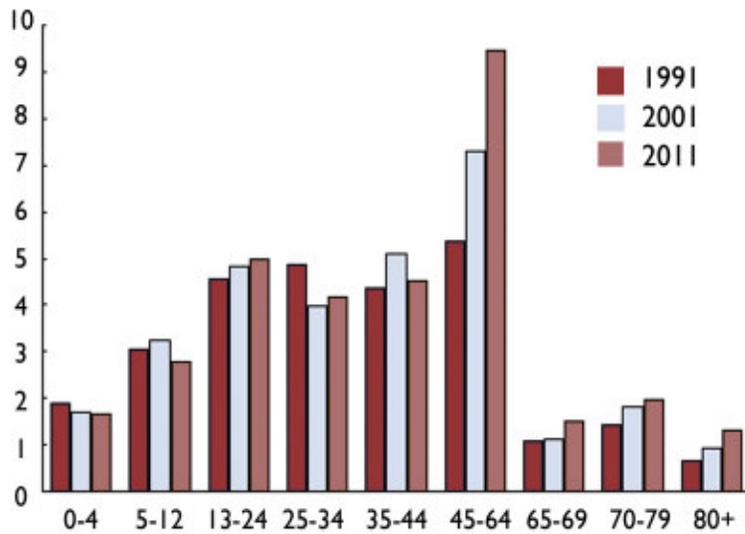


I.05 Canadian Family Structure 1986 to 2006.

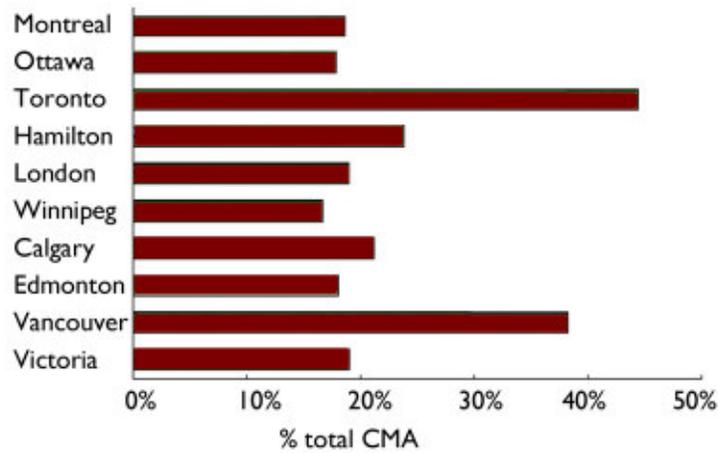
I.2 Changing demographics

In recent decades there has been a major shift in Canadian demographics. While typical households used to include parents and children, today 27% of Canadian households are one-person households⁵ and over 60% are either one or two person households.⁶ Smaller households represented the fastest growing household type in Canada in the last five years. Today, the average household size in Hamilton is 2.6 persons. However, projected changes over the next 25 years anticipate a further household size decrease to 2.3 persons.⁷ Housing needs during this period will be primarily for smaller dwellings, as 82% of anticipated new housing will be for singles, childless couples, and single parents.⁸

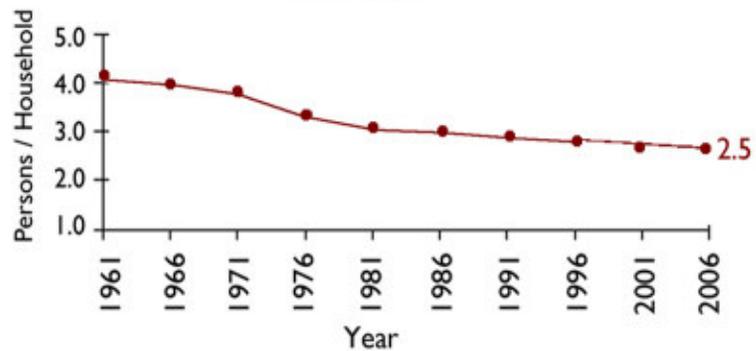
Behind this shift in living arrangements are a variety of factors including higher numbers of single young adults living alone, couples delaying having children, or couples opting not to have children, and more seniors remaining in their homes for longer. Life expectancy is also increasing, and now couples have more of their lives to spend together as “empty-nesters” after their children have left home. For the first time in Canada’s history there is a higher proportion of families comprised of couples living without children than couples living with children.⁹ Divorce and separation are also factors in creating smaller households. Today, single-parent families account for 11% of all Canadian households.



1.06 Existing and Projected Population of Canada by Age Segments 1991, 2001, and 2011 (projected).



1.07 Immigrant Population by Canadian Metropolitan Areas (CMAs).

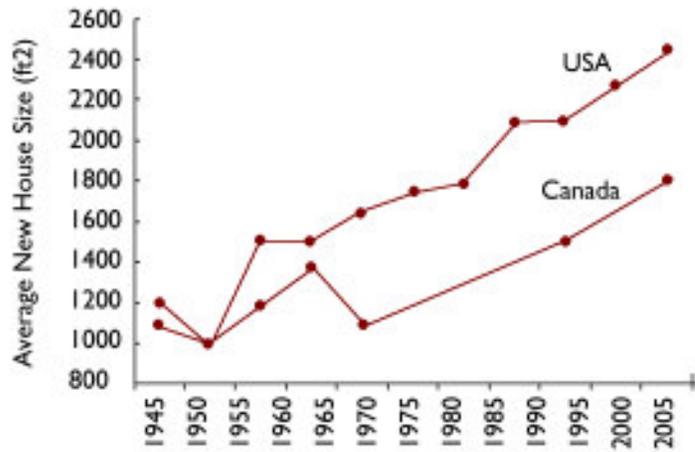


1.08 Decreasing Canadian Household Size 1961 - 2006.

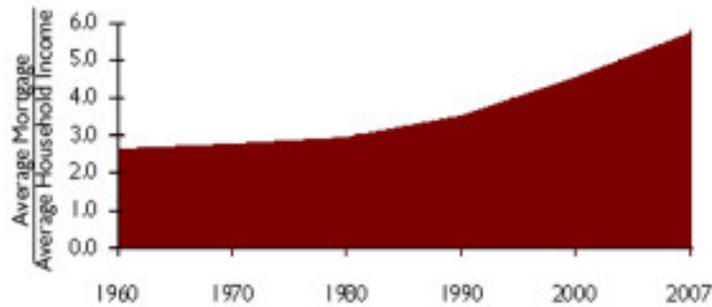
Over the last two decades, one trend amongst young adults has been their growing tendency to remain in, or return to, their parental home. In 2006, 44% of the young adults in their twenties either stayed in their parental home or moved back. Twenty years ago, only 32% of young adults lived with their parents. This mixed living situation has resulted in an increased need for housing which is clearly separated for parents and a grown child.

Over the past 15 years, the population of those 65 and older grew at twice the rate of the population as a whole, and this age group is expected to grow to over five times the general population over the next 25 years. By 2031, one quarter of all homes sales are projected to be for those aged 55 and older. Seniors are more likely to live alone, and there are growing numbers of elderly, contributing to the growth in one-person households.

The decline in the number of larger households and the growing number of one and two-person households may have implications for the housing market as smaller households, especially persons living alone, may want smaller living spaces than would larger households. Incremental intensification can be part of the solution for each of these increasing demographic groups; indeed, they represent the primary target market for this type of housing typology.



I.09 Average Size of New Detached House USA and Canada 1945 - 2007.



I.10 Hamilton Mortgage Debt-to-Income Ratio 1960 - 2007.

“There is a small but growing demand for an alternative to “conventional” suburban homes and neighbourhoods, and households are seeking a different dwelling style than single-detached. These households are seeking a neighbourhood that offers a range of dwelling forms, lower auto orientation and creative neighbourhood design. Another contributing factor is that a household’s housing preference can change after age 45 with a greater emphasis on central location.”

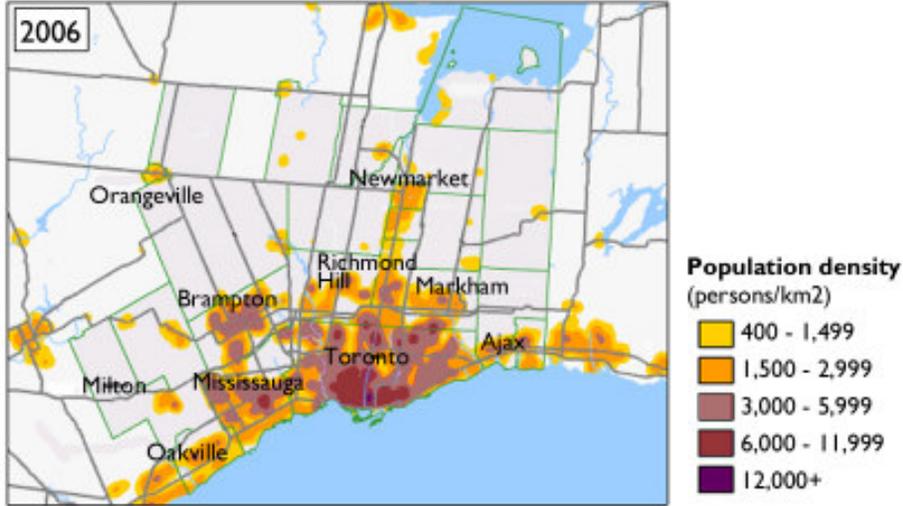
- Hamilton “Keys to the Home” document

1.3 Cultural Trends

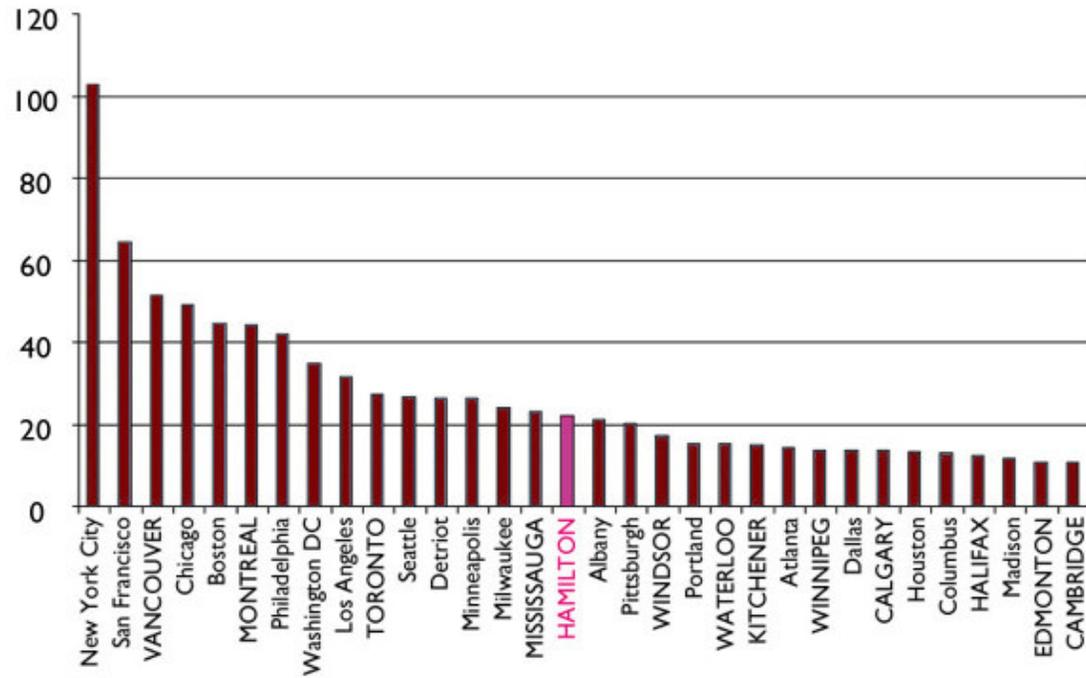
Several cultural trends are likely to drive demand for intensification development, and in particular, ground-oriented medium-density housing. Home ownership has long been a significant feature of Canadian life, and today 60% of Canadians own their own home. The value placed on individual property ownership was institutionalized early into both the Canadian ethos and post-World War II legislation as the federal government intervened to make ownership more attainable for Canadian households. Current market information indicates that the anticipated move down for “baby boomers” from large single-family detached homes to smaller units occupied by empty-nesters is beginning to take place. This is likely to result in an increase in demand for intensification-type residential accommodation, including more compact development forms and unit sizes.

Despite decreasing household sizes, one of the most visible trends since the 1950s has been an increase in the size and scale of new houses in both the United States and Canada. New Canadian single-detached houses have nearly doubled in scale since 1945, and American homes are even larger. These larger, more costly houses impact the ratio of average household income to average house price. Today, in Hamilton for example, an average new house priced at \$330,000 costs 5.7 times more than an average Hamilton income of \$58,000.¹⁰ This growing price gap has made home ownership less affordable for many Canadians, and new smaller-scale housing is in demand.

The distance Canadian commute has increased in the past two decades. This reality is particularly acute in communities of the GGH which have often expanded their residential bases without accompanying local job creation. Future demand for smaller housing that is accessible by public transport may impact future developments, as might the increase in telecommuting and various other types of live/work arrangements.



I.11 Population density in the GTA and the emergence of “edge cities” along transportation routes in southern Ontario.



I.12 Housing Density Comparison of North American Cities (in households / hectare).

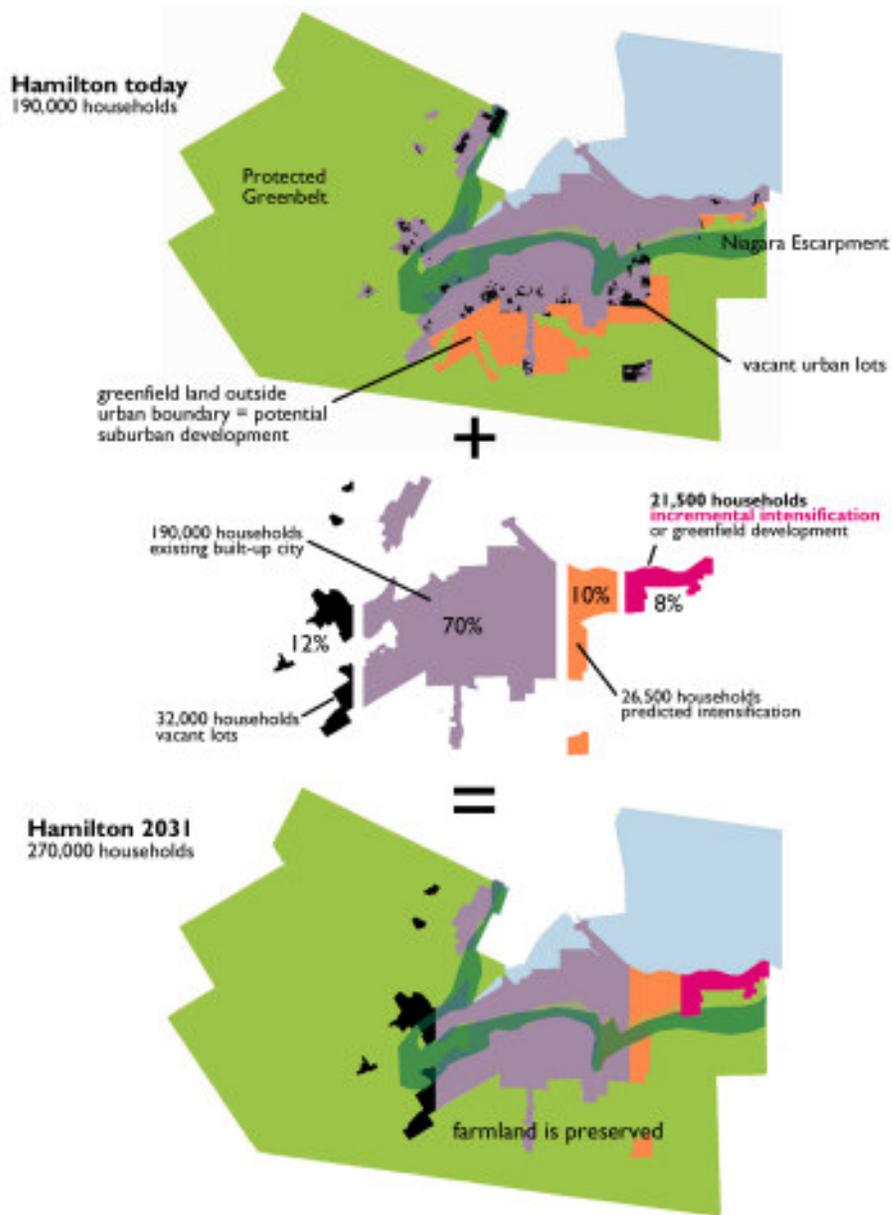
I.4 Urban spatial trends

During the 1960s, large building projects under the banner of “urban renewal” saw both the destruction of older communities and the construction of massive residential slab blocks. Believing the older communities to be outdated or inefficient, these buildings were primarily rented by less-affluent households. Particularly in the United States, some of these towers became “vertical ghettos” of poverty and violence. While this ghettoization was uncommon in Canadian cities, the social fabric of urban communities was often affected and the migration of middle-class families to the suburbs was commonplace.

By the 1980s, population growth no longer occurred in major Canadian cities, but rather in “edge cities” such as Mississauga, Brampton, Oakville, Vaughan, and Markham. Today, this trend continues along major highways and transportation routes in cities such as Barrie and Milton.¹¹ To use Barton Myers’ phrase, these edge cities have been growing out before they have had a chance to fill in. The result has been lagging infrastructure development and inadequate civic resources in edge cities due to their rapid population growth. This sprawling development has often left these cities’ existing urban areas underutilized.

There is a large gap between the sustainable growth policies of municipalities and their actual accomplishments.¹² While there are a few examples of Canadian suburban intensification, such as some denser greenfield developments in Ontario,¹³ infill housing, redevelopment, and adaptive re-use has primarily occurred in the nation’s largest cities. In many cases, intensification in Canadian cities has included infill of high-density housing on previously industrial brownfield lands in urban cores. Relatively high land prices in revived urban cores has combined with a growing demand for downtown housing to create booming condominium markets in cities such as Vancouver and Toronto.

Alternative examples of progressive densification reforms in Canadian regulation include small-lot zoning amendments in Vancouver, Montreal, and Halifax with Calgary, Saskatoon, and Halifax having changed zoning regulations to allow small-lot infill specifically in historic neighbourhoods.¹⁴ These cities’ reforms are not the norm, and most Canadian cities continue to spread out.



I.13 Analysis of protected and unprotected agricultural land outside Hamilton, along with potential future development types.

I.4.1 Urban Growth Boundaries Most Canadian cities are located on or near the country's most fertile agricultural land. While only 0.5% of Canada's land base is Class One farmland, over half of this prime agricultural land is found in Ontario¹⁵ and much of this land has already been developed. According to a University of Guelph study, 18% of Class One agricultural land in Ontario is already urbanized, and this proportion is expected to increase.¹⁶ Hamilton is believed to have the highest rate of suburban growth in the Greater Golden Horseshoe,¹⁷ with significant loss of high-quality farmland due to rampant sprawl developments.

Rather than leave farmland's future to be determined merely by speculative economics, several North American cities have created new policies on urban growth boundaries. Portland, Oregon, was a pioneer in this practice. Between 1980 and 2004, the city's population grew over 40 percent - not quite as fast as its suburbs - but a significant increase compared to other North American cities. Portland's policies made the city more appealing to home buyers and developers rather than driving them out.

In order to slow the rampant development of Ontario's farmland, the *Greenbelt Act* was created in 2005 by the Ontario provincial government. The *Greenbelt Act* was created to limit the expansion of housing into valuable farm and ecological lands as part of a comprehensive regional approach to sustainable, long-term growth. The greenbelt does not protect all land outside existing GGH urban boundaries, however. Hamilton has a significant amount of land outside its urban boundary which is unprotected, shown in orange on the adjacent map. This prime farm land is bound for suburban development over the next 25 years unless alternative growth strategies are adopted.

Utilizing projected household growth figures.¹⁸ for Hamilton by 2031, today's housing stock will account for 70% of the housing demand, while vacant land and large-scale intensification projects will provide 12% and 10% of the projected need, respectively. The remaining 8%, or 21,500 households, would likely be housed in greenfield suburban developments. This thesis proposes laneway incremental infill as an alternative in meeting part of this need.



I.14 & I.15 New Urbanist development in Kirkland, Illinois.

While the streetscape maintains many of the qualities of an older neighbourhood, the laneway is devoid of character with repetitive garage facades providing a purely utilitarian aspect.

I.4.2 New Urbanism In the 1970s and 1980s, New Urbanism emerged with urban visions and theoretical models for the reconstruction of the city proposed by architects such as Leon Krier, Peter Calthorpe, and Andrés Duany. In 1993, the Congress for New Urbanism was formed. The heart of New Urbanism is in the design of neighborhoods, defined by a discernable neighbourhood center where most houses are within a five-minute walk, a variety of shops and offices to supply the weekly needs of the neighbouring community households, and where a variety of dwelling types are present. The Congress for New Urbanism created a standard zoning code, called SmartCode. This prototype zoning code includes “downtown”, “suburban”, and two intermediate zones. The SmartCode has been adopted by various municipalities to simplify the incorporation of New Urbanist principles into new developments.

Today, more than six hundred new towns, villages, and neighborhoods in the U.S. follow New Urbanism principles.¹⁹ Critics accuse New Urbanism of elevating aesthetics over practicality and subordinating good city planning principles to dogma.³ When located in greenfield land, new communities often take on a *tabula rasa* approach to the site and thus New Urbanism is sometimes considered “dressed up sprawl.” New Urbanism has been criticized for its lack of economic or household diversity, high cost, and elitist profile.⁴

Half of New Urbanist communities are located in urban infill locations.²⁰ The widespread popularity of New Urbanist principles reveals a strong North American desire for shared spaces and walkable neighbourhoods. Incremental intensification may be able to utilize a standardized zoning code, similar to the SmartCode, to provide greater ease for municipalities when creating the regulatory framework for this type of development.



I.16 Photomontage of Hamilton's downtown depicting what a light rail transit system, part of a Smart Growth transit plan, might look like.

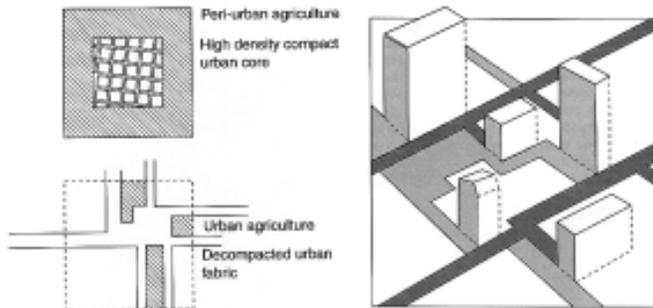
I.4.3 Smart Growth Smart Growth is a parallel movement to New Urbanism in urban planning and transportation theory that concentrates growth in the center of a city to avoid increased sprawl. The term was initially a concept in urban development promoting the revitalization of American cities. Smart growth development aims to prevent urban sprawl, decrease pollution, protect open space and farmland, revitalize communities, allow for affordable housing, and provide more transportation choices.

In 1997, Maryland was the first state government to enact Smart Growth regulations,²¹ and since then the concept has been taken up by many North American municipalities. The American Planning Association defines Smart Growth as “a collection of planning, regulatory, and development practices that use land resources more efficiently through compact building forms, infill development, and moderation in street and parking standards.”²² Smart Growth encourages the location of stores, offices, residences, schools and related public facilities within walking distance in compact neighbourhoods. It aims to provide a variety of housing choices so that young and old, single persons and families, and those of varying economic ability may find places to live.

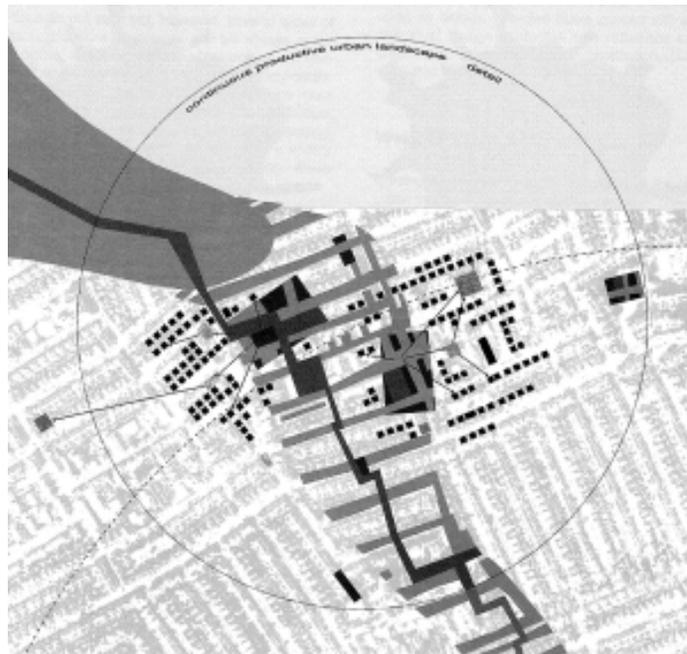
The Ontario *Places to Grow Growth Plan* is an example of Smart Growth planning, requiring 40% intensification for new development with greater utilization of public transit in urban areas. Incremental intensification, which gradually increases density of existing neighbourhoods, is an innovative growth strategy in line with Smart Growth principles.



1.17, 1.18, 1.19 Incremental intensification is a gradual insertion into a community's fabric which enables multiple layers of program in an otherwise underused urban space. The laneways of Montreal, for example, are filled with a variety of different uses, such as: a children's park and play area, laundry drying, housing, public art space, small business space, and community gardens.



1.20 Diagram of horizontal intensification within a productive urban landscape.



1.21 The idea of Continuous Productive Urban Landscapes (CPULs) can easily be envisioned in a laneway setting, as alleys are by nature a continuous part of the older urban fabric of many Canadian cities.

1.4.4 Productive Urban Landscapes Since the beginning of modernism, there have been many architects and theorists who have discussed the idea of bringing nature and productive farmland back into the city. Le Corbusier, Ian McHarg, Louis Mumford, and Frank Lloyd Wright have all created models for placing urban design within a productive urban landscape. Often, their reasoning included a increasing a community's health and sense of well-being from being within a natural environment.

The idea of having productive urban landscapes for food production has been common in many different cultures, for example in England with allotment gardening, and Cuba with the *organopolo*. Like urban parks, urban food growing can be an important for community development and as an agent for urban regeneration, reducing discrimination, tackling crime and generating economic benefit.²³

Underutilized urban land can be turned into productive land with the insertion of pedestrian pathways, community gardens, and children's playgrounds. Innovative uses such as Scattered Plot Intensive Farming (SPIN Farming)²⁴ or Continuous Productive Urban Landscapes (CPULs)³⁵ are ways of turning forgotten or marginalized land into valuable urban resources. Incremental infill can incorporate these various program, renewing the connective tissue of neighbourhoods.



I.22 Hamilton laneway in the Kirkendall neighbourhood.

“The American residential alley has been out of sight, out of mind, becoming the academic, geographic, and social outcast of the built environment for at least a half-century.”

- Grady Clay, *Right Before Your Eyes*

1.5 Literature Review Academic studies of urbanism emerged in the 1960s following historian Lewis Mumford’s critique of the “anti-urban” development of post-war America. Often a reaction to modernist urban architecture and its blatant deviation from historical patterns, these studies highlighted the lack of local and regional specificity and responsiveness. The dominant penchant for large-scale solutions, whether for housing or commercial uses, was deemed to obfuscate more nuanced ideas such as variation, scale, incrementalism, marginalism, and individualism.

The 1970s saw a growing interest in laneway housing. In Canada, George Baird and Barton Myers, with colleagues, published “Vacant Lottery”, an examination of typological urban design and professional planning. American urbanists such as Grady Clay, James Borchert, and Jane Jacobs discussed alleys in their work, while several historical analyses of laneway housing were published that focused on cities such as Washington DC, Louisville, KY, Galveston, TX and various Pennsylvanian mining towns.

Canadian interest in laneway housing grew tremendously in the late 1990s, following the construction and publication of new laneway housing projects by well-known architects, most notably in Toronto. By 2002, Canada Mortgage and Housing Corporation (CMHC) studies were published, focusing on laneway housing in Vancouver, Toronto and Montreal. These more technical reports have combined with academic and public interest to open a growing dialogue about incremental change in the forgotten byways of historic urban communities. Through that discussion, key issues have emerged which affect the viability of such projects including variation, scale, incremental evolution, and perception of place. The literature suggests that laneway housing has become a viable alternative to modernist urban redevelopment.

I.5.1 Variation Following World War II, standardization and mass production began to dominate the housing market as evidenced in both single-detached suburban housing and massive urban apartment blocks. While cost savings were realized due to efficiency, Jane Jacobs argued that a mundane quality had entered new housing. In *The Life and Death of Great American Cities* (1961), she called for planners to redesign cities away from single-use housing projects, large car-dependent thoroughfares, and segregated commercial centers. She envisioned an urban strategy which included sidewalks, neighbourliness, and density. Jacobs questioned the Garden City movement and the subsequent suburban segregation of inhabitants based on household income and ethnicity, calling for variation in housing types in order to encourage a mix of populations and enterprises.²⁶

Jacobs suggests that a range of densities can best promote a district's diversity and quality of life. She makes the distinction between a neighbourhood being "overcrowded" and being "high density" – overcrowding results when inhabitants do not have the choice to leave (usually due to economic factors). While recognizing regional differences, she believes that a density of at least 40 households per hectare would be an asset for a functional and diverse community.²⁷

While promoting density, Jacobs also theorizes that density-of-type is important. Concentrations of one housing type - for instance high-rise condominiums or row houses - can become monotonous, resulting in a deficit of variety and undermining a neighbourhood's vitality. She creates a system of qualities which are essential to good urban life.



1.22 Hamilton vernacular laneway house. Laneway housing offers a different scale to a neighbourhood's fabric.

"Give every household its own home, with enough space for a garden. Keep the emphasis on ownership of control, not on financial ownership...in all cases give people the legal power, and the physical opportunity to modify and repair their own places."

- Christopher Alexander, *A Pattern Language*, #79

1.5.2 Scale Following Jacobs's book, new theories on urban fabric emerged. In California, Christopher Alexander proposed a re-reading of the urban form in *A Pattern Language* (1977). Protesting the Modernist functionalism, its contributors attempt to restore the craft to architecture and analyze the rules and forms of the city's construction. Along with discussions on urban and social theory, two hundred and fifty "patterns" are suggested as guidelines for how cities, communities, and homes should be built and rebuilt through time.

Differing from Jacobs, Alexander denounces the high-rise apartment (and by extension, the condominium tower) in the pattern, "Four-Storey Limit". He writes, "There is abundant evidence to show that high buildings make people crazy."²⁸ Alexander advocates density in urban areas through low-rise apartments, row housing, and other incremental forms of density such as the "House for One Person"¹³ which emphasizes simplicity – a dwelling for a single person need only be 30-40m².²⁹ Alexander identifies the human desire of home ownership, which includes the ability to modify and repair a space, both indoors and out-of-doors.

Alexander and Jacobs call into question the dominant North American cultural trend towards "bigger is better", both on a consumer and design basis. They urge a reassessment of individual and community needs, and suggest that dwellings and neighbourhoods be based on a more appropriately human scale. Again, small-lot and laneway infill respond to this challenge through incremental change.

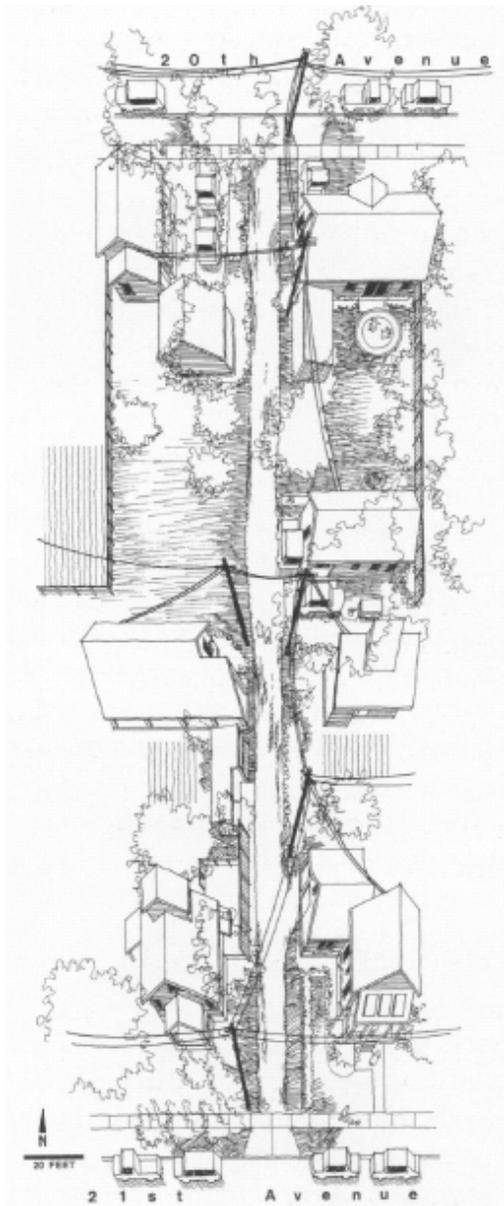
I.5.3 A Hidden Resource American urban theorist Grady Clay became an early advocate for alley housing through his 1978 book, *Alleys: A Hidden Resource*. Studying the alleys of Louisville, Kentucky, Clay theorized that, due to increased energy and commuting costs, the economic and social value of older central communities was bound to increase. Alleys represent an urban “retreat” just off the busy street – precisely the sort of ‘just-off’ locations that American tourists seek when they go to Europe. They allow an intimacy that, when well-designed, can be offered by the interior of hundreds of blocks in most historic North American cities. Clay writes,

“It is time to revise rules that make difficult the re-subdivision of urban lands into more effective layouts and to look at hidden alleys for their potentials as good places to live.”³⁰

Laneway housing represents an inherently small-scale and individual response to the needs of a changing city. Anne Mosher and Deryck Holdsworth published their 1992 study of mid-size Pennsylvanian mining towns in the *Journal of Historical Geography*. They suggested that alley housing was a successful private and small-scale housing response to rapid industrial expansion and population growth in the early 20th century. While many urban social reformers of that period considered alley housing a threat to middle-class lifestyles, some smaller communities embraced laneway housing “less as a problem and more as a necessary response to periodic housing shortages for industrial labour.”³¹

“For all the efforts of social reformers and politicians to extend to alleys the living densities, set-back requirements and architectural tastes that typified the new suburban America, alley housing seems to suggest that individualistic agendas were still possible. Thus in arenas of seeming hegemony by industrial capital, struggles between capital and labour have to be calibrated for region and time. Alley housing hints of an organic, informal housing response in the midst of controlled and hierarchical worlds.”

- Grady Clay, *Right Before Your Eyes*



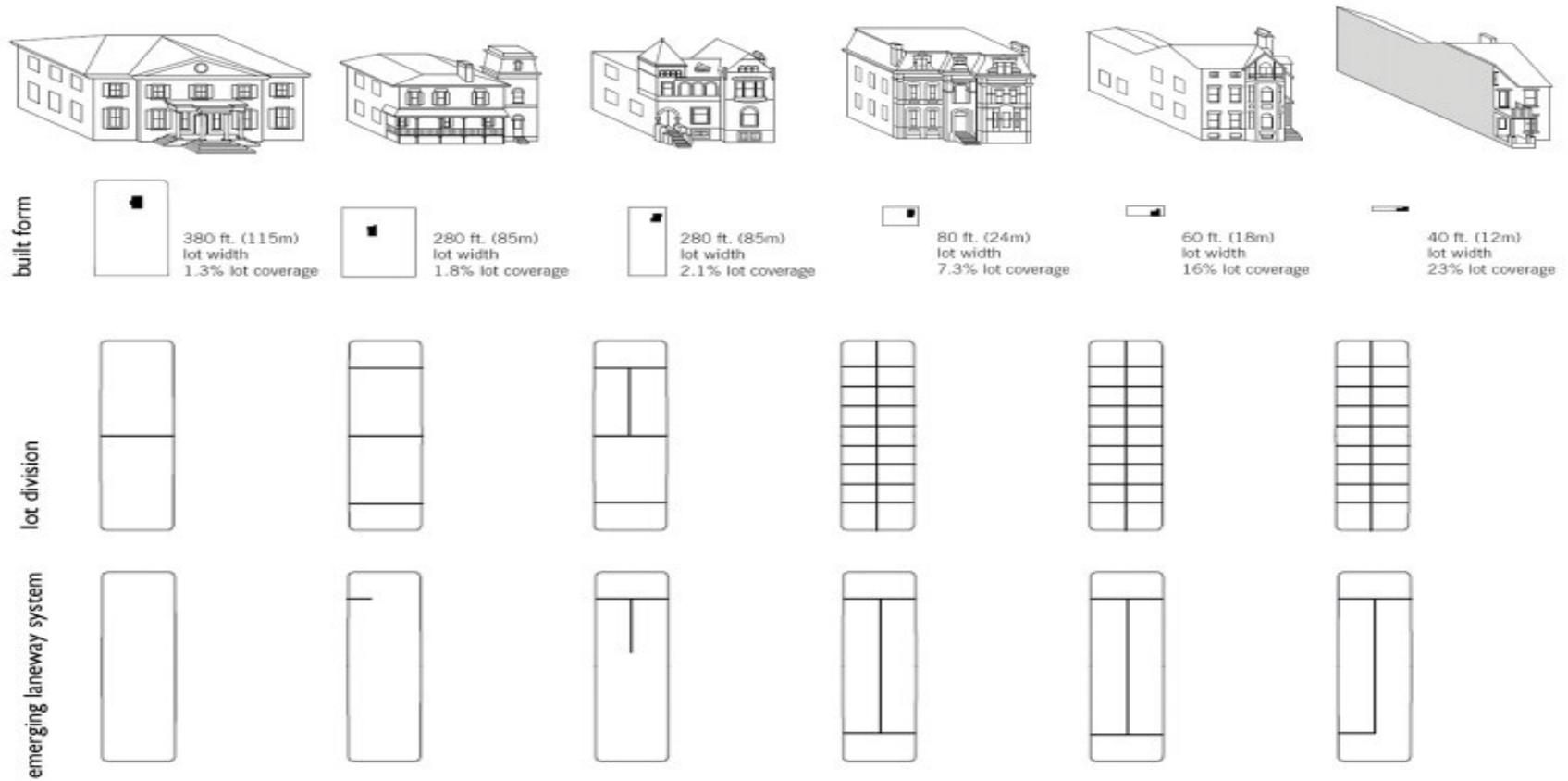
I.23 Rendering of a laneway acting as a street.

I.5.4 Perception of Place Michael Martin, a professor of landscape architecture at the University of Iowa, has written several essays on the role of alleys in urban landscapes. Martin writes that alleys can be dynamic, highly activated social spaces because they have an intimate scale, limited population, useful hardened surfaces, and status as “staging areas” for the cyclical rhythm of arrival and departure by residents.

Alleys can be viewed as having one of three basic characters: revealing, or open to private life; secluding, or screening private life from view; or pragmatic, providing basic services to houses. These can create “personalities” which in turn define the functional life of an alley. A revealing alley allows glimpses of less formal back yard landscapes and suggests that the alley landscape is “a place apart, a safe and semi-private commons encircled by private domains”³³ providing a potential playground for children and a hospitable atmosphere of tranquility. A secluding alley takes a more defensive posture, spurning social participation in a commons, and potentially harboring less than savory activity between its walls. A servicing alley is generally well used and perceived as a common space with purely utilitarian functions, allowing access for garbage collection, overhead wires, parking, and other domestic needs.

“Distinct from streets and other public spaces, the alley is both on the *back* side and on the *inside* of the neighbourhood.”³⁴

Martin believes that back alleys can undergo transformation into *de facto* streets as incremental changes in land use occur. He cautions, however, that any increase in density can be beneficial as long as this intensification occurs sparingly and does not overwhelm the *alleyscape*. At the same time, the presence of an alley house can help diversify the lane by providing greater flexibility of use, activity, and monitoring within the alley.³⁵



1.24 Diagram from *Site Unseen* describes the method in which a typical Toronto block was incrementally subdivided into smaller parcels.

The slab-block tower creates new relationships of adjacency within an existing morphology, where the “relations of front and back, public and private are all obscured, and the definition of the street edge, independent from the building façade, disappears completely.”

- George Baird, *Theory/Vacant Lots in Toronto*

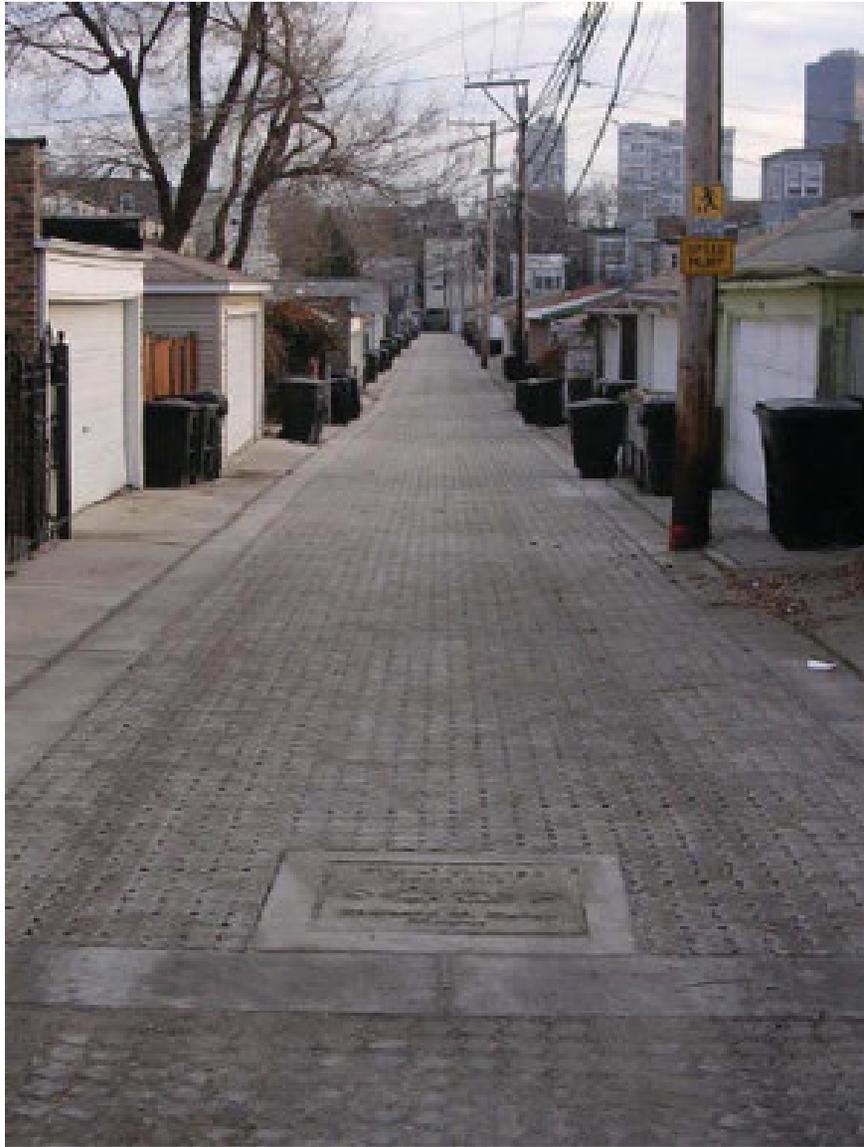
“By intervening in the laneway, the embedded value of the city’s various infrastructures is leveraged to lure customers away from the sprawling periphery of the metropolitan area in favour of a denser, ironically more urban, and potentially more sustainable city centre.”

-Brigitte Shim, *Sight Unseen*

1.5.5 Incremental Change George Baird’s 1978 *Design Quarterly* essay “Theory/Vacant Lots in Toronto” introduced the concept of typological transformation in an urban precinct. Historically, urban housing was often introduced through lot subdivision of larger surveys and estate properties. Residential densification throughout the early 20th century generally retained a precinct’s morphology of public/private space, street edge, and adjacencies. As such, it represented an incremental change in the neighbourhood’s fabric. In contrast to historic incremental change, Baird’s essay documents the 1960s’ process of land assembly in contrast to previous lot subdivisions.

New infill developments during this time were “increasingly indifferent to their older neighbours” by depleting neighbourhoods of their morphological coherence and livability. Alternatively, Baird promoted incremental change in an urban fabric which adheres to a community’s norms of public/private space, street edge and adjacencies. In a later 2004 essay, Baird reflects on how large-scale projects, urban infrastructure and “impatient, dramatic, and precipitous change” have come into vogue, with the condominium tower complex as the primary form of urban intensification for the past two decades.

The incremental quality of the laneway house typology is highlighted in *Site Unseen: Laneway Architecture & Urbanism in Toronto*, a 2003 study by Toronto architects Brigitte Shim and fellow Donald Chong based on their studio course at the University of Toronto. Discussion on incremental change is drawn from *Vacant Lottery* and the earlier writings of Baird and Myers. *Site Unseen* has stirred both public and academic interest in laneway housing as a smaller, more affordable, energy-efficient and flexible housing typology. Laneway housing is an opportunity to reconcile two usually-opposing desires: to live downtown and to live in a fully-detached house, and can viably accommodate new residential density based on their resiliency in the face of change over generations.



2.01 Recently updated laneway in Chicago, Illinois with an intricate paving pattern that also reduces stormwater runoff.

02 Contemporary laneway study Infill development is an urban response to needs for housing, commercial, and recreational spaces. Alleys have historically harboured various types of program including workshops, small businesses, garages, parks, gardens, or housing. These insertions into the urban fabric have generally been incremental – not based on a city master plan – and have responded to the needs of the immediate community and property owners. They take advantage of the pre-existing amenities of a community, adding only marginally to the servicing load of a neighbourhood. Additionally, laneway infill projects often represent a more affordable, small-scale investment in a community’s infrastructure than most developers would otherwise make.

Several characteristics become evident when analyzing incremental laneway projects. These include the connection to the “host” house, ownership structures, and the small scale of housing. Regulatory and economic factors also affect the development of new laneway infills. Indeed, it is generally the case that economically healthy neighbourhoods are more likely to experience incremental densification. This can be seen through the case studies highlighted later in this section.

This review of contemporary laneway housing will be applied to suggest a strategy for incremental laneway infill in Hamilton, Ontario. The recommendations could assist the City of Hamilton in meeting its targets for intensification while also maintaining the character of its remaining historic neighbourhoods.

2.1 History of laneway housing England has a very long history of laneway housing, usually called *mews housing*.³⁶ The mews provided secondary entries to stately homes along with accommodation for domestic servants, horses and carriages. Utilitarian uses included coal delivery, night-soil removal, and other untidy yet routine activities. Due to their apparent unseemliness, mews entrances were generally through large gates. The mews-house type was often a form of two-storey row-housing with a semi-transparent ground level for carriage storage and an area above for servants' housing. They were generally double-loaded along a narrow, cobblestone lane. Beginning in the 1960s, cultural views of mews housing changed significantly due to their often desirable locations, especially in London. This small-scale housing type is still highly sought after in England today.

Grid-patterned street layouts with corresponding alleys for service access were a common insertion in the urban fabric of North American cities through the early 20th century. The mews typology was adapted to many North American cities, but due to larger lot sizes, coach houses were usually detached two-storey back buildings accessed by a laneway. Today, these back buildings often serve as car garages or storage. Some cities, however, have seen a similar trend to that in the UK with coach houses being converted back into dwellings. Oak Park, Illinois, a wealthy suburb of Chicago, is home to 266 coach houses, many of which are inhabited. Nearly all streets in Oak Park have corresponding laneways, and many of the large Victorian homes included carriage houses with servants' quarters. Under a grandfather-clause, these coach houses may legally be occupied if they have been continuously lived in with no more than one year of vacancy.³⁷



2.02 Attached coach houses in converted alleys, called mews, have become fashionable addresses in London, England.

YESTERDAY'S ALLEYS . . . TOMORROW'S GARDEN YARDS

IF YOU ARE TIRED OF SEEING YOUR ALLEY FILLED WITH RUBBISH, GARBAGE AND RATS, OPEN TO PROWLERS AND TRESPASSERS . . .

ONCE AN ALLEY IS CONVERTED INTO AN EASEMENT, PROPERTY OWNERS CAN MOVE FENCES AND GARAGES . . . AND REDEVELOP THE AREA FOR MANY USEFUL PURPOSES.

Here's what you can do . . .

1. FIRST GET ALL THE PEOPLE WHO OWN PROPERTY ALONG YOUR ALLEY TO SIGN A PETITION ASKING THE COMMON COUNCIL TO CONVERT THE ALLEY INTO AN EASEMENT.

2. THE COMMON COUNCIL WILL REFER YOUR PETITION TO THE CITY PLAN COMMISSION FOR STUDY AND A REPORT.

3. THE STAFF OF THE PLAN COMMISSION WILL MAKE A FIELD SURVEY . . . TO DETERMINE IF IT IS NECESSARY FOR ANY REASON TO RETAIN THE ALLEY.

4. THEY WILL CHECK TO SEE IF ALL AFFECTED OWNERS HAVE SIGNED THE PETITION AND IF ALL CITY TAXES HAVE BEEN PAID.

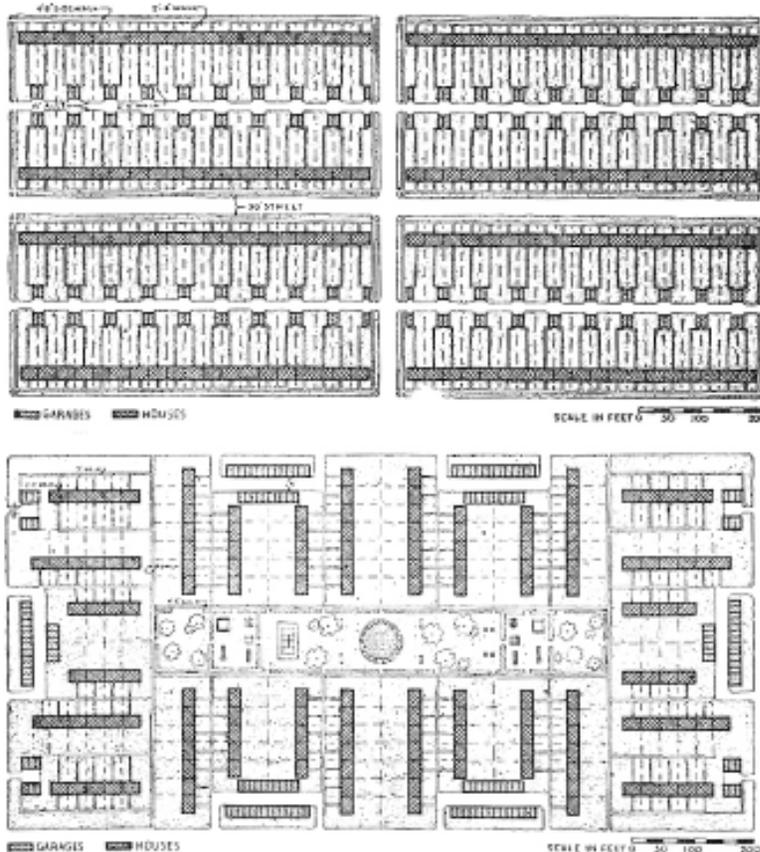
5. THEY WILL CHECK TO SEE THAT THE INTERESTS OF OTHER CITY DEPARTMENTS ARE CONSERVED . . .

6. THEN THE PLAN COMMISSION WILL MAKE A REPORT AND RECOMMENDATION TO THE COMMON COUNCIL.

7. THE COMMON COUNCIL WILL STUDY THE REPORT AND THEN APPROVE OR DISAPPROVE CONVERTING YOUR ALLEY INTO AN EASEMENT.

DPW FIRE PLC POLICE

2.03 A 1950s advertisement in an American newspaper encourages homeowners to convert adjacent alleys into easements, or “garden yards”.



2.04 Diagrams in a 1940 *Architectural Forum* made an economic case for wiping out the traditional alleys and houses (upper) with the creation of superblocks (lower).

Alley housing had many detractors through the late 19th and early 20th centuries. For instance, in the years following the Civil War, Washington, DC's alleys became severely overcrowded. Massive migrations of emancipated slaves overwhelmed the city's supply of affordable housing, and unscrupulous landlords made few efforts to ameliorate the living conditions of the new urban poor. Most alley housing was behind existing homes, and had a two-storey row-house typology. Beginning in the late 1800s, a housing reform movement advocated razing the alley housing as a solution to the undesirable social conditions they fostered. However, like in London, by the 1970s Washington's alleys houses had become desirable addresses, home to many of the nation's political elites.

Through the mid-20th century, many planners across North America believed alleys had become "unnecessary anachronisms", an inefficient use of land that could be used for private rather than public spaces. With the ubiquity of private cars and public transit, residential areas spread around the periphery of urban centres. Alley houses, products of the pedestrian city, were deemed redundant. However, with the renaissance of many urban cores, alley housing has once again become a viable option for those seeking urban housing in historic neighbourhoods.

2.1.1 Laneway Lexicon Alleys have always experienced a mixed appreciation. Originally the utilitarian access for the homes of the wealthy, they were where the service class laboured out of sight. Usually secluded, they have often been vilified as corridors of vice, havens for the seedy underbelly of society. At best, they have been the playground of children or dog-walkers. Most often, they are the semi-forgotten space-behind, where the refuse of progress can be collected and overlooked.

Communities often reveal their valuation of alleys through the names they are given. These can communicate ideal and perceived realities or functional identities. Informal titles such as Tin Pan Alley or Terra Cotta Row might indicate their former economic status or commercial activity. O'Connor's Lane could identify a particular occupant or local character, while Via Maria might signify a formative ethnic presence. Often, laneway nomenclature would reflect the negative associations put on alleys such Goose Level, Foggy Bottom, Swampoodle, Hell's Bottom, and Bloodfield – names given to the overcrowded alleys of Washington, DC.

While there is no known history for the alley names in Hamilton, some names like Wheeler, Fanning, or Blanshard still exist. Others, such as Threadneedle Lane or Chancery Lane – at one point a familiar name for a laneway which connected several legal offices with the courthouse – reveal their former place within the community's economy.



2.05 Few Hamilton laneways have retained their familiar names. Wheeler Place in the Durand neighbourhood is a laneway which includes several lane-oriented dwellings and has maintained its familiar name.

2.2 Re-Inventing the Laneway Several new movements have begun to reinvent laneways, challenging the negative preconceptions that dogged historic alleys in urban neighbourhoods.

In the Netherlands, the *woonerf* was created in the 1970s to fulfill a need for residential streets that were safe for pedestrians and cars. In the United States, a movement called “community greens” has been consolidating back lots and alleys to create communal green spaces for surrounding residents. Currently, several municipalities have begun to “green” their alleys with permeable paving in order to reclaim these back-spaces. These redesign movements point to alternatives for laneways as something more than simply utilitarian urban corridors. By envisioning a residential laneway with elements from these various approaches, a lane could become a highly desirable place to live.

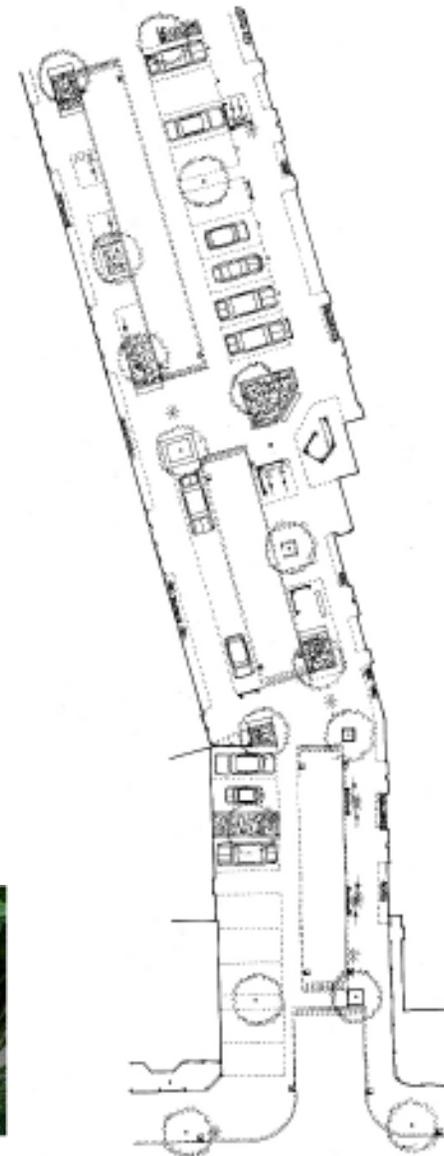
2.2.1 Woonerven A new residential traffic-calming method emerged from the Netherlands in the 1970s. The *woonerf* is a street where pedestrians and cyclists have legal priority over motorists. Translating literally as “residential yard”, these streets were designed for children to play in safe from cars. In a *woonerf*, traffic is legally limited to a “walking pace”.

The *woonerf* is meant to be an attractive place which appeals to pedestrians. This is achieved through a variety of paving materials, numerous trees and shrubs, street furniture, and parking for bikes. Separate car parking areas are provided in clusters. A semi-public realm is usually created between the street and houses with greenery and benches, providing children with space to play outdoors. *Woonerven* often include curbless design, several bends, and specific signage, all intended to prioritize pedestrian access and safety. There are currently over 6,000 residential *woonerven* in the Netherlands.³⁸

Woonerven have been created in both older neighbourhoods and new developments. Due to Holland’s high-density residential fabric, the street scale and housing typology of the *woonerf* is similar to that proposed for laneway housing. As such, this street type may be useful in the creative design of residential laneways.



2.06, 2.07, 2.08 Images reveal features of the *woonerf* such as safety for pedestrians and children, plantings, street furniture, and various paving types.



2.09 Plan of an existing *woonerf* in the Netherlands which varies from 10 - 15 meters in width.



2.10 Existing alley in Baltimore's Patterson Park neighbourhood is typical of many alleys in Baltimore.



2.11 Grindalls Yard alley in Baltimore's Federal Hill neighbourhood has been converted into a "community green".

2.2.2 Community Greens Community Greens is an American non-profit organization which assists communities in reclaiming unused portions of urban neighbourhoods.³⁹ Partnerships with neighbourhood groups convert underutilized backyards and dysfunctional alleys into aesthetic and functional shared green spaces that are owned, managed, and enjoyed by the people who live around them. When well-designed and well-managed, community greens can have remarkable benefits including strengthening a sense of community, providing safe and accessible play space for children, raising property values, and adding ecological sustainability by absorbing storm water and reducing the urban heat-island effect.⁴⁰

In this process, an alley is gated off and pavement is removed before being made into a communal green space. New US federal legislation allows municipalities to gate off and lease alleys, but at least 80% of adjacent owners must agree following a public hearing on the closure. This method of alley redevelopment works best in cities that need significant improvements in safety and green space.

The following steps must be fulfilled to create a community green on an existing block:⁴¹

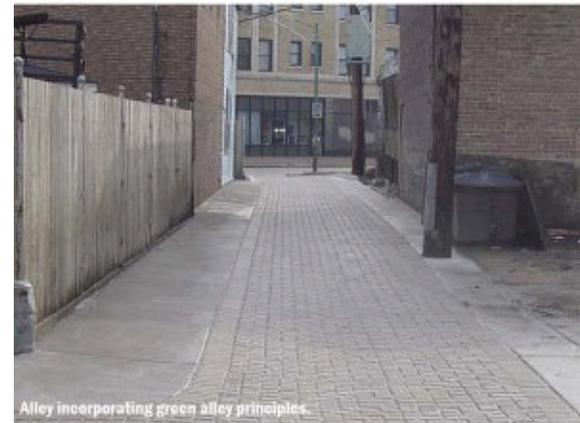
1. Develop buy-in amongst residents and property owners. How many properties will participate? Are they all contiguous?
2. Design shared green. How much property will each house contribute to the shared space? How will private space interface with shared space?
3. Decide on legal framework. What formal legal structure is appropriate?
4. Decide on what kind of entity should 'own' and manage the community green.
5. Develop plan for financing the implementation and maintenance of the community green.
6. Tear down fences, remove paving, and begin landscaping a verdant green space in the city.

2.2.3 Green Alley Initiatives Several municipalities are currently experimenting with “green” alley beautification to improve safety, maximize usability, and increase the potential for new uses surrounding the alley, such as laneway housing.

In 2002, Vancouver, British Columbia, introduced a “green laneway” initiative to modify three test laneways in order to aid rainwater infiltration while maintaining a durable surface.⁴² Materials used in these case studies included two concrete driving strips, structural grass,⁴³ engineered soil, and brick pavers. The project’s goals were to reduce storm water runoff and needed sewer capacity, replenish groundwater, and create more attractive laneways. More recently, Montreal began a new program for transforming several laneways in the Plateau district to be more environmentally-friendly.⁴⁴

In December 2007, the City of Chicago launched an ambitious Green Alleys Initiative. Chicago’s urban fabric consists of 3,000km of alleys and is touted as the “alley capital of America”.⁴⁵ The immense scale of Chicago’s alleys translates into 1,400 hectares of paved impermeable surface, creating a heavy burden for storm water management. The four primary outcomes of the Green Alleys Initiative include: storm water management through permeable paving, urban heat reduction, household waste recycling, and new lighting for energy conservation and glare reduction. The program is funded by the City of Chicago, and it is believed that the cost of construction will be offset by savings in maintenance and cancelling otherwise-necessary upgrades to the sewer system.⁴⁶

These alley initiatives point to a renewed appreciation of laneways in many cities. By rethinking and “greening” alleys, these models are creating a framework for greater program within the laneway.



2.12 Before and after images in a Chicago alley reveal the aesthetic appeal (as well as sanitary and practical benefits) of Green Alleys.

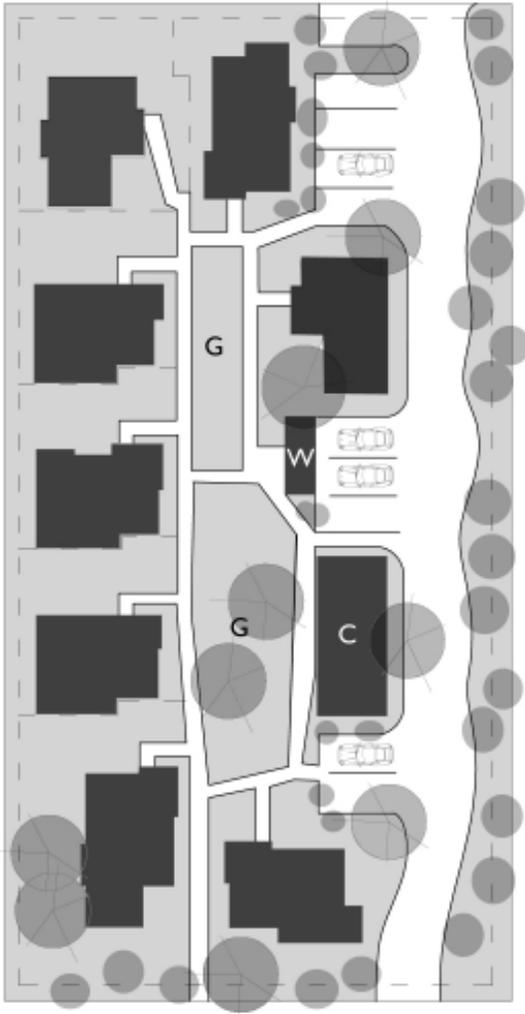
“The alley is not only functional, but an educational green landscape that is helping [Chicago] experiment with design and different ways to handle water.”

-Michael Martin

2.3 Regulatory Issues During the historical development of most North American cities, urban planning did not exist as it does today. Beginning in 1912, the *Ontario City and Suburbs Planning Act* provided regulatory control over the number and width of streets, their location within a subdivision, and the size and form of the lots. Hamilton's first Building Code was enacted in 1914, and the following year a City Planning Commission was created.⁴⁷ Following World War II, modern planning appealed to reform movements and addressed urban overcrowding. A complex system of zoning regulations with segregated uses was created where reducing density, incorporating automobile uses, and raising housing standards were dominant concerns. In 1947, the Washington-based Urban Land Institute issued the first edition of its *Community Builders Handbook* which served as a reference for many North American developers. No longer simply raw land parcels, newly platted lots came with an array of services already in place, but no back-alleys.

During this time, most Canadian cities created zoning regulations prohibiting residential infill on existing lots. Montreal, for example, requires that all dwellings have direct access to a street.⁴⁸ Vancouver does not allow addresses off a lane due to concerns over fire access.⁴⁹ In 1952, Toronto created a "house behind a house" bylaw which enables the Chief Building Official to determine which portion of a parcel is deemed the lot for a particular building.⁵⁰

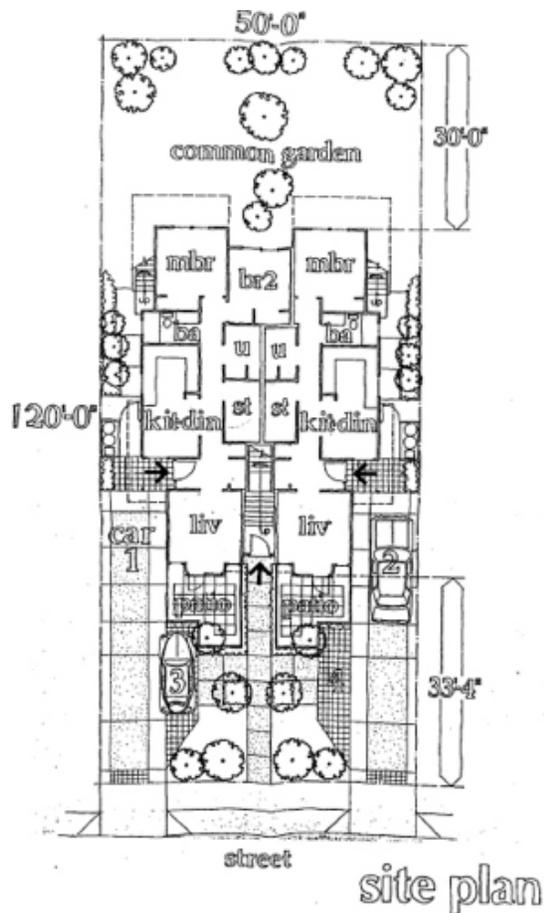
A 1957 Hamilton bylaw prohibits more than one building per lot to be used as a dwelling. In 1960 streets and laneways of lesser width, such as Blanshard and Fanning Lane, were prohibited from future infill development. In 1980 a bylaw limiting houses from development which do not front a "public highway" (with a width of at least 12.0 metres) put a stop to the remainder of attempts for urban infill, as laneway widths are usually no greater than 4.0 meters. These prohibitive uses, along with restrictions on minimum lot width, setbacks, and street frontage have collectively prevented incremental infill anywhere in the city. Today in Hamilton, an infill proposal must undergo a lengthy approvals process, as a *Principle of Land Use* which includes the laneway house typology has not yet become a part of municipal planning policy.



2.13 Site Plan of Cottage Housing Development in Langley, Washington. Sites are twice as dense as a typical subdivision and include a common green (G), community building (C), and shared workshop (W).



2.14 Cottage Housing Development “Backyard Neighbours” in Langley, Washington allows for an ADU apartment on the same lot as each small house in this new development.



2.15 Site plan for a Victoria, British Columbia, infill four-plex on a single urban lot.

2.3.1 Progressive Regulatory Reform in the 1990s Following the Smart Growth movement, many North American cities have altered their policies to encourage infilling of vacant and underused land to increase density and foster new affordable housing. West Coast municipalities have been leading the way with progressive zoning reforms which allow small lot infill or higher density ADU and multi-unit developments.

In 1990, Victoria, British Columbia, developed guidelines for a four-unit stacked townhouse on a single urban lot. The corresponding guidelines emphasized neighborhood context and preserving privacy between residences. Three prototype four-plex demonstration projects were built on three 220m² lots which demonstrated that small lot residential projects can blend well with existing neighborhoods.⁵¹

In 2002, Victoria created a new small lot zoning in the Victoria-Fraserview and Killarney neighbourhoods. Through public workshops and questionnaires, the City's planning department created a vision plan for infill housing and identified appropriate locations for development. The new zoning allows a minimum lot size of 260m², minimum width of 10 metres, and an allowable house size of 160 - 190m².⁵²

The town of Langley, Washington, created a Cottage Housing Development (CHD) zoning code in 1995, the first of its kind to be implemented in North America. This zoning provision was created to meet state and municipal goals of retaining neighbourhood character while providing an expanded range of detached housing options and increasing housing affordability.⁵³ The nearby cities of Shoreline, Redmond, and Kirkland, Washington, have followed suit with similar codes. The CHD provision, allowable in all single-family zones, effectively permits a doubling of density on lots, up to a maximum of twelve cottages on a site. Cottages are restricted to a maximum livable area of 90m². Additional stipulations mandate that each cottage be adjacent to a common area and that parking be provided for each unit in a designated parking area screened from the street. All Cottage House Developments require a conditional use permit which includes a public hearing and approval by the Design Review Board.



Santa Cruz ADU zoning

Vancouver R-10 zoning

Lot area (min) = 460m²

Lot area (min) = 511m²

2.16 Accessory Dwelling Unit (ADU) zoning regulations for Santa Cruz and Vancouver.

2.3.2 Progressive Regulatory Reform in the 2000s Santa Cruz, California pioneered Accessory Dwelling Unit (ADU) standards in 2003 to encourage the development of secondary units on single-family lots.⁵⁴ The city’s planning department released an ADU Design Manual with Prototype Plan Sets provided by seven local architects. The ADU Manual helps residents navigate the ADU design, approvals, and construction process. The ADU zoning standards require a minimum lot size of 460m² (standard for Santa Cruz, but very large by Hamilton’s standards) while reducing front and rear yard setbacks.⁵⁵ The program’s success has been nationally recognized.² Since its inception, over 80 other cities have requested copies of the manual and prototypes, revealing a significant interest in ADU housing across North America.⁵⁶

Vancouver, British Columbia, created an ADU zoning in 2005, called R-10, which is intended to encourage the retention of existing “character” houses while promoting new infill housing.⁵⁷ The R-10 zoning allows two residential buildings on the same lot with a minimum lot area of 511m² (very large lots compared to downtown Hamilton). Along with the new zoning type, Vancouver’s planning department included detailed design guidelines in order to maintain the fabric of its historic communities.



2.17 Vancouver’s R-10 guidelines allow for multiple residential buildings on a single lot, as well as lot assembly. Diagram shows possible configurations for two lots which have been assembled.

Toronto’s case-by-case approvals process has both advantages and disadvantages. The advantages weigh towards the public interest in maintaining property standards, giving careful consideration to the impact of a development, and allowing public input. The disadvantage is that the length of time and expense required for an application making the process very difficult for individual homeowners and small laneway developers to undertake. Beginning in 2004, Toronto City Council was moving towards regulatory reform to allow laneway housing. Following positive studies by both CMHC⁵⁸ and the University of Toronto,⁵⁹ the City planning department began to show interest in laneway housing as a valid form of residential infill and suggested a task force and pilot project be initiated. After negative reactions from Public Works over servicing infill housing, the initiative was dropped. However, a modification was made which allows city planners to decide whether there are “special considerations” which make a potential infill site worth pursuing.⁶



Hamilton C/D zoning
no ADU allowed

Lot area (min) = 360m²

Building height (max) 11.0m (C zoning)
14.0m (D zoning)

Hamilton D5 zoning
no ADU allowed

Lot area (min) = 225m²

Building height (min) 9.0m

PROPOSED Infill zoning
allows ADU or independant infill dwelling

Lot area (min) = 275m²

Building height (min) 9.0m
Infill building height (max) = 2/3 Building height

2.17 Existing C, D, and D5 single-detached residential zoning in Hamilton, and proposed new infill zoning revision to Hamilton zoning bylaws. Nearly all Hamilton's older residential neighbourhoods are classified zoning "C" or "D".



2.18 Existing location of Hamilton D5 zoning.

CURRENT HAMILTON ZONING BYLAWS

- 4.3a No more than one dwelling permitted per lot.
- 4.3b Lot must abut a “public highway” (road width 12.0m) for a minimum 4.5m
- 4.8a No accessory building is allowed for human habitation.
- 4.8e Maximum height of an accessory building is 5.0m
- 4.8c All accessory buildings on a lot cannot exceed a total gross floor area of 97m²; total footprint must be smaller than 30% of the existing rear yard.
- 4.8d Only accessory buildings less than 10m² and 3m high may be located in a required rear yard.

2.19 Existing general conditions in the Hamilton zoning bylaw which limit residential urban infill.

2.3.4 Regulatory Reform in Hamilton

Hamilton’s planning policies officially favour intensification; however, policy often fails at the implementation level due to various planning restrictions the city imposes on projects. These include prescriptive zoning frameworks, heritage considerations, protection of designated employment lands, and requirements for site remediation. The Planning Department must ensure that the City’s planning demands are aligned with its stated intention to encourage intensification.

Recently, Hamilton’s D5 zoning (Downtown Residential) was created for a small portion of the urban core, allowing for a smaller lot area of 225m², decreased front and rear yard setbacks and parking requirements of only one car per dwelling. Progressive regulation reform in Hamilton would include defining the principle of land use and re-defining bylaws, perhaps including a new zoning for appropriate residential infill sites:

1. Principle of Land Use⁶¹

Hamilton’s City Planning Department must create the principle of land use necessary to recognize laneway housing as a legally allowable development type. This thesis is intended to research and reveal the effects of laneway infill for Hamilton’s historic urban fabric and is intended to inform Hamilton officials of the beneficial characteristics of this development type.

2. New Zoning Bylaws

Zoning to be created to govern developments which would allow more than one detached dwelling on a property, set lot area requirement and setbacks, prescribe amenities and parking need, etc. Allowance must also be granted for a residence to front a laneway, rather than a “public highway” as the existing bylaw dictates. Diagram 2.17 includes a new proposed zoning with reduced lot area and separation requirements.

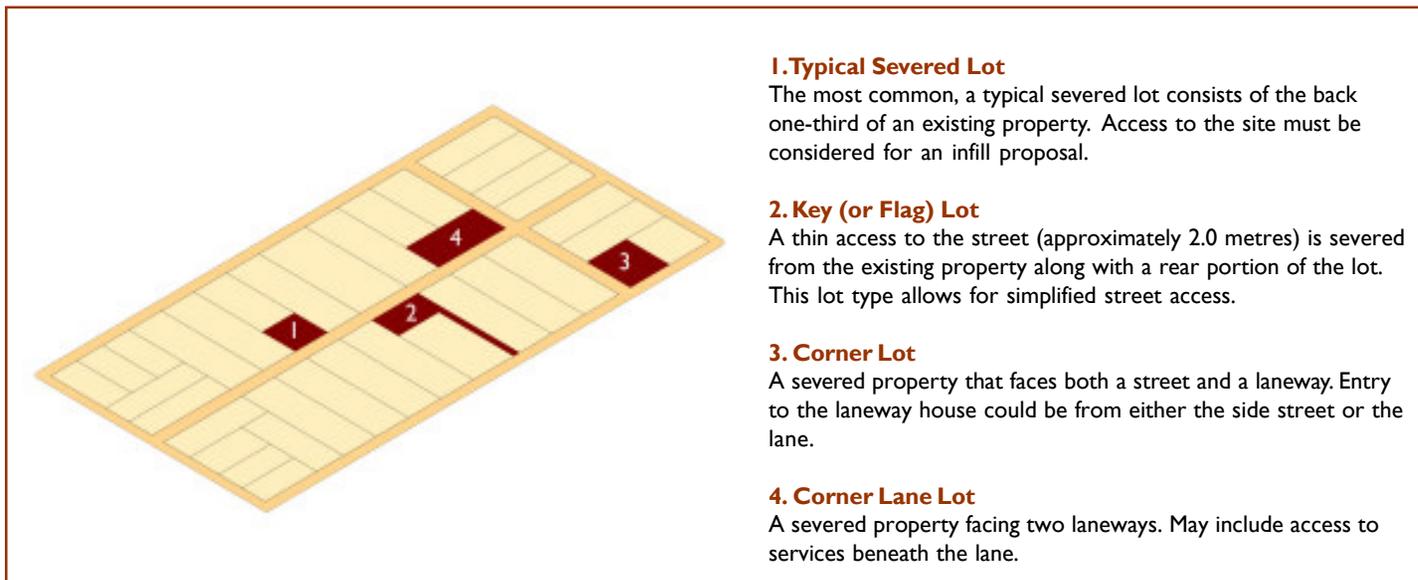


2.20 A laneway house may be either severed from its original lot or rented as an ADU. Land tenure options have various benefits for different needs of the homeowner. This converted coach house in Hamilton is located on the same property as the street-facing house and is used as an art studio.

2.4 Land Tenure As municipalities apply their own regulations to small lot infill development, two approaches have been particularly successful in encouraging incremental intensification: accessory dwelling unit infill which includes two or more separate buildings for habitation on a single lot, and lot severance to create two separate properties with dwelling units. Each approach has corresponding benefits and drawbacks.

2.4.1 Accessory Dwelling Unit (ADU) Infill This land-use type allows two or more detached dwellings on a single lot. The smaller dwelling is often called an accessory dwelling unit, or ADU. Cities desiring affordable rental accommodation or additional controls over the tenure of this small lot infill may choose this path. Residents interested in accessory dwelling units include elderly parents or adult children of the homeowner; temporary residents of an area, and those seeking more affordable rental housing in areas with high real estate values. Benefits to existing home owners include regular rental income as well as control over who lives behind the primary dwelling.

Municipalities may place restrictions on ADUs including minimum lot areas, size of ADUs, lot coverage, setbacks, height restrictions, and parking or amenity space requirements. Some may implement owner-tenant relationship restrictions or partitioning clauses preventing absentee landlords from owning the property. Tamarac, New Brunswick requires tenants of ADUs to have a one-year contract in order to confirm owner-tenant relationships under their Planning District Commission Garden Suite program.⁶²



2.21 The four types of lot severance most applicable to Hamilton. When adjacent rear lots are severed, they may be grouped together to site one or more infill dwellings.

2.4.2 Individual Ownership A lot severance divides an existing residential lot, creating two legally-separate properties. Montreal has mandated that laneway housing take advantage of the Corner Lot-type due to its requirement that a lot have direct access to a street. In this case the house may face the lane, but it must have direct access to the street. Most of Toronto's new laneway housing has been created on Corner Lane Lots, a site-type common in Toronto and made desirable due to its bordering other properties on only two sides. This can result in better light access and privacy. The Key Lot is somewhat uncommon, although its advantage is that it maintains a narrow corridor connecting to the street. This could allow for services to be brought from the street without requiring an easement, permit a street address, provide front and rear accessibility, and improve access for fire and emergency services. Typical severance lot types may face more challenges in overcoming the issues other types avoid.

Urban lots severed for incremental infill often facilitate home ownership, rather than rental occupancies. Potential buyers of laneway houses include those who might otherwise be in the market for a condominium (childless couples, empty nesters, and singles), but who desire a more private, ground-oriented, and unique living arrangement. Homeowners who choose to sever their lot can either sell the new, small lot or develop on it to make a potentially greater profit. Once sold, however, control over the adjoining property would then be diminished.

No North American city has yet created standardized bylaws which allow severed laneway housing as a matter of course, and therefore, proposals must undertake long approvals processes in order to secure the necessary variances. Stinson and Van Elsander (2003), Shim and Chong (2004), and others argue that a new set of regulations that cater to laneway housing should be created. This new type of zoning would allow for smaller lot areas, greater lot coverages, decreased setbacks and parking requirements, and primary access off the lane.



2.22 An underused laneway in the Kirkendall neighbourhood reveals the potential for infill housing.

2.5 Economic issues The supply of smaller, detached, ground-oriented houses in Hamilton is not adequate for the demand. A number of economics-related obstacles currently hinder the development of additional units of this type:

Lack of familiarity with intensification developments – Many homebuilders or small developers have little experience with incremental infill projects. The peculiarities of redevelopment and intensification projects – from site planning to environmental testing to construction financing – are different from larger site projects. Developers are sometimes leery of being the first to try something new, especially in economically depressed areas. Higher risks can be partially reduced by making available various resources including CMHC studies and demographic information about a community. Municipalities may kick-start intensification through providing infrastructure and community amenities to support infill redevelopments.

Project economics – The economics of infill projects are more complex because of the associated higher infrastructure costs, constrained site conditions, parking requirements, and development charges. Unfavorable economics for infill projects can be addressed by regulatory changes such as eliminating parkland dedication fees, lowering development charges, and simplifying the approvals process. Some financial assistance through grant or loan programs may be extended to smaller projects to help offset costs.

Public opposition (NIMBYism) – Many developers are skeptical of infill developments due to the high probability that these projects will be delayed by resistance from the surrounding community. Neighbourhood opposition can hinder an infill project by prolonging the approvals process and making the development unaffordable or by generating political pressure to block the project.

2.5.1 Supply Incremental infill is one way of addressing the demand for small scale, affordable detached housing in areas with appreciated housing prices. Based on market pricing, average housing costs in a neighbourhood have to exceed the costs of creating new laneway dwellings, including lot price, servicing fees, and construction costs.

Incremental infill is an efficient use of land based on the proposed typologies of this thesis. The area required depends on the desired use, but would often be less than 100m². This scale lends itself ideally to transforming vacant, unused, or underused patches of the urban residential fabric.

Laneway housing has become an obvious option in communities with high property prices, especially in Toronto and Vancouver. There, the average cost of downtown homes has exceeded the means of even those with moderate incomes, resulting in a demand for smaller, lower-cost housing. In Toronto, lower cost is relative, with a \$300,000 alley home being considered affordable when compared with a \$750,000 street-fronting house.

As not all land owners would consider severing a portion of their lot, those that might choose to do so have the potential to profit from the shortage of available development properties. Likewise, homeowners who build an ADU behind their house would profit from monthly income revenue. The likelihood of these two choices for Hamilton homeowners would require another study, however, and is outside the scope of this thesis.

Hamilton's housing market has not seen the price inflation of Canada's largest cities, yet the demand for detached housing in its desirable downtown neighbourhoods is strong. As these are also the areas with the most alleys, the opportunity to market laneway housing is great.

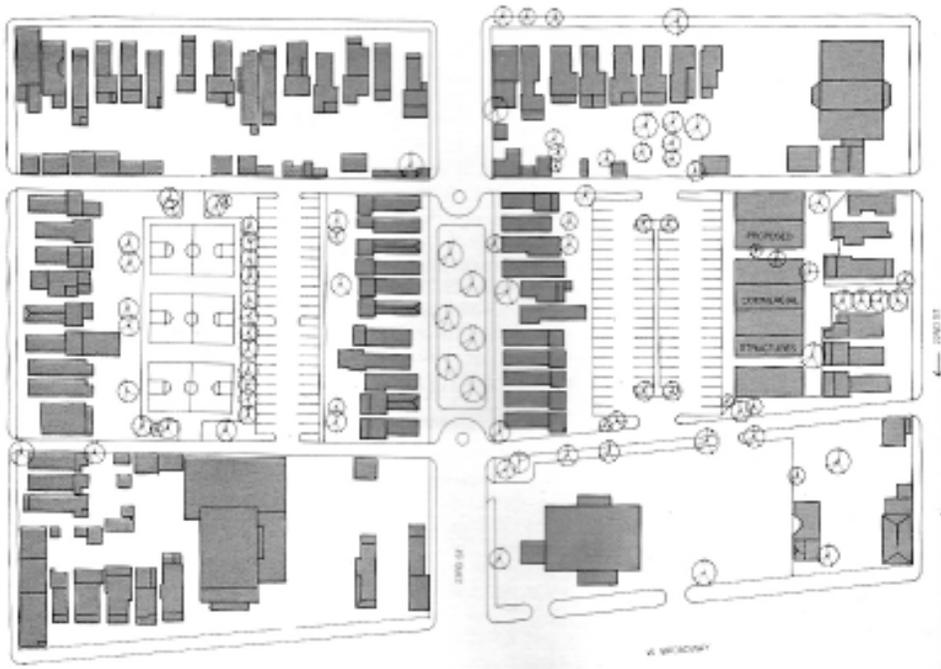
2.5.3 Market Entry, Demand, and Costs Small-scale projects could be initiated by either property owners or smaller developers with relatively limited resources. Incremental infill would not overwhelm the market's demand for smaller, affordable ownership opportunities (as might a multi-storey condo tower, for instance.)

Construction costs for new lane-oriented dwellings in Canadian cities has generally been between \$100,000 to \$175,000.⁶³ In Vancouver, a design-build team is prefabricating studio laneway infill for \$108,000. In Toronto, Jeff Stinson and Terrance Van Elsander have designed laneway house prototypes with construction costs between ranging from \$60,000 to \$90,000. In Montreal, attached lane-oriented dwellings have been sold (including land, service connections and all fees) for under \$175,000.

Servicing a laneway-accessed lot would represent a significant cost – perhaps up to 20% of the project value in Hamilton. However, that could be relatively reasonable in comparison with servicing new greenfield developments,⁶⁴ as it takes advantage of existing municipal services. Costs for servicing a laneway lot in Hamilton may vary from \$25,000 to \$35,000, depending on site location and access.⁶⁵ Where an ADU is built adjacent to an existing house with adequate servicing, fees for servicing could be significantly reduced by connecting to existing lines.

The other significant costs include development fees and those associated with the approvals process. Appendix A shows a list of costs currently associated with lot severance and development for Hamilton. The primary fees are for development charges - \$20,000, engineering consent agreements - \$3,000, and rezoning applications - \$2,800. Any additional fees could push the total over \$30,000 for a new lot.

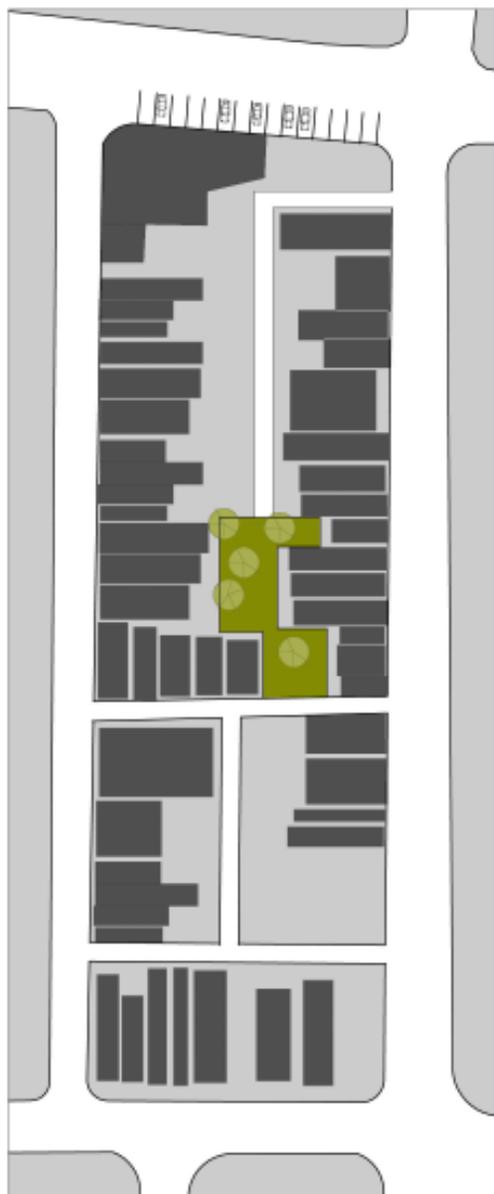
Santa Cruz has taken a progressive stance on fees that benefits homeowners and lower-income renters alike by placing affordability restrictions on ADU rental units. By covenanting to maintain rents⁶⁶ at or below 50% of the median income for the life of the unit, all building and development fees are avoided. This type of creative solution should be considered to encourage affordable housing in Hamilton.



2.23 Laneway intensification proposal for a Louisville neighbourhood includes creating parking, recreation areas, and commercial space in the space underused laneways and residential backyards currently occupy.

2.6 Laneway Intensification Case Studies

The following survey of case studies highlights various cities pursuing innovative solutions for incremental intensification. The case studies cover neighbourhood planning models, zoning requirements, and small-lot infill prototypes. They present some of the foundational work to make this type of incremental development acceptable by municipalities, planners, and designers.



2.25 View of rowhouses on East Cross Street beside Chandlers Yard.



2.26 Chandlers Yard during construction in 1976. The three garages in the foreground were demolished and three rowhouses were infilled on the site.

2.24 Chandlers Yard (indicated in green) was created from a laneway and the back portion of twelve rowhouses in the Federal Hill neighbourhood of Baltimore.

2.6.1 Baltimore “Community Greens” Laneway Redevelopment (1977)

infill type	community development
benefit	neighbourhood
extent	n/a

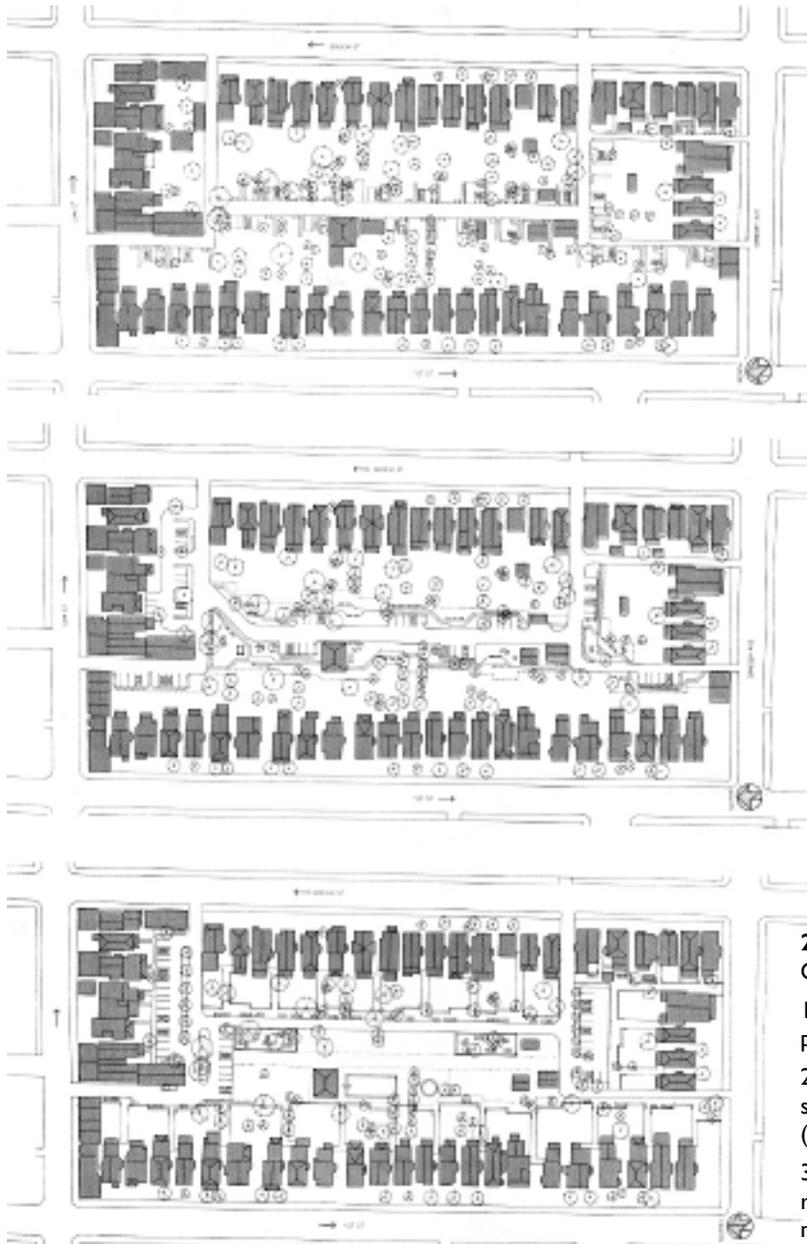


2.27 View of Chandlers Yard from neighbouring balcony.

In the late 1970s, Community Greens helped redevelop an unused stretch of residential laneway in downtown Baltimore.⁶⁷ The Federal Hill neighbourhood had nearly been razed in the 1960s to make way for a new highway. The neighbourhood was saved when it was listed on the National Register of Historic Places and a city-sponsored lottery sold once-condemned row houses cheaply in exchange for rehabilitation guarantees.

Chandlers Yard was the vision of one of these homeowners who eventually recruited eleven neighbours to each pay \$1,000 and give up a portion of their backyards and alley access in exchange for a community green. The communal space is a well-landscaped quiet place for private relaxation as well as a crossroad for meeting neighbours and hosting community events. A low wooden fence and gate delineates the transition from each private backyard to the shared courtyard.

Construction of the courtyard was achieved by designating the group of homes a Planned Unit Development, a planning device usually reserved for much larger development projects. Each homeowner was given a share in the courtyard, which was indicated by a separate deed attached to the title for each house. Routine maintenance of the space and costs are shared between the residents. Property values in the neighbourhood have increased significantly since the development of the community green which is appreciated as a welcome oasis in the middle of the city. Since this project, Community Greens have helped create many successful projects across the United States.

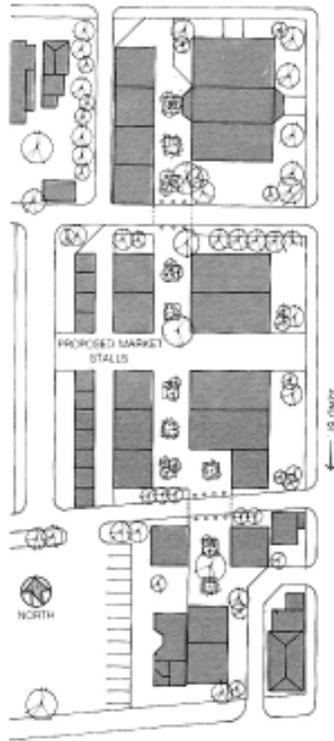


2.28 A three-part proposal for the Oak Street/ Ormsby Avenue neighbourhood includes:

1. fencing all private property, including car parking areas to increase security (top);
2. closing off the alley and creating common open space and parking from under-used backyards (middle);
3. further reducing private yard space for residents with the added benefit of a shared neighbourhood swimming pool.

2.6.2 Louisville Alley Redevelopment Case Studies (1978)

infill type	community development
benefit	neighbourhood
extent	n/a (theoretical)



2.29 Proposal for the Grunder Avenue neighbourhood included inserting market stalls into the laneway fabric behind a commercial district, permitting a gradual conversion of houses to shops.

In the late 1970s, Louisville, Kentucky, historian and writer Grady Clay participated in various design *charettes* along with the non-profit Louisville Community Design Centre to envision rehabilitation of the city's 1,200 kilometers of historic laneways, many of which had been plagued by disinvestment and neglect.⁶⁸ Responding to the condition of Louisville's alleys, Clay deplores, "it is time to turn our speculative gaze from the open fields of suburbia to these older urban blocks...it is time to revise rules that make difficult the re-subdivision of urban lands into more effective layouts, and to look at the hidden alleys as good places to live."⁶⁹ These case studies were pioneering in the promotion of laneway rehabilitation and housing.

The *charettes* included five different neighbourhoods with geographical and programmatic diversity. One study included a typical rectilinear block in the Oak Street/Ormsby Avenue neighbourhood. The alley in this block was a public nuisance, but the designers believed it could be turned into a privately-managed asset. One proposal encouraged residents to simply fence in their properties, leaving only the alley as public space. Another alternative was to close off all or part of the alley, consolidating it with owners' backyards to create a community commons. A third option included adding a community pool in the shared space, its cost shared equitably by residents.

A second *charrette* took place in an older, declining neighbourhood near Grunder Avenue where "H"-shaped alleys had considerable unused alley frontage and vacant land. One proposal for this block suggested adding low-rent market stalls and parking behind a local shopping district. A second solution included building a three-court basketball centre as a safe play space for neighbourhood youth, replacing nine little-used backyards and an adjacent alley. A third option included constructing low-density apartments for the elderly in the previous backyards of seventeen lots.



2.30 Site plan of 'Backyard Neighbours' pocket development in Langley, Washington, which employs a doubling in housing density through the Cottage House Development zoning.



2.31 Third Street Cottages development includes a common greenspace for residents.

2.6.3 Cottage Housing Development, 1998

infill type	pocket development / ADU
benefit	new development, affordable
extent	approximately 100 new houses

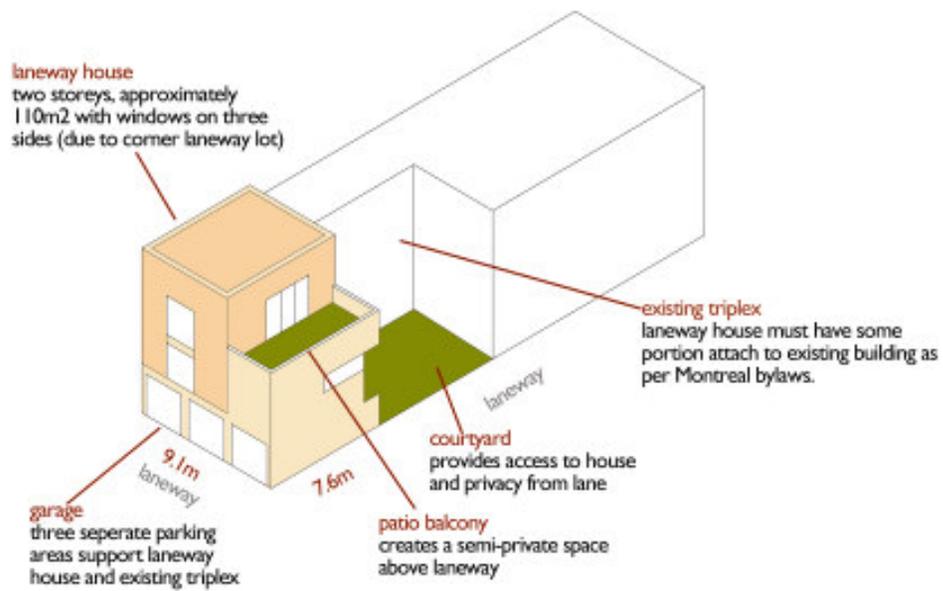


2.32 A small (41m²) cottage in the Third Street Cottages development.

The Puget Sound region in Washington State has been progressive in permitting new types of dense neighbourhood development through the unique code provision of Cottage Housing Development (CHD). Called “pocket neighbourhoods”, these developments have demonstrated that clusters of smaller homes can be successfully integrated into otherwise single-family areas. There are at least a dozen⁷⁰ successful developments in the region which have taken advantage of a similar cottage type and density. Due to their layout, the first two developments under this zoning, both on Whidbey Island, are particularly applicable to laneway housing.

The City of Langley is a small waterside town located on Whidbey Island, one hour from Seattle. Completed in 1998, Third Street Cottages consists of eight detached, one-bedroom cottages grouped around a garden courtyard with detached parking. Built on four 660m² single family lots, the 78m² cottages utilized the CHD zoning which allowed a doubling in housing density. The original occupants were singles and couples (and one toddler) between the ages of 40 and 65.⁷¹

The second pocket neighbourhood of this type includes two smaller dwellings on each separate lot and weaves them together with a shared alleyway. While the 110m² front house includes two bedrooms and an office, the 39m² backyard cottage provides the flexibility of a granny flat, rental unit, office, or guesthouse.



2.33 Montreal Laneway Infill Prototype
Proposed by Jocelyn Duff and Terrence Dawe, 1999

2.6.4 Montreal Laneway Infill Prototypes, 1999

infill type	single and multi-unit laneway housing
benefit	affordable
extent	not determined



2.34 *Les Lofts du Pont I*, a five-unit infill project fronting on a laneway in downtown Montreal.



2.35 Figure-ground diagram of *Les Lofts Du Pont I*.

The first in a wave of studies considering Canadian laneway housing, a 1999 Canada Mortgage and Housing Corporation (CMHC) paper looked at the municipal bylaw barriers and options for laneway housing in Montreal.⁷² The Affordability and Choice Today (ACT) project team, headed by architects Terrance Dawe and Jocelyn Duff, documented 359 existing laneway houses in Montreal and developed a list of criteria for selecting suitable sites for this type of housing. A questionnaire sent to residents of laneway houses showed a high level of satisfaction, noting affordability, tranquility, lack of vehicular traffic, and proximity to work and shopping as significant advantages of laneway housing.

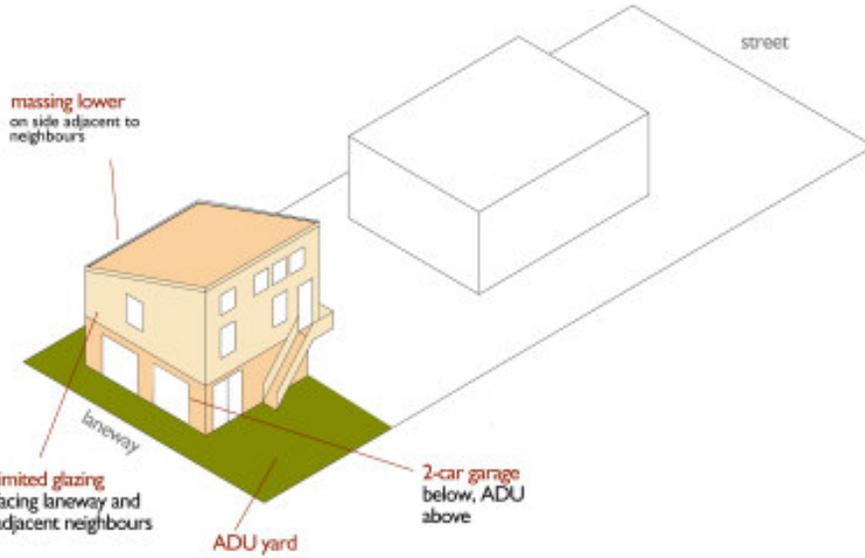
The Montreal laneway housing study concluded with a proposal to alter Montreal regulations to allow laneway infill. Stipulations in this proposal included:

All lane-oriented infill be no more than 20 meters from a street.

Infill must be sited adjacent to two lanes, or a lane and a street.

Laneway houses have their own water supply, a minimum of two bedrooms, an area of 85m², and access to private outdoor space via a balcony, roof garden, courtyard, or porch.

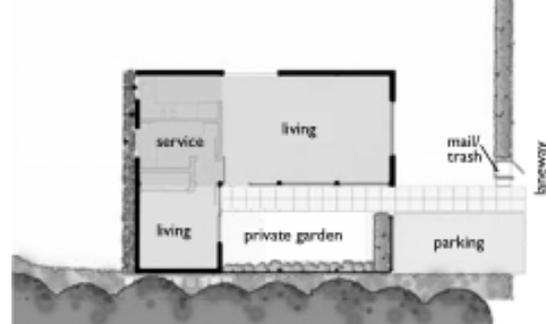
Following the study, Dawe and Duff created a development company called *Les Developpements MAS Inc.* which has built three lane-oriented residential infill projects with a total of 25 housing units.⁷³



2.36 Santa Cruz ADU Prototype
 Santa Cruz ADU Guidelines, 2003



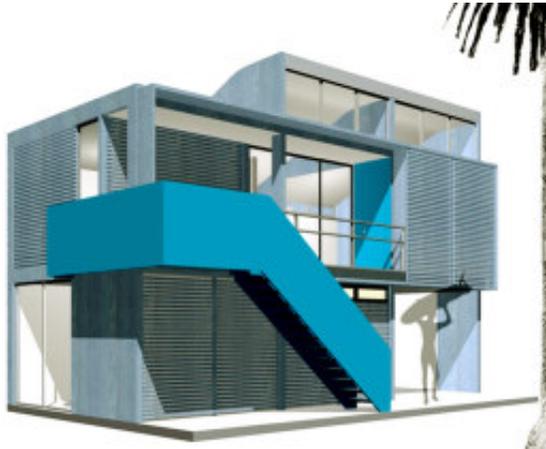
2.37 ADU prototype utilizes SIPs construction, a trombe wall and greywater storage and re-use. Design by CSS Architecture.



2.38 Plan and rendering for ADU prototype with prefabricated wall panels and a green roof. Design by Peterson Architects.

2.6.5 Santa Cruz Accessory Dwelling Unit Prototypes, 2003

infill type	ADU
benefit	affordable housing
extent	250 infill units expected



2.39 ADU above workshop/garage with passive solar design and sleeping loft. By SixEight Design.



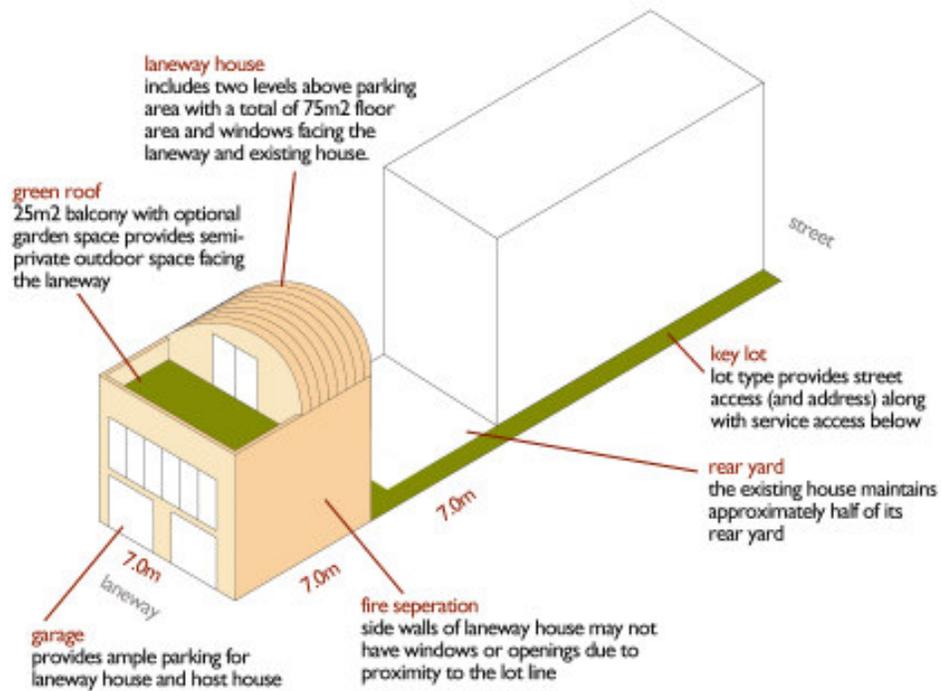
2.40 Figure-ground diagram of a typical block in Santa Cruz with potential for ADU infill.

In 2003, Santa Cruz created an Accessory Dwelling Unit (ADU) program to help reduce the impacts of population growth into its greenbelt by allowing affordable infill rental housing in the city's existing neighbourhoods. The ADU Development Program was designed to encourage small-scale neighborhood-compatible housing and allows for a simpler and shorter ADU permit approvals process as well as some ADU development incentives.⁷⁴

The new zoning allows ADUs on residential lots of 460m² or greater, and that meet setback, height and parking requirements. Unit size is limited to 46m² and a single storey. Two-story ADUs or any infill unit that does not meet standardized zoning guidelines would require a public hearing and permit.

Seven local architecture firms were retained to design prototypical ADUs which could inform homeowners of the opportunities within this type. A book of plan sets was created with full working drawings for these houses, allowing homeowners to utilize them free of charge. The prototypes in the Plan Sets are energy efficient, have small building footprints, and offer privacy for tenants and homeowners. Most plans include both street or alley access options for the infill units.

Since its inception, between 40 and 50 new infill units have been built annually. The program's goal is to achieve incremental infill growth of 250 accessory dwelling units within Santa Cruz's existing residential fabric.⁷⁵



2.41 Toronto Key Lot Infill Prototype

Proposed by Jeff Stinson / Terrance Van Elsander, 2003



2.42 Laneway house prototype by Jeff Stinson and Terance Dawe, 2003.



2.43 Laneway house on Sprout Lane, designed by and for Peter Duckworth-Pilkington and Suzanne Cheng, 2003.

2.6.6 Toronto Laneway House Prototypes, 2003

infill type	laneway housing
benefit	affordable, location
extent	6,000 units potential



2.44 Laneway infill house on Ways Lane, at a cost of \$110,000 and designed by Diamond+Schmitt, 1997.



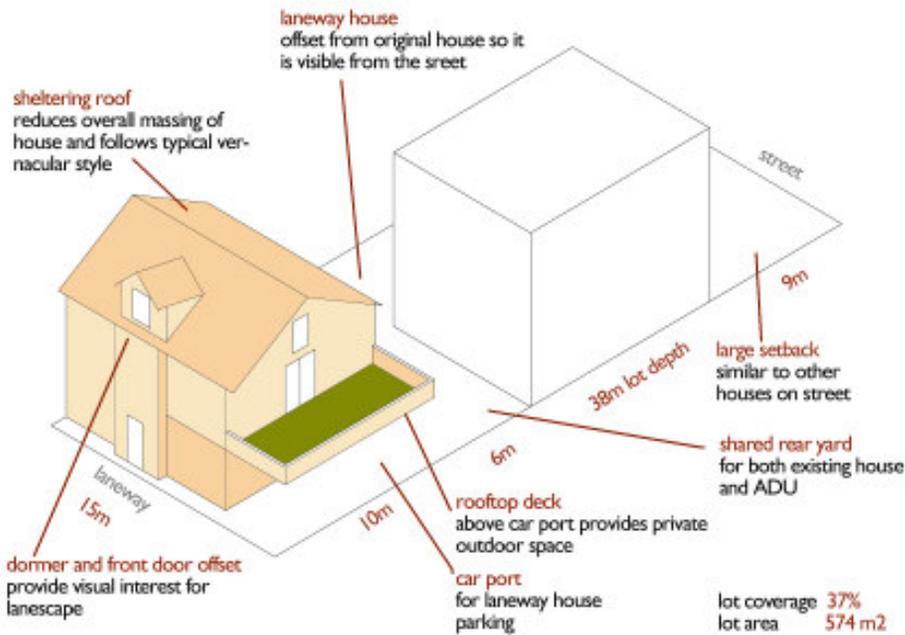
2.45 Figure ground of Ways Lane in downtown Toronto.

Jeffery Stinson's 1989 Prototypical Urban Family House was a precedent in Toronto's new movement advocating laneway housing. In 1993, Brigitte Shim and Howard Sutcliff completed their own home, located on the corner of two laneways in the city's east end. Several new laneway projects have been built in Toronto in the past decade by architects⁷⁶ receiving significant press coverage and publication in numerous design journals. A common feature of these projects has been the long approvals process they have had to endure.

In 2003, Jeffery Stinson and Terrance Van Elsander completed a CMHC study of laneway housing in Toronto.⁷⁷ The study included a history of the infill type in Toronto and a survey of vernacular laneway infill types which influenced their own suggested criteria for infill site location and type. The criteria included:

- Six-meter minimum lot widths
- Existing lot coverage under 30%
- Direct access to services
- Proximity to fire hydrants along with fire-fighting access

The report estimated that laneway housing could increase neighbourhood densities by between 5% and 10%. This could involve adding up to 6,000 new residential units along Toronto's 2,433 city-centre laneways (which are 311 kilometers in total length). The study also included three prototypes for Toronto laneway housing.



2.46 Vancouver Arbutis Ridge Infill
2049 W. 14th, Vancouver

“If we are serious about providing quality housing so that the next generation has some hope of living in this city too, then we need to be more flexible and diverse in our housing types.”

- Small Footprints, Big Steps



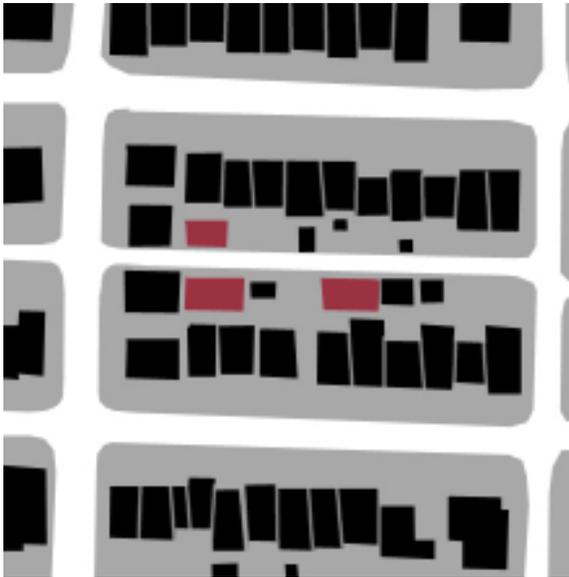
2.47 New infill housing by the Vancouver design-build firm Smallworks.

2.6.7 Vancouver Laneway Housing, 2006

infill type	ADU
benefit	affordable, location
extent	47,000 units (potential)



2.48 New laneway infill in Vancouver's Kingsway-Knight neighbourhood.



2.49 Figure-ground diagram of a typical block in Vancouver with potential for ADU infill.

Vancouver, British Columbia's EcoDensity Initiative has noted laneway housing as a viable opportunity for increasing urban density.⁷⁸ Precedents for laneway housing in Vancouver are plentiful on larger lots (15m frontages or more) in several older neighbourhoods, as well as on some smaller lots (10m frontages) where variances were given in exchange for neighbourhood character retention.

In 2005, the Vancouver City Planning Commission sponsored a report entitled "Small Footprints, Big Steps" which highlighted the inflated market for detached housing in Vancouver and recommended laneway housing as an alternative to large-scale intensification. Vancouver is already home to over one hundred laneway houses in its various historic neighbourhoods. That same year, Small House/Duplex zoning (called R-10) was created in the Kingsway-Knight neighbourhood. Included with the new zoning was a set of design guidelines of the preferred house typology, scale, form, and entry transition to match the character of older Vancouver. The guidelines also highlight consistency and variety, composition, and materials integrity in order to create "livable spaces."

Laneway housing initiatives have continued to gain momentum in Vancouver. CMHC is currently funding a study in Vancouver called "Livable Lanes" by Joaquin Karakas, who also led a workshop in October 2006 for the "Affordability by Design" forum.⁷⁹ That session focused on laneway housing and included spatial analysis, a study of existing laneway houses, and a review of Vancouver policy and zoning schedules to illustrate the opportunity for expanding this form of infill housing. Karakas proposes laneway housing which avoids parcel assembly. The study suggests that approximately three-quarters of lots in Vancouver have potential to accept a laneway house, for a total of 47,000 new units.



3.01

03 Hamilton's Residential Urban Fabric



3.02 View of Hamilton's steel mills from the ground.



3.03 Lloyd D. Jackson Square mall.



3.04 Hamilton's steel mills from the air.



3.05 Hamilton's downtown began to change in the 1960s with the addition of new high rise towers to the residential fabric.

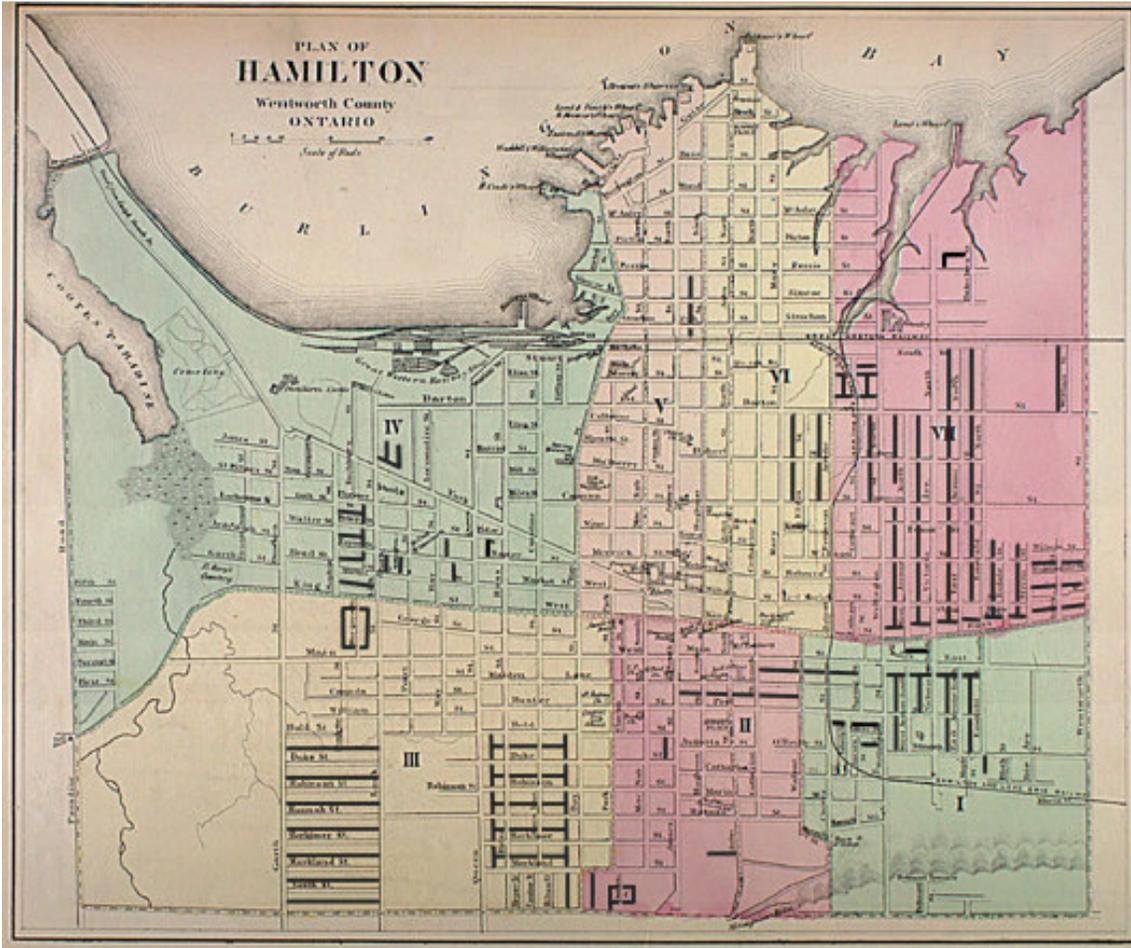


3.06 Houses in Hamilton's Kirkendall neighbourhood.

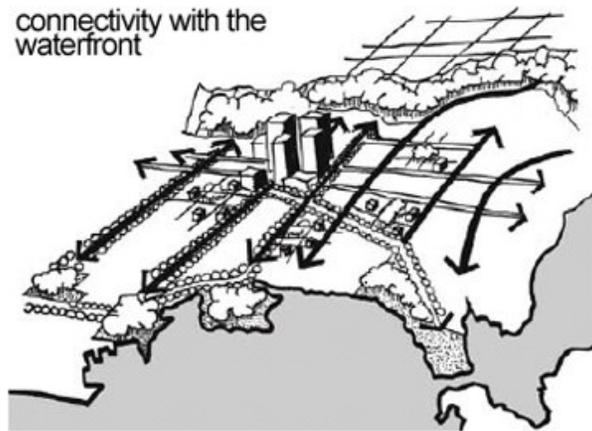
3.1 History Hamilton is in many ways a typical North American industrial city. After decades of economic strength, this Great Lakes port city's wealth derived from steel and heavy manufacturing industries has waned. Economic globalization has driven a number of Hamilton operations to lower-cost regions of the world. While steel and manufacturing remain important economic activities, the structure of Hamilton's economy has changed considerably since its industrial zenith. However, unlike many post-industrial cities that have slipped into dramatic decline, Hamilton has held its own and today the city is at a point of transition.

The "urban renewal" movement of the 1960s and 1970s saw many historic buildings torn down and new, modernist projects constructed. This movement saw landmarks such as the Victorian-style City Hall, The Palace theatre, the Birk's Building, and many others leveled in favour of monolithic modernist designs, finally culminating in the creation of Jackson Square Mall, an inward-facing shopping centre covering two city blocks. The complex also included two large office towers, a Sheraton Hotel, and an Eaton's Centre. This era also saw the tallest buildings in Hamilton erected, including the 43-storey Landmark Place and the First Place seniors complex. Large civic buildings such as the new City Hall, Hamilton Place auditorium, the Hamilton Convention Centre, and Copps Coliseum were all part of the urban renewal drive.

The 1980s brought a time of tension in the city as citizens began to protest the urban renewal strategies of the City. This conflict peaked in 1983 following the "Gore Park Fiasco", with city residents squaring off against City planners over public space in the core. The 2001 forced-amalgamation of Hamilton with six other satellite communities pushed municipal interests further out towards the suburbs where the fastest growth has been occurring. While economically the city has a steady labour force, much of the growth has occurred in suburban communities from where residents commute out of the city to other municipalities,⁸⁰ creating an economic void in the downtown core.



3.07 An 1875 map of Hamilton reveals the city's original urban fabric, including laneways (in black).



3.08 Urban re-alignment of Hamilton is occurring as new vitality extends north-south from the downtown towards the waterfront.

3.2 Residential Morphology of Hamilton

During the 1800s, a typical lot in a Hamilton survey was 15 meters x 38 meters, quite large compared to most North American cities of the time.⁸¹ Land speculation was rampant, and the city experienced several housing booms. Most parts of central Hamilton (those parts that include laneways) were surveyed prior to 1847, when mandatory registration of subdivisions came into effect.⁸² Mid-Victorian surveyors and developers created the future layout of the city's residential districts by determining the width and spacing of streets, the presence and location of amenities, and the dimension and orientation of building lots. These early surveys often produced varied streetscapes due to the scale and pace of subdivision (and the reputed inebriation of some surveyors). It was not uncommon for houses on adjacent streets to be constructed even decades apart. In the mid-Victorian city, services such as water and sewer lines were left to be negotiated between residents and the bodies providing the infrastructure. Later, electricity and telephone lines were usually strung through the laneways that formed the capillaries of most older neighbourhoods, while gas lines were eventually laid beneath the streets.⁸³

By the early 1900s, Hamilton was becoming urbanized. A rising middle class expressed a growing concern for planning regulations, often with the intention of exclusivity. Lots subdivided in 1910 were often much narrower than a quarter century earlier, with yet subsequent subdivision of lots creating the common 8 to 9 meter-wide lots still existing in urban Hamilton today.⁷ During this time, several of Hamilton's vernacular laneway houses were built in response to the demand for small-scale housing. As this era wore on, moderately priced housing became scarcer as the housing industry turned its attention to the desires of the middle and upper classes in districts such as Westdale, Hamilton's first official suburb. Less affluent residents had to fend for themselves with self-building, doubling up, worker co-operatives, company-built dwellings, tenement rentals, and the shack towns in the industrial north-east of the city.⁸⁴

Hamilton's downtown residential fabric has historically responded to the general economic trends of the city. In the late 1800s, for example, most houses were rented to tenants, with the owners taking advantage of rising property values through successive housing booms. Many of the larger houses were later bought by homeowners who would live in the homes, while others were subdivided into two or three (or more) apartments to provide greater rents. This pattern of intensification and de-intensification continues to occur in Hamilton's older residential fabric as a neighbourhood's desirability changes. Other examples of ongoing small-scale intensification include apartment buildings which retained the original lot survey or the adaption of underutilized buildings into condominiums or apartments. Building types which have been successfully adapted include schools, banks, commercial buildings, and carriage houses.

Downtown Hamilton has received significant residential intensification. An average apartment building in 1900 was three floors with 10 units. This building type and density continued until the 1960s, when residential buildings increased significantly in scale. By 1980, the average apartment building had 66 units – with some exceeding 250 units. Today, there are over 170 apartment buildings in Hamilton's Central Area.⁸⁵ Since the high-rise apartment boom of the 1960s and '70s, very few new rental units have been built.

Typical Hamilton Apartment Building



3.09 Today a typical apartment building in the Central Area has 64 units, eight floors, and a lot coverage is 2.1 GFA (gross floor area).

Apartment buildings in the Central Area are broken down as follows:

- 48% one - four storeys (low rise)
- 30% five to twelve storeys (mid rise)
- 22% 13 storeys or more (high rise)

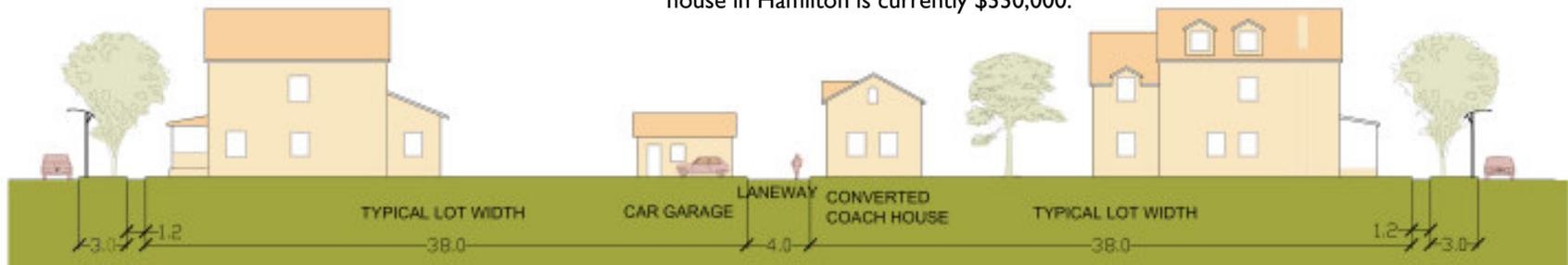


3.10 Average resale house prices (2007) in Hamilton, by district. Average house price in Lower Hamilton is \$166,000.

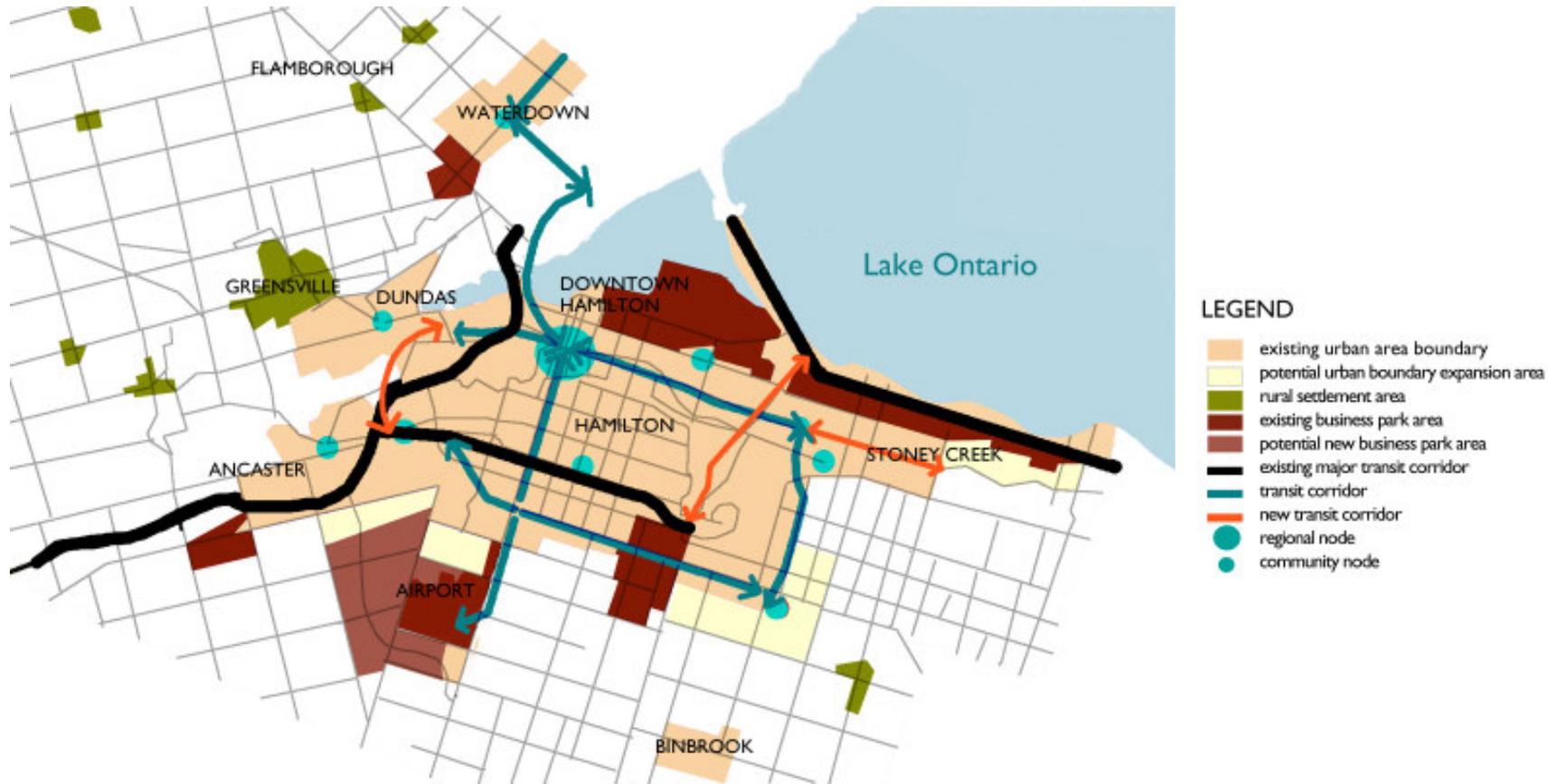
Recent growth has occurred in the downtown by converting former civic and commercial buildings into housing. This movement began in 1996 when the historic Piggott and Sun Life buildings were renovated for condominiums. A municipal loan program now exists to spur the conversion of unused commercial space to residential units. This has generated over 1,500 new residential units in downtown Hamilton.⁸⁶ Some historic neighbourhoods are also experiencing reinvestment as a new generation of occupants renovates older homes. Hamilton's housing market has always been dominated by single-detached homes, and in recent years this type has continued to grow faster than semi-detached, row house and apartments combined. Today, 65% of Hamiltonians own their own home.⁸⁷

3.2.1 Incomes and Housing Costs in Hamilton

Average household income in Hamilton is considerably less than the Ontario average. While in 2001 the Ontario average income was \$66,800, Hamilton (not including communities retained after amalgamation) had an average household income of only \$40,400.⁴ House prices are also lower in Hamilton than the provincial average, with the average resale house value in Lower Hamilton of approximately \$166,000,⁸⁸ compared to the current provincial average of \$317,000.⁸⁹ The average price of a newly-constructed house in Hamilton is currently \$330,000.⁹⁰



3.11 Section of a typical Lower Hamilton block



3.12 Hamilton GRIDS Growth Plan nodes and corridor approach.

“I am committed to reducing our level of sprawl and redirecting investment onto existing vacant urban lands, including brownfields. I believe this is the most prudent thing to do both economically and environmentally while helping to preserve our valuable agricultural land. However, over time, the projected growth of the city will put pressure on our urban fringe and we need to plan for that now so that we can develop a strategy to see the growth needs of Hamilton in a holistic way. The key for Hamilton in this area will be balance and sustainability - to ensure that any new development will not come at the expense, or be to the detriment of existing urban areas.”

*-Fred Eisenburger
Mayor of Hamilton*



3.13 Today, downtown Hamilton includes a distinct mix of housing densities.

3.3 Future Population and Housing Projections

The Growth Related Integrated Development Strategy (GRIDS) was adopted by the City in 2002 to identify the best places and types of growth for Hamilton.⁹¹ Intensification is considered a priority in the GRIDS strategy, and follows the *Places to Grow* Provincial guidelines for at least 40% intensification in future housing growth. The ‘nodes and corridors’ approach was deemed most suitable for growth in Hamilton where an urban boundary expansion is deemed necessary for the development of mixed use corridors linking high density areas and improving connectivity and transit service.

3.3.1 Scale of Strategy and Growth Projections The City has initiated several population-growth projection studies since 2002. That report, prepared by the Centre of Spatial Economics, created household, economic, and population projections suggesting anywhere from 34,000 to as many as 226,000 additional residents for Hamilton by 2031. City Council adopted figures for population growth of 120,000 persons and 81,000 households. In 2005, a new study by Hemson Consulting⁹² cited Provincial projections related to *Places to Grow* which increased growth projections for Hamilton to 200,000 persons and 100,000 households by 2031. One significant finding of the Hemson study was that household size would decrease to 1.9 persons over the next 25 years.

3.3.2 Hamilton Intensification Projections In 2001, an intensification study was conducted⁹³ to identify areas across the city with potential for residential densification. It calculated that between 28,000 and 62,000 units could be added to the urban built environment.

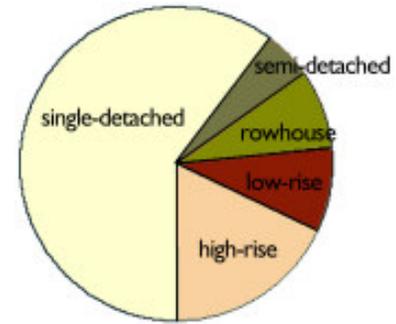
A subsequent vacant lot inventory identified approximately 32,000 existing lots within the City’s fabric,⁹⁴ with 20% of vacant lots being in Hamilton’s downtown.⁹⁵ Clayton Consulting projected that these vacant lots could provide adequate intensification to meet Provincial targets through 2016. Noting the “uncertain nature” of intensification development drivers such as employment growth and demand among specific demographic groups, they suggested potential intensification targets of 26,500 households for Hamilton by 2031.⁹⁶

In 2006 a new Residential Intensification Opportunities Study⁴ developed for Hamilton by Metropolitan Knowledge, Inc. in association with Clayton Research Associates, Meridian Planning Consultants, Soskolne Associates and architectsAlliance. It estimates that 44,000 units can be accommodated across the City through redevelopments and infill opportunities. However, due to an expected weakening in market demand, an intensification target of between 27,000 and 32,000 units was suggested for the 25 years through to 2031.⁹⁷

The study noted that meeting this target will require a three-fold increase in rental apartments built annually as part of encouraging Smart housing development. It recommended that the City proactively reduce the lengthy approvals process and fees for intensified developments. While policies and financial incentives can encourage intensified growth, the market for housing in denser, urban areas will need to grow for new projects to be economically viable.



3.14 Hamilton household makeup.



3.15 Hamilton dwelling types.

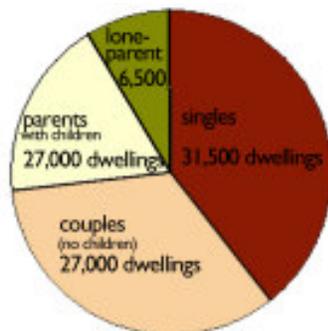
Places to Grow Forecasts for Hamilton			
Year	Population	Households	Employment
2001	510,000	190,000	210,000
2011	540,000	210,000	230,000
2021	590,000	240,000	270,000
2031	660,000	270,000	300,000
Change 2001-31	150,000	80,000	90,000

Projected Housing Supply - Vacant Lands					
	Single	Semi	Row	Apt.	Total
2001-11	2,541	126	1,615	259	4,541
2011-21	9,905	1,114	4,361	644	16,024
2021-31	6,187	1,623	2,700	836	11,346
TOTAL	18,633	2,863	8,676	1,739	31,911

3.16 Projected population and household growth and vacant lands projections



3.17 Locke Street reveals Hamilton's growth in singles and couples.



3.18 Projected housing needs in Hamilton before 2031, by household type.

3.3.3 Projected Household Makeup The average household size in Hamilton is small, and has been shrinking for the past half-century. Now, over 60% of households have fewer than three members. Laneway housing is an option for this demographic who need smaller, more affordable, housing. The demographic makeup of smaller households is revealing.

Single-person households	One-quarter of all Hamilton households have one person. Single-person households often seek accommodation with either one or two bedrooms and smaller living spaces.
Childless couples / Empty nesters	One-quarter of Hamilton's households are couples with no children living with them. This includes younger couples, older couples without children, and parents whose children have moved out of the house.
Single Parents & Children	Twelve percent of households have a single-parent with children. While the housing needs for children may differ from childless households, laneway housing may be an ideal solution due to its affordability and proximity to services and safer outdoor spaces for children to play.
Elderly Parents & Adult Children	A growing number of families in Hamilton have elderly parents or adult children living at home. A laneway house for such relatives may be an ideal option for multi-generational families. Independence can be maintained while staying connected to family supports.



3.19 Hamilton's 650 urban laneways stretch approximately 72 kilometers through the city's historic fabric.

“if you walk through the laneways you see a back to front, an inverse city pulled inside out like a sweater.”

- Gary Michael Dault

3.4 Hamilton Laneway Survey

Over six hundred and fifty residential laneways stretch a total combined length of 72 kilometers across Hamilton.⁹⁸ Three methodologies have been employed to study the quality, character, and development potential of these lanes: mapping, photo analysis, and diagramming. Mapping exercises provide insight into how the city expanded and the elements that delineate neighbourhood boundaries. Site-specific photo analysis provides a visual understanding of neighbourhoods at ground level. Diagramming the collected and analyzed information relates the laneway data to their potential for incremental residential infill.



3.20 This laneway is categorized Public Assumed, meaning that the municipality oversees maintenance of the lane. The paving belies this lane's status.



3.21 This laneway was sold to adjacent residents at some point and is categorized Private Closed. However, adjacent properties have made little use of their additional asset, as its overgrowth reveals.



3.22 This laneway is Public Unassumed, which means that it receives limited maintenance from the City.

3.4.1 Laneway Ownership Hamilton’s alleys fit into three general ownership types: Private Closed, Public Unassumed, and Public Assumed. These ownership structures are often visibly reflected in whether or not an alley is paved or maintained by either the City or individual residents.

Hamilton’s mixed alley policy is similar to that of Windsor, Ottawa, London, and St. Catharines, Ontario.⁹⁹ Other cities such as Toronto, have assumed most downtown alleys, seeing them as potential assets.¹⁰⁰ While the City of Hamilton has maintained ownership of a portion of its laneways, many have been sold to adjacent property owners so that the City can relinquish. When laneways are Private Closed, the lot lines are altered and over time fences may be moved and laneway entrances blocked off to enlarge adjacent properties and limit access from non-residents.

Lane Ownership	%	Description
Private Closed	38%	Usually access lanes for one or more properties. Once civic property, they were sold off to adjacent residents at some point, and now the city has no responsibility.
Public Unassumed	33%	Alleys which the City sold to adjacent properties and altered lot lines. Receive only limited maintenance by the city such as removing abandoned cars, dead trees, and other health hazards.
Public Assumed	26%	Often paved, the City maintains to a higher level. Garbage collection until 2006.

3.23 Survey of alleys in the Durand neighbourhood in 1986.¹⁰¹



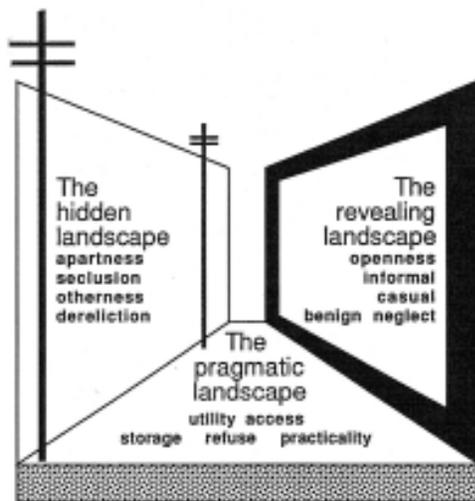
3.24 This lanescape behind Robinson Street in the Durand neighbourhood is an example of Martin's revealing landscape. The openness creates permeable spaces between houses and the lane. This lane type is most common for clustered laneway housing.



3.25 This lanescape behind Chatham Street in the Kirdendall neighbourhood is an example of Martin's pragmatic landscape. Concrete paving, utility poles, and garages make this laneway primarily utilitarian.



3.26 This lanescape, located behind Erie Street in the Corktown neighbourhood, is an example of a hidden lanescape which has received little maintenance.



3.27 Diagram identifies Martin's three alley types.

"Distinct from streets and other public spaces, the alley is both on the back side and on the inside of the neighbourhood."

- Michael Martin,
Dept. of Landscape Architecture, Iowa State

3.4.2 Laneway Typology Laneways take different shapes and sizes, but they always reveal the inner workings of a neighbourhood. The "inverse city" described by Gary Michael Dault shows the less presentable, the more utilitarian, and primarily private life of a residential neighbourhood block.¹⁰²

A laneway's typology is influenced by many factors including paving, maintenance, styles of fencing, vegetation, lot depth, building scale, setbacks, and lane usage. Michael Martin describes lanes using three categories.

Pragmatic lanes are utilitarian: extensive paving, service poles, garages, and parking areas all point to an actively used, functional lanescape. These laneway can be found frequently in areas fronted by higher densities, rental housing, or commercial districts.

Hidden lanescapes are secluded with high fences closing off yards from public view. There are generally few signs of life, giving the impression of a forbidden and potentially-unsafe passageway. Laneway maintenance is less attended to, and frequently these alleys are unpaved.

Revealing alleys allow glimpses of less formal back yard landscapes and suggest that the lanes are safe and semi-private commons. Walking down a revealing lane, one can observe features of the houses, see and hear family pets, find signs of children's presence, and notice residents' activities of daily life.

Hamilton's lanescapes are diverse, but current laneway housing units are predominantly found along revealing lanes.¹⁰³



3.28 Rear lots are often used for storage space, and are often underutilized.



3.29 Laundry is often hung in rear yard, but rarely in the laneway.



3.30 Rear lots in Hamilton are often set aside primarily for parking, however only approximately half of these spaces are utilized.

3.4.3 Laneway Program

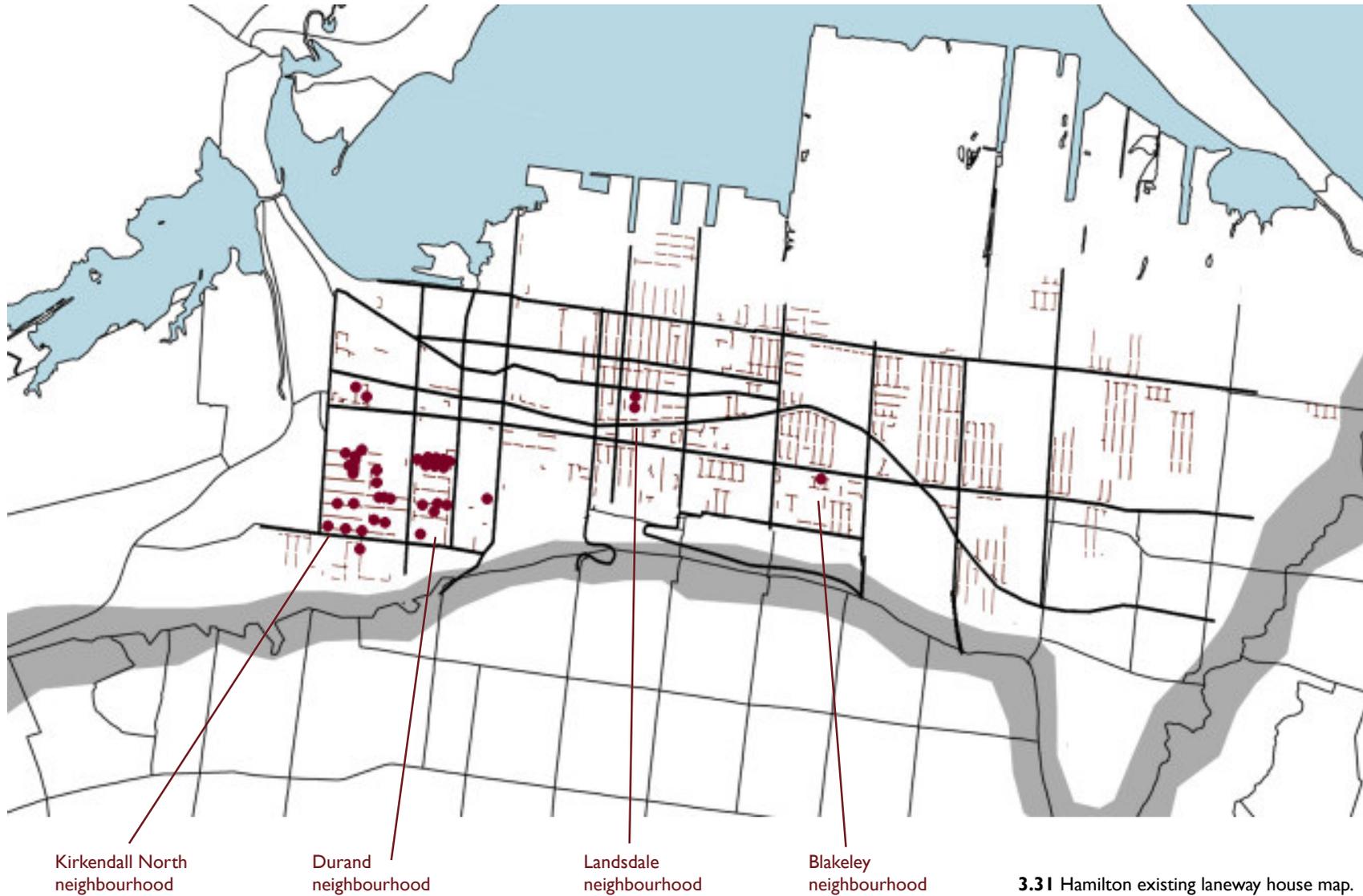
Most of the land adjacent to Hamilton's laneways is underused, and this thesis suggests utilizing this space for incremental residential intensification. Hamilton's laneways do, however, have a variety of program across the city. These program include:

<i>Parking</i>	Includes parked cars, garages, work vehicles, and often, disused vehicles. Parking is not permitted directly on the lane
<i>Garbage collection</i>	Weekly garbage collection occurred until 2006 when curbside collection became mandatory due to new, larger garbage trucks being unable to navigate the alley grid
<i>Garbage dumping</i>	Rear lots can be marred by both private and public dumping of garbage, especially heavy construction waste such as concrete and asphalt shingles
<i>Storage</i>	Many rear lots provide a place of storage for unused items
<i>Gardens</i>	Rear lots sometimes include vegetable and flower gardens
<i>Playing/ Sports</i>	Children often play sports such as hockey, soccer, and basketball in alleys
<i>Walking</i>	Laneways are frequently used for dog walking, shortcuts, or quiet strolls
<i>Laneway housing</i>	There are over 35 occupied laneway houses in Hamilton
<i>Laneway businesses</i>	Numerous alley-accessed businesses exist in Hamilton

Laneway program is influenced by both the lanescape and the lot size and location. It is generally observed that revealing lanes lend themselves to more pedestrian activities, while storage and dumping occur most frequently along more hidden alleys.

Parking seems most common along lanes which have narrow lot frontages with high levels of rental housing. Laneway housing generally is located along revealing lanes, although the question of causation cannot be definitively determined from this research.

Existing Laneway Houses in Hamilton



3.31 Hamilton existing laneway house map.



3.32 68R East Ave. North
Converted coach house in
the Landsdale neighbour-
hood.



3.33 3 Fanning St. A cottage-style
laneway house in the Kirkendall
neighbourhood.



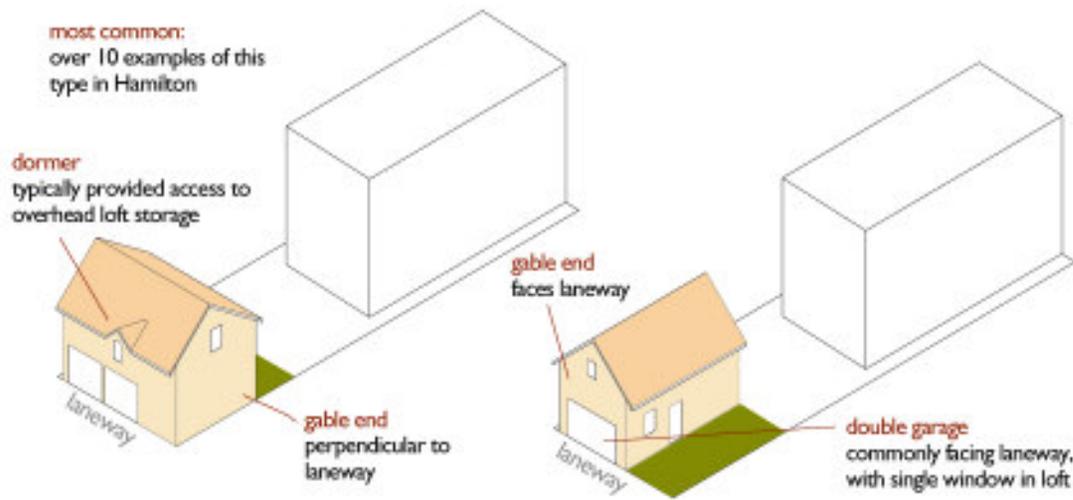
3.34 14 Reginald St. A converted
coach house with a large addition, in
the Kirkendall North neighbourhood.

3.5 Hamilton Vernacular Laneway Housing Study

It is difficult to determine exactly how many laneway houses already exist in Hamilton as there are no formal records of their numbers. Back buildings can quietly change occupancy under the building department's radar, and even when physically observed it can be difficult to know if a building adjacent to an alley is occupied for residential use. According to my observations,¹⁰⁴ there are over 35 inhabited lane-oriented dwellings in Hamilton. Appendix B and C include a database and images of all known laneway houses in Hamilton.

Approximately half of Hamilton's existing laneway dwellings have been converted from coach houses and other back buildings. The remaining laneway houses were built for residential inhabitation. Existing laneway houses were either built before 1952 when current zoning regulations came into effect or they have been built or adapted without municipal approval. The structures range in size from those meant for single occupants to some with multiple units or suites for small families. Whether permitted or unofficial, they are nevertheless functioning as important elements in each neighbourhood's fabric.

Form, materiality, access, and open space vary widely in Hamilton's laneway houses and will be discussed in the following typology studies.



3.35 Gable Roof Converted Coach House Typology



3.36 156 Robinson St. (rear)



3.37 195 Homewood Ave. (rear)

3.5.1 Gable Roof Coach House Conversion There are numerous examples of coach house conversions throughout Hamilton. Coach houses were typically 1 ½ storeys with a gable roof. However, due to the informal nature of the laneway, there is much variation in these designs. For example, one converted coach house is 2 ½ storeys tall and includes two apartments. Another common characteristic is a small window in each gable end near the peak.

Material Converted coach houses are often brick, whether the common local red or more varied colours. Additions are generally of frame construction for dormers, extensions on the ground or second floor, and decks. The original window placements are usually maintained.

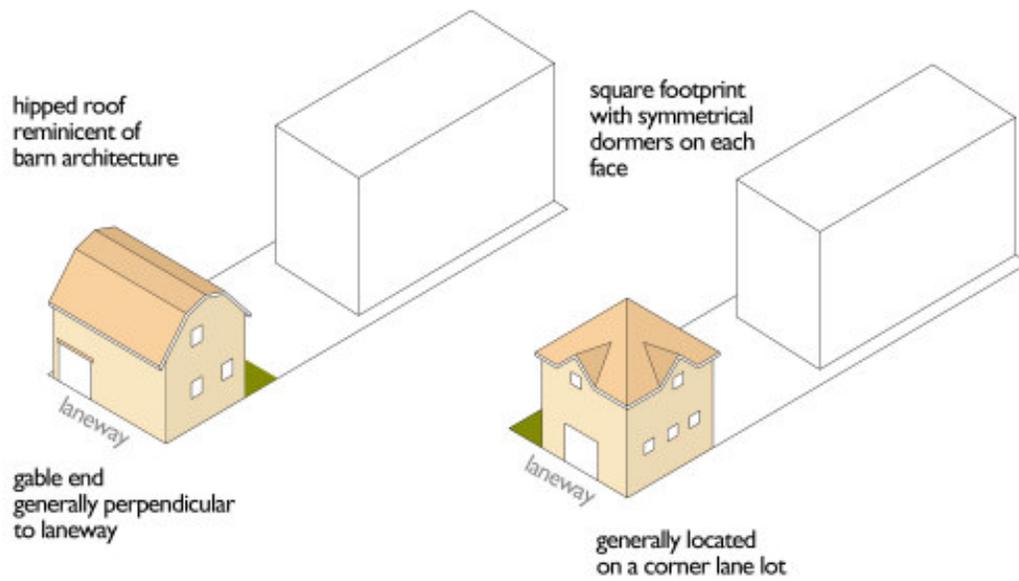
Access Converted coach houses are usually accessed from the lane. Some ADU apartments on wider lots may only be accessed from the street. Laneway houses on severed lots generally access only from the lane. Many converted coach houses often address the laneway due to their original functions for horse and carriages; however, this is not always the case.

Open Space & Sunlight Most converted coach houses include a small plot of outdoor land which is either independently owned and maintained or shared with the street-facing house. Some coach house conversions also include balconies and raised decks which incorporate outdoor space into their design. Due to their small scale and location on deep lots, Hamilton's converted coach houses have little effect on sunlight access for neighbouring houses.

Parking Nearly all converted coach houses have space to park one automobile. Often, these parking spaces are located beside the building either uncovered or under a car port. Some coach houses include car parking within the converted building, utilizing all or part of the ground floor as a garage.



3.38 215 Herkimer St. (rear)



3.39 Irregular Back Building Conversion Types



3.40 107 Victoria Ave. North



3.41 27 Wheeler Place

3.5.2 Irregular Back Building Conversion Hamilton is also home to many unique back building typologies such as square, mansard, and gambrel roof buildings. Like the gable roof coach houses, most of these laneway houses date back to the turn of the 20th century and were converted before zoning laws were imposed in the 1950s.

Material Almost always brick construction, sometimes with framed additions. There are also a few examples of concrete block construction.

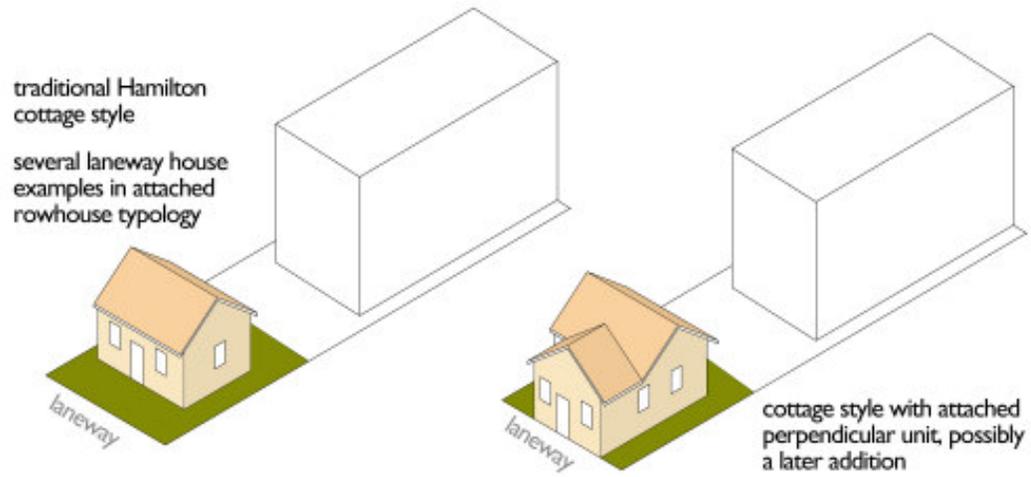
Access Usually accessed from the laneway and addressing the lane. A large coach house accessed by Wheeler Lane includes two apartments with pedestrian access from the lane through a gate and small garden area. Car parking access for these apartments is from the street behind.

Open Space & Sunlight Most irregular back buildings include a small plot of outdoor land, balconies or raised decks. They also have limited effect on sunlight access for neighbouring houses.

Parking Parking is usually located beside these buildings.



3.42 24 Blake St. (rear). While currently vacant, this coach house would make a beautiful residence once converted.



3.43 Laneway Cottage Types



3.44 332 1/2 Herkimer St.



3.45 8 Fanning Lane

3.5.3 Laneway Cottage A number of smaller cottage-style houses were built specifically as lane-oriented dwellings. They are generally one storey with side-gable roofs.

Material Hamilton's cottage laneway houses are primarily wood-frame with a variety of cladding materials. They typically reveal an incremental construction process, with additions being built as funds become available. The relaxed composition of materials gives a play of pattern and a sense of scale to these dwellings.

Access Most cottage laneway dwellings address the lane directly with a front door located above several steps. The main entry, parking area, and most windows face the lane.

Open Space & Sunlight Lane cottages often have significant lot area either behind or beside the structure. Fanning Lane houses, for example, have similar lot depths to typical street-facing houses. There are rarely balconies or decks associated with this type.

Parking Houses are often offset from the laneway three or four meters allowing cars to park perpendicularly in front of the house. Alternatively, parking can be beside the building.



3.46 20 Wheeler Place



3.50 Wheeler Lane site map

3.47, 3.48, 3.49 Wheeler Lane images

3.5 Clustered Laneway Housing

Hamilton laneways have in the past been home to several housing clusters, but only two known clusters remain. These laneways have characteristics which made them particularly suited to laneway dwellings. These are Wheeler Place, in the Durand neighbourhood, and Fanning Street in the Kirkendall North neighbourhood – both communities in southwest Hamilton. Nearby Blanshard Street, now home to only one lane-oriented dwelling, was previously lined by four houses.¹⁰⁵

3.6.1 Wheeler Lane Wheeler Lane (officially called Wheeler Place) has been inhabited by independent dwellings for over a century and today includes seven dwellings – both owner-occupied and rented homes. Occupants note their appreciation of the “unique” and “friendly” qualities of living on a lane. Several Wheeler Lane residents are in the music business, so there is a common interest among the neighbours. The separateness of this small cluster of houses also gives this group of neighbours an appreciation for their mutual differences from the larger Durand community while still relishing their convenient downtown location.

While some Wheeler Lane houses are adaptations from older coach houses, others were built as independent residences. 23 Wheeler Lane dates back to 1915 and was built as a separate residence for a brick mason.¹⁰⁶ Many of these houses have unique typologies and show signs of regular adaptations. None of the houses share a typology found on nearby street-facing housing. Since the development of Wheeler Lane’s dwellings, the surrounding block has changed through adaptive reuse, mid-scale intensification with several low-rise apartment buildings, and larger house conversions into multi-unit apartments. While this intensification has altered the block, Wheeler Lane has remained intact.

This laneway lends itself to a cluster of houses for several identifiable reasons. First, the block width is particularly deep at 54 meters. Second, the lane is located in a historically desirable area near downtown and within the Durand neighbourhood. Third, there were originally several coach houses which could be converted into housing. And fourth, there was a demand for more affordable or unique housing as compared with the available street-facing stock. All of these factors have created what is today a unique “pocket” community within the Durand neighbourhood.



3.54 Fanning Lane site map

3.51, 3.52, & 3.53 Fanning Lane images

3.6.2 Fanning Lane Located six blocks west of Wheeler Lane, Fanning Lane (officially named Fanning Street) is currently home to five lane-oriented dwellings. Fanning Lane runs perpendicular to its block and is located behind the commercial Locke Street. In the past, this cluster included two additional houses next to 3 Fanning Street. An additional laneway also ran behind the Fanning Lane houses, long closed and amalgamated into the adjacent lots.

Fanning Lane is distinctly different from Wheeler Lane in its scale, adjacencies to neighbouring dwellings, proximity to a commercial district, and housing type. Fanning Lane's houses are all framed cottage typology, similar to many street-oriented houses. The dwellings are each one-storey and have back or side yards of a size similar to many urban properties.

Fanning Lane's development could be traced to a number of factors. First, the lot depths for this block were deep at 50 meters. The rear portions of these lots were thus often underutilized due to their depth. The lane is a modified "I" shape, giving Fanning convenient access to both Melbourne and Chatham Streets. The houses are also in close proximity to a commercial district. Nearby



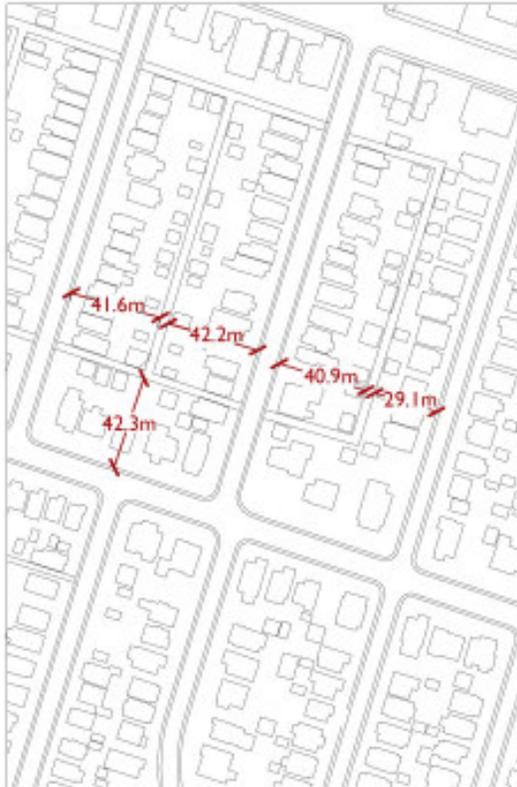
4.01 By studying Hamilton's existing laneway houses and urban fabric, several patterns arise to inform future laneway house typologies.

04 Laneway House Patterns and Prototypes

Given the restrictive and challenging conditions that define laneway sites, a thoughtful laneway house prototype must solve various problems such as overlook, sunlight, access, scale, and the connection to the outdoors. The following section addresses the various issues related to both the infill site and structure, and describes patterns associated with infill development. These patterns are followed by six specific infill house designs for Hamilton's laneway fabric.



4.01 Map of Hamilton's laneways indicating lot depth. Lots are generally deepest in the western portion of the city; however, the lots vary throughout the city's fabric.



4.02 Lot Depth Lot depth indicated for typical blocks in the St. Clair neighbourhood with rear-lane access.

4.1 Site-related Patterns

The following five patterns help determine suitable sites for laneway infill in Hamilton.

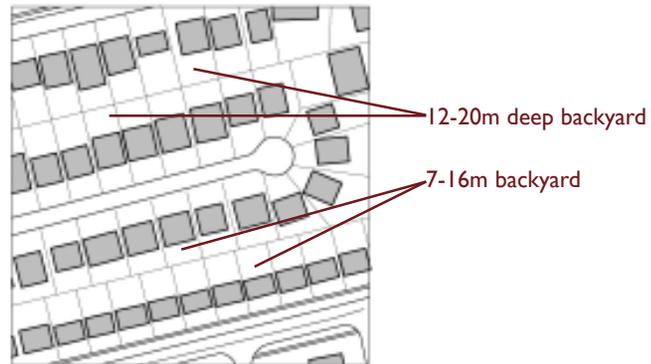
4.1.1 Depth of Lane-accessed Lots

While blocks with laneways vary across the city, lots over 40.0m deep are most suitable for infill.

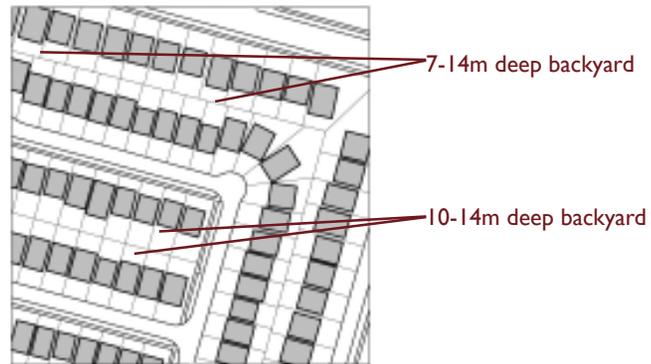
There are at least 25,000 lane-accessed lots in Hamilton.¹⁰⁷ While many different characteristics can help determine if a lot is suitable for infill development, the initial step is assessing the lot depth. Hamilton's lane-accessed lots vary from 30 meters in depth to greater than 50 meters. Generally, the deeper the lot, the greater the potential for laneway infill. Shallower lots may be suitable for infill development due to greater width or their location on an alley.

The adjacent map charts lot depth for Hamilton's urban blocks accessed by a laneway. Blocks with lots greater than 40 meters in depth hold particular potential. The following neighbourhood proposals are all located on blocks with lots between 40 and 45 meters in depth.

Ancaster "Meadowlands"
Residential Development
Age: 0-10 years
Density: 10 hh/hectare
Average lot area: 800m²



Stoney Creek Residential
Development
Age: 0-5 years
Density: 14 hh/hectare
Average lot area: 500m²



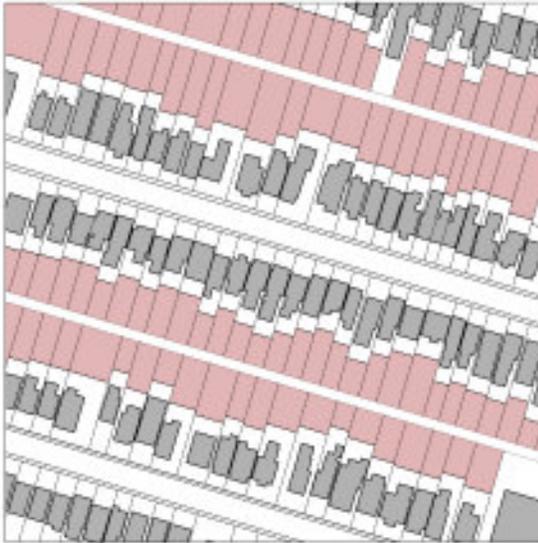
Kirkendall North
neighbourhood
Age: 100 years
Density: 24 hh/hectare
Average lot area: 375m²



4.03 Backyard comparison of suburban and historic Hamilton lots (all sample areas are 4.0 hectares).

4.1.2 Depth of Backyards and Building Separation

Infill too close to a host house can seem crowded – especially in the Hamilton context. A separation between host house and infill of 7.0m mitigates these problems.



4.04 Backyard Infill Potential

Diagram from the Kirkendall North neighbourhood indicates rear lots (in red) with six meters separation from the street-facing house. Red indicates potential infill lot, however the new lot size may be negotiable, with a minimum depth of nine to ten meters.

Critics of laneway infill have argued that rear lot severance could dramatically reduce street-houses' yards, making them virtually unusable while degrading the residential fabric of a neighbourhood. A simple comparison of historic urban lots to new suburban development removes that concern.

This study compares a typical block from one of Hamilton's older neighbourhoods with two contemporary suburban developments located in the city. While the suburban lots are larger in area, back yards are, in fact, significantly more shallow than many historic lane-accessed lots. Even with the rear 10.0 meters of an urban lot severed for lane-oriented infill, these historic yards are still comparable in depth to new suburban ones.

The adjacent diagram reveals the potential (in red) for infill development in the rear of Hamilton's older blocks. Back yards for the street-facing houses are maintained, with a 10.0 meter laneway site being set aside. Sites with less than 10.0 meter available could consider infill types that are raised, allowing access through the entire lot; shallow infill types or ADUs may be more appropriate for such lots.

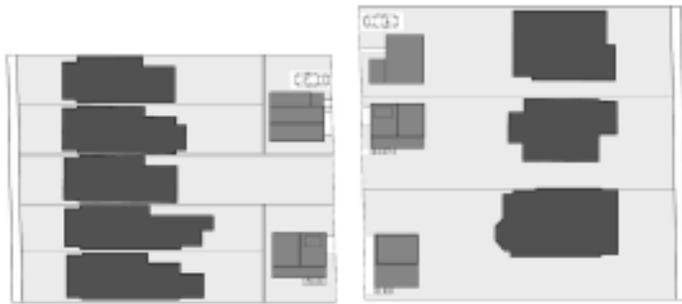
Lots narrower than 8.5 meters, most suitable if merged with adjacent rear lots



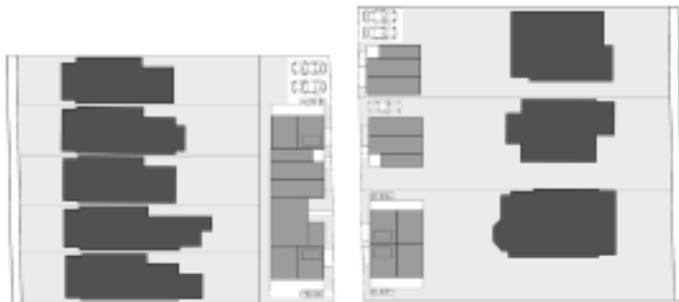
* lot widths in meters

Lots wider than 8.5 meters suitable for individual infill

4.05 Lot Width Diagram Example of typical sites in the St. Clair neighbourhood. Lot widths vary greatly - from less than 6 meters to more than 20 meters. Lots indicated in red can easily site laneway infill, while more narrow lots (in tan) are better suited to rear lot amalgamation in order to site one or multiple infill laneway houses.



4.06 Lower-density infill potential for grouped narrow lots (left) and single wide lots (right).



4.07 Higher-density infill potential includes attached housing of four units on five narrow lots (left) and single and semi-detached housing on wider lots (right).

4.1.3 Width of Lane-accessed Residential Lots

An 8.5 meter lot width ensures adequate area for infill housing and parking. The size was determined from typical lot sizes and prototype designs, and provides easier access to the site and flexibility in house design.

The width of residential lots varies greatly across the city and even within any given block. This diagram reveals the variety of lot widths along two typical blocks in the St. Clair neighbourhood. This range of lot sizes is common across Hamilton’s urban neighbourhoods, caused by speculation-driven surveying over several decades.

Lot width is a determining factor in infill type. Narrower lots may be inadequate sites for infill projects due to parking requirements, minimum side yard setbacks, and limited building depth. The following prototype infill houses range in width from 5.1 to 7.5 meters. When parking and setback requirements of the Ontario Building Code are added, minimum infill lot sizes for these prototypes need to be from 8.7 to 9.9 meters wide. Variance applications to reduce side lot setbacks may be considered, but the adjacent diagram reveals lots which are most appropriate for individual infill development (in red).

When greater site width is desired, two or more rear lots may be grouped together. In this scenario, one or multiple infill houses may appropriately fit, as is shown. Multiple lot severances and assembly make these scenarios more complex than single lot infill, however.



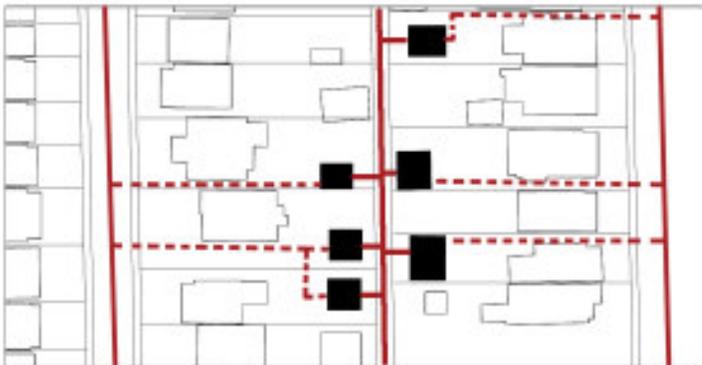
4.08 Laneway Access

Laneway provides access to cars and pedestrians. Most suitable when laneway is well-maintained. Below-alley servicing may be possible if the site is near the entrance to the lane.



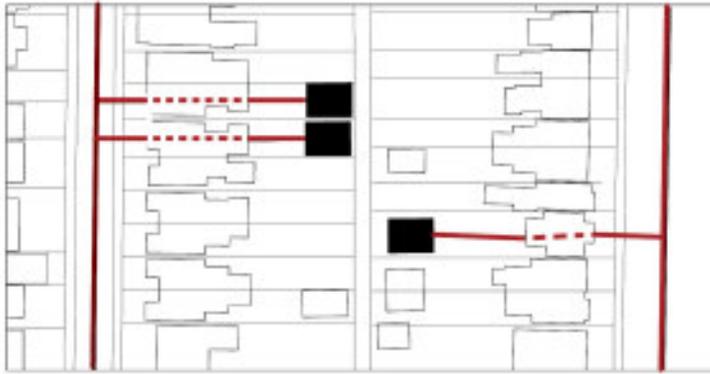
4.09 Street Access, with severance

A lot may be severed with a narrow strip running to the street, affording street access. Lots suitable for street access must have a clear path of at least 2.5 meters in order to access the street.



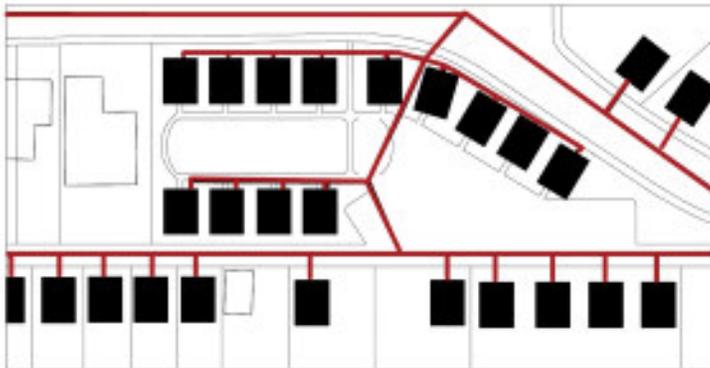
4.10 Alley Access, with legal easement to street

Utilities and other services run to the street through a legal easement along the adjacent property. When two units are built in close proximity, a line may be shared to further reduce costs. Vehicular and pedestrian access is via the lane.



4.11 Shared Access with Street-facing House

This access option is suited only for ADU dwellings with single ownership. Existing lot services and access could be extended through to the rear of the property. Utilities are shared with the street-facing dwelling and connected to municipal services beneath the street. Adequate servicing infrastructure must be confirmed prior to connection.



4.12 Multiple Dwellings with Shared Access and Servicing

When more than one adjacent infill is developed, access and servicing may be shared, reducing infrastructure costs.

4.1.4 Site Access

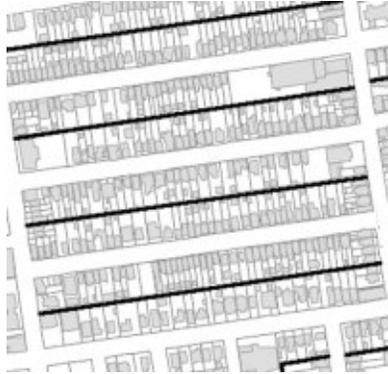
Site access is an important factor in rear-lot infill and must be addressed for pedestrians, cars, emergency services, utilities, and deliveries.

Access to the infill site is an important consideration for many functions including vehicles and pedestrians, emergency access, utility servicing, postal service, garbage collection, and deliveries.

Pedestrian and car access can usually be via the lane. Special considerations may include snow removal and regular maintenance of the laneway. Emergency service access might require greater accessibility than the laneway can provide. In such cases, sites may require an easement through an adjacent property to gain access to the street. Lane-oriented dwellings should include a residential sprinkler system to offset any delays the municipal fire services may have in reaching the site.

Hamilton's municipal water and sewer services currently run beneath the streets, and it would be necessary to extend these services to lane-oriented properties. Utility services can be run through a below-grade trench. To reduce trenching costs, a well-sited infill project will plan in a minimal distance to connect these services.

The associated diagrams indicate five options for access to a lane-oriented site, including from the laneway, from the street, with an easement, from an existing house, and the possibility of multiple-site access from a single service connection.



Laneways in residential neighbourhoods are long and straight, exiting directly on the abutting streets. Residential programs may best suit these locations.



Many laneways abutting commercial streets turn to exit onto the side street. Such sites may be ideal for live/work types or alley businesses.



Some laneways are irregularly-shaped, affording opportunities for unique program.

4.13 Hamilton laneway shapes and their affect on program.



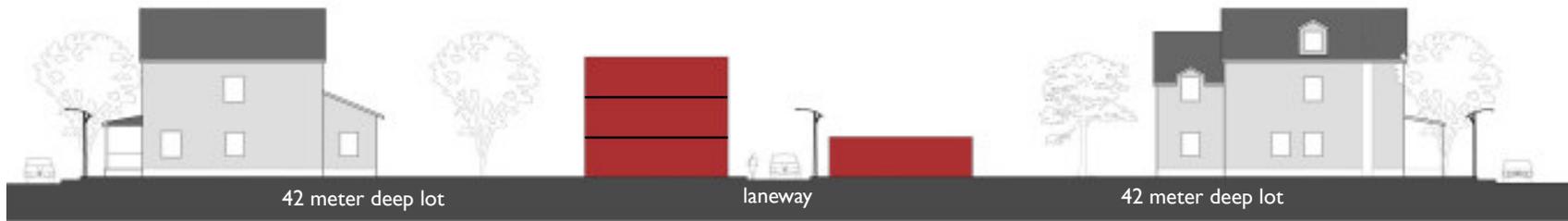
4.14 This section of lane runs perpendicular to the block and is therefore short with easy access. The lane running parallel with the block enters to the left.

4.1.5 Laneway Shape and Site Location

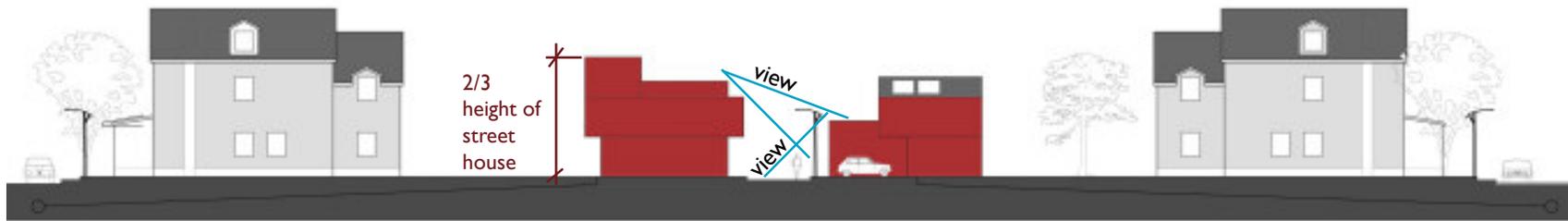
Lane shape and lot locations on the lane can affect the available options of program each site has. Certain locations may be more suited to commercial, residential, or mixed program.

Residential program can be considered appropriate for most lanes. A longer straight laneway type may lend itself more to residential program, given the potential distance from access streets. They offer more privacy, safety, and neighbourhood feel.

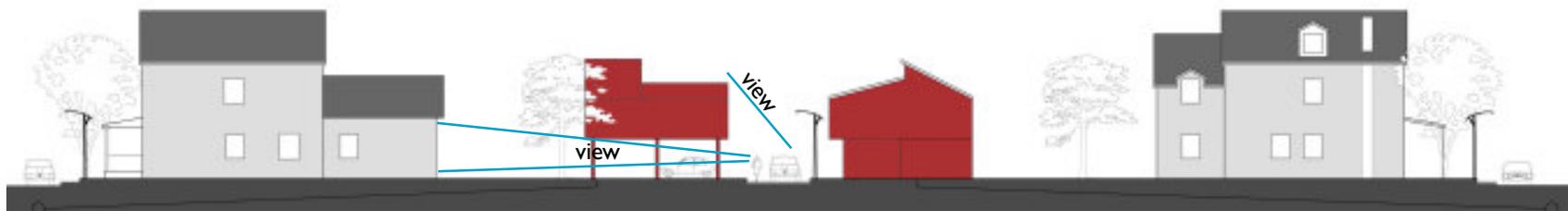
“T” shaped and irregular alleys near commercial districts may better suit small businesses due to the presence of pedestrians and the opportunities to advertise with sidewalk signs. Their short distances are also less daunting to those unfamiliar with entering lanes. Access to street parking is also more convenient.



Section of a Hamilton block shows inappropriate laneway massing which is either too great (three levels) or too diminutive (one level).



Appropriate massing for a laneway house is in the ratio of 2:3 compared to the height of the street-facing building. This section shows infill massing which is lighter on the ground and includes an upper plane of program due to roof terraces.



Example of appropriate massing, including raised "Pilot" house type which does not inhibit visibility from street-fronting house or laneway.

4.15 Hamilton block sections, noting infill scale.

4.2 House Patterns

The following four patterns offer rules of thumb in design of an infill house in Hamilton.

4.2.1 Infill House Scale

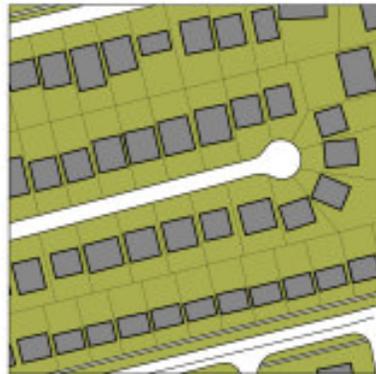
An infill house 2/3 the height of host house allows it to fit in with both the surrounding neighbourhood context and scale of the lane.

It is important that the scale and massing of a new laneway infill fit in with both the immediate and broader context of the neighbourhood. The appropriate scale for laneway housing can be matched to the massing of existing alley coach houses, which generally measure approximately two-thirds the height of the street-facing house. The appropriate height for most laneway housing in Hamilton would therefore be between 1½ and 2 storeys.

An infill house proposal must also consider the overall mass of the proposed building in relation to surrounding context, along with carefully proportioned facades, openings, and units of construction which relate the building to the alley. Adjusting elements of scale such as floor to floor heights, horizontal features, changes in material, and proportion and placement of openings should aim to reduce the apparent massing of lane buildings.

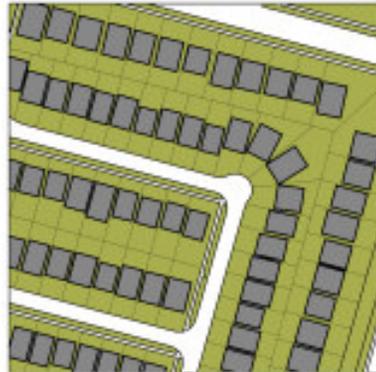
**Ancaster “Meadowlands”
Residential Development**
Age: 0-10 years
Density: 10 hh/hectare

**Outdoor space : Lot
Area ratio = 0.71**



**Stoney Creek “Summit Park”
Residential Development**
Age: 0-5 years
Density: 14 hh/hectare

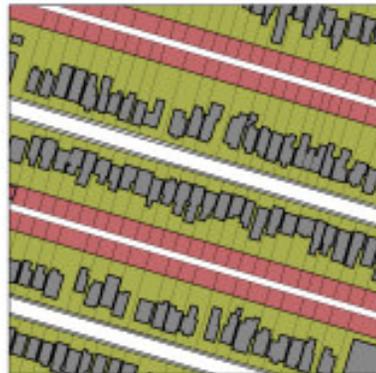
**Outdoor space : Lot
Area ratio = 0.64**



Kirkendall North neighbourhood
Age: 100 years
Density: 24 hh/hectare

**Outdoor space : Lot
Area ratio = 0.67**

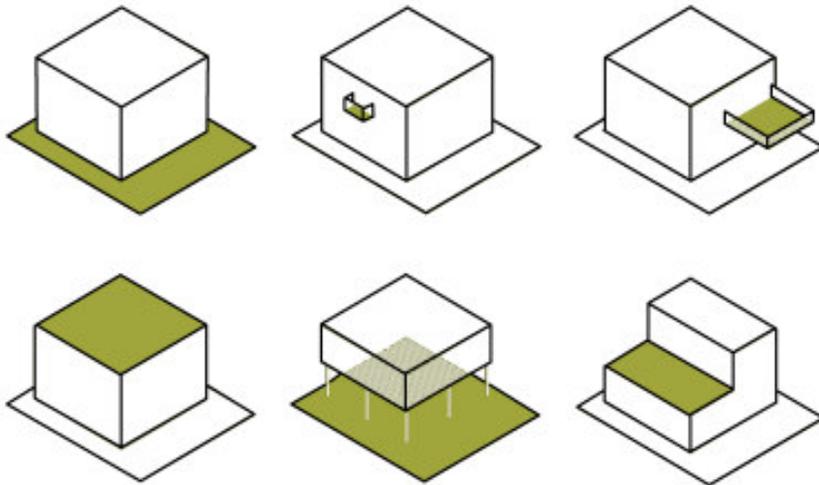
** not including rear 10 metres of each lot*



4.16 Comparison of outdoor space in suburban lots compared to urban lots with infill potential.

4.2.2 Outdoor Space

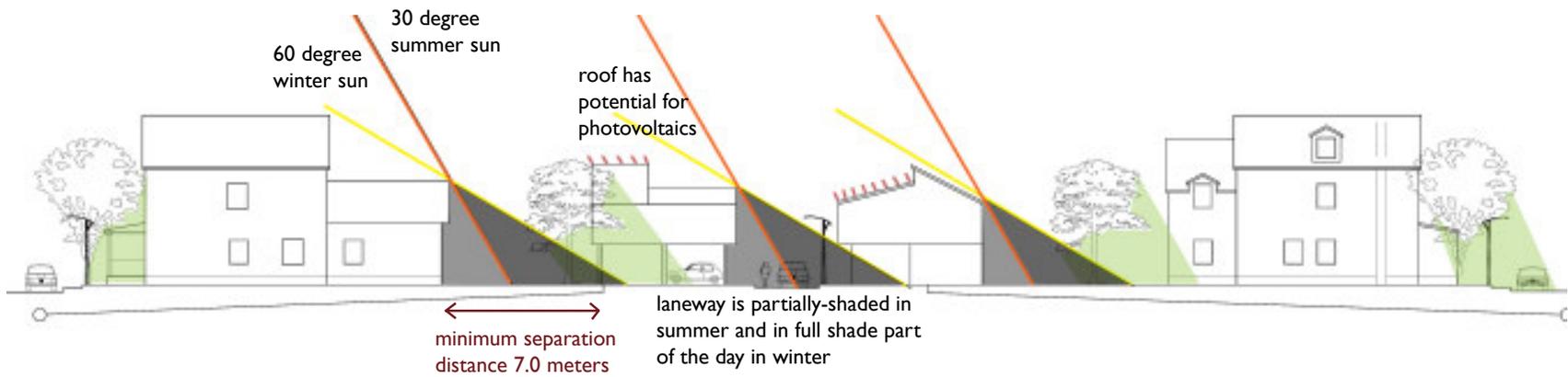
A host and infill site must likewise retain at least 60% “green” coverage through yard and elevated outdoor space.



4.17 Diagram shows various connections to the outdoors possible on an infill site, including: a yard, balcony, deck, rooftop space, area below a raised structure, and rooftop terrace. A mixture of these outdoor spaces creates dynamic outdoor spaces for infill developments.

A key asset of ground-oriented infill is the opportunity to create private open space. The diagrams opposite compare downtown Hamilton lots to new suburban subdivisions. While suburban lots often have larger areas, they actually have less open space in proportion to the actual lot. This diagram indicates the ratio of open space (or yard, as it is often understood for suburban lots) compared to lot area. Urban Hamilton lots actually have proportionately more open space than new suburban lots. Urban lots, even with the rear 10.0 meters set aside for infill development, are similar to new suburban developments at 67% of lot area in open space.

New infill housing should allow for at least 60% open space per lot. This can be achieved through a variety of approaches including those shown in diagram 4.17. These outdoor spaces, in conjunction with operable skylights and windows onto open spaces, maximize the connection infill housing can have with the outdoors.



4.18 Diagram compares mid-day summer sun (June 21) to winter sun (December 21). Due to lot depths, neither existing nor infill houses experience the affects of shadowing. Outdoor spaces above grade are ideal for sun exposure, and even photovoltaic and green roof types are possible.



4.19 Shadow studies reveal minimum affect of infill housing on existing fabric.

4.2.3 Overlook and Shadow

Impacts of overlook and shadow to adjacent property must be assessed for each infill project. Careful placement and screening of windows and outdoor spaces can mitigate privacy issues.

Access to sunlight is important to both laneway occupants and their neighbours. An assessment of a potential laneway house lot should include a shadow study for the area. Skylights are an invaluable tool for bringing sunlight into a laneway house (which may often have limited windows). In order to reduce the impact of a laneway house on adjacent properties, the building should have a lower, sloped roof and be located closer to the southern property line.

Green building technologies such as photovoltaic and solar thermal panels and green roofs can be integrated into infill design to maximize the utilization of available light. Passive solar designs may require specific analysis to confirm their appropriateness for a particular site.

Privacy and overlook are sensitive issues surrounding laneway housing. In all urban settings, when buildings are higher than one storey, overlook is unavoidable. Careful placement and screening of windows and outdoor spaces can mitigate these problems. Primary living spaces can be programmed to face towards the public lane. Accessory Dwelling Unit regulations in various jurisdictions often prescribe a six to seven meter separation between an infill unit and the existing house to reduce issues of overlook and shadow.



4.21 Prefabrication of building components is potentially preferable for infill housing. However, there must be adequate access for trucks to deliver portions of the house and for lifting equipment to assist in assembly.

4.2.4 Construction Process

Serious thought must be given to the construction process as typical spaces for maneuvering, excavation, and materials may be unavailable.

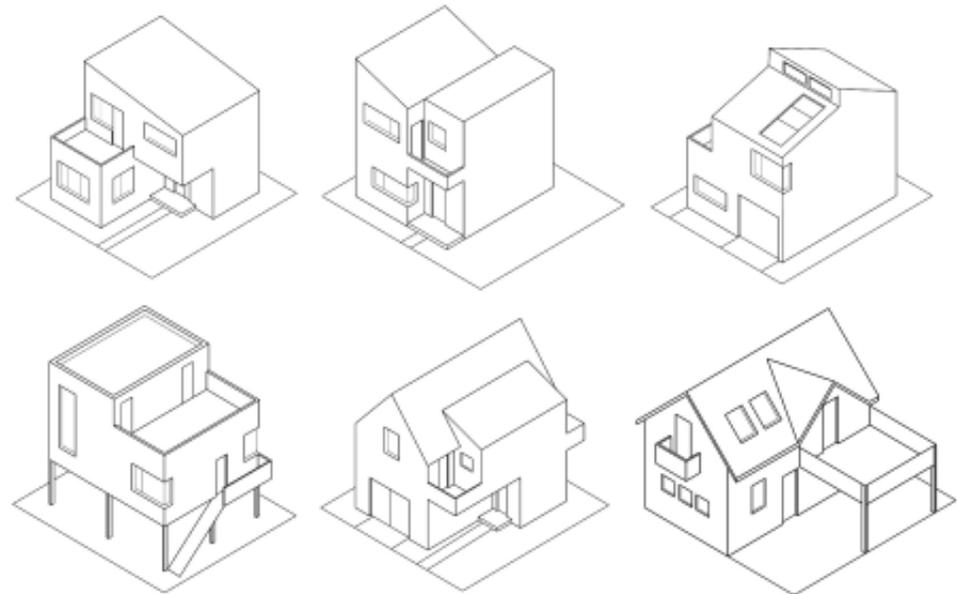
Laneway lots may typically have limited space for traditional patterns of construction; excavating foundations, maneuvering equipment, parking vehicles, and storing supplies will all require more attention to logistics. Smaller machines for hauling or lifting materials may be needed. Waste disposal must also be kept in mind, as site clutter could amass quickly.

Prefabrication of building components is one approach to solving these problems. Such techniques reduce the need for site storage, increase the speed of construction, and dramatically reduce site-generated waste. Prefabricated systems are available for virtually all building components and should be considered when planning the project.



4.21 Hamilton laneway in the Landsdale neighbourhood.

4.3 Infill House Prototypes

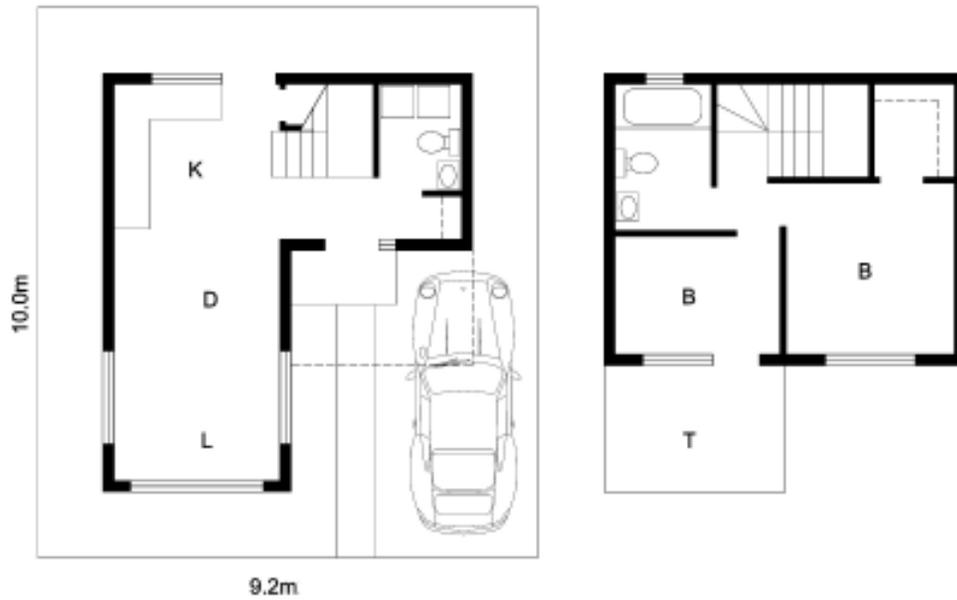


4.22 Six prototype infill houses for Hamilton

The following section provides a variety of laneway house prototypes. Each model incorporates the design considerations outlined in this thesis. All case studies follow building code requirements, but would require approval due to bylaw regulations. Lot sizes, open space ratios, and dwelling areas are suited to the lane contexts found throughout Hamilton.

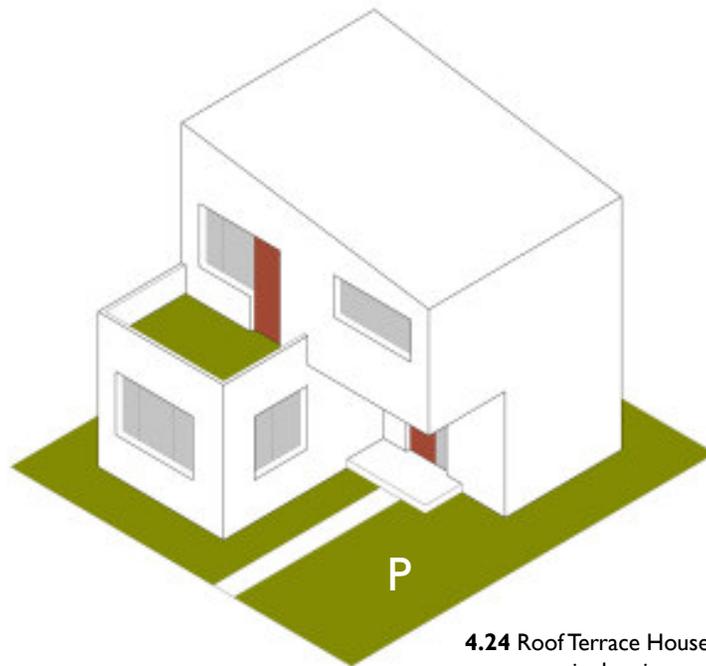
Prototype legend:

K – kitchen; **D** – dining room; **L** – living room; **B** – bedroom; **T** – terrace; **O** – office/bedroom



4.23 Roof Terrace House ground and second floor plans.

dwelling area	63m ²
lot area	92m ²
open space	63m ²
open space to lot ratio:	0.68

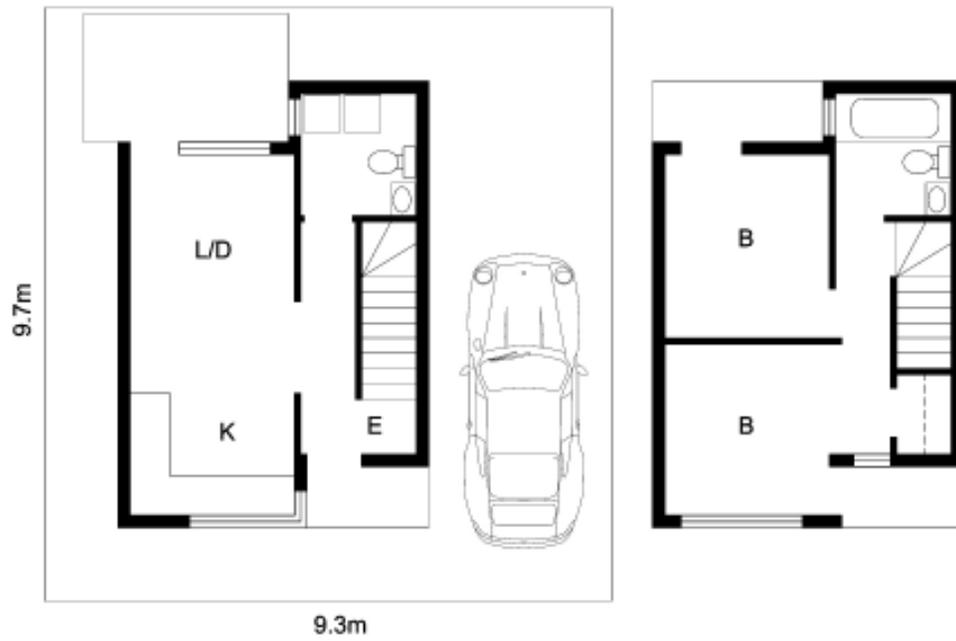


4.24 Roof Terrace House axonometric drawing.

4.3.1 Roof Terrace House

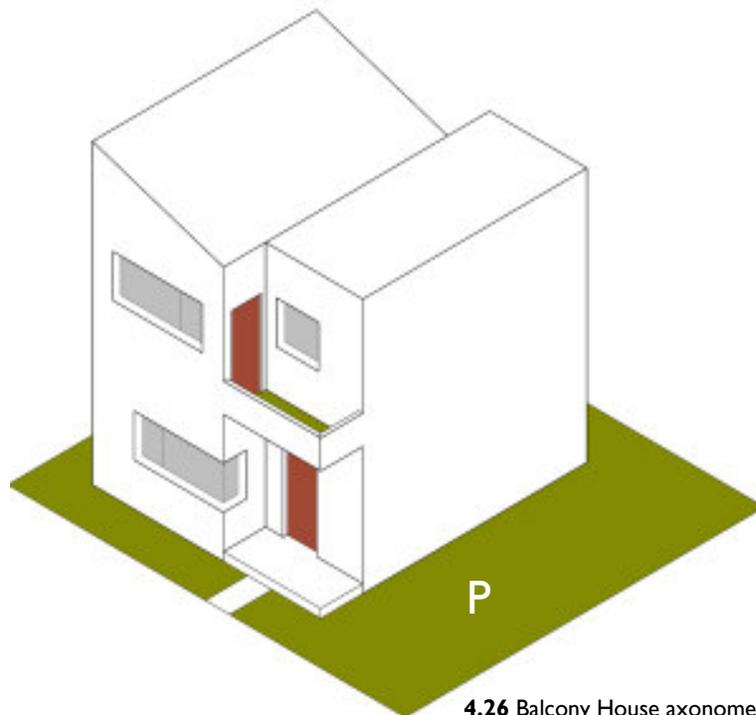
This house prototype includes a recessed second floor which allows for a garden or parking at ground level and a roof terrace on the second level facing the lane. The bathrooms, kitchen and staircase are all located at the rear of the house, allowing for flexibility in program in front.

The “L” shape of this type allows for multiple arrangements, including live/work space and a car garage if desired. The entry is set back, offering a transition space from lane to house. While this house allows for a variety of roof types, a sloped roof could be optimally oriented to support solar technology panels.



4.25 Balcony House ground and second floor plans.

dwelling area	54m ²
lot area	90m ²
open space	64m ²
open space to lot ratio:	0.71



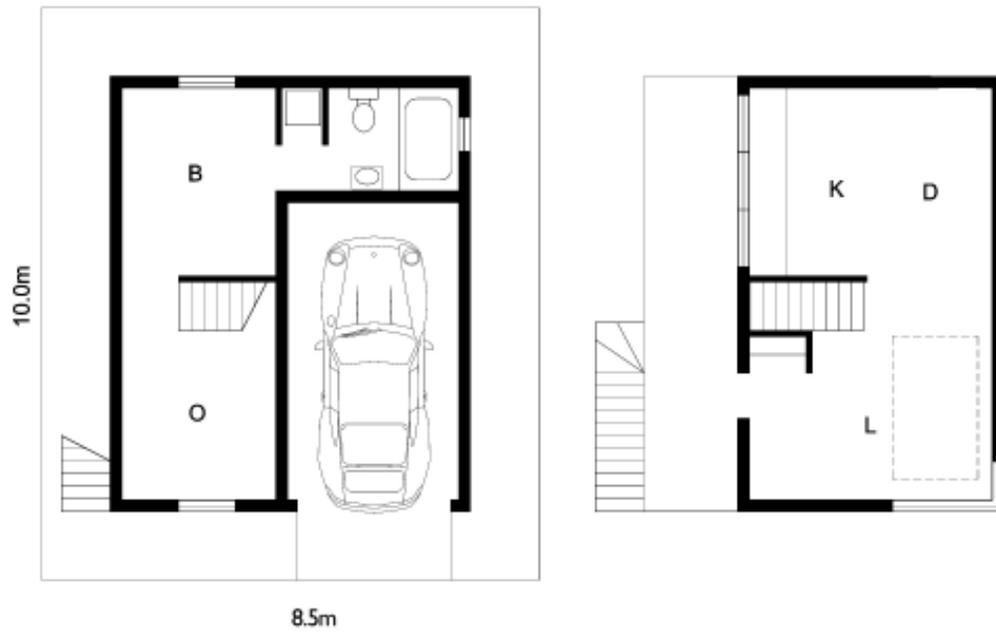
4.26 Balcony House axonometric drawing.

4.3.2 Balcony House

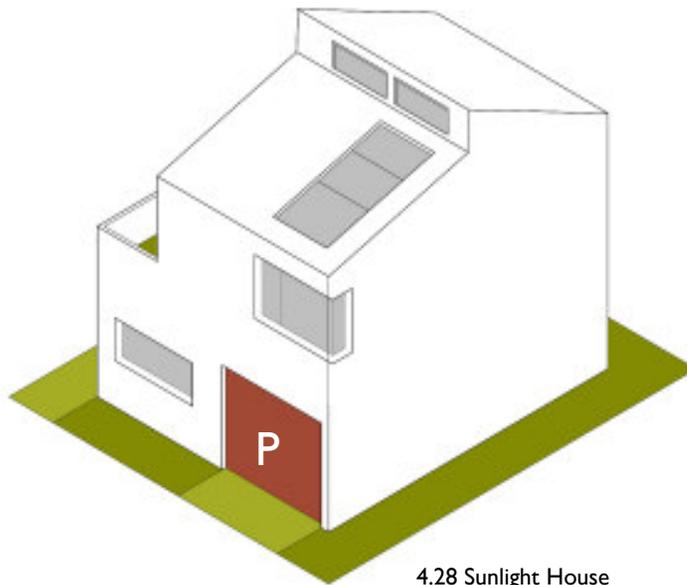
The most condensed prototype, this house includes an efficient side core with stacked bathrooms and a staircase. The remaining living and sleeping areas are therefore flexible, offering the opportunity for multiple configurations.

The form of the house is made of two masses, slightly offset, to allow front and rear balconies. Balconies allow for multiple outdoor spaces and connection with both the laneway and back yard.

Parking is situated beside the house. This house type would also be appropriate for developments with shared parking.



4.27 Sunlight House ground and second floor plans.



4.28 Sunlight House
axonometric drawing.

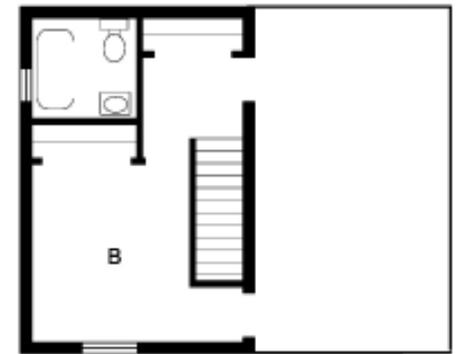
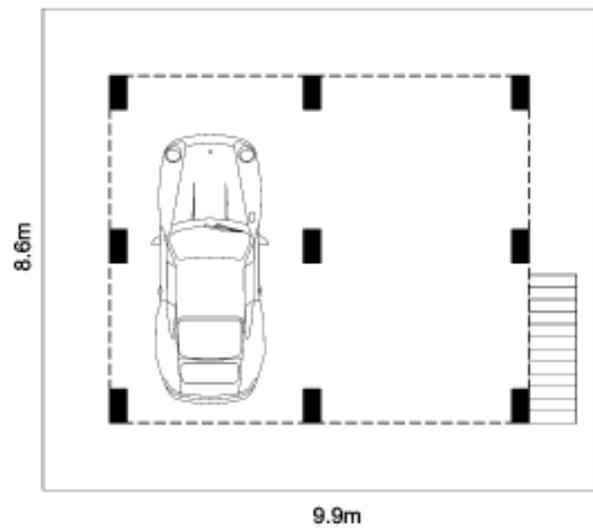
dwelling area	60m ²
garage area	16m ²
lot area	87m ²
open space	52m ²
open space to lot ratio:	0.60

4.3.3 Sunlight House

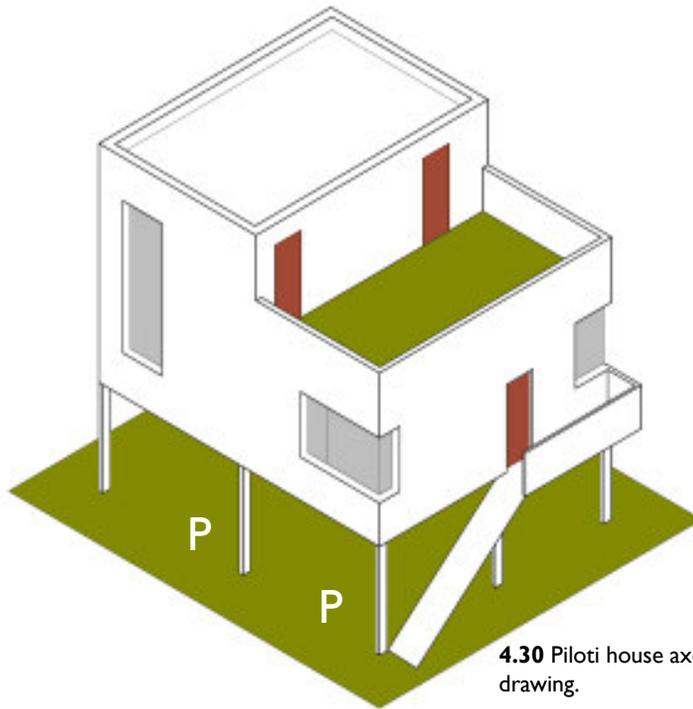
This prototype suits 8.5 meter-wide lots, the narrowest sites suggested by this thesis.

The distinguishing traits of this house are abundant light and sky exposure provided by large skylights and transom windows. The “French farmhouse” *parti* places primary living areas (kitchen, living, and dining rooms) on the second level, while the bedroom and office on the ground level.

This type has the flexibility to include a garage for car parking and a lane-accessed room for a live/work space. The garage may also be converted into additional living or small business space, with parking space provided adjacent or in a shared parking area.



4.29 *Piloti* House ground, second, and partial third floor plans.



4.30 Piloti house axonometric drawing.

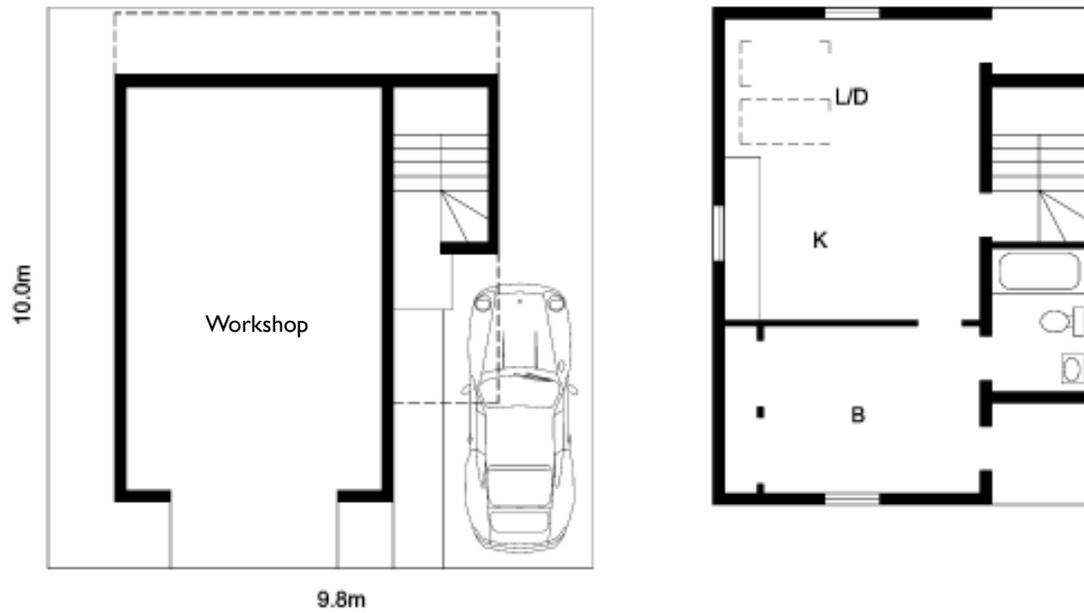
dwelling area	60m ²
lot area	85m ²
open space	105m ²
open space to lot ratio:	1.18

4.3.4 *Piloti* House

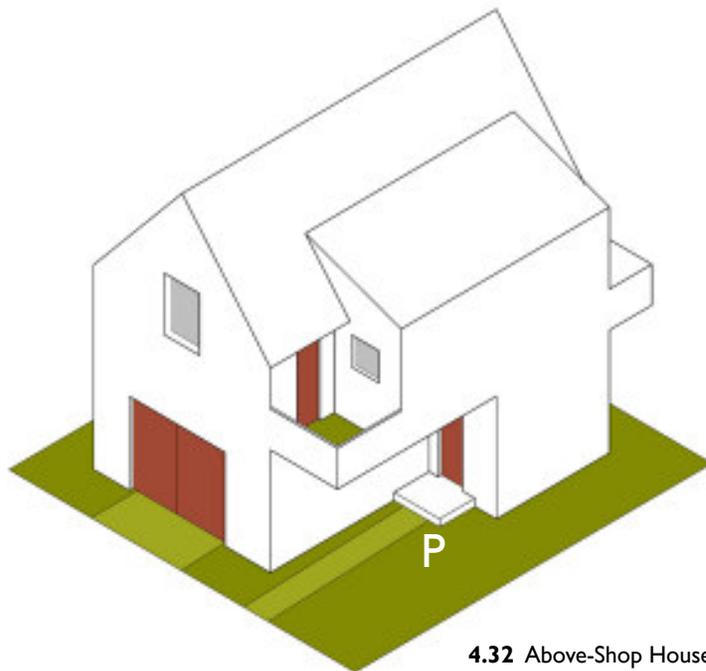
This house prototype is raised one storey above grade, allowing for unobstructed visibility between street-facing house and laneway. This house type is well suited for both ADU infill and severed-lot infill housing. It would not, however, be ideal for pocket developments due to its treatment of the ground plane.

The house is raised on nine *piloti* and permits one or two cars to be parked below the structure. Alternative uses of this open space could include a patio beneath the structure. A large roof terrace covers half of the upper level, providing a particularly large amount of outdoor space.

The *Piloti* House requires only 8.6 meter in lot depth, the shallowest of the six prototypes.



4.31 Above-Shop House ground and second floor plans.



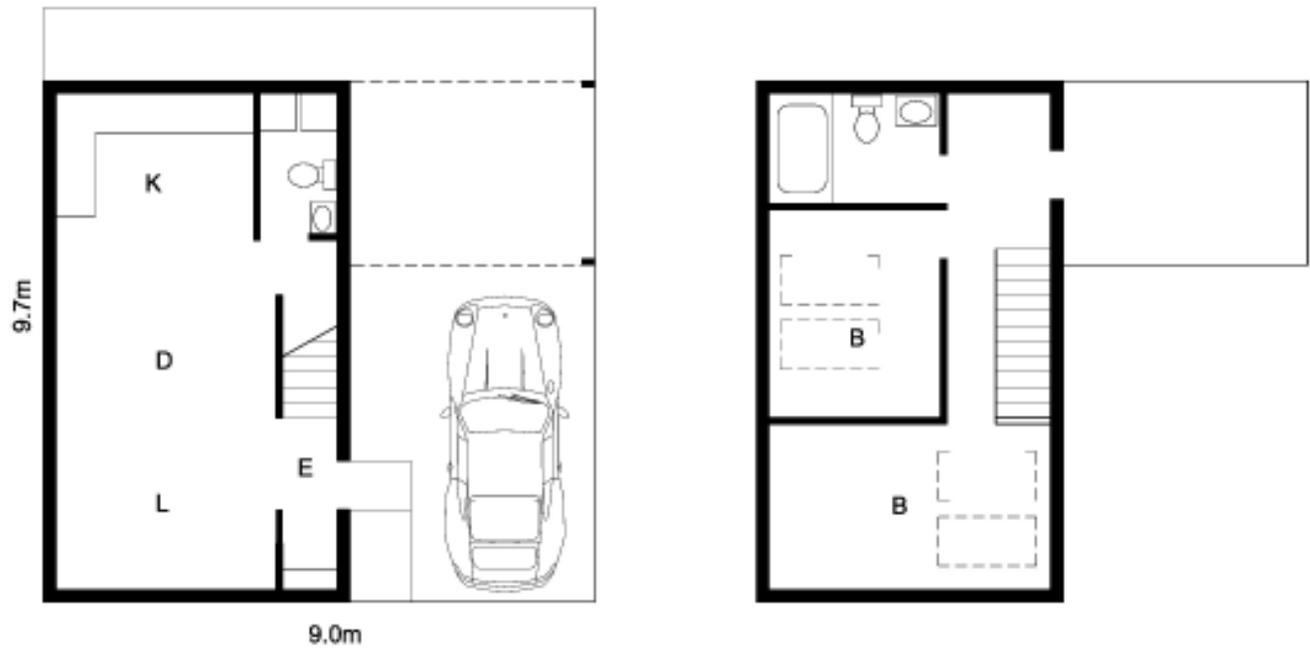
4.32 Above-Shop House
axonometric drawing.

dwelling area	50m ²
workshop area	33m ²
lot area	98m ²
open space	60m ²
open space to lot ratio:	0.61

4.3.5 Above-Shop House

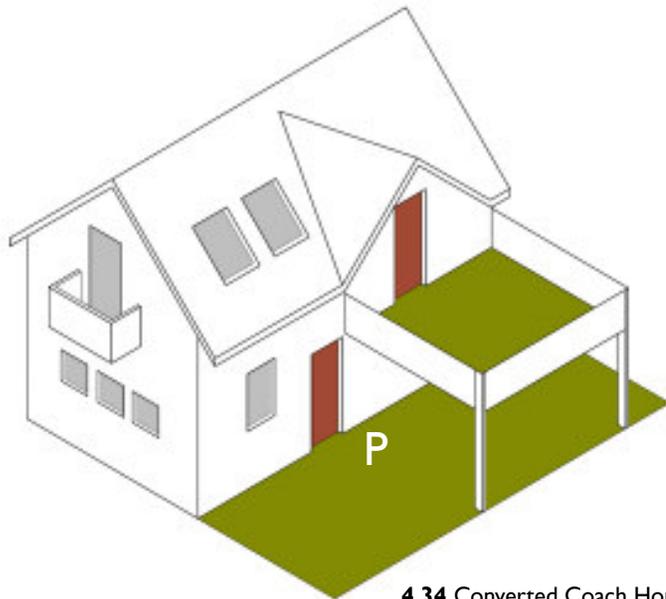
This prototype allows for a large lane-accessed garage or workshop on the ground level. Living quarters are above the shop, with two private balconies providing usable open space. The second level cantilevers one meter beyond the rear ground floor.

Business uses for this live/work unit might include bicycle repair, fine woodworking, small boat building, or any number of small enterprises. The building's lower-level spaces could also be utilized for retail purposes.



4.33 Converted Coach House ground and second floor plans.

dwelling area	73m ²
lot area	87m ²
open space	57m ²
open space to lot ratio:	0.65



4.34 Converted Coach House
axonometric drawing

4.3.6 Converted Coach House

This prototype utilizes the most common vernacular coach house type in Hamilton, with its gable end facing the lane. Additions to this coach house include a dormer on the second level, a large deck, and a balcony. Inserted skylights bring light into the second level.

Each coach house conversion would need to be designed on a case-by-case basis. There are several coach house types in Hamilton, however, and these conversion techniques could be explored in most cases.

The coach house placement reflects the original site conditions and purpose for the structure. Parking is likely to be located beside the house.



5.01

05 Test Cases

an urban spatial study of residential laneway infill in Hamilton, Ontario

Three neighbourhood infill proposals for the city of Hamilton reveal the latent potential for incremental intensification within an established urban fabric. The studies identify potential neighbourhoods which could benefit from the addition of the laneway house typology and explore varying degrees of infill density. The studies are, however, only a first step in suggesting what communities could look like if laneway housing were once again a permitted type of urban development.

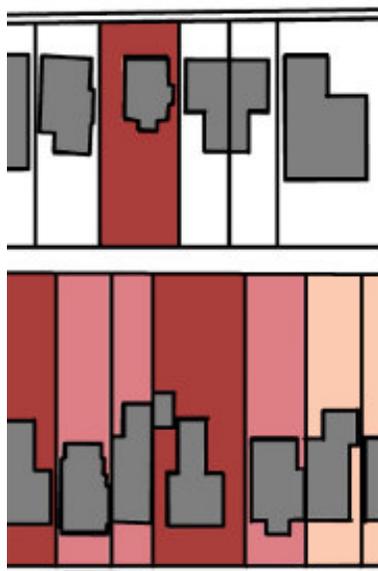


5.01 Lots around this laneway in the Landsdale neighbourhood are underused, but offer potential for infill.

5.1 Review of Hamilton Context The research conducted for this thesis brings together demographic, typological, and morphological studies of Hamilton's built residential fabric along with studies of how other North American cities have explored the finer-grained end of the housing spectrum. A review of Hamilton's context reveals:

- Several of Hamilton's older residential neighbourhoods which include laneways are becoming desirable places to live.
- Hamilton expects to grow by 80,000 households in the next twenty-five years.
- The most common household sizes (60%) for this growing population have only one or two people.
- While large-scale intensification will address much of this housing growth, unique housing options will also be necessary, with demand being only partially met by adaptive reuse and loft projects.
- The rear of lots along Hamilton's laneways offer the potential for infill growth due to their significant underutilization.
- Hamilton's planning department is currently revising the City's official plan and is considering new intensification models to help meet Provincially-mandated urban growth targets.
- Residential laneway infill has been an excluded and forgotten option for intensification for the past sixty years.

Hamilton has the opportunity to reinvent its understanding and expression of its urban character as it accommodates projected growth. Laneway housing can inform this process by adding variety to the placement, texture, and typology of urban neighbourhoods. This chapter recommends criteria for assessing the suitability of laneway sites, suggests priority areas for this type of development, and concludes with three test case studies from diverse Hamilton neighbourhoods.



Optimal Sites with appropriate depth, width, and access are most suitable for immediate infill development. Service access can be either directly to the street through a “host” lot with at least a 2.5 meter clearance, or along the lane (if within 35 meters of the street).



Merge-lot Individual lots without optimal access may be merged with an adjacent serviceable site. The added challenge of severing lots from different owners makes the infill potential of these sites more moderate; it may be possible to infill with semi-detached or rowhouse units on merged sites, improving their relative potential.



Multi-unit Develop Single lots which are too narrow for most infill dwellings and lack convenient lane access have less potential due to the costs and difficulty in gaining access. These lots may, however, be ideal sites for multi-unit developments where several rear lots are sold to a developer who can spread the costs of servicing and other charges across a larger number of units.

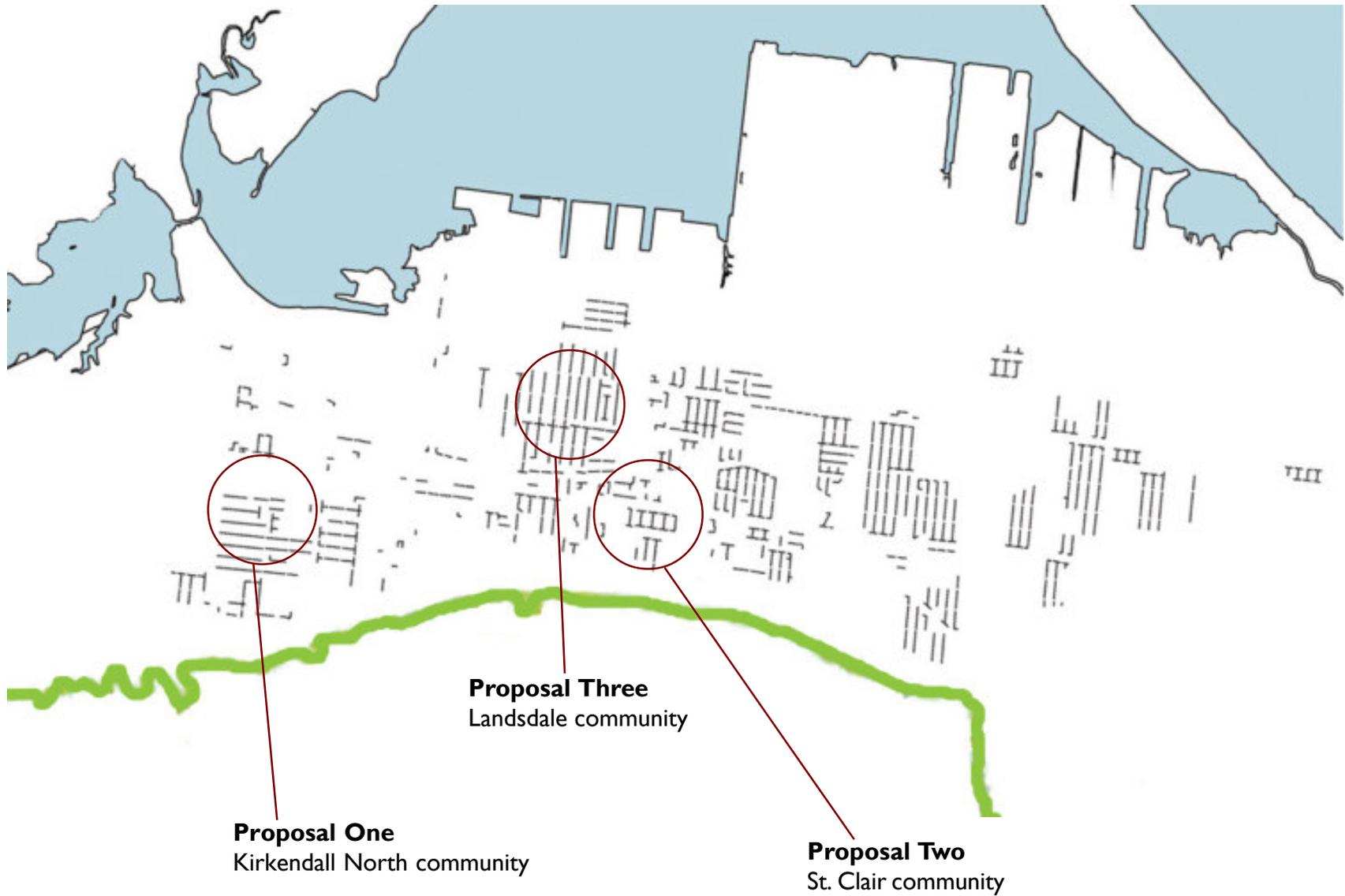
5.01 Lane-oriented infill site potential
 A system of rating lot infill potential including Optimal, Merge-site, and Multi-unit Develop is utilized in the following test case studies.

5.1.1 Criteria for Sites with Infill Potential Small-scale infill has been an uncommon urban growth type for the past sixty years. Through the strategic identification of neighbourhoods and sites most suitable for this type of growth, the re-introduction of a laneway typology could occur over time, easing the transition towards higher densities for both the municipality and surrounding communities. By broadening perceptions of what makes a city thrive, this thesis suggests that laneway infill be re-introduced to Hamilton's older urban fabric.

Several patterns typical of Hamilton's urban fabric (identified in Part Four) should be met in order to support this development type:

- Appropriate lot access to services (either direct access, an easement through an adjacent property, or a distance to the street along the lane of 35 meters or less)
- Original lot depth (over 40 meters, although a more shallow lot may be possible)
- Backyard depth (at least 16 meters, to allow for a 7.0 meter separation between houses)
- Lot width (over 8.5 meters wide; less if parking is provided elsewhere)
- Appropriate scale (infill house no greater than 66% of the height of the typical street-facing house)
- Outdoor space (approximately 60% of the lot area, including raised decks, terraces, etc.)
- Healthy economic conditions for neighbourhood (average house value over \$150,000)
- Existence of other lane-oriented dwellings
- City-owned and maintained alley

These patterns can be used as a guide; however, it is possible to have flexibility in each infill proposal including housing type, grouping, particular characteristics of the site, and desires of the homeowner. When all these conditions are met, the site is considered "Optimal" (see adjacent diagram, identified in red). Sites with more limited access may be merged with an adjacent lot to provide servicing access, and are identified as having "Merge-lot" site potential (identified in pink). Adjacent lots which do not fulfill the above requirements may hold potential for "Multi-unit Development", where a number of rear lots are merged and access is shared. These lot patterns and types will be used in the following neighbourhood proposals.



5.02 Proposed neighbourhood infill map.

5.2 Test Case Study Methodology

The following three test case studies were chosen based on the following criteria:

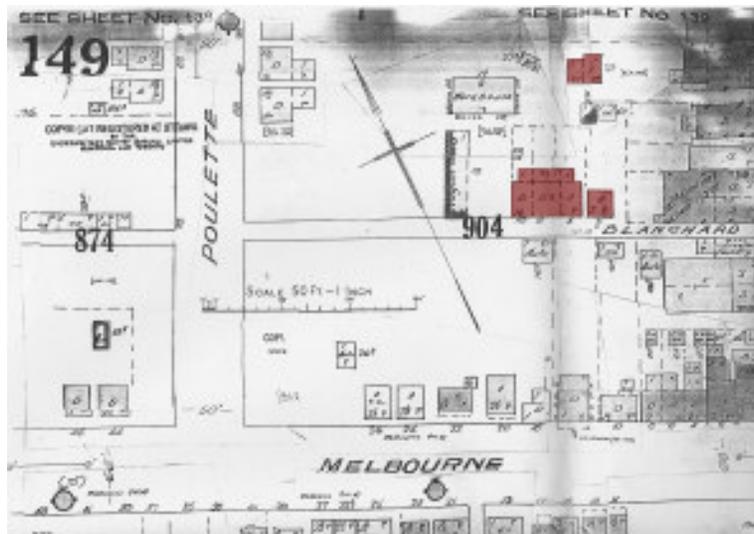
- Blocks are prototypical for each district, and results can be extrapolated.
- Wide variety of socio-economic standings, land uses, and program types within the urban fabric.
- Relative proximity to commercial areas.
- High proportion of laneway-accessed lots with depths between 40 and 45 meters.
- High potential for infill development, in terms of economic feasibility and neighbourhood compatibility.

Each study represents a distinct residential area in Lower Hamilton, namely the Kirkendall North, St. Clair, and Landsdale neighbourhoods. Together, the three test case studies represent the range of possibility in Hamilton.

The studies are organized as follows: a context of the existing neighbourhood, limitations to intensification in the existing urban fabric, and studies of infill intensification at low, mid, and maximum densities. The existing fabric of the neighbourhood is taken into consideration and proposed infill lots and types are strategically determined based on the patterns identified in Part Four.



5.03 Photomontage of the Blanshard Lane site in the Kirkendall North neighbourhood, looking north.



5.04 The 1947 insurance map for the Blanshard Lane site reveals four infill houses, where today only one remains.



5.3 Proposal One

Kirkendall North Neighbourhood Laneway Housing and Pocket Developments

Kirkendall North study site
(grey) 5.2 hectares

5.05 Five-minute walking radius (50 hectare area) from the study site in the Kirkendall North neighbourhood, indicating existing laneway infill housing (black), laneways (red) and parks (green).

Kirkendall North statistics (169ha)

average density = 16 households per hectare

Total Households 2,740
Ave. persons per household 2.09 person/hh

Dwellings Owned 50%
Dwellings Rented 50%

Neighbourhood housing types
Single detached house 45%
Semi detached/row 5%
Apt detached duplex 12%
Apt <5 storeys 24%
Apt >5 storeys 14%

Average residential resale property value \$260,000

Total population 5,720 persons
0-19 years old 20%
20-65 years old 67%
65+ years old 13%

Participation in labour force 70%
Unemployment rate 7.8%

Education
High school (or less) 30%
College / trade school 37%
University 33%

Low income households 19%

Commuting trends
Car (driver) 67%
Public transit 11%
Other (bike, walk, home) 22%
Work from home 7.8%



5.05 Locke Street retail district.



5.06 Allenby Lofts: adaptive reuse of a school building into luxury condominiums.



5.07 Blanshard Lane looking east from Poulette Street.



5.08 Streetscape along Poulette Street.



5.09 Streetscape along Melbourne Street.



5.10 Streetscape along Hill Street.

5.3.1 Existing context Kirkendall North is a vibrant historic neighbourhood in south-west Hamilton. A varied built fabric includes elegant two-and-a-half storey brick homes, brick townhouses, high, mid and low-rise apartments, duplexes, and small cottages. The community has become one of Hamilton's most desirable areas due its historic urban character, walkable neighbourhoods, proximity to downtown, convenient access to transportation routes, and a now-thriving commercial district along Locke Street. Hill Street Park is located in the proposal site, and the HAAA grounds and Hamilton Tennis Club are nearby. Half of Kirkendall North's available housing stock is rented, often in converted single-family homes.

Most of Kirkendall North was surveyed prior to 1881 with deep lots and laneways. In 1895, the Toronto, Hamilton & Buffalo railway was dug along the north side of the case study site. Many of the lots in this area were developed after this time due to the improved drainage of what had previously been somewhat marshy land. The later development of these blocks is evidenced in the varied housing types, including many smaller frame cottages on adjacent streets.

Unlike the Durand neighbourhood to the east, Kirkendall North escaped the lot amalgamations and high-rise developments of the 1960s and 1970s. As such, its historic scale and alley grid remain intact. Some high-density apartment infill did occur around the HAAA Recreation Grounds, however, and the neighbourhood now includes diverse intensification types such as low-rise apartments, units above commercial buildings, adaptive reuse of civic buildings, co-ops, and accessory apartments in large, historic houses. Secondary suites account for 12% of the neighbourhood's household makeup.

Laneway housing does exist in the Kirkendall North neighbourhood, although all such houses were built prior to the 1950s. Fifteen laneway buildings are known to be inhabited, ten within a five-minute walk of the Blanshard Lane study site. Some of these dwellings were converted from old coach houses; others were specifically built as cottage-style dwellings facing the laneways. Fanning Lane has five of these laneway houses, while the others are dispersed irregularly throughout the community. In the 1940s, four houses fronted onto Blanshard Lane; today, only one remains.

5.11 Kirkendall North Blanshard Lane neighbourhood
 (5.2 hectares - excluding commercial buildings and park)

82 houses (12% duplex)
 Existing density = 17.7 hph

- Existing Lot Study**
- Optimal infill potential
 - Merge-lot infill potential
 - Multi-unit development
 - Limited / no infill potential
 - Park / Greenspace



5.12 Scenario One: Low-density Infill

18 infill houses
 Density = 21.1 hph

19% household density increase



5.3.2 Limitations of the Urban Fabric Urban land in this neighbourhood is being underused. Empty back lots and other large pockets of undeveloped land can be found in the Kirkendall North neighbourhood, leaving holes in the neighbourhood fabric. While some coach houses in this neighbourhood have been converted, others stand empty. Density in this area is low for downtown Hamilton, at less than 18 households per hectare.

Despite its low density, the availability of single-family freehold housing in Kirkendall North is limited. Due to the neighbourhood's renewed desirability, housing prices have risen dramatically in recent years, with real estate values in this area amongst the highest in Hamilton. This has created a demand for new housing, such as the Allenby Lofts school conversion. However, there are few other opportunities for adaptive reuse in this neighbourhood. Many people who have previously rented in the neighbourhood and would like to purchase property locally find the price of housing unaffordable. There are also only a limited number of dwelling types suited to smaller households.

5.3.3 Scenario One: Low-density Infill This neighbourhood has great potential for infill housing, as many lots are of a suitable size, back yards are large and underutilized, and the market has created a strong demand for additional housing. In this scenario, individual lots of adequate size and access potential are developed into single-unit infill sites. Both ADU and freehold infill units are possible. A total of 18 new infill dwellings could be created on available lots, both lane-facing and street-accessed. These dwellings would create a 19% increase in block density while adding an additional layer of housing type currently absent from the neighbourhood fabric.

**5.13 Option Two:
Medium Density infill**

Two rear lots can be grouped together in order to gain access

Multiple units may be built on a lot

32 infill houses
Density = 23.8 hph

34% household density increase



**5.14 Option Three:
Maximum Density infill**

Encourage multi-unit development and shared access of units

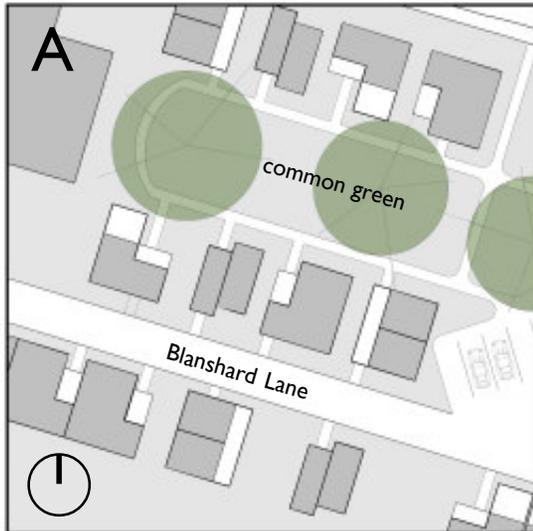
63 infill houses
Density = 29.8 hph

68% household density increase





5.15 Model image, looking west along Blanshard Lane, revealing maximum infill potential in the Kirkendall North neighbourhood.



5.16 (For location, see “C” on map 5.14) Infill houses front both the lane and common green in this pocket development.

5.3.4 Scenario Two: Medium Density Infill This scenario nearly doubles infill density along Blanshard Lane by including sites from Scenario One with new sites created by amalgamating rear lots for greater access potential. Infill typologies in this scenario include semi-detached dwellings and row houses on merged lots. In one case, the rear portion of an already-assembled lot along Melbourne Street provides a potential site for a five-unit row house project. As merged lots require lot severances, the additional infill units in this scenario are best suited to freehold tenure. Thirty-two infill houses are proposed in this scenario, increasing the block density by 34%.

5.3.5 Scenario Three: Maximum Density Infill This maximum density scenario groups together otherwise inadequate rear lots to create sufficient land for multi-unit developments, along with large sites within this block which are utilized for pocket developments. The only additional lot amalgamation required for this scenario includes nine lots: three lots behind Melbourne Street west of Poulette Street, and six lots east of Poulette Street. In this scenario, site servicing costs could be shared, fire access could be simplified, familiar planning regulations could be applied, and the historic urban fabric could be maintained while more efficiently utilizing existing municipal services provided to the lone current laneway house on Blanshard Street.

The first site (“A”) lies between Hill Street and a closed section of Blanshard Lane, a single lot now owned by the City and maintained as a fenced green space. Adjacent to Hill Street Park, this green space is underutilized. At 2,500m² (0.25ha), a 13-unit pocket infill community would reflect the smaller fabric of the neighbourhood, utilizing similar setbacks, heights, and adjacencies to neighbouring properties. However, rather than having large rear lots, each dwelling would have a small front garden and share the adjacent green space. The development includes shared parking (one space per household) and helps create a sense of community through the shared green; however, the units are part of both the street and laneway communities and as such, the units front on both the green and the lane or street.



5.17 Kirkendall North test case study model images - maximum density.

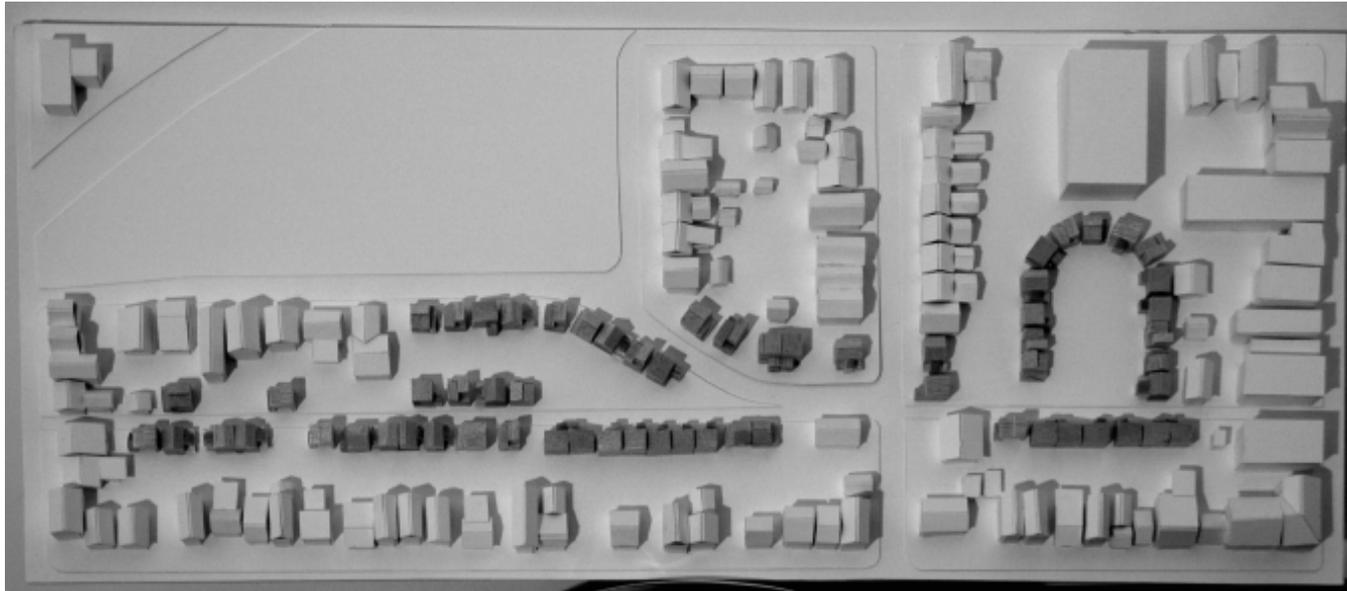
Scenario Three: Maximum Density Infill, Continued A second potential pocket development (“B”) is located on a site originally utilized by Allenby School, and later a warehouse and livery stable. Long-ago severed, it lies fallow behind the new condominiums of Allenby Lofts. Two other properties abut the site, both with extensive empty areas isolated from both street and alley access. Blanshard Street (one of only a few named alleys in Hamilton) runs along the south side of the potential site. While a high-rise, high-density development would be inappropriate for the scale of the surrounding community, a 14-unit infill pocket development on this 3,500m² (0.35ha) site would make ideal use of the alley access and compliment the surrounding cottage-scale neighbourhood. Houses all front a shared green with a shared parking lot accessed from the lane.

Such a maximum density infill scenario, including the two pocket developments, would add 63 units to the block, increasing density by 68%.

5.3.6 Scenario Four: Commercial Infill Option Capitalizing on its location behind Locke Street, an alternative proposal assembles the back portion of eight deep lots and creates market stalls along Blanshard Lane. In this scenario, the Locke Street Merchants’ Association or the City could purchase these rear lots to create low-cost market stalls for local farmers, merchants, and artists. This space would add to the vitality of the Locke Street area and create opportunities for small-scale commerce. Allowing commercial activity along Blanshard Lane would create greater diversity and connectivity to the neighbourhood. Similarly, other small business or live-work typologies would also suit lane-oriented infill in both this location and nearer to Dundurn Street.



5.18 (For location, see “C” on map 5.14) Twenty-six market stalls create an optional commercial infill type behind a high-traffic retail portion of Locke Street.



5.18 Kirkendall North test case study model - maximum density.



5.4 Proposal Two St. Clair Neighbourhood Laneway Infill Housing

Laneway infill study site
(grey) 3.6 hectares

5.19 Five-minute walking radius (50 hectare area) from the study site in the St. Clair neighbourhood, indicating existing laneways (red) and parks (green).

St. Clair neighbourhood (71 ha)

average density = 20 households per hectare

Total Households	1,410
Ave. persons per household	2.33 person/hh

Dwellings Owned	50%
Dwellings Rented	50%

Neighbourhood housing types	
Single detached house	52%
Semi detached/row	1%
Apt detached duplex	12%
Apt <5 storeys	22%
Apt >5 storeys	13%

Average residential resale property value \$182,000

Total population	3,285 persons
0-19 years old	22%
20-65 years old	66%
65+ years old	12%

Participation in labour force	61%
Unemployment rate	9.2%

Education	
High school (or less)	43%
College / trade school	32%
University	19%

Low income households	19%
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Commuting trends	
Car (driver)	66%
Public transit	18%
Other (bike, walk, home)	16%
Work from home	7.9%



5.20 Existing St. Clair laneway behind Burris Street south of Main Street East.



5.21 Existing St. Clair neighbourhood laneway.



5.22 Streetscape along Delaware Avenue.



5.23 Streetscape along Burris Street.



5.24 Existing St. Clair neighbourhood laneway.

5.4.1 Existing Context The St. Clair neighbourhood is located in lower Hamilton, following the Niagara Escarpment south of Main Street East between Wentworth Street South and Sherman Avenue South. Originally a white-collar neighbourhood, its quality-built urban fabric contains streets lined with large brick homes. Large-scale high-density urban redevelopment passed by this community, leaving the historic built environment intact and household density moderate. Like the Kirkendall North neighbourhood, rental units account for 50% of the housing stock in the community. There is a small park two blocks to the west, and many amenities make this a walkable neighbourhood. No inhabited laneway dwellings are known to exist in the neighbourhood. Instead, most lanes include numerous garages and other back-buildings.

Blocks in this neighbourhood vary in width and length, with many containing rear lanes. Lot and house sizes also vary, with lot depths ranging from 30 meters to 45 meters. The lanes themselves are generally not paved or maintained by the City.

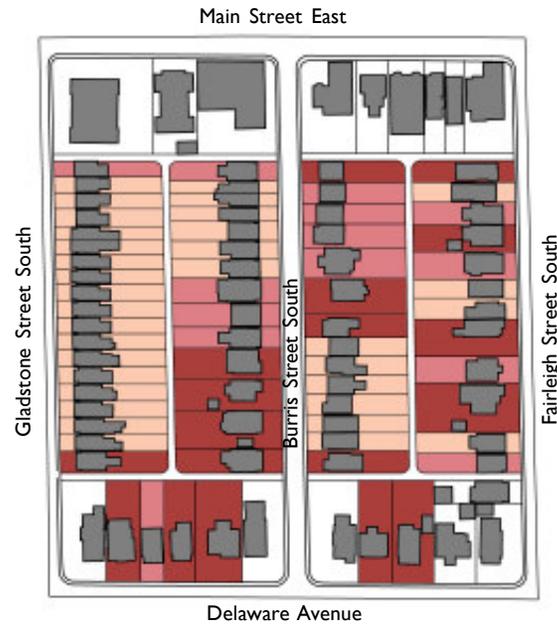
Delaware Avenue is the southern boundary of the study area, and home to particularly large lots and homes. The northern side is Main Street East, a busy thoroughfare through the city lined by low-rise apartment buildings, a restaurant, a church, and several commercial buildings converted from old homes. The fabric of the north-south streets is dense, with a very tight 7.0 meter wide row of lots facing Gladstone Street. Due to these narrow lots, the sample block's household density of 22.1 hph is notably higher than the overall neighbourhood density of 20 hph.

5.25 St. Clair neighbourhood
 (3.6 hectares - excluding commercial buildings)

71 houses (12% duplex)
 Existing density = **22.1 hph**

Existing Lot Study

-  Optimal infill potential
-  Merge-lot infill potential
-  Multi-unit development
-  Limited / no infill potential
-  Park / Greenspace



5.26 Scenario One: Low-density Infill

19 infill houses
 Density = **27.4 hph**

24% household density increase





5.27 (Location indicated on map 5.26 with “A”) Piloti House and Above-Shop infill house in low-density infill scenario of St. Clair neighbourhood context, including afternoon shadow study (September 21st).

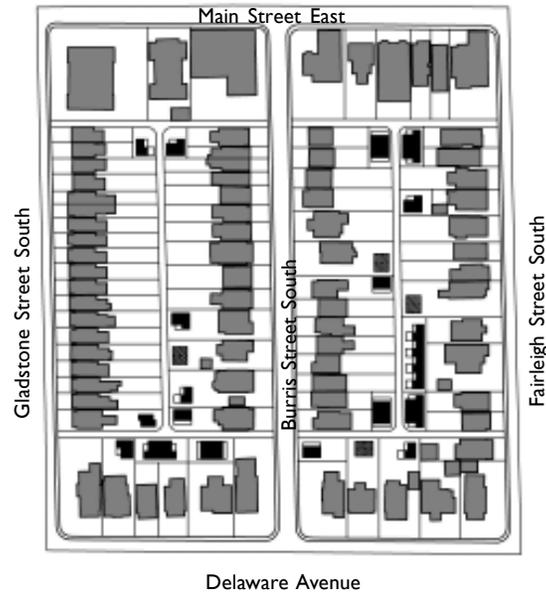
5.4.2 Limitations of the Urban Fabric There is limited housing diversity in the St. Clair neighbourhood beyond large detached homes, duplex apartments, or larger apartment buildings along Main Street. Housing availability is not increasing in the neighbourhood, while interest in living in this community is growing. Many of the larger homes in this neighbourhood have already been divided into several apartments, but those conversions have reached a plateau. There are very few undeveloped lots available for new residential infill construction. The rear portion of many lots remains underutilized by domestic activities including gardening, storage, or parking. Many homeowners in this area may desire to add a rental unit to their house, although this is often not an option.

5.4.3 Scenario One: Low Density Infill Deep-lot laneway housing types such as ADUs could be ideal solutions for homeowners wishing to add value to their properties and capitalize on their neighbourhood’s desirable location within the city. Both ADU and freehold development would be best suited on large infill lots with access potential, for instance, those located behind Delaware Avenue. Infill potential that does not require lot severance or additional accessibility could increase the housing stock on these two blocks by 19 houses, or a 24% increase in household density.

**5.28 Scenario Two:
Medium Density infill**

31 infill houses
Density = **30.7 hph**

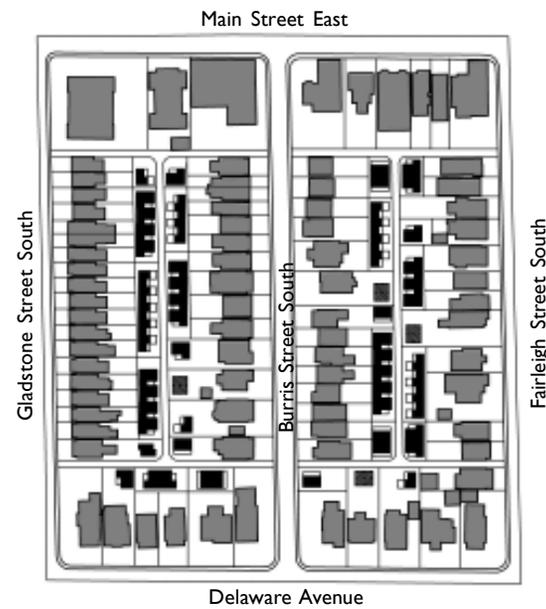
39% household
density increase



**5.29 Scenario Three:
Maximum Density infill**

63 infill houses
Density = **39.6 hph**

79% household
density increase





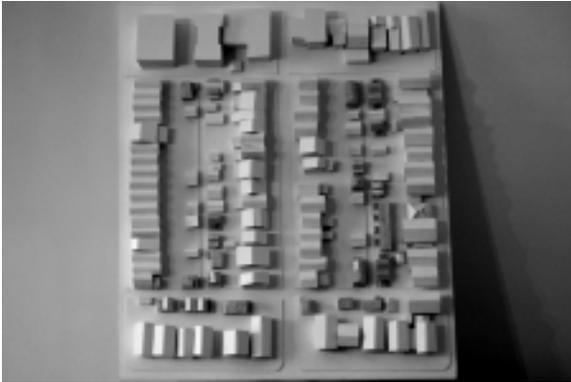
5.30 Model of medium-density infill potential in the St. Clair test site including detached and attached laneway houses and back garages.

5.4.4 Scenario Two: Medium Density Infill This development scenario allows for two-lot amalgamation as well as multi-unit housing on larger lots. Dense infill development is created along the short perpendicular ends of each laneway, as well as behind several of the larger homes of Burris and Fairleigh Streets. By inserting semi-detached and multi-unit dwellings through lot severance, household density can be increased by as much as 39%. Sites behind Main Street are ideally situated for live work and small business infill typology.

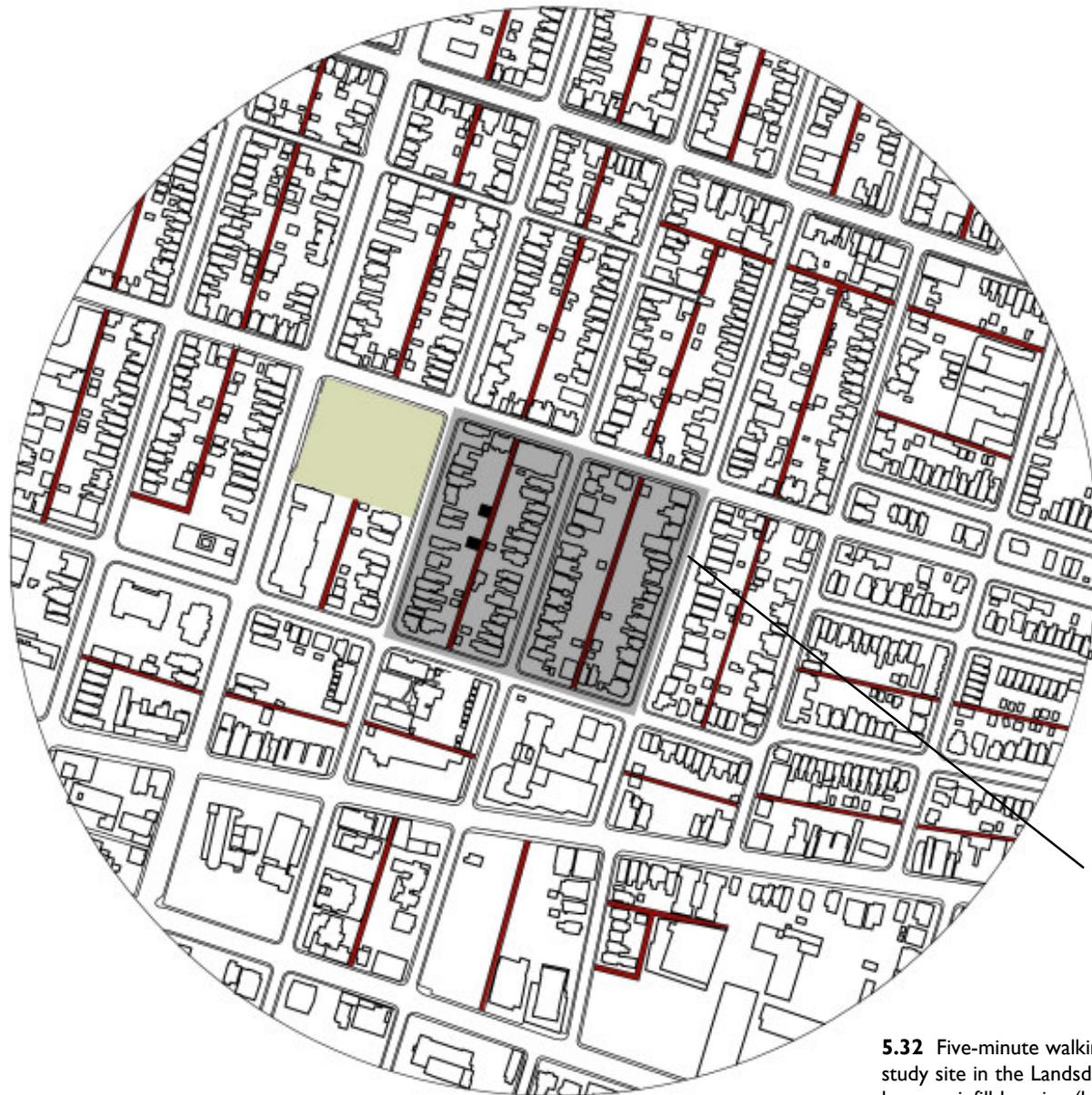
This mid-density scenario is best suited to this test case site. The City would need to assume the maintenance of these alleys at that point. In order to retain some of the verdant nature of these lanes, “green paving” techniques such as concrete strips and structural grass could be considered. Dwelling types with above-grade outdoor spaces would re-orient the lane into two planes: ground level, and second storey, where balconies, roof terraces and decks become a semi-private space.

5.4.5 Scenario Three: Maximum Density Infill In this maximum density scenario, nearly every lane-oriented lot is intensified with infill housing on the two study blocks. Rear lots which previously did not have adequate scale or access (such as the narrow-lot houses along Gladstone) have been grouped together and developed as a unit. Services to all lots would be laid beneath the alley, including water mains for fire hydrants.

Adding this volume of infill would increase the neighbourhood’s density by 79%, a significant amount given the historic character and scale of the community. It would do so, however, without appreciable changes in the streetscape. With such a distinct increase in density for these blocks, economic prospects of community businesses would likely improve. Infilling of this scale is unlikely, however, due to the required extent of property amalgamation. In effect, development at this scale would make the lane into a street.



5.31 St. Clair test case study model images - medium density.



5.5 Proposal Three Landsdale Neighbourhood Laneway Housing

Landsdale infill study site
(grey) 3.5 hectares

5.32 Five-minute walking radius (50 hectare area) from the study site in the Landsdale neighbourhood, indicating existing laneway infill housing (black), laneways (red) and parks (green).

Landsdale neighbourhood (114 ha)

average density = 32 households per hectare

Total Households 3,630
Ave. persons per household 2.15 person/hh

Dwellings Owned 32%
Dwellings Rented 68%

Neighbourhood housing types
Single detached house 40%
Semi detached/row 8%
Apt detached duplex 13%
Apt <5 storeys 11%
Apt >5 storeys 28%

Average residential resale property value \$121,000

Total population 7820 persons
0-19 years old 23%
20-65 years old 42%
65+ years old 19%

Participation in labour force 48%
Unemployment rate 9.6%

Education
High school (or less) 73%
College / trade school 20%
University 7%

Low income households 47%

Commuting trends
Car (driver) 60%
Public transit 11%
Other (bike, walk, home) 29%
Work from home 3.0%



5.33 Streetscape along Tisdale Street North



5.34 Streetscape along East Avenue North



5.35 Lanescape between East Avenue North and Emerald Street North



5.36 Lanescape between Emerald and Tisdale Street North



5.37 Existing converted coach house behind East Avenue North



5.38 Lanescape between East Avenue North and Emerald Street North

5.5.1 Existing Condition The Landsdale community has seen significant disinvestment in recent decades. The resulting low property values have attracted absentee landlords, many of whom own the historic housing stock which has been converted into multi-unit rental accommodations. The traditional two-and-a-half storey brick gable-end single-family houses common in this community are now frequently three units. Tenant-occupied units outnumber owner-occupied dwellings two to one in the neighbourhood. Education, employment, and income levels here are some of the lowest in the city.

While some high-density high-rise buildings are present, the originally-surveyed north-south urban grid remains. The case study blocks are within a five minute walk of the International Village on King Street East and only ten blocks from the heart of Hamilton's downtown core. Like many other historic lower-City neighbourhoods, Landsdale has a grid of alleys which includes a variety of back buildings, garages, and existing-but-vacant coach houses. Most of these structures have experienced the same level of care as the surrounding infrastructure and are in various states of disrepair.

Lot depth is similar to the St. Clair neighbourhood, but due to large back additions and new residential infill that does not respond well to the urban context, one-third of the lots in the case study blocks are not suitable for incremental infill. There are also a significant number of semi-detached houses in this neighbourhood, creating narrow lot widths with little opportunity for rear-lot access to the street.

Despite these factors, laneway housing is an existing part of the neighbourhood fabric. Two converted coach houses are inhabited behind East Street North; one as a freehold unit on a severed lot, the other as an ADU.

5.39 Landsdale neighbourhood

(3.5 hectares - excluding commercial buildings)

79 houses (13% duplex), density = 25.5 hph
 + 2 existing laneway houses

Existing density = 26.1 hph

Existing Lot Study

- Optimal infill potential
- Merge-lot infill potential
- Multi-unit development
- Limited / no infill potential
- Park / Greenspace



**5.40 Scenario One:
 Low Density Infill**

7 new infill houses + 2 existing infill
 Density = **28.6 hph**

12% household
 density increase





5.41 Model of low-density infill potential in the Landsdale test site.

5.5.2 Limitations of the Urban Fabric Disinvestment has created a shortage in the variety of quality housing types. The available substandard rental housing deters many potential residents from considering the neighbourhood, despite its many advantages including generally-sound residential buildings, historic neighbourhood character, human scale, and walkable proximity to all urban amenities.

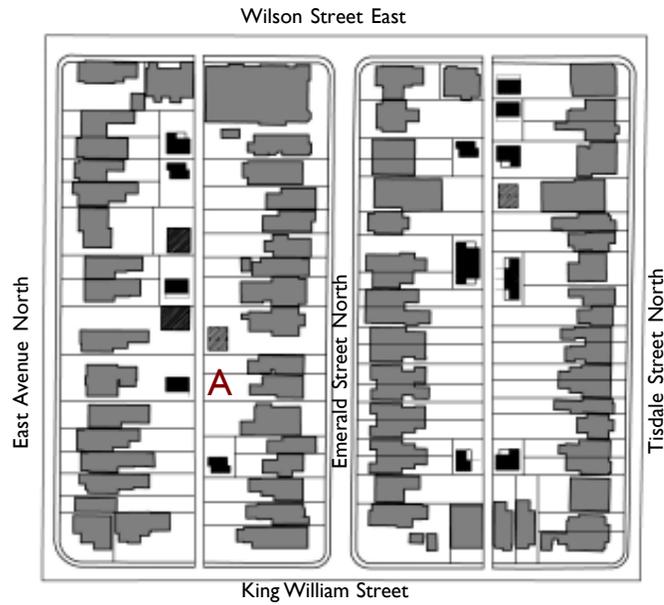
5.5.3 Scenario One: Low Density Infill The Landsdale neighbourhood would greatly benefit from conscientious reinvestment in its built environment. This obviously includes maintaining and restoring the existing buildings of the community, but would also include adding diversity in building types to fill existing holes in the urban fabric. These new housing types would be attractive to younger new-home buyers seeking a home in this downtown community that is close to all civic amenities.

Due to the below-average costs for land, small developers could sever, build, and sell quality new laneway houses at entry-level prices to first-time buyers. The scale, privacy, and freehold ownership would be appealing as an alternative to condominium housing. Due to the density of housing on adjacent blocks, few houses in this neighbourhood could be developed without lot severance and amalgamation. In this two-block study, a total of seven new infill units are possible. This low-density scenario would create a 12% increase in household density.

**5.42 Scenario Two:
Medium Density Infill**

17 infill houses + 2 existing infill
Density = 31.5 hph

24% household
density increase



**5.43 Scenario Three:
Maximum Density Infill**

30 infill houses + 2 existing infill
Density = 35.2 hph

32% household
density increase

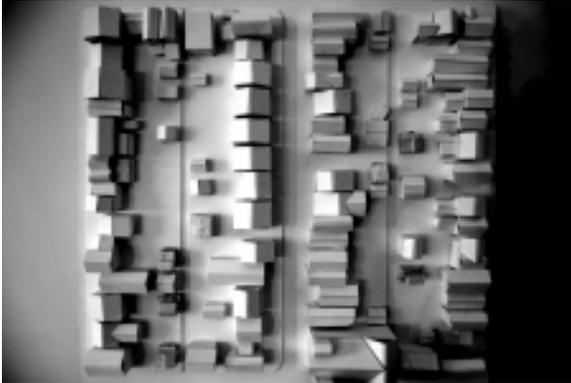




5.44 (For location, see “A” on map 5.42) Converted coach house in existing Landsdale neighbourhood context with shadow study.

5.5.4 Scenario Two: Medium Density Infill By severing and amalgamating 18 rear lots, an additional seven detached and four semi-detached infill houses are possible. Along with Scenario One, this would allow for 17 infill houses and a household density increase of 24%. This would create a populated presence on portions of the lanes, providing a sense of vitality and security. This scenario is less likely due to the high number of adjacent lots that would require amalgamation.

5.5.3 Scenario Three: Maximum Density Infill Higher-density infill of this site would be most likely to occur once property values in the neighbourhood showed significant appreciation. Given the tight lot conditions due to the existing semi-detached housing stock, rear-lot severance and assembly would be required to allow longer row-house typology to be built between Emerald St. and Tisdale Street. Lot amalgamation and multi-unit development would allow for a total of 15 units in this more-dense portion of block. Due to site constraints, neighbourhood density would increase by 38%.



5.45 Landsdale test case study model images - low density.

5.6 Summary of Test Case Studies

The previous case studies reveal the latent potential for infill development along Hamilton's lanes and other underutilized residential urban pockets. These proposals offer alternative forms of urban housing which can broaden perceptions of what can enhance a city.

5.6.1 Results of Three Neighbourhood Test Case Studies

By looking at these case studies in varying degrees of infill density, and based on existing site contexts, several conclusions have emerged:

- Infill in the Kirkendall North neighbourhood was deemed suitable at all three scales – low, medium, and maximum density. Infill included freehold laneway houses, ADUs, pocket developments, and commercial infill opportunities. This infill increased neighbourhood households by up to 68% or 29.8 hph.
- Infill in the St. Clair neighbourhood was most suitable at low and medium densities, which increased neighbourhood households by up to 39% and 30.7 hph. Infill proposed in this case study included ADU, freehold laneway houses, and live/work units.
- Infill in the Landsdale case study was more limited, as 1/3 of existing sites were not suited to infill due to large back yard additions and, in some cases, large front setbacks. Low density infill in this case study would increase household density by 8%, however the neighbourhood density would increase to 28.2 hph, as this community was initially the densest of the case studies.

Kirkendall North Test Case

Maximum density infill scenario

68% increase

Density 29.8 hph



St. Clair Test Case

Medium density infill scenario

39% increase

Density 30.7 hph



Lansdale Test Case

Low density infill scenario

12% increase

Density 28.6 hph



5.46 Figure-ground comparison of target laneway infill scenarios for three neighbourhood test cases. From these studies, maximum targeted infill density from laneway housing is approximately 30 households per hectare.

5.6.2 Conclusions of Three Neighbourhood Test Case Studies

Several conclusions can be drawn from the preceding case studies:

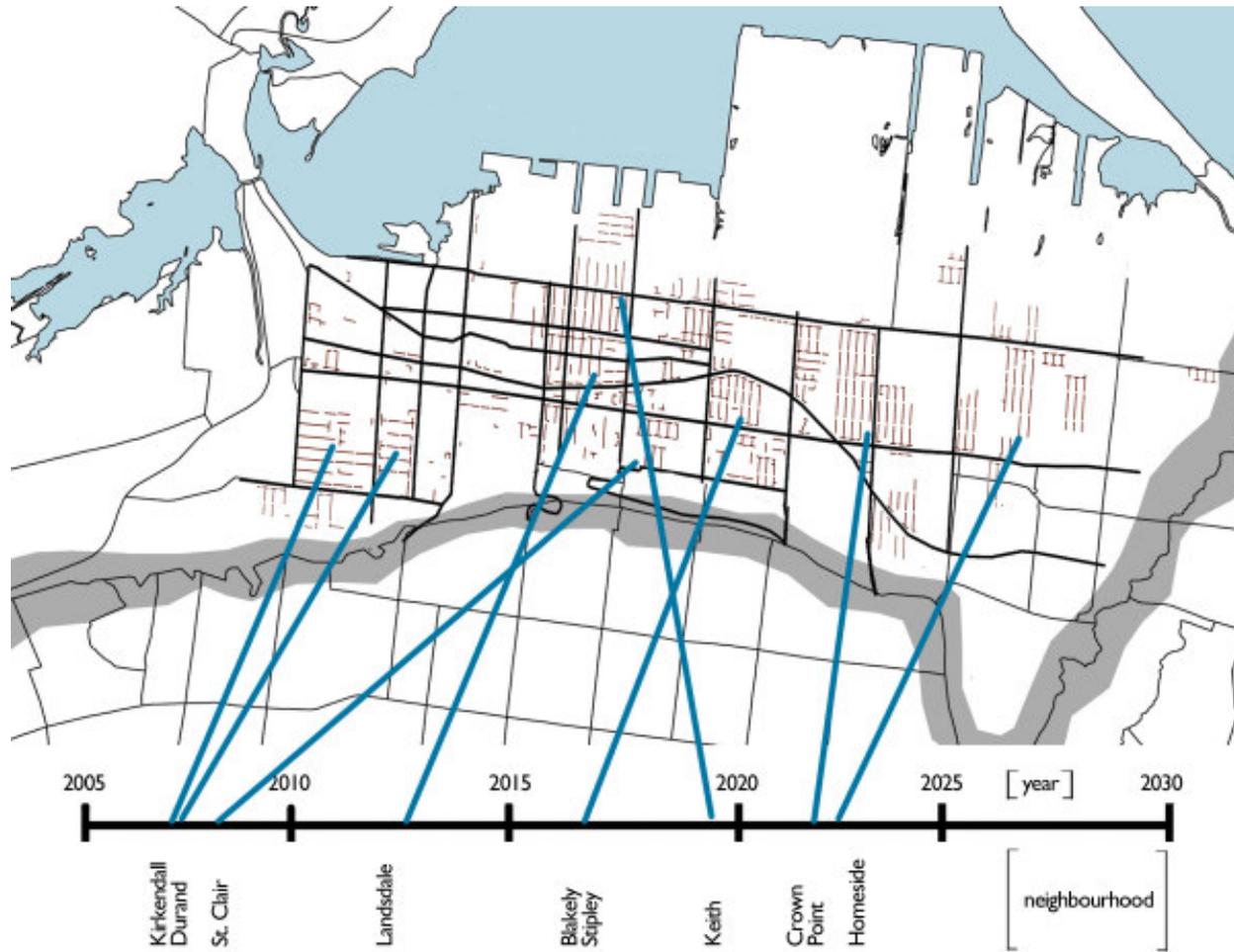
Higher density incremental infill projections are most appropriate in areas with larger plots of available, underused land, such as in Kirkendall North. Pocket developments bridge the street and the lane, creating a sense of transparency on the lane and possibly introducing neighbourhood amenity through a shared park. Average lot size in this neighbourhood was also higher than average for urban lots, requiring a minimum of lot assembly. These areas are also more likely to include a variety of existing typology, allowing laneway infill to be incorporated more seamlessly into the urban fabric.

Medium density insertions suit neighbourhoods with moderate existing densities and where lot scale and distribution are consistent with the needs for laneway infill. In light of the existing laneway house clusters in Hamilton, placing housing in groups of six to ten infill houses creates a familiar scale in the urban fabric, ensuring more livable communities.

Low density infill is most readily undertaken in neighbourhoods with smaller lot sizes. The intractable nature of these sites reflects the challenges of lot severance, assembly, and tight adjacencies. While these challenges can be overcome through multi-unit development, limiting infill to the best-suited sites may be the wisest process of intensification in these more-dense residential communities.

The densification figures for each case study site reveal an interesting correlation: when each of these test cases was intensified with the laneway house typology, maximum densities reached approximately 30 households per hectare. Further study would be necessary to determine the validity of this pattern of maximum density for incremental infill, but the findings suggest it as a valid intensification target for laneway developments.

Hamilton Laneway Infill Development Schedule



5.47 Map and Timeline suggests a potential development schedule for Hamilton's lanes. Proposed developments would occur over a 25-year period, progressing from west to east as community renewal takes place. Neighbourhood selection was based on the defined criteria of average lot width and depth, local economics, existence of established laneway housing, and laneway ownership.

5.6.3 Schedule of Lane-oriented Development for Hamilton

Laneway infill has strong potential in Hamilton, but it must be developed incrementally.

The southwest portion of Lower Hamilton is familiar with this typology and could accommodate insertions immediately. All factors suggested previously, including adequate property values and demographic data already exist in this area.

The rest of Hamilton's historic laneway neighbourhoods could achieve the suggested density of 30 households per hectare over subsequent years as their local conditions warranted. This timeline presumes a suitable *Principle of Land Use* and the requisite zoning provisions are created to re-allow this urban typology.



6.01

06 Conclusion

Expanding the Laneway Infill Typology
Across North America



6.02 Existing Hamilton laneway house, looking west along Blanshard Lane.

6.01 Expanding Finding to North American Cities The concluding case studies of this thesis examined the potential for laneway housing in Hamilton. However, this typology has potential for inclusion in any North American city with historic laneway networks. Some cities have already begun considering the possibility (Chicago, Toronto, Vancouver, Montreal, Santa Cruz, etc.), yet most cities continue to overlook this type of thoughtful intensification.

The results of this thesis can be expanded to any North American city. Particular contexts, such as lot size, will be important; however, the Principle of Land Use can be commonly applied as part of re-examining the nature of urban communities.

6.02 Typological Variety Just as biodiversity is essential for an ecosystem, typological diversity is vital for a healthy urban environment. Throughout her life, Jane Jacobs called for planners to redesign cities with variety – not single-use, car-dependant, mono-type projects – so that a city might flourish. Laneway housing should be included as part of the program to bring renewal to older urban neighbourhoods. For over 50 years this housing type has been ignored, but once again there is great potential to add much-needed texture to the built environment.

This thesis affirms Barton Meyers' assertion that cities need to learn to "fill in before they spread out." Laneway infill housing creates a richer idea of what makes a healthy city. It creates a finer-grained end of the housing spectrum with texture, form, and materials providing a greater variety of scale in the residential fabric.



6.03 Model reveals high-density potential for laneway infill on the Kirkendall North site looking west along Blanshard Lane.

6.03 Alternative Ways of Living The typology of laneway housing offers cities a more sustainable way of growing. Laneway housing fosters more neighbourly interactions and a renewed appreciation of place within the city. The emphasis in laneway infill is on quality of life, not quantity in size or scale.

Laneway housing re-invents the horizontal and vertical axes of personable interaction. The typologies suggested in Part Four allow roof terraces, balconies, and decks which offer new types of outdoor space, creating an alternative semi-private dimension in which neighbours can interact. This raised outdoor space also introduces additional “eyes on the lane”, adding an additional layer of security. This affords both an easier sharing of daily life and awareness of the common life on the lane. Proximity of laneway infill also fosters more opportunities for intentional community, potentially alleviating the isolation of many urban environments.

Laneway housing offers choice: rent or own, detached or attached, freehold or condo, live and work. As Christopher Alexander suggests, ground oriented, adaptable spaces are important in creating livable communities. Given the opportunity to locate laneway housing in almost any historic residential community, neighbourhoods can be less car-dependent, more personable, and more nuanced.

6.04 Making Enduring Cities Cities are enhanced by typological diversity. A re-introduction of the laneway typology repairs, rebuilds, and re-imagines life within urban North American communities. While this type may be enjoyed by its inhabitants and addresses cultural changes such as demographics, developing the laneway at the scales identified in this thesis ultimately benefits the city. As many cities take stock of their options for growth and renewal, incorporating the laneway housing typology can add new textures, scales, and ways of living which will help create cities of enduring urban



6.04

Appendices / Additional Research

The following appendices offer further analysis of Hamilton's laneway fabric. This photo-analysis creates the framework for a more conclusive survey of Hamilton's laneways. Prior to this analysis there was no known survey of Hamilton's laneway houses and back buildings. This survey was created by walking many kilometers of Hamilton's laneways, camera in hand. Due to the often inconspicuous nature of this building type, further exploration of Hamilton's lanes will make this survey more complete. Because these buildings are often built, converted, and demolished away from the eye of City Hall, the fabric of Hamilton's laneways is constantly changing.

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6.05 In winter, Hamilton's laneways are sometimes used for activities such as cross-country skiing.

Appendix A

Hamilton Municipal Fees for Lot Severance

Severance application	\$990
Rezoning	\$2,815
Survey	Private Cost
Lawyer's fees for Deed stamp	Private Cost
Tree management plan	\$500 approx. per tree
Access Permit*	\$200 approx.
Building Permit	\$859 (for 100m ² house with garage)
Development charge	\$19,700 (single)
Cash in lieu of parkland	5% market value of land (\$1,000-\$5,000)
Road cut permit	n/d
Consent agreement	\$3000 approx (engineering drainage, etc.)
Cut trench / Install services	Private Cost (approximately \$25,000)
Street numbers	n/d
TOTAL	\$29,064**

* New Urbanism charges = \$469/meter frontage for sidewalks, etc. (not necessary for lanes?)

** Does not include survey, legal fee deed stamp, service trench/ install, road cut permit, and street numbers.



6.06 Large converted coach house in the Durand neighbourhood.

Appendix B

Hamilton Laneway House Survey

	Address	Units	Levels	Coach House?	Owner/ Renter	Comments
1	276 Aberdeen	2	3	CH	R	Brick, covered in ivy
2	360 Aberdeen	1	1		R	Frame,ADU
3	2 Blanshard St.	2	2		R	Frame house
4	200 Bold (rear)	3	1		R	Frame, small bachelor apts.
5	290 Caroline St. S.	1			R	Frame, attached to apt. building
6	56R Charlton Ave. West	1	2	CH	R	Brick, old back building
7	108 Charlton Ave. West	1	2	CH	R	Brick, attached to house
8	111 Charlton Ave. West	1	2	CH	R	Brick, large
9	68 East Ave. North (rear)	1	2	CH	R	Brick
10	56 East Ave. North	1	2	CH	R	Brick, large ADU
11	3 Fanning Street	1	1		O	Frame cottage
12	4 Fanning Street	1	1		O	Frame cottage
13	6 Fanning Street	1	1		O	Frame cottage
14	8 Fanning Street	1	1		O	Frame cottage
15	224 George St.	1	2		O	Key lot
16	165 Herkimer St.	1	2	CH	O	Brick, pest control office
17	215 Herkimer St.	1	2	CH	R	Brick,ADU and pool house
18	209 Herkimer 2nd	1	2	CH	R	Brick,ADU
19	296 1/2 Herkimer St.	1	2	CH	R	Brick with addition, key lot
20	332 1/2 Herkimer St.	1	1		R	Frame cottage
21	56 Homewood Ave.(rear)	1	1.5	CH	R	Brick, irregular form
22	195 Homewood Ave.	1	2	CH	R	Striped brick pattern, large
23	162 1/2 Locke St.	1	1		R	Frame, behind Locke St. buildings
24	876 Main St. East	1	2	CH	R	Brick, recently converted
25	3 Pine Street (rear)	1	1.5	CH	R	Art studio/ ADU
26	39 Ray St. South	3	2	CH	R	Brick
27	14 Reginald	1	2	CH	O	Brick ,with large addition
28	71 Stanley (rear)	1	1.5	CH	R	Art studio/ ADU
29	20 Wheeler Lane	1	1		O	Frame cottage
30	22 Wheeler Lane	1	1		R	Frame cottage
31	23 Wheeler Lane	1	2		O	Brick, built in 1915
32	25 Wheeler Lane	1	1		R	Brick
33	27 Wheeler Lane	1	2	CH	O	Brick, back building
34	30 Wheeler Lane	1	2	CH	R	Brick, with frame addition
35	32 Wheeler Lane	1	2	CH	R	Brick, with frame addition



6.07 Converted coach house with a large addition at 14 Reginald Street, Hamilton.

Appendix C

Photo Survey of Inhabited Laneway Houses in Hamilton, Ontario

The following photographs represent inhabited lane-oriented buildings either as residences or studio/work space. While these images create the beginnings of a database on this subject, they are not comprehensive. Corresponding addresses are the author's best attempt at accuracy, but should not be relied upon in all cases.



111 Charlton Ave. West



195 Homewood Avenue (rear)



56 Homewood (rear)



23 Wheeler Place



3 Fanning Street



2 Blanshard Street



209 Herkimer Street (2nd)



71 Stanley Avenue (rear)



209 Herkimer Street (rear)



296 1/2 Herkimer Street



27 Wheeler Place



68R East Avenue North



165 Herkimer Street



107 Victoria Avenue North



30 & 32 Wheeler Place



56 East Avenue North (rear)



22 Wheeler Place



332 1/2 Herkimer Street



8 Fanning Street



3 Pine Street (rear)



6 Fanning Street



162 1/2 Locke Street



290 Caroline Street South (rear)



20 Wheeler Place



25 Wheeler Place



4 Fanning Street



276 Aberdeen Avenue (rear apartments 1 & 2)



56 Charlton Ave. West (rear)



31 Ray St. South



156 Robinson Street (rear)



200 Bold Street Rear (apartments 1, 2, & 3)



876 Main St. East (rear)



360 Aberdeen Avenue (rear)



309 Caroline Street South



108 Charlton Ave. West



6.08 This vacant coach house in Hamilton's east end at 24 Blake Street holds great promise for conversion into a residence.

Appendix D

Photo Survey of Existing Coach Houses in Hamilton, Ontario

The following collection of photographs identifies coach houses and back buildings in Hamilton which are currently not being used as residences. This survey is a sample of this building type in Hamilton's urban fabric and reveals the variety of back buildings along the city's lanes; it is not a conclusive survey.

Addresses refer to adjacent street-oriented houses.



117 Ray Street



55 Sherman Avenue



82 Burriss Street



149* Sherman Avenue



East Avenue North



71 Chatham Street



Landsale neighbourhood



Delta West neighbourhood



5 Chatham Street



179 Burriss Street



Markland St.



115 Robinson St.



191 Robinson Street



130 Markland Street



271 Bay St. South



315B Aberdeen Avenue



Landsdale neighbourhood



116 Charlton Ave. West



Landsdale neighbourhood



Landsdale neighbourhood



6.09 St. Clair neighbourhood lanescape

Appendix E

Photo Survey of Hamilton Laneways

The concluding photographs are a collection of images taken by the author from October 2006 to February 2008. Photographs begin in Lower Hamilton's western neighbourhoods and move east. These photographs reveal the unique qualities of laneways within Hamilton's urban fabric and the potential for infill development along these often underused areas in the city's fabric.





Durand and Kirkendall neighbourhoods





Durand and Kirkendall neighbourhoods





Landsdale and Stinson neighbourhoods





Landsdale and Stinson neighbourhoods



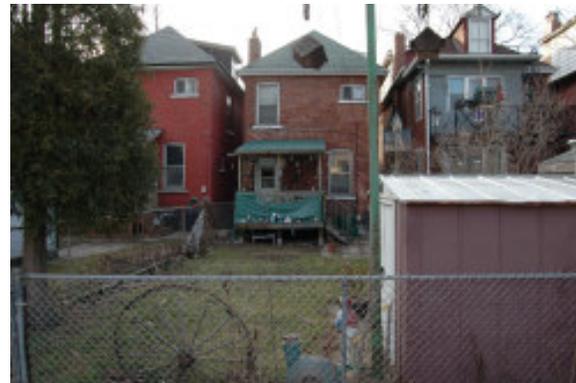


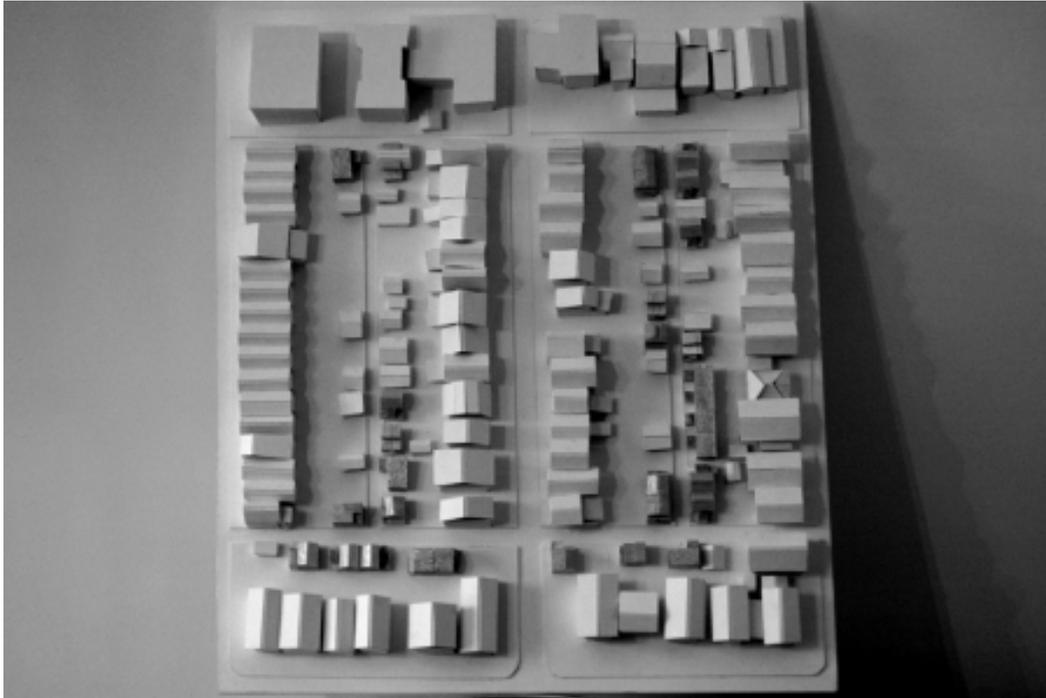
St. Clair and Crown Point East neighbourhoods





St. Clair neighbourhood





6.10

Endnotes

¹ Baird, George and Myers, Barton. 1980. Vacant Lottery: *Design Quarterly* No. 108.

² Ibid.

³ Martin, Michael D. 2001. *The question of alleys, revisited*.

⁴ The Greater Golden Horseshoe (GGH) includes Toronto, Hamilton, Guelph, Peterborough, Barrie, Orillia, and the regions of Halton, Peel, York, Durham, Waterloo and Niagara.

⁵ In 2006, the proportion of one-person households in Canada (26.8%) was similar to the United States (27.1%), but lower than recent data from other countries such as Norway (38.5%) and Germany (37.5%). However, the proportion in Canada was higher than in New Zealand (22.6%), Ireland (22.4%) and Australia (20.7%).

⁶ 2006 Census shows that 26.8% of Canadian households are one-person, while 33.6% are two-person, totaling 60.4% between the two. This percentage has grown from 2001, where one and two-person households in Canada comprised 58.3% of the population. Source: <http://www40.statcan.ca/101/cst01/famil53a.htm?sdi=household%20size>

⁷ Centre for Spatial Economics. *City of Hamilton Population, Household and Employment Projections Report*. November 8, 2002.

⁸ Hemson Consulting. 2005. *Growth Related Integrated Development Strategy – Growth Options and Revised Forecasts*. City of Hamilton Strategic Initiatives Division (CM04017a).

⁹ According to 2006 Census data, 42.7% of census families were couples who did not have children compared to 41.4% of families who were couples with children. Twenty years ago, more than half of census families were couples with children (52.0%) while 35.3% were couples without children. Source: <http://www12.statcan.ca/english/census06/analysis/famhouse/cenfam1a.cfm>

¹⁰ Average new house data source: Hamilton-Burlington Real Estate Association. Average household income data source: Statistics Canada.

¹¹ Between 2001-2006 the population of Barrie grew 24%, and in Milton the population grew 71%. At the same time, the national population growth rate was 5.4%, the City of Toronto grew only 0.9%, and Hamilton's population grew by 1.8%.

¹² This discrepancy was noted in a December 2005 CMHC document which studied six regions across Canada (Halifax, Montreal, Toronto, Saskatoon, Calgary, & Vancouver) regarding sustainable growth policies.

¹³ According to the 2005 CMHC document, this increased suburban density is often not the result of new municipal regulation but due to increasing land values.

¹⁴ "Smart Growth in Canada: A Report Card." 2005. Canada Mortgage and Housing Corporation.

¹⁵ University of Guelph, *Farmland Preservation Research Project, 2004*. (www.farmland.uoguelph.ca/oft/publications.htm)

¹⁶ Ibid.

¹⁷ www.farmland.uoguelph.ca/publications/phasel.pdf

¹⁸ MKI & Clayton Research. 2006. *Hamilton Residential Intensification Study*. City of Hamilton Long Range Planning Division (PED07053).

¹⁹ www.cnu.org

²⁰ Ibid.

²¹ Meck, Stuart. 2000. *Bringing Smart Growth to Your Community*. American Planning Association. Summer.

²² Ibid.

²³ In depth study of community gardens in terms of urban regeneration, reducing crime and discrimination can be found in the research of Garnett 1996, Howe and Wheeler 1999 and Hynes 1996.

²⁴ www.spinfarming.com

²⁵ Viljoen, Andre. 2005. *CPULs: Continuous Productive Urban Landscapes*.

²⁶ Jacobs, Jane. 1961. *The Life and Death of Great American Cities*, p.279

²⁷ Ibid. While these qualities can be found in many proposals for small lot infill and laneway housing. Jacobs notes that poorly-planned small housing infill, which she calls "a second layer in the backyards and courts within little blocks" often do not increase density enough to be practical. She notes, "they are not at fault in every case; at occasional oddities they are charming. The trouble comes with too many."

²⁸ Alexander, Christopher. *A Pattern Language*. p 115.

²⁹ Ibid., p 390.

³⁰ Clay, Grady. 1978. *Being a disquisition upon the origins, natural disposition and occurrences in the American scene of alleys: A hidden resource*.

³¹ Mosher, Anne E. and Holdsworth, Deryck W. 1992. *The meaning of alley housing in industrial towns: examples from late-nineteenth and early-twentieth century Pennsylvania*.

³² Baird, George. 1978. *Theory/Vacant Lots in Toronto* in *Design Quarterly* 108. p29.

³³ Martin, Michael D. 2000. *Endangered landscapes*.

³⁴ Ibid.

³⁵ Martin, Michael D. 1996. *Back alley as community landscape*.

³⁶ A similar type of infill occurred in Germany in the early 1900s in what were called *hintergassen*. Alleys were fronted by low-cost worker housing which stood behind the homes of wealthier citizens.

³⁷ In 2000 the Village planning department created a Coach House Study Task Force to look at existing carriage house lanes as a “hidden resource” for affordable housing. The report offered several suggestions, including revised regulations to allow converted carriage houses to be rented, and encouraged creating a set of guidelines for this development. A year later the plans were halted, primarily by the fire department, due to some concerns over access restrictions.

³⁸ Home Zones briefing sheet, Robert Huxford, *Proceedings, Institution of Civil Engineers, Transport*, 135, 45-46, February, 1999.

³⁹ www.communitygreens.org

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² <http://www.cityfarmer.org/lanes.html>

⁴³ Structural grass used in these studies was called Geoblock and Golpla.

⁴⁴ <http://www.hour.ca/news/explainer.aspx?ilDArticle=13177>

⁴⁵ Saulny, Susan. 2007. “In miles of alleys, Chicago finds its new environmental frontier.” *New York Times*, November 25.

⁴⁶ For example, the City pays \$45/cubic yard for permeable concrete, while ordinary concrete costs \$50/ cubic yard. The stone filtration layer below the paving will be an added cost, however.

⁴⁷ Doucet, Michael and Weaver, John. 1991. *Housing the North American City* p108.

⁴⁸ Terrance Dawe, email correspondence.

⁴⁹ http://www.sfu.ca/city/PDFs/Afford_by_Design_final_prf.pdf

⁵⁰ Stinson, J & Van Elslander, T. *A Study in Laneway Housing in Toronto*.

⁵¹ Energy Pathways Inc., Ottawa, Ontario (1996) *ACT Demonstration Project: Small-Scale Infill: The Stacked Fourplex*. Capital Region Housing Corporation Victoria, British Columbia.

⁵² http://www.victoria.ca/common/pdfs/planning_smallot.pdf

⁵³ <http://cottagecompany.com/cczoning.html>

⁵⁴ City of Santa Cruz. 2005. *Accessory dwelling unit manual*. www.ci.santa-cruz.ca.us/pl/hcd/ADU/adu.html

⁵⁵ Ibid.

⁵⁶ Cottage Housing Development zoning has been recognized by receiving the American Planners Association's 2005 Outstanding Planning Award for a Program, the American Institute of Architects 2004 Merit Award and the Environmental Protection Agency 2004 Award for Smart Growth Achievement.

⁵⁷ City of Vancouver Planning Department. 2005. *RT-10 and RT-10N Small House/Duplex Guidelines*. November.

⁵⁸ Stinson, J & Van Elslander, T. *A Study in Laneway Housing in Toronto*.

⁵⁹ Shim, Brigitte and Chong, Donald. 2004. *Site Unseen: Laneway architecture & urbanism in Toronto*.

⁶⁰ Gadd, Jane. 2006. "Council snuffs out laneway dream." *Globe and Mail*, October 19.

⁶¹ Emphasis on the importance of creating a principle of land use from an email with Hamilton urban planner Al Fletcher.

⁶² *ACT Case Study: Regulations for Garden Suites*. Tantamar Planning District Commissions, Sackville, NB. 1994.

⁶³ Costs based on published Canadian laneway infill studies 2000-2007.

⁶⁴ In upper Hamilton, a typical serviced subdivision lot (including land costs and development fees) is approximately \$10,000 per meter frontage. Therefore, a lot in a more dense subdivision (such as the Summit Park) would cost approximately \$140,000 per lot, while a lot in Ancaster's Meadowlands development could cost closer to \$200,000 for serviced land and development fees alone.

⁶⁵ Cost estimate was given for this project by Wm. Bethlehem Trenching, of Burlington, ON.

⁶⁶ Allowable rent under this covenant was \$688 for a single-person household and \$785 for a two-person household (in 2005).

⁶⁷ www.communitygreens.org/ExistingGreens/chandlersyard/chandlersyard.htm

⁶⁸ Clay, Grady. 1978. *Being a disquisition upon the origins, natural disposition and occurrences in the American scene of alleys: A hidden resource*. p 14.

⁶⁹ Ibid.

⁷⁰ Pocket neighbourhood developments in the Puget Sound region have been primarily designed by architect Ross Chapin. For a list of these projects see www.rosschapin.com/Projects/projects.html

⁷¹ <http://cottagecompany.com/cctsc.html>

⁷² Duff, Jocelyn and Dawe, Terrance. 2002. *ACT Case Study: Espaces habitables sur ruelle (building houses that front on alleys): rapport final*.

- ⁷³ CMHC document in Residential Intensification Case Studies: Built Projects. Page K1-5 *Les Lofts du Pont, Montreal*.
- ⁷⁴ City of Santa Cruz. 2005. *Accessory dwelling unit manual*. www.ci.santa-cruz.ca.us/pl/hcd/ADU/adu.html
- ⁷⁵ Ibid.
- ⁷⁶ Toronto architects who have designed laneway housing for themselves or a client include: Michael Taylor, Mary Jane Finlayson, Shim-Sutcliffe, Kohn Shnier, Don Schmitt, and others.
- ⁷⁷ Stinson, J & Van Elslander, T. *A Study in Laneway Housing in Toronto*. Canada Mortgage and Housing Corporation: Ottawa, Ontario. 2003.
- ⁷⁸ City of Vancouver Planning Department. 2007. *Vancouver EcoDensity Primer*.
- ⁷⁹ <http://smartgrowth.bc.ca/Portals/0/Downloads/Affordability%20by%20Design%20Report.pdf>
- ⁸⁰ In 2001, there was a commuter deficit of 23,000 people in Hamilton.
- ⁸¹ Doucet, Michael and Weaver, John. 1991. *Housing the North American City*. p31.
- ⁸² Ibid.
- ⁸³ Ibid. This continued until 1921 when nearly every lot in the original city was passed by water and sewer lines.
- ⁸⁴ Ibid, p94. Before 1905 houses were almost exclusively brick (95.9%) but, due to a reduction in the city's "fire limits" in 1903, between 1905-1925 1/3 of all houses built were wood frame construction.
- ⁸⁵ Planning and Economic Development Department, Hamilton Wentworth Region. 1987. *High density residential development study: background report*.
- ⁸⁶ Source: *Hamilton Spectator* April 4, 2007. "City core alive with new life."
- ⁸⁷ Statistics Canada. www.statscan.ca
- ⁸⁸ Average income of Lower Hamilton from 2001 Statistics Canada data.
- ⁸⁹ Hamilton statistics from Hamilton-Burlington Real Estate Board, 2007.
- ⁹⁰ Canadian Real Estate Board data, January 2008. www.crea.ca
- ⁹¹ Hemson Consulting. 2005. *Growth Related Integrated Development Strategy – Growth Options and Revised Forecasts*. City of Hamilton Strategic Initiatives Division (CM04017a)
- ⁹² Hemson Consulting's findings were higher than the previous study due to a higher level of population expansion, decreased emigration and higher immigration levels than earlier anticipated.
- ⁹³ Program Policy and Planning Department, City of Hamilton. 2004. *Keys to the home: a housing strategy for Hamilton*.

⁹⁴ <http://www.myhamilton.ca/myhamilton/CityandGovernment/CityDepartments/PlanningEcDev/LongRangePlanning/InformationPlanning/Vacant+Urban+Residential+Land+Inventory.htm>

⁹⁵ Fred Vallance-Jones. "Lament for a Downtown: Business running on Empty." *Hamilton Spectator*. March 17, 2001

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⁹⁹ Ibid.

¹⁰⁰ *Hamilton Spectator*, August 27, 1973. "Finding a Solution to Problem Lanes is Up Their Alley"

¹⁰¹ Lakatos, Joe. 1986. *Durand neighbourhood alley beautification study*.

¹⁰² Dault, Gary M. 2004. "Inverse city". *The Canadian Architect* 49(10).

¹⁰³ Based on the author's observations in laneway study October 2006 to February 2008.

¹⁰⁴ These observations were made between November 2006 and November 2007 by observing a large proportion of Hamilton's laneways by walking through them and identifying trends.

¹⁰⁵ Historical data on lane-oriented dwellings is taken from 1898 and 1947 Hamilton insurance maps.

¹⁰⁶ Based on information from interview with occupant, November 2007.

¹⁰⁷ Estimate created by assuming an average of 40 lots per typical block and 650 official laneways in Hamilton.

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6.11 Paved alley signage in Oak Park, Illinois. Stop, discern, and strategize. Like all other forms of infill, a laneway infill strategy that will benefit the whole community must be handled with finesse.