It Takes a Village:
A Retrofit Framework for Improving Health and Community in Car-Dependent Suburbs

by

Logan Carragher

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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

Car-dependent suburban sprawl is an outdated planning methodology that is antithetical to the health, wellbeing, and social prosperity of suburban residents. In the past, North-American town planning was more community-centric; however, after World War II, suburbanization took it in a markedly different direction.[1] Suburbs provide less expensive housing than in cities, quieter neighbourhoods, and are ideal for nuclear families. These benefits, however, do not outweigh the health, social, and environmental concerns associated with them. The car-dependency of suburbs causes a plethora of health ailments and results in obesogenic neighbourhoods, as well as reduces residents' overall satisfaction with life.[2] Socially, suburbs promote group separation which decreases civic engagement, and they consume valuable time due to the commuting necessity, eroding the social identity of the region.[3] Lastly, the extensive amount of space they take up eats into wilderness and farmland, and the carbon emissions per-capita are much higher than in cities.[4]

As a product of the Covid-19 pandemic, work-from-home culture has become widely accepted out of necessity, causing suburbanites to spend more time in suburbs throughout the day. It has also initiated a migration of city dwellers moving to the urban periphery who are taking advantage of distanced work culture and lower housing prices.[5] As such, it is more important than ever for architects and planners to re-examine the composition of suburban neighbourhoods in order to provide a better quality of life to residents. This thesis explores the use of a retrofit framework to supplement single-family home

1 John Douglas Belshaw, "9.13 Cold War Society: Cities and Suburbs," in *Canadian History: Post-Confederation* (Victoria, BC: BCcampus, BC Open Textbook Project, 2017), pp. 564-572.

2 Charles Montgomery, *Happy City: Transforming Our Lives Through Urban Design* (New York, NY: Farrar, Straus and Giroux, 2013), 95-96.

3 Robert D. Putnam, "Chapter 12: Mobility and Sprawl," in *Bowling Alone: The Collapse and Revival of American Community* (New York, NY: Simon & Schuster Paperbacks, 2020), pp. 205-215.

4 Daniel Hoornweg, Lorraine Sugar, and Claudia Lorena Trejos Gómez, "Cities and Greenhouse Gas Emissions: Moving Forward," *Environment and Urbanization* 23, no. 1 (October 2011): pp. 207-227, https://doi.org/10.1177/0956247810392270.

5 Conor Dougherty and Ben Casselman, "House Hunters Are Leaving the City, and Builders Can't Keep Up," *The New York Times*, May 29, 2021, https://www.nytimes.com/2021/05/29/business/economy/new-home-building-suburbs.html?referringSource=articleShare.

neighbourhoods to better support more time spent there. It invents the concept of *villageness* and argues that this is what is missing from suburbs. Neighbourhood identity, social gathering spaces, ease of pedestrian transit, and resource availability are proposed categories that can be combined to produce *villageness*. Through this framework and the *villageness* it creates, existing suburbs have the potential to become healthier, self-supporting communities that are less heavily reliant on the automobile to function.

Acknowledgements

There are several individuals whose assistance over the past twenty months has been indispensable. Were it not for their time and expertise, this thesis would not be what it is today. I would like to thank the following people:

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Background

This thesis makes use of several ideas and terminologies that require context for its content to be better understood. These terms include: suburb, social capital, walkability, Walk Score®,[6] and the 15-minute city. To start, the suburb is an integral part of this thesis and is the setting for the retrofit framework. Next, social capital is an important metric of social wellbeing and can be used to assess the wellbeing of suburbanites. Walkability is a measure describing the comfort of pedestrian living in a given neighbourhood and is connected to *villageness*. Walk Score is a formal scoring system that quantifies walkability. Finally, the 15-minute city is connected to *villageness* as it is a planning ideology that argues for an increase in local living. The following section provides background information for and the definitions of these terms

6 Walk Score, "Walk Score Methodology," Walk Score, November 19, 2015, https://www.walkscore.com/methodology.shtml.

Suburb

The etymology of suburb has Latin roots and is a combination of 'sub,' meaning 'near to' or 'under,' and 'urb,' meaning 'city' or 'pertaining to city life.' 'Sub-urb' then means 'near to the city.' [7] This is a rather limited definition, however, and can be expanded upon.

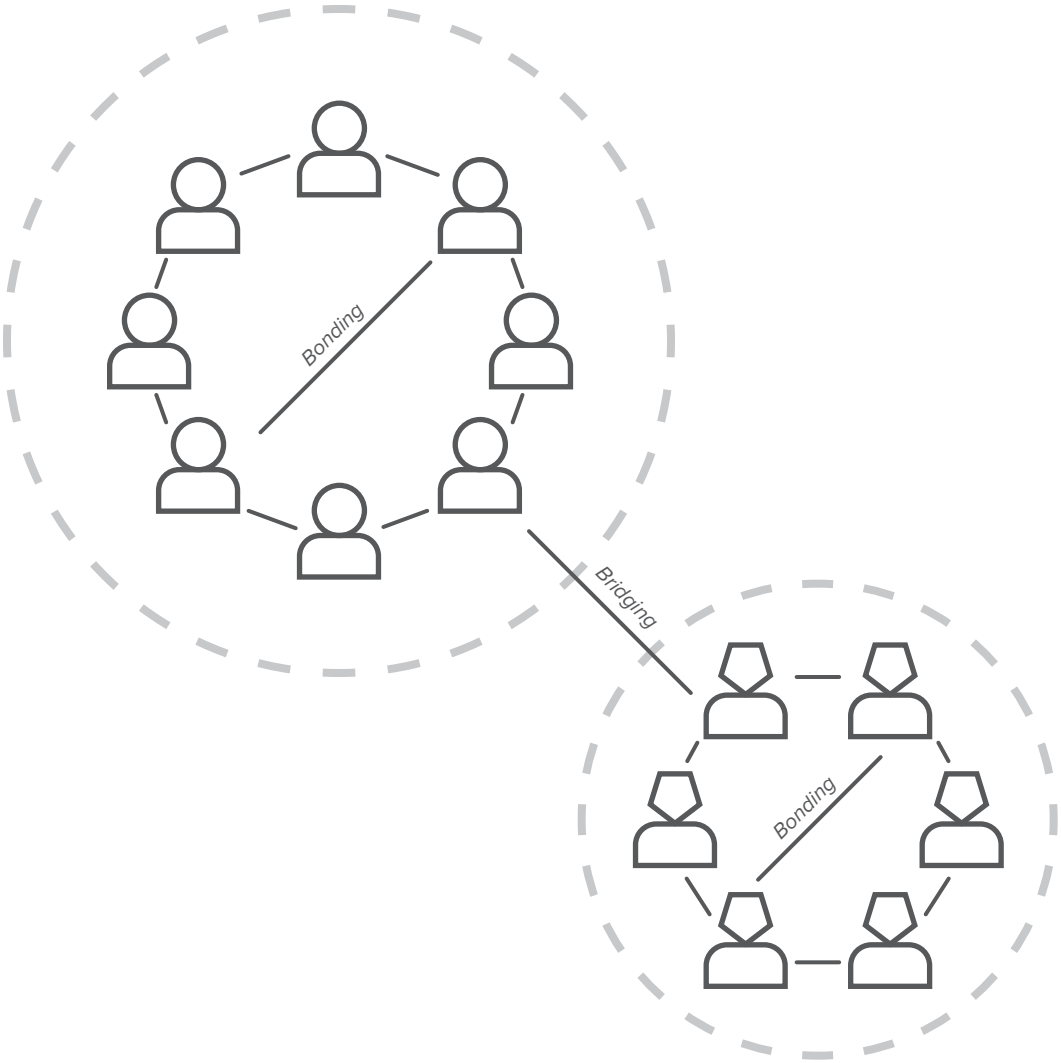
Fig. 0_1 *(Opposite page) An aerial view of a typical suburban neighbourhood in Markham, Ontario. As with most North-American suburbs, it is monotonous and car-dependent.*

In his journal article *Satellites and Suburbs*, Leo F. Schnore characterizes suburbia by combining two previous definitions, one from Walter T. Martin and the other from Harlan Paul Douglass. Martin's definition describes the suburb using two distinctive features. The first feature is its ecological position. The suburb is primarily a residential area that lies outside of a city center while not being rural. The second feature is commuting. As a direct outgrowth of the suburb's ecological position, commuting to work is a requirement because the lack of goods and services within the suburb region produces a reliance on the city center for resources and employment. Douglass's definition separates the suburb into two types: consumer suburbs and producer suburbs. Consumer suburbs are repositories for wealth, purchased goods, and are primarily places for inhabitation. Producer suburbs are predominantly factory and industry centers, while also providing housing for local workers, and whose goal is wealth production. [8]

This thesis focuses on the consumer suburb as it is the primary type across North-America. These neighbourhoods have been given other names including 'commuter town,' 'bedroom community,' 'dormitory town,' and 'sleeper city.' All of these names describe an isolated and monotonous neighbourhood whose primary function is to serve as a place for sleeping because everything from goods and service, to social engagement spaces are difficult to find within its bounds.

7 Online Etymology Dictionary, "Suburb (n.)," Online Etymology Dictionary, 2001, https://www.etymonline.com/word/suburb.

8 L. F. Schnore, "Satellites and Suburbs," *Social Forces* 36, no. 2 (December 1, 1957): 121–27, https://doi.org/10.2307/2573846.


Bonding
Bridging
Bonding

Social Capital

The American political scientist Robert D. Putnam defines social capital as the "social networks and the associated norms of reciprocity and trustworthiness." This can be measured through metrics such as trust levels, social network size and strength, and civic engagement. Social capital can be further explained by its two subsets, bonding and bridging social capital. Bonding social capital is defined as the "ties to people who are *like* you in some important way." Bridging social capital is defined as the "ties to people who are *unlike* you in some important way." Social capital is important for several reason. Most significant to this thesis is that it has a positive influence on our mental and physical health when it is strong. Strong social capital also helps those outside yet near social networks. Another way to say this is that social capital has positive externalities, meaning, for example, that a mother who does not engage with a neighbourhood's parents group nonetheless benefits from its presence and can easily access it if needed. Lifetime income is also influenced by higher social capital as most people receive employment through who they know rather than what they know. In sum, Putnam concludes that "…where levels of social capital are higher, children grow up healthier, safer, and better educated, people live longer, happier lives, and democracy and the economy work better."[9]

Fig. 0_2 *(Opposite page) Bonding social capital connects individuals within the same group identity, whereas bridging social capital connects individuals across group identity boundaries. The presence of both are necessary for intricate social networks to flourish.*

9 Robert D Putnam, "E Pluribus Unum: Diversity and Community in the Twenty-First Century - The 2006 Johan Skytte Prize Lecture," *Scandinavian Political Studies* 30, no. 2 (2007): 38.

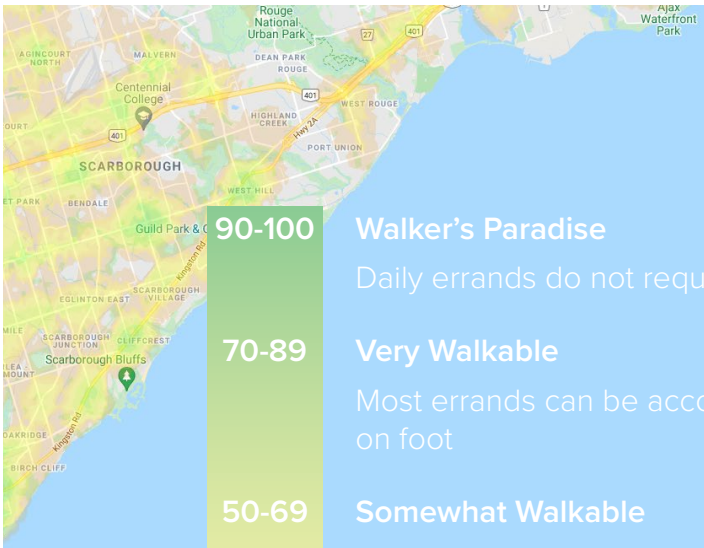
Walkability

Walkability is a measure of the proximity to amenities considering walking time and the ease with which pedestrians can make those journeys. Jeff Speck, city planner and author of *The Walkable City*, defines a walkable city as "a city in which the car is an optional instrument rather than a prosthetic device." A place can only become walkable when it offers a walk that is as good as a drive, or better. To do this, Speck provides his 'General Rule of Walkability' which has four criteria that must be met simultaneously. The walk must be useful, it must feel safe, it must be comfortable, and it must be interesting.[10] Walkability is beneficial to cities in ways that fall into five categories: Health, Climate, Economics, Community, and Equity. In terms of health, cities that are walkable reduce automobile-related deaths by lowering the number of drivers on the road, and their residents are slimmer and fitter as a result of increased daily movement. On the environmental side, a walkable place, in reducing car usage, decreases GHG emissions and is better for the planet as well as resident's lung health. Considering the economic argument, homes in walkable neighbourhoods increase in property value, residents pay lower transportation costs yearly, and city infrastructure expenditures for building and maintaining wider roads are no longer needed. Walkability also increases community connectedness, with residents in more walkable neighbourhoods reporting having more friends and participating in community events more often. Lastly, walkable areas provide equity by making streets safer for children and the elderly, allowing those that cannot afford a vehicle to access amenities, and improving navigability for the differently abled.[11]

Fig. 0_3 *(Opposite Page)*
The Italian city of Siena is an example of a walkable city, the historic center especially. Older cities, built before the invention of the automobile, are more likely to be walkable. Cities in Europe have a higher chance of being walkable than cities in North America, based simply on how long ago they were built.

10 Jeff Speck, "4 Ways to Make a City More Walkable," Jeff Speck: 4 ways to make a city more walkable | TED Talk, October 2013, https://www.ted.com/talks/jeff_speck_4_ways_to_make_a_city_more_walkable.

11 Jeff Speck, *Walkable City Rules: 101 Steps to Making Better Places* (Washington D.C., DC: Island Press, 2018), 1-11.



90-100 **Walker's Paradise**

Daily errands do not require a car

70-89 **Very Walkable**

Most errands can be accomplished on foot

50-69 **Somewhat Walkable**

Some errands can be accomplished on foot

25-49 **Car-Dependent**

Most errands require a car

0-24 **Car-Dependent**

Almost all errands require a car

Walk Score

This thesis uses Walk Score ranking to represent the walkability of cities. Walk Score is an online tool that measures the walkability of an address or the average walkability of a city or region. It is formatted as a numeric scale, and addresses are given a Walk Score rating of between 0 (car-dependent) and 100 (a walker's paradise).[12] These scores are produced through the analysis of hundreds of walking routes to local amenities from the address being scored. The distance to these amenities dictates how points are awarded. If that distance is within a 5 minute walk, maximum points are awarded. Beyond this timeframe, a decreasing amount of points are given. Walking times of 30 minutes or more do not provide points. Walk Score also takes into account population density, block length, and intersection density.[13] Walk Score is overseen by an advisory board of urban planners and environmental experts from foundations such as The Sightline Institute, The Brookings Institution, and Smart Growth America.[14]

Fig. 0_4 *(Opposite Page)*
The Walk Score ranking system.

Walk Score began in 2007 as a small-scale enterprise that aimed to promote walkable neighbourhoods in America. Later, in 2014, it was bought by the Unites States real estate brokerage Redfin.[15] Walk Score has been used in numerous research papers and has been proven as a reliable measure of walkability.[16] Walkability measures based on proximity to amenities have received criticism, however. There are often inconsistencies at smaller scales, and they overestimate scores in certain places while underestimating them in others.[17] Because of this, Walk Score should be taken as an approximation of walkability rather than an absolute.

12 Walk Score, "Walk Score Methodology."
13 Ibid.
14 Walk Score, "Advisory Board," Walk Score Advisory Board, 2022, https://www.walkscore.com/advisory-board.shtml.
15 Robert Steuteville, "Walkability Indexes Are Flawed. Let's Find a Better Method," CNU, June 25, 2019, https://www.cnu.org/publicsquare/2019/01/10/walkability-indexes-are-flawed-lets-find-better-method1.
16 L. J. Carr, S. I. Dunsiger, and B. H. Marcus, "Validation of Walk Score for Estimating Access to Walkable Amenities," *British Journal of Sports Medicine* 45, no. 14 (2010): pp. 1144-1148, https://doi.org/10.1136/bjsm.2009.069609.
17 Steuteville, "Walkability Indexes Are Flawed."

The 15-Minute City

The 15-minute city is a concept in which neighbourhoods provide all necessary daily amenities within a 15 minute walk or bike ride from home. The term was originally coined in 2016 by Sorbonne professor Carlos Moreno. Since then, other intellectuals have proposed variations on the concept, some extending the range up to 20 minutes, others placing the focus on walkability, sociability, technological integration, and access. [18] Moreno argues for a chrono-urbanism in which hyper-proximities provide freedom from the typical time constraints of a centralized urbanism.[19] Instead of multiple locations commuting to one large center, those places would be able to commute shorter distances to multiple smaller centers. This form of hyper-local living draws from a world before the intrusion of the automobile, emulating a village outlook and applying it in an environmentally friendly and socially connected way. The 15-minute city has been around for less than a decade and has already transitioned from utopian idealism to practical implementation. It has been adopted at a policy level in Paris where its utilization is headed by Mayor Anne Hidalgo and Moreno, and is being adopted in other cities, such as Brussels, Milan, and Melbourne. The concept of the 15-minute city received the 2021 Obel Award for its potential to create environmentally sustainable and people-centric environments,[20] and has become more seriously considered globally due to the vulnerabilities in car-dependent urbanism that the Covid-19 pandemic has illuminated.[21] The 15-minute city is a European invention, however, where cities are much older and built pre-automotive age. It receives push-back in North America where development has largely been automobile-focused, making the 15-minute city unrealistic without substantial investment and urban reconstruction.[22]

Fig. 0_5 *(Opposite Page)*
Paris is moving to integrate the 15-minute city over the next several decades. The pandemic has shown the weaknesses of the existing ubranism, and the mayor hopes to fix these with the help of Moreno's invention.

18 Carlos Moreno et al., "Introducing the '15-Minute City': Sustainability, Resilience and Place Identity in Future Post-Pandemic Cities," *Smart Cities* 4, no. 1 (August 2021): pp. 93-111, https://doi.org/10.3390/smartcities4010006.

19 Carlos Moreno, "The 15 Minutes-City: For a New Chrono-Urbanism! - Pr Carlos Moreno," Carlos Moreno, May 15, 2020, https://www.moreno-web.net/the-15-minutes-city-for-a-new-chrono-urbanism-pr-carlos-moreno/.

20 Andreea Cutieru, "The Concept of 15-Minute City Wins 2021 Obel Award," ArchDaily (ArchDaily, October 27, 2021), https://www.archdaily.com/970873/the-concept-of-15-minute-city-wins-2021-obel-award.

21 Moreno et al., "15-Minute City," pp.93-111.

22 Feargus O'Sullivan, "Where the '15-Minute City' Falls Short," Bloomberg.com (Bloomberg, March 2, 2021), https://www.bloomberg.com/news/articles/2021-03-02/the-downsides-of-a-15-minute-city.

Introduction

My childhood was spent in a home in the Canadian countryside. It was calm, picturesque, and secluded. The nearest cities were between a 15 and 20-minute drive away; far enough to make it feel like its own little island in the woods. As I grew older, however, it began to feel isolating. There were no opportunities for spontaneous visits to friends' houses as most of them lived in cities. My independence and agency were tied to my parent's vehicles, which weren't accessible until my license was complete, and then only when they weren't already in use. The level of freedom that I felt after getting my first car shouldn't have surprised me, yet I underestimated the amount of the world that became readily accessible; as long as I could spend the time driving there.

I have often wondered how living in a city would have changed my childhood experience. My family moved to the countryside when I was four, and our previous house is something I cannot remember well. It was a suburban home in Guelph, Ontario. I remember being excited to visit friends who lived in suburbs as a child, not only because it would be enjoyable to spend time together, but because the setting was entirely different to what I was accustomed to. I imagined it would be more vibrant than the countryside, with more people living close together. Neighbours would be supportive of each other and a stronger community would be present. My expectations were greater than what reality presented to me, however. In the end, I was always disappointed to find a group of independent islands, not unlike my childhood home in the countryside. They were closer together yet still exhibited a similar level of isolation. Each were their own castle where neighbouring driveways became drawbridges unsafe to trespass for fear of an unknown neighbour's ire. Roads were always just a little too unsafe to feel comfortable, leaving backyards and PlayStations as our only refuge for play.

The closest these places ever came to the level of connectedness I expected was during Halloween. Trick-or-treating in the countryside

isn't feasible because houses are too far apart. As such, my parents would drive my brother and I to a family friend's house that was in a suburb of Waterloo. There we walked the suburban roads at night in our Halloween costumes with the rest of the city children. It was the only time I ever saw those streets full of people. It was bright and cheerful with laughter and screams at the spooky decorations that adorned the neighbourhood. The only reminder of the suburb's previous state were the few houses that didn't give out candy or decorate, with their doors shut and windows dark. The next day or time we visited the neighbourhood would feel all the more empty in contrast.

Would my childhood home have been less isolating if it were in a suburb? Would a greater sense of community be present there? From what this thesis has shown me, the answer is most likely not. If I were to have grown up in a standard suburb, it would still have been car-dependent like the countryside and likely wouldn't have the tight community I was looking for. There is potential for stronger community in suburbs; however, not in their current most common state across North America.

Topic Selection

Choosing the topic for this thesis took time. The initial intention was to investigate community's connection to architecture and planning. This started with looking into happiness research, then transitioned into designing spaces for wellbeing and belonging, and afterwards paused at intentional communities with a focus on marginalized groups. It shifted into loneliness research, which then became more specific to suburban loneliness and how to create anti-loneliness neighbourhood designs. Through further research, social capital entered the picture, and reinforced the focus on suburbia because of Robert Putnam's writing on the subject. The impact of car-dependence on people, city function, and the environment were innately connected to this. The focus on suburbs pointed to a research paper without much room for design. This was a not favourable outcome because a final product which proposed a design solution was desired. As the COVID-19 pandemic surged, however, and people moved out of cities in favour of the suburbs,

the topic felt timelier than ever before. As such the following thesis presents research on the North-American car-dependent suburb, and proposes the design of a retrofit framework to be used to supplement those neighbourhoods towards *villageness*.

Thesis Structure

It Takes a Village: A Retrofit Framework for Improving Health and Community in Car-Dependent Suburbs is organized into four chapters. The first presents a selected history of town planning and the development of suburbs in post-World War II Canada. Chapter one ends with the problems that these suburbs create organized into four categories: Social, Life Satisfaction, Health and Safety, and Environment. The second chapter outlines the design intent of this thesis, defines *villageness*, and investigates aspirational village suburbs in the Toronto area. Site selection and walkability mapping are also covered in this chapter. The third chapter proposes the design for the retrofit framework which is split into the categories of **Identity**, **Gathering**, **Circulation**, and **Resources**. It speculates on a phasing order for the implementation of the framework, shows how it will impact the lives of fictional personas, and what the resulting suburb might look like. The final chapter is an analysis of both the quantitative and qualitative impacts of the design, comparing these data to two sites which exhibit *villageness* for comparison.

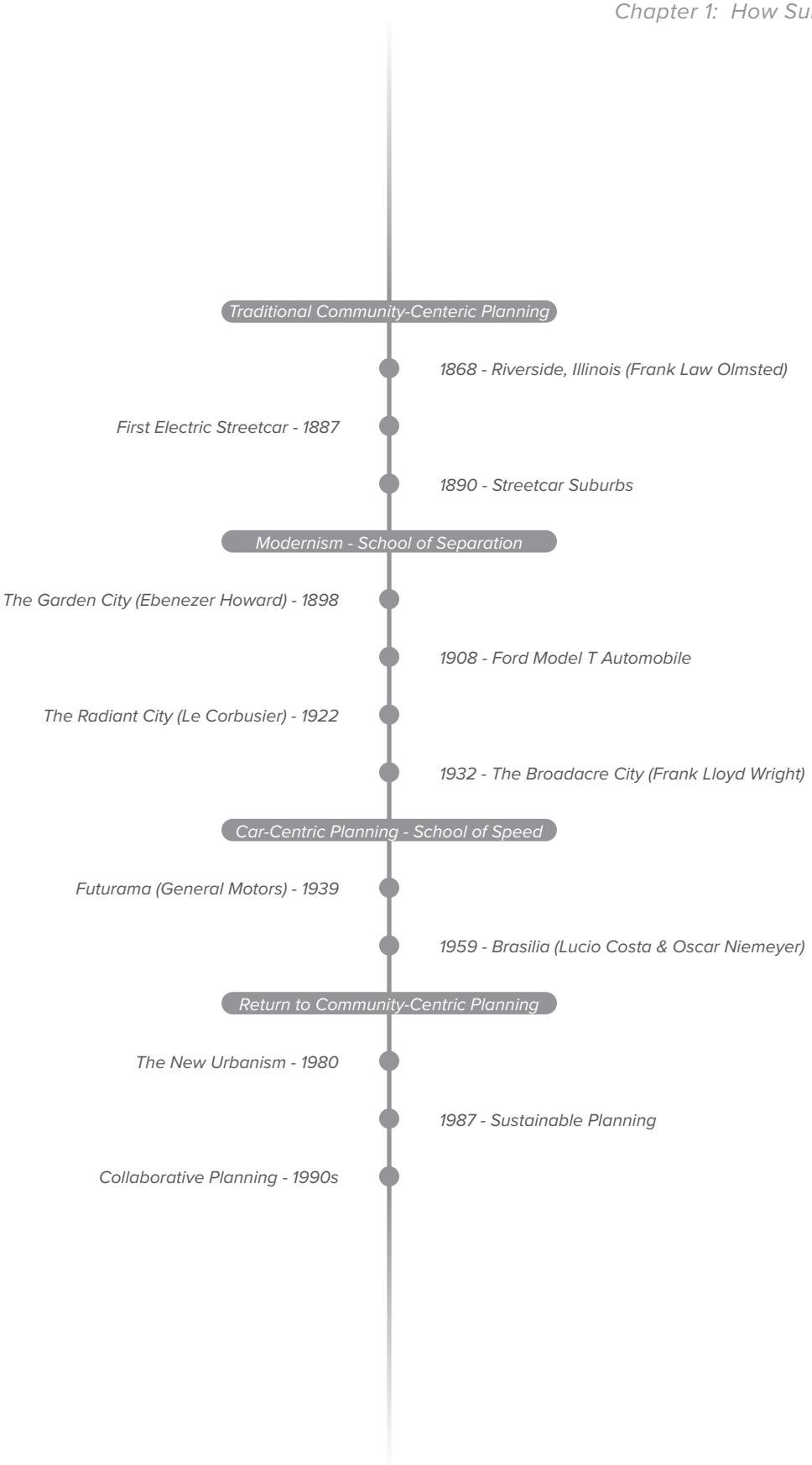
This thesis builds on the existing suburban retrofit literature and presents alternative solutions to the problems resulting from suburbia's car-dependency.

Chapter 1: How Suburbs Fail

Car-dependence is a problem in North America, and is most evident in the suburban sprawl that surrounds most major cities. Before the invention of the automobile, town planning was at the scale of the human body and its focus was on the community. Through reactions to the industrial revolution, town planning changed by separating land uses to avoid toxicity, and with the integration of the automobile, planning has altered in such as way that it no longer prioritizes the pedestrian. This chapter is split into three parts illustrating how town planning has become what it is today, and the problems associated with car-dependence and what it mean for residents and the environment.

Fig. 1_1 *(Opposite page) A manifestation of North-American car-dependence can be seen in the wide, multi-lane highways needed to accommodate drivers commuting from suburbs to urban centers.*

Part one presents a selected town planning history that shows the transition from community centric town planning in the late 1800s to car-dependent planning after 1940. This establishes that socially conscious town planning has been done before and that current planning, inhibited by land-use separation and speed-based tactics, is insufficient for achieving similar results. Part two presents the development of suburbia in Canada after World War II, which was initially successful as a post-war housing strategy. Part three illustrates the downsides of suburbanization that residents face today, focusing on four categories and identifies how they negatively impact suburbanites and the environment. The chapter concludes with how the pandemic has changed the way North Americans live and work, and the incentive it presents for making changes to suburbs.


Traditional Community-Centeric Planning
1868 - Riverside, Illinois (Frank Law Olmsted)
First Electric Streetcar - 1887
1890 - Streetcar Suburbs
Modernism - School of Separation
The Garden City (Ebenezer Howard) - 1898
1908 - Ford Model T Automobile
The Radiant City (Le Corbusier) - 1922
1932 - The Broadacre City (Frank Lloyd Wright)
Car-Centric Planning - School of Speed
Futurama (General Motors) - 1939
1959 - Brasilia (Lucio Costa & Oscar Niemeyer)
Return to Community-Centric Planning
The New Urbanism - 1980
1987 - Sustainable Planning
Collaborative Planning - 1990s

1.1 Selected Town Planning History

Town planning strategies throughout history have responded to societal changes, geographic restraints, and technological innovations. This section covers a selection of the most relevant planning ideologies, influential design proposals, and key cities and suburbs to illustrate the origins of the car-dependent suburb. It starts in the late 1800s with community centric examples, moves through responses to the toxicity produced in cities by the industrial revolution, the introduction of the automobile in the middle of the 20th century, and ends with modern examples that prioritize climate and a return back to community-centric planning. This is not an in-depth analysis of each town planning practice, but rather a historical narrative that follows the emergence of speed and separation-based planning in North America to show how and why car-dependency is the norm, and its impact on social wellbeing. A brief overview of each example will contextualize its placement and identify its priorities and aspirations. Subsequently, each will include a critique of the example's consideration for and impact on social wellbeing of its residents. These critiques consider three main criteria that promote social wellbeing (criteria are referenced using **(C#)** in most of the evaluations):

Fig. 1_2 *(Opposite page) A selected town planning history timeline. Modernism and car-centric planning have had a lasting impact on the majority of subsequent North-American planning.*

(C1) Does it provide prominent and accessible social gathering spaces? These spaces are important for social connectivity and relationship building.

(C2) Does its form encourage walkability and access to goods and services within a reasonable time (15 minutes is the ideal maximum)? [1] This criteria is important for life satisfaction and liveability.

(C3) Does its form incorporate a density of uses in many areas and limit mono-zoning deserts? Avoiding mono-zoning allows for more dynamic neighbourhoods and a higher frequency of social interactions between different groups of people.

1 Meik Wiking, *The Little Book of Lykke* (London: Penguin, 2017), 194.

Riverside

Summary

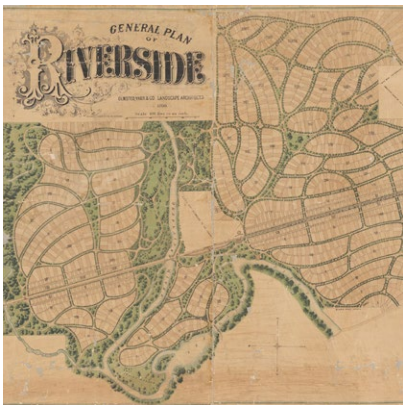


Fig. 1_3 *The original plan for Olmsted's Riverside. The non-rectilinear streets and lots follow the topography of the existing landscape.*

Frank Law Olmsted's Riverside community follows the natural topography of its Illinois setting, creating a freeform wandering suburb, atypical to the more common gridded approach of the time. Riverside was built at the beginning of suburban development in the United States and was functional through its connection to downtown Chicago via passenger railway and bridle path.[2] Inspired in part by the garden cemetery and early East Coast suburbs, Olmsted's design is a romantic interpretation of the suburb with picturesque flowing streets and considerate preservation of the existing landscape. These organic streets avoid right angles and create interstitial zones intended for use as public spaces. Olmsted ensured that each resident would have access to natural scenery, recognizing the viewing of nature as important to human life. The original design covered 1,600 acres; however, only 1,000 were fully realized.[3] Riverside is over 150 years old and is registered as a National Historic Landmark.[4]

Critique

Riverside's design benefits its resident's wellbeing through composition and access. Its timely 20 minute commute to downtown Chicago via the railway allows for access to goods and services in the city. The suburb is also walkable. **(C2)** It has an enjoyable streetscape, a few restaurants and small shops near the train station, and close access to parks and recreation. **(C1)** The free-form streets also create a multitude of triangular park spaces, which are evenly distributed across the suburb. **(C3)** Unfortunately, this suburb is mono-zoned as entirely residential. Its small scale and close proximity to a vibrant train station balances this drawback, however.

General Information

Time Period:	*1868*
Key Figures:	*Frank Law Olmsted*
Location:	*Illinois, USA*
Type:	*Suburb*

2 Frampton, *Modern Architecture*, 26.
3 FrederickLawOlmsted.com, "Riverside, Illinois," Riverside, Illinois, 2011, https://www.fredericklawolmsted.com/riverside.html.
4 The Frederick Law Olmsted Society of Riverside, "Riverside: Frederick Law Olmsted's Illinois Masterpiece," Enjoy Illinois, July 19, 2018, https://www.enjoyillinois.com/illinois-200/riverside-illinois-frederick-law-olmsted/.

Streetcar Suburbs

Summary

The implementation of the electric streetcar in 1887 ushered in a form of residential planning centered on this new form of powered transport. Streetcar lines extended the scope of residential development into the city periphery. Suburban development flourished under this new system, and with an affordable flat rate for tickets and transfers, the streetcar became the dominant mode of transport for most lower and middle class citizens.[5] Streetcar suburbs weren't 'suburban' as the term is understood today (endless cul-de-sacs of single-family homes) and were instead dense neighbourhoods built along streetcar lines and stops. As the predominant planning strategy in America from 1890 to 1930, streetcar suburbs packed in housing, amenities, and employment options along streetcar lines, creating vibrant, mixed-use neighbourhoods.[6] After the invention and subsequent widespread use of the automobile, however, streetcar ridership declined in the 1940s and this form of planning fell out of favour as more automotive focused planning became mainstream.[7]

Fig. 1_4 *Streetcar suburbs are often very liveable neighbourhoods due to the amenities available and easy access to public transit. A number of streetcar suburbs remain in Toronto. Riverdale is an example of one.*

Critique

The streetcar suburb covers each social wellbeing criteria quite well and those that exist today are often vibrant and enjoyable places to live. **(C2)** The streetcar allows for easy access to amenities not available within the community. **(C3)** Mixed-use planning allows for interactions between different groups of people and provides access to goods and services within the community while avoiding mono-zoning deserts. **(C1)** Before the widespread use of cars, the streets themselves were social spaces which rallied around the public and regular use of the streetcar for everyday life. Unfortunately, these social space have been lost to the automobile; however, streetcar suburbs remain highly functional, liveable places.

General Information

Time Period:	*1890s*
Location:	*USA, Canada*
Type:	*Planning Ideology*

5 Living Places, "Streetcar Suburbs 1888 to 1928," Streetcar Suburbs, 1888 to 1928, accessed April 21, 2021, https://www.livingplaces.com/Streetcar_Suburbs.html.

6 Pete Saunders, "In Praise of Streetcar Suburbs, Defined and Illustrated," In Praise of Streetcar Suburbs, Defined and Illustrated | Newgeography.com (New Geography, August 9, 2020), https://www.newgeography.com/content/006739-in-praise-streetcar-suburbs-defined-and-illustrated.

7 Living Places, "Streetcar Suburbs 1888 to 1928."

Garden City

Summary

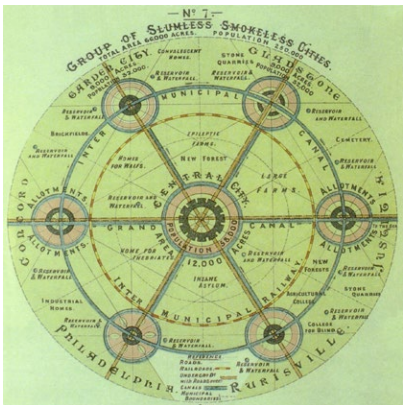


Fig. 1_5 *Ebenezer Howard's diagram of the Garden City. Few cities were built in this way; however, the use of circles and axes translated into many of the Garden Cities built in the following decades.*

Garden City planning was born as a response to the toxicity and overcrowding in cities produced during the industrial revolution. Its goal was to provide the benefits of the town and country, while avoiding the downsides of both. Originally proposed in Ebenezer Howard's 1898 book *Tomorrow: A Peaceful Path to Real Reform*, this planning strategy was comprised of a several fixed-sized circular cities of between 32,000 and 58,000 residents, linked by rail networks that encircled them and bordered by greenbelts reserved for agriculture. These static and independent 'Rurisvilles,' as Howard called them, were intended to be economically self-sufficient satellite cities of mutual aid with strong communities. Howard envisioned that residents would work and live in the same city, with rail lines being used for transporting supplies rather than for passenger transit. The first Garden City to be built was Letchworth in Hertfordshire beginning in 1903. It was a reinterpretation of Howard's diagrammatic city proposals.[8]

Critique

Garden City planning is laudable for its **(C1)** prominent garden gathering spaces and grand avenues for culture and commerce. **(C2)** Howard's intention to eliminate the commute to work by having all residents find employment within their city circle is admirable but unrealistic given that place of employment is difficult to predict. **(C3)** Its walkability is unclear, and does not provide density of uses, relying on strict concentric zoning separations in response to the toxicity of factories in urban centers of the time. This type of planning pioneered the use of zoning separations for public health reasons, a concept which still influences urban design today.

General Information

Time Period:	*1898*
Key Figures:	*Ebenezer Howard*
Location:	*UK*
Type:	*Planning Ideology*

8 Frampton, *Modern Architecture*, 28.

Radiant City

Summary

Le Corbusier's vision of the machine-age city was the hyper-modernization of historic Paris through its demolition and reconstruction into an ordered set of cruciform towers. Moving away from a centralized city model, the 'Ville Radieuse' proposed a limitless city relying on zoning separations and the automobile to function. Intended to be zoned into roughly parallel bands of use, the proposal included a contradicting anthropomorphism which pulled in Corbusier's human-inspired design. The sixteen cruciform towers acted as the 'head' which sat above the cultural center as the 'heart' which was then bounded by two residential zones acting as the 'lungs'. The proposal continued with many of Corbusier's other design principles, including the free ground plane. A section taken through the city would reveal all buildings raised up on *pilotis* creating an uninterrupted park space below. The Radiant City was never fully realized, yet its influence on subsequent town planning is indisputable. It promoted the idea of a limitless city, the use of grouped skyscrapers, and zoning separations to achieve order, hierarchy, and public health.[9]

Fig. 1_6 *Le Corbusier's model of his Plan Voisin for Paris, which was presented at the Nouveau Esprit Pavilion in 1925. The prominent cruciform towers were to replace the historic center of Paris. This model was an important touchstone piece for his Radiant City proposals.*

Critique

The Radiant City is a poor example of a socially conscious planning ideology for today's age. **(C3)** It relied heavily on mono-zoning separations and **(C2)** use of the automobile to connect them, making social cohesion difficult. **(C1)** The free ground plane appears beneficial in theory, however its separation makes it harder to access, and because of the distance between zones cross-group interactions are unlikely, making this social space less than ideal except for individual enjoyment. The Radiant City marks the beginnings of automobile supremacy in town planning.

General Information

Time Period:	*1922 – 1950s*
Key Figures:	*Le Corbusier*
Location:	*France*
Type:	*Planning Proposal*

9 Frampton, *Modern Architecture*, 180-183.

Broadacre City

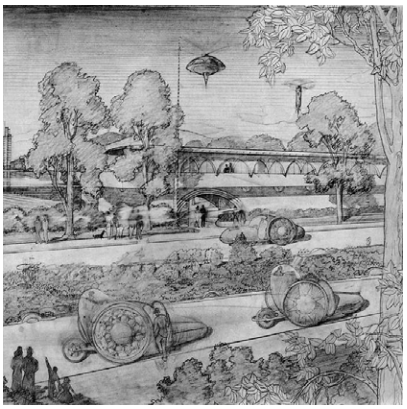


Fig. 1_7 *One of Wright's sketches of his Broadacre City proposal. Buildings and houses are hidden behind trees and foliage, while motorized vehicles, roadways, and flying machines are prominent throughout.*

Summary

Frank Lloyd Wright's proposal of the Broadacre City responded to the invention of the automobile by dispersing the city to an extent where it became indistinguishable from the countryside. In his first book on city planning titled *The Disappearing City,* Wright described his utopia as both being everywhere and nowhere. This merging of the country and city into one system would only have functioned because of its heavy reliance on the automobile to traverse its vast extents. As an apotheosis of the suburb, Wright's proposal presented an almost spiritual retreat from the toxic and crowded cities of the time.[10] Envisioned as a form of urban-rural utopia, Wright saw people being freed from cities through automobile ownership, accessing freedom in self-sufficient compounds built in the countryside. Cars would be this strategy's enabler and provide transport to goods and services mere minutes away.[11] Key resources would shape this city, those being "the car, the radio, the telephone, the telegraph, and, above all, standardized machine shop production" for simple construction of his Usonian homes,[12] a Wright-designed home able to be constructed by and house the common person.

Critique

The Broadacre City ranks low considering social wellbeing; **(C3)** it is too spread out and **(C2)** reliant on the automobile for any of the three criteria to be met. Relying again on separation, in this case large physical distances between buildings, **(C1)** Wright's proposal focused on the family unit as an isolated entity with less consideration for the larger social implications of his design. Broadacre City was never fully realised; however, it is an important example in North American town planning history, and perpetuated trends of automobile reliance and spatial separation.

General Information

Time Period:	*1932*
Key Figures:	*Frank Lloyd Wright*
Location:	*USA*
Type:	*Planning Proposal*

10 Charles Montgomery, *Happy City* (New York, NY: Farrar, Straus and Giroux, 2013), 65.
11 Ibid, 27.
12 Frampton, *Modern Architecture*, 190-191.

Futurama

Summary

Unveiled at the 1939 World's Fair in New York, Futurama was a pavilion designed to sell the automobile lifestyle and it's associated 'freedom of movement' to Americans. Futurama was a progression on a previous proposal presented to the National Planning Conference in Detroit in 1937 by Miller McClintock and Norman Bel Geddes. Organized as a set of images, the 1937 proposal depicted a future of sleek skyscrapers rising through a network of unimpeded elevated highways. Futurama brought these images to life in a football-field-sized model where toy cars were shown moving speedily along freeways from tower heavy cities to the scenic countryside. The pavilion was sponsored by General Motors. It was massively successful, drawing in over twenty-four million people, and cemented a cultural shift towards a speed-based view of the future as presented by the automotive industry. Although the implementation of the automobile was already underway, Futurama instilled the idea that automotive transportation meant freedom for individuals, resulting in it soon outpacing streetcars as the dominant mode of transportation.[13]

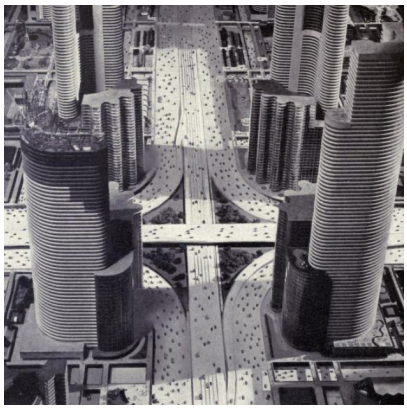


Fig. 1_8 *The model of Futurama that was presented at the 1939 World's Fair. Extensive highways with miniature cars weave between skyscrapers. This representation of a car-centric future changed the course of North-American town planning history.*

Critique

Futurama is a poor example of a socially conscious design for the same reasons that the Broadacre City and the Radiant City are. Futurama and its *Motordom* vision have a striking similarity to both of these planning proposals, yet distinguishes itself through its utter reverence for speed (as is only logical given its sponsors and intent). The lasting effects of Futurama can be seen in the subsequent inner city demolition to make way for highways and the preference for unimpeded automotive movement over human movement in town planning.

General Information

Time Period:	*1939*
Key Figures:	*Miller McClintock, Norman Bel Geddes*
Location:	*USA*
Type:	*Planning Proposal*

13 Montgomery, *Happy City*, 72-74.

Brasilia

Summary

Fig. 1_9 The view down the Monumental Axis of Brasilia, which spans the length of the 'body' of the airplane. Buildings are spaced far apart and swooping freeways take center stage, connecting the disparate parts of the city for those who have access to vehicles and transit.

Espousing many similar themes as the Radiant City and Futurama, Brasilia is an example of a modernist city executed to the fullest. It was designed in the late 1950s by urban planner Lucio Costa and architect Oscar Niemeyer and is the capital city of Brazil. Organised in an airplane-shaped masterplan, Brasilia is a tabula rasa city that segregates uses between the body, wings, tail, and head. Extensive motorways pave the perimeter and spine of the plane connecting the 'head' where government sits to the residential quarters within the 'wings'. Brasilia was designed to free the new capital from slums, crime, and congestion through the use of simple geometry, and providing equal access to green space for every resident.[14] The resulting urban form does not feel like a city should, however, resembling more a college campus on a massive scale. Ricky Burdett, Professor of Urban Studies at the London School of Economics, goes as far as to say that Brasilia is not actually a city, as it lacks the important ingredients that promote healthy city life. Indeed, residents frequently leave on weekends to experience Sao Paulo or the old capital in Rio de Janeiro rather than stay in Brasilia.[15] Its citizens have even coined the term *brasilite,* or Brailia-itis, which is used to describe living without the spontaneous interactions and outdoor life found in other Brazilian cities. [16]

Critique

Brasilia is another poor example of a socially conscious city design. Its automotive priorities, **(C3)** strict mono-zoning, **(C1)** and lack of easily accessible social gatherings spaces are detrimental to social connectivity. **(C2)** Using the automobile as the scale of measurement creates massive distances between necessities, resulting in a city that is too spread out for it to be enjoyably traversed on foot.

General Information

Time Period:	*1959*
Key Figures:	*Oscar Niemeyer*
	Lucio Costa
Location:	*Brazil*
Type:	*Capital City*

14 Montgomery, *Happy City*, 92.
15 Robin Banerji, "Niemeyer's Brasilia: Does It Work as a City?," BBC News (BBC, December 7, 2012), https://www.bbc.com/news/magazine-20632277.
16 Montgomery, *Happy City*, 92-93.

New Urbanism

Summary

The New Urbanists, in response to the prioritization of the automobile over people, look to return urban planning to a human scale with walkability and the village as central tenets. Codes and bylaws set in place by previous planning ideologies like the Radiant City and Futurama promote sprawl and car-dominance. Starting in the late 20th century with influential towns like Seaside, the setting of *The Truman Show*, New Urbanism pushes back against these sprawl-inducing codes. The Congress for the New Urbanism was formalized in 1993 by Miami architect Andrés Duany, his creative partner and wife Elizabeth Plater-Zyberk, and a group of like-minded designers. This ideology aims to undo much of modernist planning with a manifesto that builds off of the ideas of Jane Jacobs, Christopher Alexander, and Jan Gehl. New Urbanism calls for dense, mixed-used, mixed-income, walkable neighbourhoods with desirable public spaces and reliable transit, all comprised of buildings sensitive to the local culture and climate. Despite their notable origins and organization size, New Urbanist towns are few in number. Many states' and provinces' codes disallow the design tenets of New Urbanism.[17]

Fig. 1_10 *One of the oldest New Urbanist towns is Seaside, Florida. It is organized around a central plaza that has a post office and many other amenities bordering it. Residential buildings and homes fill in between this village center and other smaller plazas, continuing along the length of the shoreline where the city is located.*

Critique

New Urbanism is a good example of a socially conscious planning ideology for its focus on **(C2)** walkability, the human scale, **(C1)** and the village square. **(C3)** There is criticism, however, that in practice it falls back onto mono-zone planning, and amenities aren't always accessible within a decent amount of time. Jane Jacobs, in an interview with James Howard Kunstler, noted that the use of shopping centres as downtowns was not sufficient. This, she continued, was not unique to New Urbanists, saying that most architects and planners have come to associate shopping centres as synonymous with downtowns. She concluded that "the New Urbanists want to have lively centres [yet] they don't seem to have a sense of the anatomy of these hearts."[18]

General Information

Time Period:	*1980s - present*
Key Figures:	*Andrés Duany, Elizabeth Plater-Zyberk*
Location:	*USA*
Type:	*Planning Ideology*

17 Montgomery, *Happy City*, 280-283.
18 Chris DeWolf, "Why New Urbanism Fails," Planetizen, February 2, 2002, https://www.planetizen.com/node/42.

Sustainable Planning

Fig. 1_11 *The pedestrianizing of Times Square in 2009 was inspired by Jan Gehl's 'cities for people' planning strategy and is one of the most successful projects of its kind in North America.*

General Information

Time Period:	1987 - present
Location:	Global
Type:	Planning Ideology

Summary

In response to the climate crisis, Sustainable Planning focuses on the wellbeing of the planet and subsequently the wellbeing of people. *The Routledge Companion for Environmental Planning* states this planning ideology "is about making purposeful planning decisions to protect and enhance the environment now and in the future."[19] Like the New Urbanism, it takes issue with car-dependence and excessive land use. Sustainable Planning doesn't have a global consensus on methods and outcomes, however there are general tenets that apply to its many versions. These common tenets include: compact land use, less automobile usage with better transportation access, reduction of pollution, healing of nature's systems, providing healthy habitats for housing and living, generating and supporting a sustainable economy, promoting healthy social networks and community participation, and the preservation of regional cultures and wisdom. The architect and urban planner Jan Gehl argues in favor of "cities for people." He states that re-prioritizing people over automobiles and modernism produces cities that are lively and livable, safe, healthy, and ultimately sustainable through their effectiveness in reducing car-miles and sprawl. Cities such as Copenhagen, and street reform in New York City attest to this.[20]

Critique

Sustainable Planning has a high potential for social wellbeing. Its focus is on providing technical solutions to reduce environmental decline and repairing ecosystems, and many of these go hand-in-hand with social wellbeing criteria. **(C2)** Reducing fuel-based car-miles and promoting efficient public transit allows for greater walkability. **(C3)** Compact land use will inherently be less mono-zoned. **(C1)** More functional green space in cities is critical for both the maintenance of cleaner urban ecologies, but also the betterment of citizens' mental and physical wellbeing as well as providing lush spaces for social interaction.

19 Simin Davoudi et al., *The Routledge Companion to Environmental Planning*, 1st ed. (Abingdon, Oxon: Routledge, 2020), 1.

20 Philea - Philanthropy Europe Association, "Jan Gehl on Changing Mindsets About Urban Planning and Living," YouTube, June 4, 2013, https://www.youtube.com/watch?v=Lid9ELzzT8Y.

Collaborative Planning

Summary

Also known as the Communicative Model, Collaborative Planning is the practice of including a multitude of affected stakeholders in the decision making process of town planning. In this model, planners take on the role of stewards rather than authoritative figures by listening to the stories of those involved, facilitating community discussion, and steering participants towards a shared vision. This form of planning has gained interest over the past half-century due to shortcomings in contemporary planning. As an alternative planning practice, it has the potential to create more holistic results that benefit multiple groups of people. Collaborative Planning focuses on the relationships between the members involved more than other planning practices. It is criticised precisely for this matter, in fact, as this relationship building may become more important than the quality of the final product. Additionally, because of the investment and time committed to collecting community feedback, the process may become lengthy leading to burnout among citizen participants. Communicative theorists are largely committed to equity and diversity, however the results of consultation may be contrary to these ideals. As Susan S. Fainstein puts in her journal article *New Directions in Planning Theory*, "[communicative planners] avoid dealing with the classic topic of what to do when open processes produce unjust results."[21]

Fig. 1_12 *Collaborative planning has the potential for substantial social change as it can provide space for underrepresented voices to be heard and their ideas incorporated into the future design of cities.*

Critique

Measured against the social wellbeing criteria, Collaborative Planning has the potential to achieve a high standard. This is dependent on the individuals involved, however, as this planning practice has no ideology of its own and is instead focused on the process of decision making. There is a significant potential for social wellbeing through this method, given the focus it places on relationship and consultation. It may, however, produce harmful results if mismanagement occurs and the trust between residents and planners is lost.

General Information

Time Period:	*1990s-present*
Location:	*Global*
Type:	*Decision-making Process*

21 Susan S. Fainstein, "New Directions in Planning Theory," *Urban Affairs Review* 35, no. 4 (2000): pp. 451-478, https://doi.org/10.1177/107808740003500401.

Conclusion

The course of town planning history in North America has been heavily influenced by the industrial revolution, the resulting land-use separation tactics, and innovations such as the electric streetcar and the automobile. Charles Montgomery, author of *Happy City*, defines the result of these influences into two schools of thought:

> "The first philosophy might be called the *school of separation*. Its central belief that the good life can be achieved only by strictly segregating the various functions of the city so that certain people can avoid the worst of its toxicity.
>
> The other might be called the *school of speed*. It translates the lofty concept of freedom into a matter of velocity - the idea being that the faster you can get away from the city, the freer you will become."[22]

Despite most North American cities no longer being sites of toxicity and overcrowding, and the introduction of newer movements that prioritize human scale and health such as the New Urbanism and Sustainable Planning, pre-existing building codes still propagate separation and speed-based planning. These planning solutions are understandable responses to the problems of their time; however, they actively harm the social wellbeing of residents. When considering the social wellbeing criteria presented at the beginning of this section, suburbs fail at all three. They rely heavily on the automobile to access goods and services as amenities aren't within walking distance. They are primarily residential, and are mono-zoned deserts. The occasional park is insufficient, resulting in a community without easily accessible social gathering spaces. The consumer suburb's composition is not self-sustainable and necessitates residents leaving for large portions of the day. It is a manifestation of the health and social problems resulting from building through speed and separation.

22 Montgomery, *Happy City*, 64.

1.2 History of Canadian Suburbs

Described as the "century of the city", the planning history of the 1900s may have been focused on cities, however, the majority of Canadians were experiencing life primarily in the suburbs. In fact, the larger share of greenfield developments during this time were part of suburbanization. Canada's major cities had all been founded by the late 1800s, with minor exceptions for some resource extraction company towns.[23] Although suburbs had been around since at least the 1840s, it was the wave of substantially different suburbanization that started after the 1900s that changed the urban fabric of North America so drastically.[24] The beginnings of the migration away from urban cores began in the 1920s. This initial shift was simply a transition to the margins and outskirts of urban cores as the suburb as a fully formed typology was not yet established. Shortly preceding and during WWII, this suburbanization paused, but re-emerged afterwards and dominated the post-war period of urban development. Historic neighbourhoods in urban cores were drained of their residents in favour of these new suburban communities. Brampton, Burnaby, Laval, Markham, Mississauga, Surrey, and Vaughan are examples of some of the largest cities in Canada, all of which started off as peripheral bedroom communities housing only a few thousand residents in 1914.[25]

Fig. 1_13 *(Opposite page) A suburban family in the 1950's. The television helped residents feel more connected to the world outside suburbia.*

Factors Affecting Suburbanization

Canadian suburbanization had several incentivizing factors. The existing housing stock was already overcrowded in the 1930s, and with the return of thousands of veterans after the war, new homes were desperately needed. Inner city neighbourhoods were increasingly being associated with crime, violence, and new immigrants, motivating some groups to look elsewhere for housing because of racist tendencies.

23 John Douglas Belshaw, "9.13 Cold War Society: Cities and Suburbs," in *Canadian History: Post-Confederation* (Victoria, BC: BCcampus, BC Open Textbook Project, 2017), 564-5.
24 Richard Harris, *Creeping Conformity: How Canada Became Suburban, 1900-1960* (Toronto, ON: University of Toronto Press, 2020), 8.
25 Belshaw, *Canadian History*, 565-6.

Fig. 1_14 Canadian soldiers and CWAC members celebrating V-E Day in London, England. Returning veterans were faced with a difficult re-entry into normal life. Housing and employment were in short supply.

Additionally, the baby boom was underway, adding to the number of families requiring ample living space, a commodity in short supply within existing urban neighbourhoods. Suburbs offered a solution to these problems. The new houses provided significantly more floor space and were placed on larger lots than the existing stock. New highways and road infrastructure made car-ownership favourable. Additionally, brand-new schools were built to service the new suburban communities, easily outshining the deteriorating schools of the urban cores. These positive attributes made suburbs very attractive for post-war baby-boom families.[26]

Returning Veterans

Ex-soldiers from WWII faced a difficult return to society. To support the returning 900,000 war veterans, the 1944 Veterans Charter provided $1.2 billion for reintegration as one-time payments for items like clothes and housing costs. In 1946 the Central Mortgage and Housing Corporation (CMHC) was created to assist Canadians with first-time homeownership and renovations of older homes. These were managed by the Department of Veteran's Affairs, known as Veterans Affairs Canada today. The CMHC made homeownership possible for a generation who had experienced mass unemployment, and low wages less than a decade earlier. Suburbanization would not have likely expanded so quickly otherwise.[27]

The Baby Boom

The nuptiality rate and number of births had recovered in the 1930s as the effects of WWI and the post-war period began to subside. These numbers were low in comparison to the rates after WWII, however. The declaration of war in 1939 produced an immediate need for marriage between couples, increasing the marriage rate by 26.6% from the previous year. Because of this, the birthrate soon outstripped previous records, continuing to rise throughout the 1950s. In 1956 there were double the number of births (450,700) than in any one year of the 1930s. Additionally, progressively more births were happening

26 Belshaw, *Canadian History*, 565-6.
27 Ibid, 567-8.

in hospitals. Only a quarter of births occurred in hospitals in the 1920s, whereas nearly 64% occurred there after the war, and by 1965 that number averaged 99%. This greatly decreased infant mortality, and stillbirths fell from 32 per 1,000 births in 1931 to less than 12 per 1,000 in 1965.[28] These factors contributed to a sizeable number of baby-boom families in need of new homes and space for their children to grow.

White-Flight

Homeownership in suburbia was presented as accessible to everyone at the time. As with many other events in history, however, owning a home in these new suburbs fell along racial and wealth lines. Families moving to the new suburban communities were more often of British and French ancestry. In fact, many suburbs were built as 'white only' communities where black families were prohibited from purchasing homes or forced out by their white neighbours. The postwar migration at this time had produced a wave of new immigrants, most of which could only feasibly afford to live in the overcrowded urban neighbourhoods. This new visible diversity of urban cores and their increasing squalor produced what is known as *white flight,* the migration of white individuals (largely of western European ancestry) away from areas of visible diversity because of racist beliefs, in this case in the direction of the suburbs.[29]

Effects on Urban Cores

This migration from urban cores to their peripheries has had lasting effects. Downtowns were the social focal point in the first half of the 20th century, but by the 1960s many of these same places were gutted. Entertainment venues closed down, and neighbourhoods that were seen as decrepit were bulldozed for new freeways in service of the suburbanite masses. Downtown stores and conveniences were soon outperformed by the new shopping malls, with little recourse other than closing down. This downtown abandonment was dealt with in two ways: demolition for new road infrastructure or for what is now often

28 Belshaw, *Canadian History*, 567-8.
29 Ibid, 570.

referred to as a Central Business District (CBD). In response to the suburban expansion and diffusion of the population over a larger area, Toronto's leadership created the Municipality of Metropolitan Toronto in 1953. The 1950s saw huge pressure for better highway systems and roads to connect the suburbs more effectively to downtowns and avoid traffic congestion. A new generation of planners during this time period saw the demolition of 'blighted' areas for traffic infrastructure as the way forward. This technique was pioneered a few years earlier in the United States, but with the work of planning critics like Jane Jacobs, many Canadian cities were saved from worst of this trend. Most prominently, her defeat of the Spadina Expressway resulted in the decline of proposals for 'radical slum clearance.'[30] The suburbs that were a response to, and subsequently aggravators of, the situation in urban cores at this time were not without their own issues, however.

Problems with Suburban Design

The new suburban lifestyle had its drawbacks; although, these downsides were less important to residents than the problems it solved at the time. Families in urban cores tended to stick together in identifiable neighbourhoods before 1945. Neighbourhoods were identifiable through a group ethnicity, religious affiliation or church, and the preferred food-types available. The process by which residents could purchase homes prevented this in suburbia. Siblings and extended families were not often able to buy in the same area, meaning that support from family members became tenuous without the proximity that urban neighbourhoods offered. Additionally, suburbs were seen as culturally deficient. Amenities like parks, rinks, and pools were available; however, places such as art galleries or performance halls were uncommon from 1945 to 1970. Corner stores were also an element of urban cores not brought into suburbs due to mono-zoning regulations. This made trips for everyday necessities change from a short walk to a car ride to the nearest shopping mall. Shopping malls were introduced in the 1950s and high streets were pushed aside in favour of concentrated retail centers. Pedestrianism was discouraged by distance, sprawling parking lots, and a lack of nearby necessities.

30 Belshaw, *Canadian History*, 569-70.

Additionally, a majority of streetcar lines, which provided affordable public transit, were decommissioned in favour of promoting more car-ownership and the automotive lifestyle.[31] As such, most families were required to own two automobiles for them to go about their lives. Very few households had more than one vehicle, however. Men would use these to commute to work, leaving women and children trapped in the suburbs. This often resulted in loneliness amongst house-wives.[32] Without the natural town or village centre, the shopping mall emerged as the new social focal point. Suburbs encouraged an automotive lifestyle and consumerism through the lack of any other site for community contact.[33] A more invisible consequence of suburbanization was the progressive shift from public space to private. Private space became dominant, subsequently discouraging civic and community engagement through the inward focus of peripheral neighbourhoods. The next few generations retreated to the living room, connecting with the *civitas* mainly through the television screen.[34] Suburbs didn't start off this way, however. It was only after the suburban boom post-WWII that many of these issues became commonplace due to the change in how they were financed, developed, and constructed.

Fig. 1_15 The Brentwood Shopping Centre in Burnaby, BC, 1963. The mall opened in 1961 with stores like Eaton's, Zellers, and a Loblaw's Supermarket. It later became the Brentwood Town Centre in 2003, following the trend of shopping centres becoming synonymous with city centres.

Development Practices

Suburbs in the early 1900s were built and settled by individuals rather than large companies, resulting in more diverse communities than seen today. By the 1960s, however, suburban development had become homogenized, with residents living very similar lives.[35] During the early period of suburbanization, house builders were often not the residents of the homes they built. Instead, these were speculative builders, constructing for the purpose of selling or to rent. Speculative builders only constructed a few houses at a time given the uncertainty of markets, and would build from a small selection of standard designs that were known to sell well. It was rare for a single builder to construct the majority of any subdivision, and most blocks were built by several,

31 Belshaw, *Canadian History,* 567-571.
32 Harris, *Creeping Conformity*, 44-45.
33 Belshaw, *Canadian History,* 567.
34 Ibid, 570.
35 Harris, *Creeping Conformity*, 5-6.

Fig. 1_16 Aerial image of a Levittown in the early 1950's. Houses were mostly identical and arranged into uniform neighbourhoods.

even a dozen builders. This produced more varied streetscapes than most modern suburbs.[36] There is a clear difference between self-built or speculative-built suburbs, and suburban developments built by large corporations. The former often looking less homogenous and being more socially connected, and the latter being cookie-cutter and socially distant. Homeownership in the suburbs was not significant until the postwar period. Before the 1950s, tenants outnumbered homeowners in most of Canada. As late as 1941, suburban homes were rented, with the proportion of tenants to owners exceeding fifty percent. It wasn't until the suburbanization following WWII that single-family homes became primarily owned by their residents.[37]

Don Mills has historically been referred to as the standard for the corporate-built suburb that uses curved streets and cul-de-sacs. It was also one of the first subdivisions in which the developer oversaw more than just the construction of the neighbourhood's housing. Before then, municipalities were in charge of paying to construct services like sewage and water, however due to the scale of Don Mills, the developer E.P. Taylor helped pay for the construction of many of the public services. Once this model was seen to be successful, this transfer of responsibilities from municipalities to developers became more common. This increased the influence developers held, resulting in suburban projects becoming larger and more homogenized. The CMHC also promoted the growth that large developers provided.[38]

Another important example of large scale suburban development were the towns created by William Levitt. These were American developments in the 1950s that influenced suburbanization in Canada. Known as 'Levittowns', there were three in total, with one located on Long Island, one in New Jersey, and one just outside Philadelphia. They were substantial in size; the development on Long Island held 17,500 homes alone. The handling of these projects was also significant, as Levitt acted as the developer, builder, and installed all services. Because of the projects' scale, Levitt was able to acquire substantial deals from manufacturers. Factories were built on site for precutting lumber, and Levitt made an assembly line for suburban home construction. This

36 Harris, *Creeping Conformity*, 95-7.
37 Ibid, 26.
38 Ibid, 137-141

mode of development was significant because it was the first of its kind and Canadian developers followed suit.[39]

Conclusion

Resulting from the catalyzing factors of lack of housing, the reintegration of returning war veterans, the baby-boom population, and racially motivated migration, suburbanization significantly changed the lifestyles of most Canadians and the urban form of this country. From the 1920s to the latter half of the 1950s, the suburban development process was pioneered, modernized, and simplified.[40] In the 1930s and 40s annual production of houses never rose above 50,000. After WWII, this number started rising rapidly, and by 1953 annual production had doubled, continuing to rise until the end of the decade. [41] As a result, more housing was built between 1945 and the 1970s than the entire stock built before then. [42] The number of car owners likewise increased. In 1910, almost everyone walked, with only the few wealthy affording horse-drawn vehicles. In 1945 just over 1.1 million cars were registered in Canada, but by 1961 there were nearly 4.3 million. At this point, nearly everyone drove an automobile.[43]

This post-war expansion was significant in many ways and it was during the 1950s and 60s that suburbs began to be seen as ubiquitous. This is when it became commonplace to refer to the suburbs as *suburbia*; a new term that characterized all forms of peripheral development. These neighbourhoods had become so uniform that unique variations were rare.[44] Suburbs have drastically changed Canadians' way of life, becoming the accepted social norm and even the ideal in the 1950s. Sitcoms and shows frequently glorified the suburban experience.[45] Growing up in the suburbs has become the default experience for most Canadians and Americans alike, with the baby-boomers leading the way as the first generation to grow up in these neighbourhoods, in a time when car and homeownership were taken for granted.[46]

39 Harris, *Creeping Conformity*, 141-2.
40 Ibid, 153.
41 Harris, *Creeping Conformity*, 129-130.
42 Belshaw, *Canadian History*, 571.
43 Harris, *Creeping Conformity*, 129-130.
44 Ibid, 130.
45 Ibid, 12.
46 Belshaw, *Canadian History*, 570.

Retrofit Framework Categories

Problem Categories

	Identity	Gathering	Circulation	Resources
Social	Suburbs take time; less access to amenities close to home means more commuting, resulting in less time for friends and neighbours, and for participating in community events; sprawl leads to community disengagement because most people leave daily			
	Sprawl inhibits strong community identity through its repetition and visual homogeneity, any place could be anywhere in suburbia	Sprawl produces social homogeneity and separation	The street used to be places of social interaction; automobiles increased speeds and streets are no longer safe to socializing in.	Social hub amenities like cafés, restaurants, and bars are absent from suburbs; people must leave suburbs in order to find places to socialize
	Suburbs are organized around the family unit, lives are centered inside the house rather than on the neighbourhood or community		Current sidewalks are insufficient social spaces	
Life Satisfaction	People are happier in smaller towns than in sprawling cities	Neighbours live very separate lives without interacting		Beyond a 15 minute commute to work happiness decreases
	Children and elders face social isolation in suburbs; suburban streets without safe and continuous sidewalks are too dangerous and the absence of community exacerbates fear of strangers			A person with a 1 hour commute has to earn 40% more money to have the same life satisfaction as someone who walks to the work
	Suburbs can produce a feeling of boredom	Lack of collective space contributes to loneliness		
		Children have fewer friends and places to play in suburbs; they spend more time alone (~3.5 hrs/day) than with friends and family		
Health	Suburbs don't produce a sense of belonging, this negatively influences residents' mental wellbeing, leaving them unmoored	Close relationships and social integration are the two highest predictors of longevity, suburbs make these aspects very hard to achieve by providing insufficient gathering spaces and not being designed for community living	Death by automobile is higher in suburbs than cities	Suburbs are obesogenic
			Suburban roads are often wider for safety, however drivers kill four times as many pedestrians on these than older narrow roads	Frequent long commutes often result in higher blood pressure, headaches, and a tendency to become easily enraged and frustrated
			Higher risk of chronic lung disease and other ailments due to breathing in automobile emissions during long commutes	
Environment	Suburbs lack a sense of connection to place and land		Car-dependent sprawl necesitates car-ownership: more cars are added to roads every year, resulting in road widening	
				Suburbs rely on a dwindling global oil supply to function
				Suburbs produce more emissions than large cities per capita; suburbanites produce twice as many GHGs than people living in cities

1.3 The Problem

As a result of separation and speed-based planning, and functioning as a mechanism for post-war housing, suburbs were a timely solution in the 1950's and seen as a best practice for the following few decades. After more than fifty years of testing, this model is now referred to as the *suburban experiment*.[47] The current state of the North American suburban landscape, however, begs us to ask whether this experiment has caused more problems than it has solved. The problems that suburbs create which are addressed in this thesis are organized into four categories: Social, Life Satisfaction, Health and Safety, and Environment.

Fig. 1_17 (Opposite page) Suburbs cause a multitude of problems. These fall into the following categories: Environment, Health, Life Satisfaction, and Social. The retrofit framework categoires (explained in Chapter 3) tackle these issues.

Social

The American political scientist Robert D. Putnam writes extensively on the decline of American social networks in his book *Bowling Alone*. In it he highlights the negative social impacts of suburbia. First, he writes that sprawl consumes time because of the distance to work and amenities that can only feasibly be covered with an automobile. More time commuting means less time participating in neighbourhood activities and less time spent at home. Second, Putnam finds that sprawl seems to encourage social group separation. This is linked with less incentive for civic engagement and subsequently less chance for social networks to bridge across wealth and race lines. Third, and the most important of these points, is the impact commuting has on community boundedness. Putnam writes that because of the time spent commuting, suburbs lack a level of social connectedness. The political scientists Sidney Verba and Norman Nie have shown that well-distinguished and bounded communities are more likely to participate in local government and civic affairs.[48] Suburbs consume the valuable time of

47 Charles Marohn, "This Is the End of the Suburban Experiment," Strong Towns (Strong Towns, October 13, 2020), https://www.strongtowns.org/journal/2020/4/27/this-is-the-end-of-the-suburban-experiment#:~:text=The%20suburban%20experiment%20includes%20a,need%20to%20go%20get%20food.

48 Robert D. Putnam, "Chapter 12: Mobility and Sprawl," in *Bowling Alone: The Collapse and Revival of American Community* (New York, NY: Simon & Schuster Paperbacks, 2020), pp. 205-215.

their residents, discourage interaction, and result in communities with vague identities.

Life Satisfaction

In his book *Happy City*, Charles Montgomery outlines the impacts of suburbs on residents' health, happiness, and the environment, all of which connect back to their designed reliance on the automobile. Due to the nature of their composition, with a general lack of social engagement spaces, amenities, and employment, suburbs necessitate longer commutes into city centers, and the longer the commute, the less happy people are. In their research paper *Stress That Doesn't Pay: The Commuting Paradox*, authors Alois Stutzer and Bruno S. Frey show that the longer people choose to commute, the less happy with their lives they become. Indeed, they make the comparison that a person with a one-hour commute must earn 40% more income than someone who walks to work to be equally as satisfied with their life.[49] Meik Wiking in his book *The Little Book of Lykke* states that those who work at home or very close to work are the happiest, and that any commute beyond 15 minutes progressively decreases that level of happiness.[50] The research from these authors shows a clear connection between commuting time and life satisfaction. Suburbanites will more likely have a lower level of life satisfaction than those commuting shorter distances from other neighbourhoods.

Health and Safety

The most important negative health effect caused by suburbs is its most simple: the illness that results from doing nothing. Low-density sprawl is proven to be obesogenic; resulting from a lack of amenities and resources nearby that would enable a walking commute and encourage physical movement. Sprawl necessitates large amounts of time spent sitting in a car or sitting at home. With 33% of Americans being obese (individuals with a BMI over 30), and 25% of Canadians being

49 Montgomery, *Happy City*, 83.
50 Meik Wiking, *The Little Book of Lykke: Secrets of the World's Happiest People* (London: Penguin Life, 2017), 194.

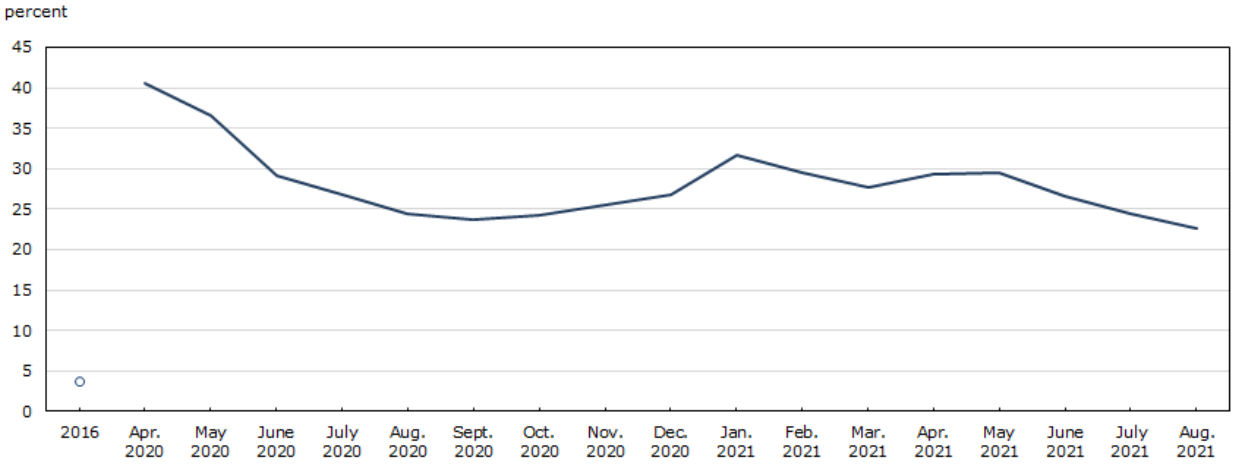
overweight (individuals with a BMI of between 25 and 30), the negative contributions of obesogenic sprawl are salient. Living in low-density sprawl has also been connected to a greater risk of arthritis, chronic lung disease, digestive problems, headaches, and urinary tract infections. Some of these are the result of breathing in car fumes during required commutes, most are the result of neighbourhoods that force people to drive. Sprawl is also more difficult for fire trucks to access because of the sheer distance and lack of funding for an adequate distribution of fire stations. Roadways have been progressively widened since the 1950s to allow for fire truck access, however as the new capacity fills up and sprawl continues to expand, fire brigades are fighting against congestion and distance to reach emergencies. Lastly, and perhaps most counterintuitive, a person has a higher chance of dying at the hands of a stranger in suburbia than in a city center. This is because when drivers feel safe, they drive faster and with less attentiveness. Wide suburban roads, which have had distractions systematically removed over time, feel incredibly safe for drivers. As such, divers kill four times as many pedestrians in wide suburban streets than in narrow traditional roads.[51] Suburbanites are at risk of long term health ailments, potentially out of reach from emergency services, and living in neighbourhoods that produce a false sense of safety.

Environment

The most immediate environmental problem facing suburbs is their reliance on oil. The world is rapidly running out of fossil fuels with projections showing peak production occurring within the next twenty years, and the price skyrocketing well before then. As a direct result of its reliance on oil, suburbia is a major contributor to global greenhouse gas (GHG) emissions. Urban areas are responsible for three-quarters of the world's energy consumption and produce 80% of global GHG emissions and Suburbia is among the most wasteful. Suburbanites produce twice as many GHG emissions than people living in city centers. Suburbs take up substantial farmland, they are harder to heat and cool than apartments and townhouses, and the separation of land-uses makes it difficult to benefit from public transportation systems. Even the front lawn is a problem with gasoline-powered lawnmowers

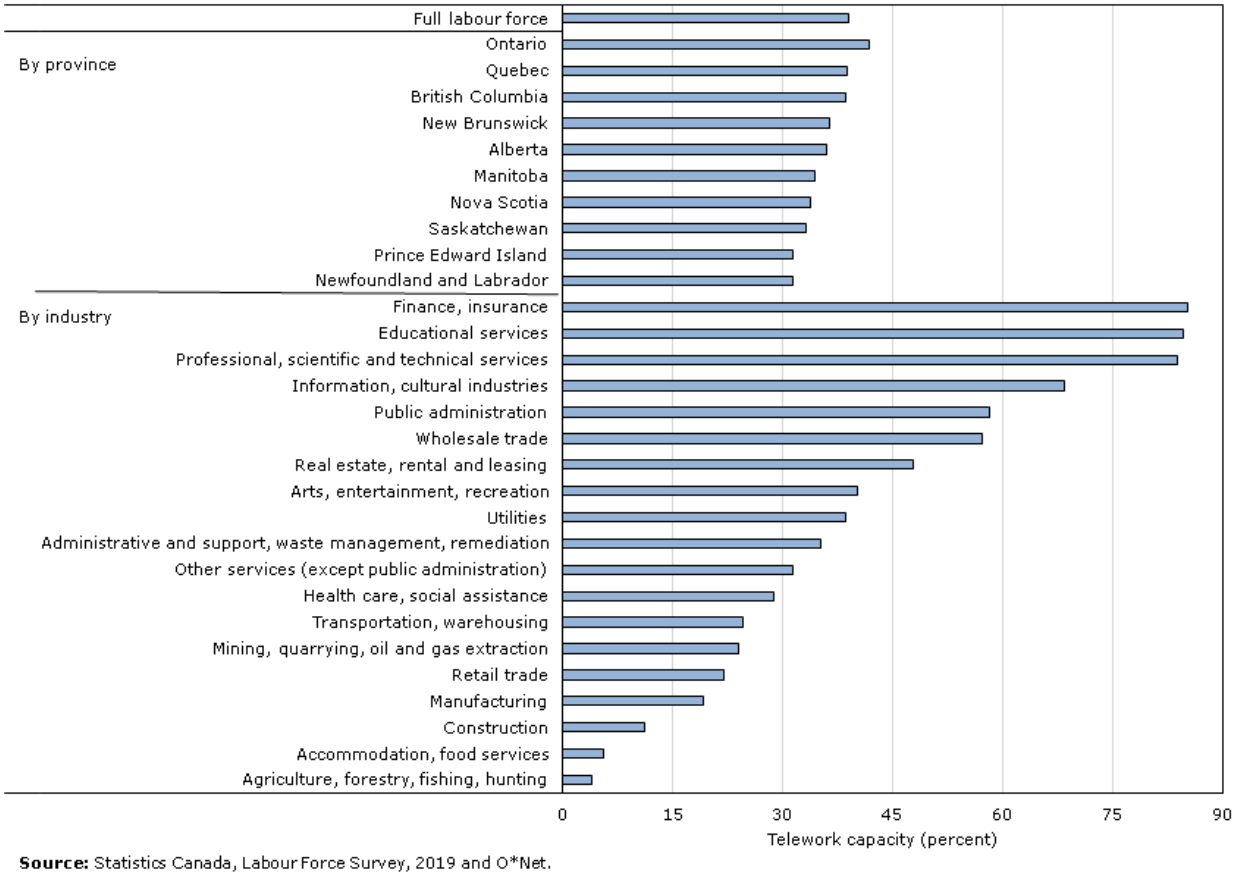
51 Montgomery, *Happy City*, 82-99.

Percentage of employees working most of their hours from home, 2016 to August 2021



Notes: For 2016, the sample consists of employees aged 15 to 69 living in the 10 provinces. From April 2020 onwards, the condition that employees are not absent during the Labour Force Survey reference week is added to these criteria.
Sources: Statistics Canada, General Social Survey, 2016; and Labour Force Survey, April 2020 to August 2021.

Telework capacity in 2019, by province or industry



Source: Statistics Canada, Labour Force Survey, 2019 and O*Net.

producing eleven times more air pollution than new cars. Finally, sprawling cities experience nearly twice as many severe heat waves than compact city centers do. This is due in part to the vast amount of paved surfaces and the extensive road networks connecting suburbia, which absorb heat. This trapped heat contributes to more smog, which will further affect and cause asthma**.** The elderly and youth will experience more heat stress and respiratory illness in suburbia as the climate crisis escalates.[52] Suburbs are significant contributors to and will be impacted greatly by the climate crisis. If they are to exist in the future, how people live and operate within them will need to change.

Fig. 1_18 *(Opposite page - top) Compared to 2016, the number of employees working most hours from home increased tenfold by April 2020. These numbers dropped later in 2020, yet remained high throughout the pandemic.*

Fig. 1_19 *(Opposite page - bottom) Across provinces, about 30% of Canadian jobs can be completed from home. Different industries have varying ability to transition to telework employment.*

Conclusion

From negative influences on social capital and lung health, to decreases in life satisfaction and major contributions to global emissions, the downsides of suburbs are significant. Valorized for their ample living space and suitability for nuclear families, their benefits do not outweigh their costs. As the world enters the third year of the pandemic, changes in work culture and location of residence are an incentive for change.

Statistics Canada estimates that 39% of Canadian jobs can plausibly be completed from home. This percentage ranges across wage, education, and industry markers. Those who hold a bachelor's degree or higher education are at 59%, while those without a high school diploma are at 10%. Those at the top decile for family earnings are at 54%, while those in the bottom decile are at 8%. 85% of workers in finance and insurance, professional, scientific, and technical fields can feasibly work from home. In contrast only 6% of workers in accommodation and food services can do the same. Additionally, because of the geographic distribution of these industries, with office jobs generally being found in cities, less work-from-home opportunities exist in smaller communities. These estimates reflect the actual percentage of Canadians that have worked from home during the pandemic relatively accurately. By April of 2020, approximately 40% of employees spent a majority of their hours at home. This was a tenfold increase from the mere 4% in 2016. As of August 2021, around 23% of Canadians were

52 Montgomery, *Happy City*, 102.

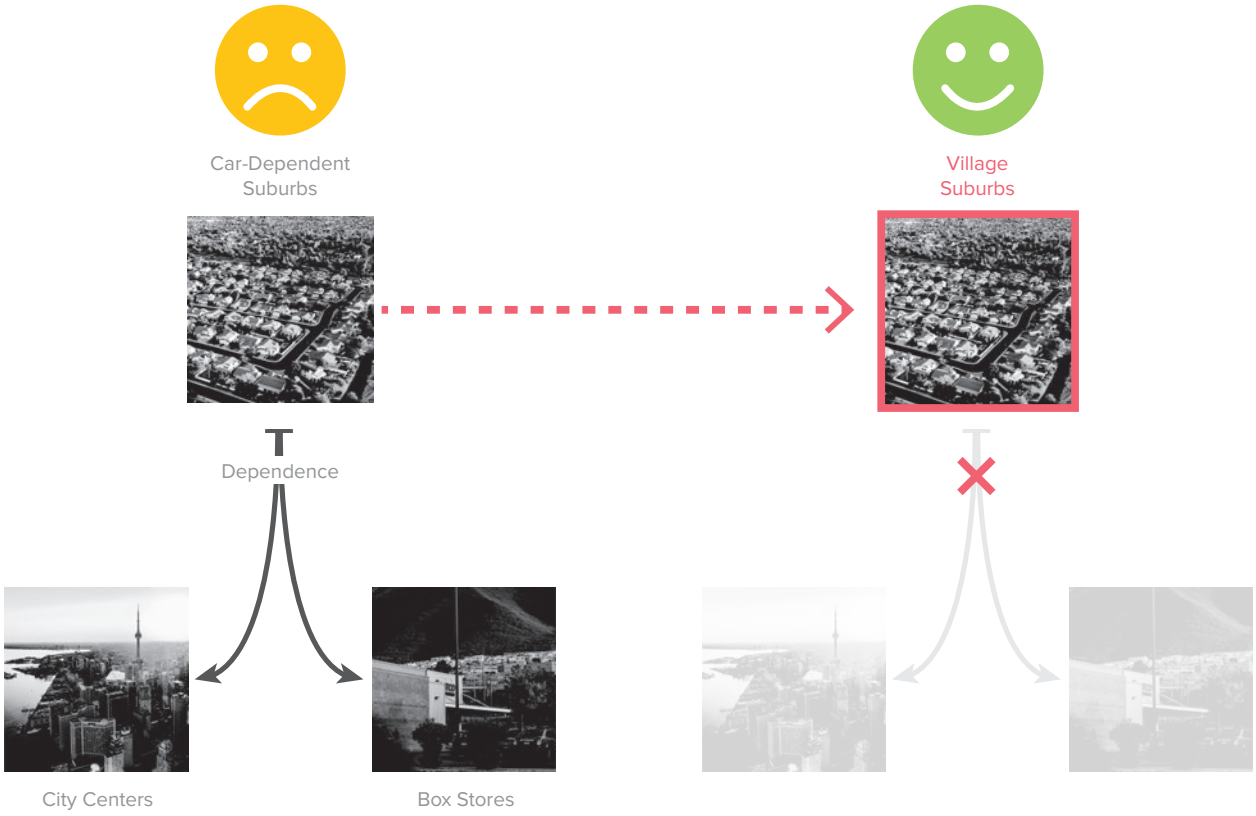
primarily working from home.[53] The pandemic has drastically changed our relationship to work and where we work from. This increase in work-from-home hours will likely not disappear once the pandemic is over. The number of employees working entirely from home will likely decrease, but with 80% of employees wanting to work at least half of their hours from home once the pandemic is over, less time on average will be spent in company offices. Statistics Canada estimates that the amount of work-from-home hours that most Canadians will prefer is 24%.[54] Indeed, many companies are currently functioning with a partial in-office and work-from-home model. This hybrid model will likely continue into the post-pandemic world.

The pandemic has also had an influence on where we work-from-home. Since the beginning of the pandemic, city dwellers have been moving into the urban periphery in favor of more living space and lower housing prices. Commuting from distant housing locations is no longer necessary because of the new work-from-home culture. Those that had the means to, fled urban cores in droves, and while some may move back after the pandemic subsides, many will not.[55] During pandemic lockdowns, interest in condos decreased in Toronto while home buying in the suburbs, exurbs, and the cottage country increased.[56] Condo sales were down by 23% in May of 2021 from the previous year, with home sales across downtown Toronto down by 19%.[57] The pandemic has reduced the appeal of dense cities, with many realtors and wealth advisors reporting more interest from homebuyers to purchase outside of the city. In fact, some suburbs in the United States experienced residential sales volume increases of between 75% and 120%.[58]

With work-from-home culture now mainstream and likely to continue

53 René Morissette and Tahsin Mehdi, "Working from Home in Canada: What Have We Learned so Far?," Statistics Canada (Government of Canada, Statistics Canada, October 27, 2021), https://www150.statcan.gc.ca/n1/pub/36-28-0001/2021010/article/00001-eng.htm.
54 Ibid.
55 Conor Dougherty and Ben Casselman, "House Hunters Are Leaving the City, and Builders Can't Keep Up," *The New York Times*, May 29, 2021, https://www.nytimes.com/2021/05/29/business/economy/new-home-building-suburbs.html?referringSource=articleShare.
56 Rachelle Younglai, "Toronto Buyers behind Uptick in House Prices across Ontario, Data Suggest," *The Globe and Mail*, June 4, 2021, https://www.theglobeandmail.com/business/article-toronto-buyers-behind-uptick-in-house-prices-across-ontario-data/.
57 Becky Robertson, "Hardly Anybody Is Buying Condos in Downtown Toronto Anymore," blogTO (blogTO, June 2, 2021), https://www.blogto.com/real-estate-toronto/2021/06/hardly-anybody-buying-condos-downtown-toronto/.
58 George Arnett, "Is This the Year of the Suburb?," *Vogue Business*, March 15, 2021, https://www.voguebusiness.com/consumers/is-this-the-year-of-the-suburb.

in the future, and a noteworthy increased interest in suburban homeownership over condos and downtown living, people will be spending more daily hours in suburbs. Suburbs were not designed for residents spending most hours of the day at home, however. With such an increase in time spent there, residents will be exposed more often to the negative effects of suburbs. As such, now is the opportune time to revisit the North American suburb and make adjustments which will allow for more time spent there.


Car-Dependent Suburbs
Village Suburbs
Dependence
City Centers
Box Stores

Chapter 2: Design Intent

This chapter introduces *villageness* as a remedy for the social, health, life satisfaction, and environmental problems with suburbs. *It Takes a Village* addresses these problems by proposing a framework that retrofits existing suburban neighbourhoods into more village-like communities over a twenty-five year period. Retrofitting is prioritized over a new-build proposal because a substantial amount of suburbs have been built within the last century and a majority of North Americans live in suburban neighbourhoods. Addressing only new neighbourhood developments would be a limited strategy and would not solve the problems existing suburbs create. It will be more impactful to focus on existing neighbourhoods, and by using a widely replicable solution. The retrofit framework's design intent is to transform car-dependent suburbs into *village suburbs*. Using specific retrofit elements, such as creating corner stores and enhancing social gathering spaces, the framework improves the *villageness* of suburbs. This *villageness* releases suburban neighbourhoods from their dependence on urban centers and box stores, resulting in self-sufficient villages where all day-to-day necessities are available within a short walking distance.

Fig. 2_1 *(Opposite page) Design intent: the transformation of car-dependent suburbs into village suburbs through the integration of villageness.*

The concept of *villageness* is defined at the beginning of this chapter, followed by a selection of noteworthy village-like suburbs in the Toronto area, the site selection process for an example retrofit design, and a comparative analysis of the selected site with example *villageness* sites to understand the existing conditions. Site selection is in two parts, starting with the selection of a city from those bordering Toronto as they are areas of significant suburbanization. A brief description of the chosen city follows. The second part of the selection process takes a closer look at the chosen city to choose a single neighbourhood as the example site so that the framework can be applied to it in Chapter 3. Chapter 2 ends with the comparative analysis between the chosen site and reference sites that exhibit *villageness* to highlight existing deficits upon which the retrofit framework can improve.

2.1 Villageness

This thesis invents the term *villageness*, a concept that counteracts the problems created by suburbia, and that is derived from the qualities of traditional villages. *Villageness* is difficult to define by numbers alone and is more easily distinguished as a feeling. It is produced by the physical arrangement and use of space, but also by the identity and history associated with that space. *Villageness* is at the human scale and is more often felt in smaller settings, meaning that small towns have a higher chance of displaying it. This does not mean that cities cannot have *villageness*, merely that it is unlikely they will exhibit it evenly across their entire urban form. To understand what *villageness* is, knowing the basic structure of a village is helpful.

Fig. 2_2 *(Opposite page) Siena, Italy. The historic nature of the architecture and street-scape contribute to this Italian city's villageness.*

The anatomy of a village can be broken down into three categories: infrastructure, buildings, and a social dimension. Within the category of infrastructure, the village is organized around a main square or a few important social gathering spaces with narrow, human-scaled streets connecting them. These spaces are often in proximity to a water source such as a well or river. Historically, they have often held a large fire for warmth, cooking, and gathering around. Under the category of buildings, a government or religious building, like a town hall or church, is often located adjacent to these important centers. Markets and shops make use of these gathering spaces and are located at their edges, and radiate outward at a decreasing concentration along major streets. Residential buildings fill in the rest. More developed villages will have shops at street level with residential units above, and buildings may share dividing walls. The social dimension is equally as important as the formal organization of the village. The village identity is evident, understood, and celebrated by residents. It is also often locally driven and organized, with residents participating in the success of the village. *Villageness* is based on this anatomy, exhibiting centeredness around an important gathering space with nearby amenities that are within walking distance and a strong sense of community. Walkability is an integral part of *villageness*. A place that has *villageness* will always be

walkable, however a walkable place may not always have *villageness*.

As shown in figure 2_18 (pages 60-61), walkability exists sporadically across the GTA. In general, North America and most other car-dependent nations have limited walkability. The same is true for *villageness*. Looking overseas to Europe, however, both are more common, particularly in historic towns built before automotive integration. A perfect example of *villageness* is the small Italian city of Siena. *Villageness* is concentrated within the city's historic fortifications as the outskirts of the city are more car-dependent. Historic Siena is a reliable reference because of its long cultural history, for being pedestrian friendly, walkable, its density and mixture of uses, and for its community gathering spaces such as piazzas and courtyards. Siena is used later in this thesis as an architype for European *villageness* in comparative analyses to assess differences between sites. Another European example of *villageness* is La Petite Venice in Colmer, France. North American examples of *villageness* are less common. In Canada, there is Elora, Ontario, mainly for its downtown as it quickly becomes suburban beyond. Each of these places demonstrate *villageness* through their human-scaled streets, historic character, and vibrant cultural identity. They are walkable, have mixed uses in their village centers, and are enjoyable for pedestrians. This thesis recognizes the value of *villageness* and refers to settings where this concept is exhibited most fully to find ways in which it can be implemented in a modern context.

Fig. 2_3 *(Opposite page) The Italian city of Siena viewed from above. The tightly arranged buildings in the historic portion make for a human-scaled, walkable city.*

Fig. 2_4 *(This page - top) The Piazza del Campo is the town center of Siena, has many shops and restaurants, and is always bustling with people.*

Fig. 2_5 *(This page - middle) The streets that connect between piazzas like del Campo are narrow and at a human scale.*

Measuring Villageness

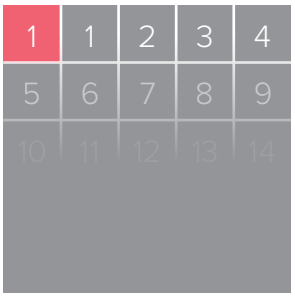
Villageness is an invented term with no pre-existing measurement that can quantify it. For the purposes of site analysis and comparison, this thesis proposes several quantitative data points that can be used in combination with qualitative observations to determine the likelihood of *villageness* in a given area. *Villageness* is linked to walkability. Therefore, existing walkability data can be used as a starting point to determine whether a neighbourhood exhibits *villageness* or not. The quantitative measurements that this thesis uses to predict *villageness* are: Walk Score mapping, walking time to amenities, amenity to residential ratios, and the number of amenity options within a site.

Walk Score

60 - Somewhat walkable

Walking Time

Average 10 min
Nearest 2 min



Amenity/Residential

$^{1}/_{24}$

Amenity Options

100

Walk Score

As defined at the beginning of this thesis, Walk Score is a 0-100 scale that outlines the walkability of a given area. The lower or higher the Walk Score value, the lower or higher the walkability respectively. Walk Score has a significant amount of the world's walkability mapped and is therefore a valuable resource in the process of identifying the *villageness* of a region. Where Walk Score is high, the likelihood of *villageness* being present is also high.

Walking Time to Amenities

This measure provides the average walking time from any household to any amenity within the site boundary as well as the average walking time from any household to their nearest amenity. If the amenities are concentrated in a single area instead of being evenly distributed, these two values will be the same. Walking time to amenities is measured in linear distance from household to amenity. Therefore, the actual walking time using pathways will be greater than these values. Where walking time to amenities is low, the likelihood of *villageness* being present is high.

Amenity to Residential Ratios (ARR)

This measures the ratio of above-ground amenity floor area to residential floor area within a site boundary. The resulting value is an $^{x}/_{y}$ data point meaning that for every x m^2 of amenity area there is y m^2 of residential floor area. Where this ratio is high, the likelihood of *villageness* being present will also be high.

Amenity Options

This measure provides the total number of amenity options within a site boundary. Where this value is high, the likelihood of *villageness* being present is also high.

These measurements are used to allow for numerical comparison between sites and are combined with qualitative observations (such as whether pedestrians must cross multilane roads, the state of gathering spaces, and the historicism of a site) to approximate *villageness*.

Fig. 2_6 *(Opposite page) Info-graphic examples of how the villageness measurements will be presented in later analyses.*

Fig. 2_7 *(This page - top) Elora, Ontario, has a quaint village center with shops and restaurants along the Grand River. It is often referenced as one of the best small towns to visit in Ontario.*

Fig. 2_8 *(This page - middle) The historic center of Colmar, France. Here there are old buildings on narrow streets. A small canal cuts through this area, creating a picturesque neighbourhood known as the La Petite Venice.*

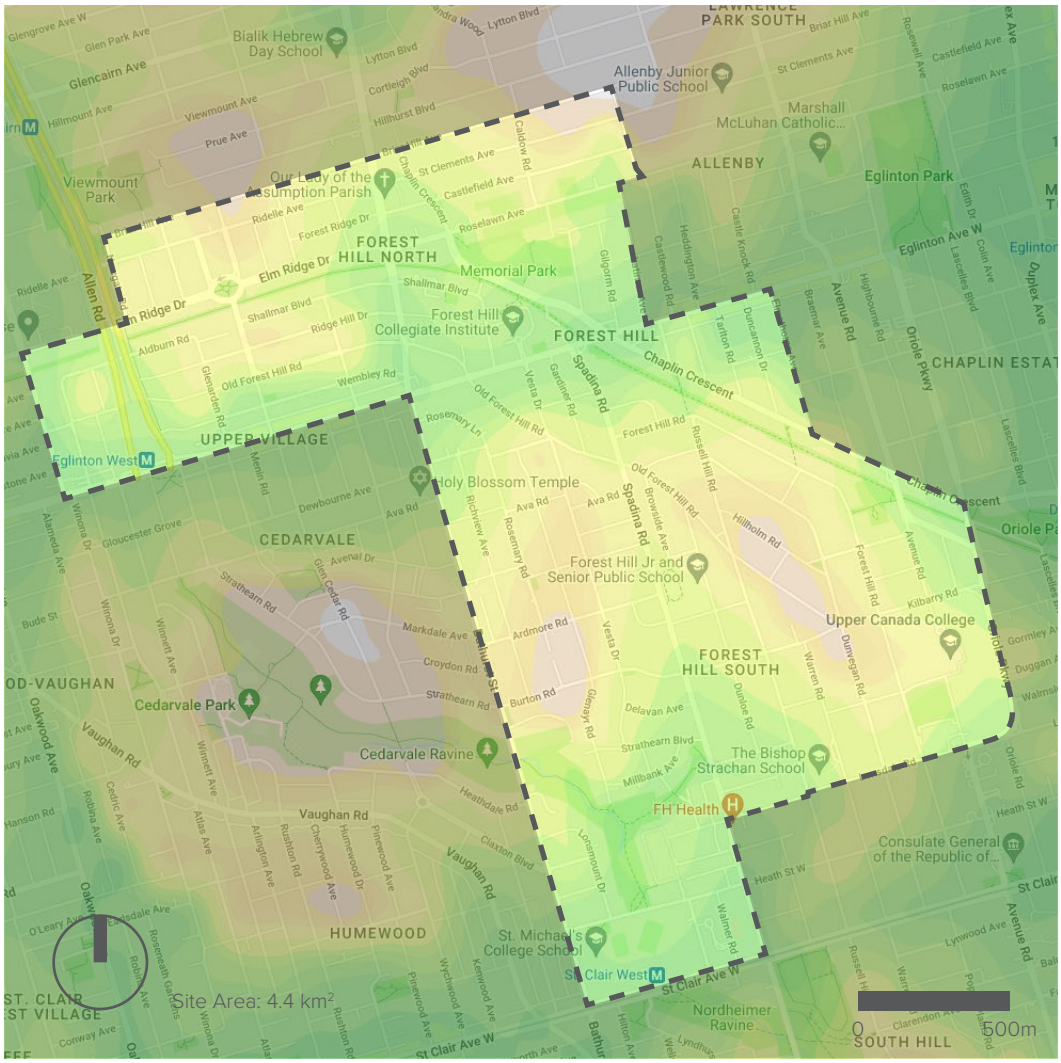
2.2 Toronto Area Villages

The word 'village' is commonly used in the naming of suburban developments to sell the idea of a strong community and to entice prospective homeowners into purchasing. It evokes feelings of connectedness and safety, which are useful for marketing new homes. 'Village' is frequently misused, however, often appearing in the names of places in which strong communities have difficulty forming. This is the case for many suburbs. Rosedale Village, a gated suburban development in Brampton, Ontario, is an example of this inconsistency between a place's name and its reality. It is a reinterpretation of the suburb using the idea of village centrality. The suburb is organized concentrically with a community centre and sports facilities in the middle, with condos and detached homes surrounding it. Because of zoning, however, it remains car dependent and its village center feels like a missed opportunity. It lacks convenience retail options and sufficient social gathering spaces to achieve *villageness*. Rosedale Village shows how mono-use zoning holds developers and planners back from creating successful village designs. The neighbourhood does come closer to exhibiting *villageness* than a typical suburb does, however, and its concentric design and village center give it a stronger sense of place. Other developments do not attempt village planning and yet still use 'village' to describe themselves.

Fig. 2_9 *(Opposite page) The gated community of Rosedale Village.*

Fig. 2_10 *(This page) Rosedale Village's village center*

The use of 'village' in the naming of some suburbs does have a historical bases, however, and these neighbourhoods are ripe for examination. This leads the following section to ask the question: how do historical villages in the Toronto area fare in terms of *villageness*? This section looks at three examples built in the early to mid-1900s: Forest Hill Village, Westdale Village in Hamilton, and Thorncrest Village. A fourth site, built in the 1950s, is investigated for its noteworthy neighbourhood design: Don Mills.


Site Area: 4.4 km²
0
500m
Walkable
Car Dependent
Walking Time
~13 min
Amenity/Residential
~1/100
Amenity Options
~130

Forest Hill Village

Summary

Forest Hill is one the oldest neighbourhoods in Toronto. It was officially incorporated as a village in 1923, but has housed residents in summer homes since the mid-1800s. The village was originally called Spadina Heights, a name stemming from the Ojibwe word *ishpadenah* translating to 'little hill' or 'a rise in the land.' The neighbourhood has expanded substantially around the hill since its inception, and although it is still more treed than many other suburbs in Toronto, most of the existing forest was cleared to make room for residential development. The original village was located at the intersection of Spadina and Lonsdale Road. Today this location is a small retail hub in Forest Hill South that provides amenities to the surrounding suburbs. Forest Hill Village was one of the last independent villages to be annexed by the City of Toronto and was folded into the city in 1967. The quality of the neighbourhood has been heavily influenced by its 1920s building code. This required that new homes would be built by architects and that a tree would be planted in the front of each property. Forest Hill is known today for its wealthy residents, beautiful homes, and greenery.[1]

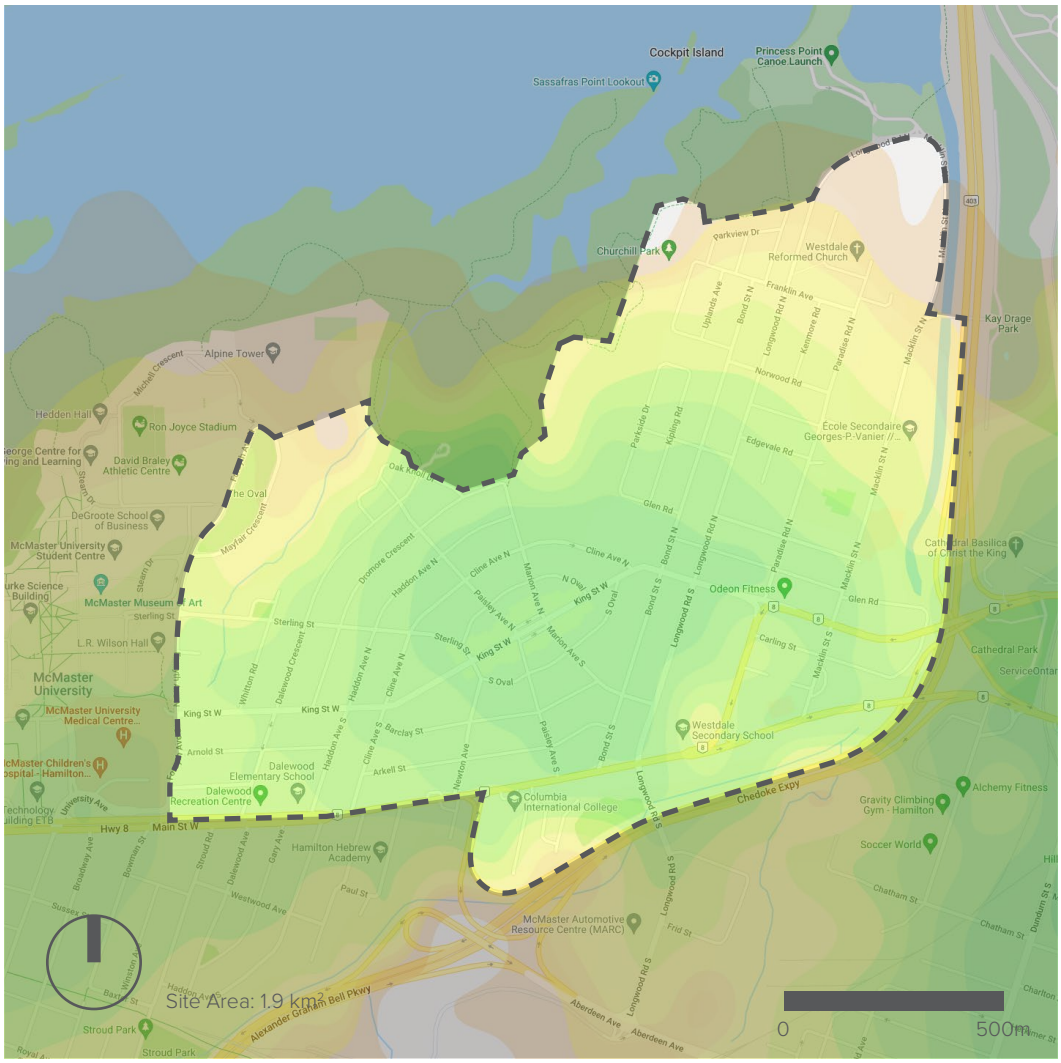
Fig. 2_11 *(Opposite page) Walk Score heat map of Forest Hill, Toronto.*

Fig. 2_12 *(This page) Houses along Warren Road in Forest Hill, Toronto.*

Critique

Forest Hill is not evenly walkable across its area. It scores highest near the available amenities, such as along Englington Avenue and at the intersection of Spadina and Lonsdale Road. There are several pockets of car-dependence, however. Outside of the retail areas, the neighbourhood becomes mono-zoned. For the most part, however, it is picturesque, comfortable and enjoyable to walk around, and the houses lend a historic feeling as many are old brick homes.

1 Anastasiya Romanska, "The History of the Forest Hill Neighbourhood in Toronto," blogTO (blogTO, January 9, 2021), https://www.blogto.com/city/2021/01/forest-hill-neighbourhood-toronto-history/.



Walkable

Car Dependent

Walking Time

~6.6 min

Amenity/Residential

~1/30

Amenity Options

~80

Westdale Village

Summary

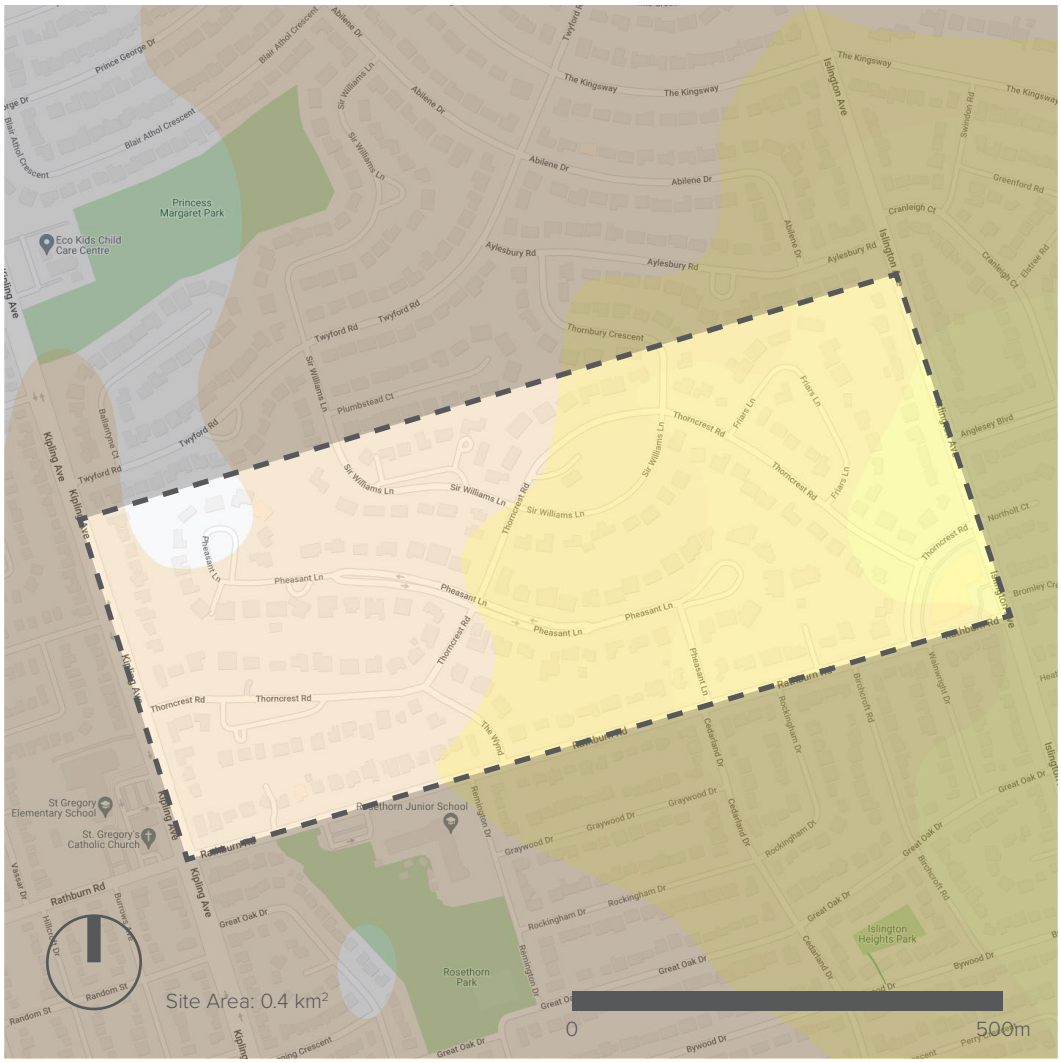
Westdale is a historic village and shopping district in Hamilton, Ontario. Established in the 1920s, it is one of Canada's first planned communities and Hamilton's first suburbs. Westdale's past is marred by its racist inception as an exclusively white protestant neighbourhood, yet it exists today as a successful village design. The suburb's design began in 1911, with architect Robert Pope envisioning a self-contained neighbourhood of 1,700 homes with a concentric street layout centered on a main street with amenities and shopping. The design was inspired by the Garden City movement and the circular city proposals in Europe at the time. Westdale's original financiers purchased several hundred acres of land that were originally named Hamilton Gardens. The project switched hands in 1918 and construction began in the early 1920s, mostly finishing by 1931. The final sections of the suburb were completed as of 1951, by which time McMaster University had relocated to an adjacent property west of the neighbourhood. Over the years, Westdale has not expanded far from its original design, due to a highway, the University, and Lake Ontario surrounding it on all sides. These bounding forces have contributed to the suburb's success as they have prevented it from sprawling outside its main street's effective range. Westdale is a highly walkable neighbourhood, with amenities on site, continuous sidewalks, and is much less car-dependent than the standard suburb.[2]

Fig. 2_13 (Opposite page) Walk Score heat map of Westdale, Hamilton.

Critique

Westdale is almost entirely walkable. It scores best at the center where there are retail and commercial options along King Street West. Beyond this main street, the remainder of the suburb is mono-zoned. Its overall scale limits the downsides of this, however, as most of the suburb is contained within an effective walkable range to the main street. Westdales *villageness* is most apparent along its main street, particularly where older brick buildings are present.

2 Paul Shaker and David Premi, "Westdale a Model for Design," *The Hamilton Spectator*, April 9, 2015, https://www.thespec.com/opinion/contributors/2015/04/09/westdale-a-model-for-design.html.



Walkable

Car Dependent

Walking Time

~5.0 min

Amenity/Residential

~1/63

Amenity Options

5

Thorncrest Village

Summary

The hundred acre site Thorncrest Village sits on today was first purchased in 1944 by Marshall M. Foss. Foss created Thorncrest Development Co. and had the idea for a village governed by a homeowners association. This governing body gave each resident member one vote to help manage community activities and facilities. The urban planner Dr. E.G. Faludi designed the village in 1945 and ensured that each lot was larger than those in a typical suburb. Additionally, Faludi was conscious to fell a minimum number of trees. The streets were designed to be organic and with multiple dead ends to discourage speeding. A small shopping center was built on the eastern corner of the site to support the community. Other facilities, such as a community pool, clubhouse, tennis courts, and a playground, were built in the center of the village. Thorncrest Village has a very strong community identity. This is due, in part, to the management structure of the neighbourhood. The Board of Directors for the Homeowners Association is comprised of elected residents and, in conjunction with the development company, they restrict development of the area to maintain the country-like setting. Properties were bound by a 30-year deed restriction until 1975, which prohibited further construction. Up until that point, membership in the Homeowners Association was mandatory for all residents. Once the deeds expired this became voluntary. Most of the restrictions on neighbourhood development remained, however, because a majority of the membership voting in their favour by adopting City of Toronto by-laws with additional Association by-laws on top.[3]

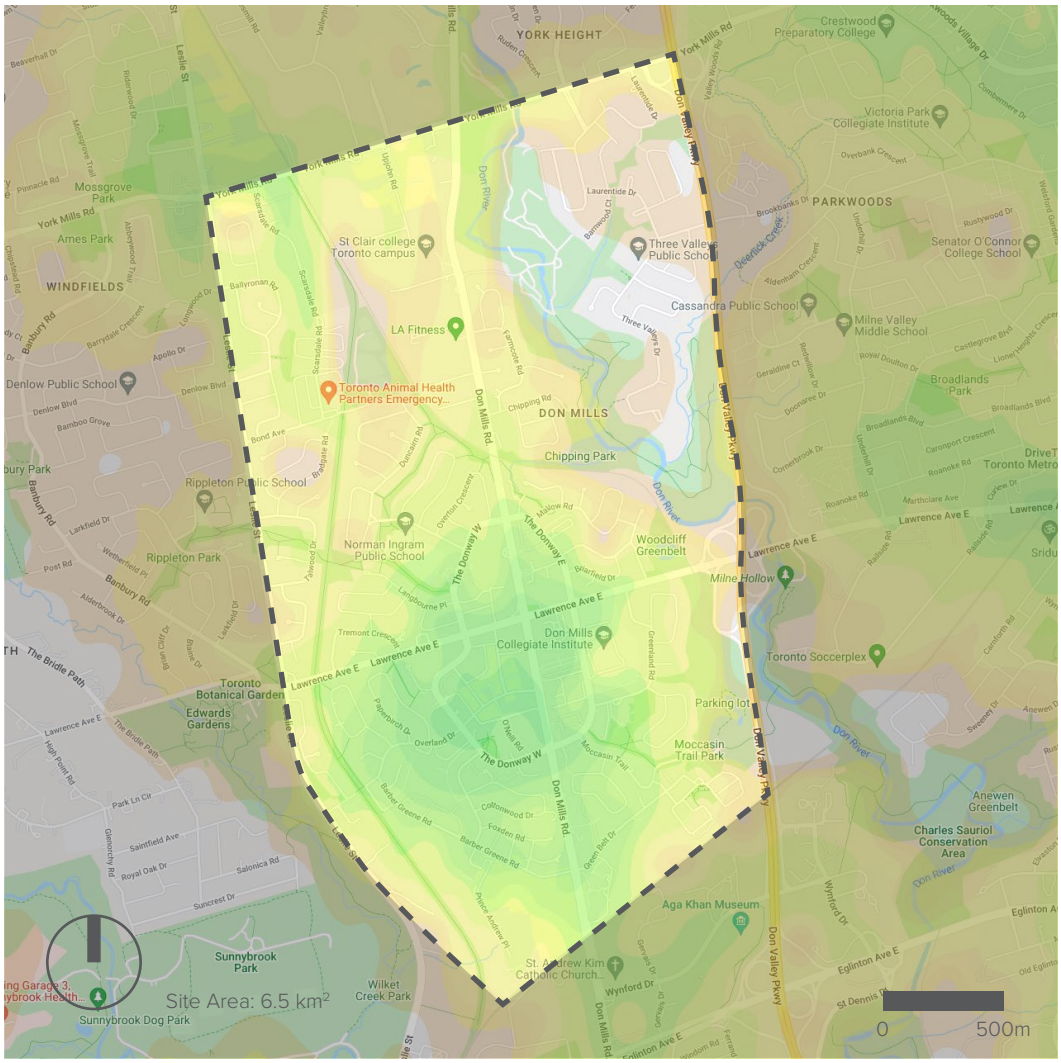
Fig. 2_14 *(Opposite page) Walk Score heat map of Thorncrest Village, Toronto.*

Fig. 2_15 *(This page) Houses in Thorncrest Village.*

Critique

Thorncrest Village is village-like when considering its strong community identity and community boundedness, however it is car-dependent and cannot be considered to have substantial *villageness*. The suburb is mostly car-dependent, with its best score located around the convenience building in the eastern corner.

3 Thorncrest Village, "About," Thorncrest. A residential community in Toronto, Ontario, 2018, http://www.thorncrest-village.com/info.php?pnum=35bb3646d24c51.



Walkable

Car Dependent

Walking Time

~13.6 min

Amenity/Residential

~1/14

Amenity Options

~220

Don Mills

Summary

Don Mills was the first master-planned suburb in Toronto and unique compared to the block-by-block developments that cropped up at the urban edges at the time. Financed by E.P. Taylor and designed by urban planner Macklin Hancock, Don Mills marked the beginnings of the theory to create 'complete neighbourhoods.' These neighbourhoods would include more than just single-family homes. They provided housing for people of varying incomes, as well as churches, schools, and places to work and shop. Don Mills was built between 1952 and 1965 and was organised as two concentric layers with housing on the outer layer and a town centre and industries in the middle. This concentric system was divided into four quadrants, and at the center of each resulting neighbourhood an elementary school and park space were built. The project was originally viewed with skepticism; however, the housing demand in post-WWII Toronto outweighed these misgivings and Don Mills' construction moved forward. Subsequent suburban projects such as Victoria Park Village and Humber Valley Village directly referenced Don Mills in their design, with schools in the center of suburbs and cul-de-sacs to slow traffic. At the time of its creation, Don Mills' focus was on neighbourhood completeness and walkability (at least to the schools). Over time however, Don Mills has come to represent many of the problems suburbs create including car-dependence and sprawl.[4]

Fig. 2_16 (Opposite page) Walk Score heat map of Don Mills, Toronto.

Critique

Don Mills exhibits some *villageness* in its shopping district; however, beyond this area, the development is distinctly suburban. The shopping district is also the most walkable part of Don Mills as the neighbourhood becomes more car-dependent moving outward from the center. Pedestrians must also cross a multilane road to get to the shopping center, making the journey there less enjoyable.

4 Noor Javed, "Toronto's Mother of All Suburbs: Don Mills," *The Toronto Star*, March 21, 2009, https://www.thestar.com/news/gta/2009/03/21/torontos_mother_of_all_suburbs_don_mills.html.

Thorncrest Village

Site Area: 0.4 km²

Walking Time

~5.0 min

Amenity/Residential

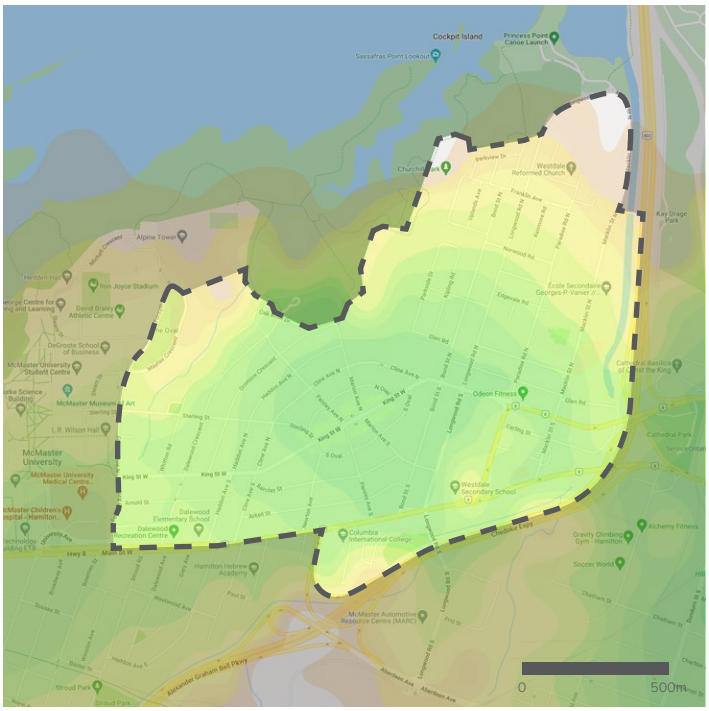
~1/63

Amenity Options

5

Westdale Village

Site Area: 1.9 km²



Walking Time

~6.6 min

Amenity/Residential

~1/30

Amenity Options

~80

Measures

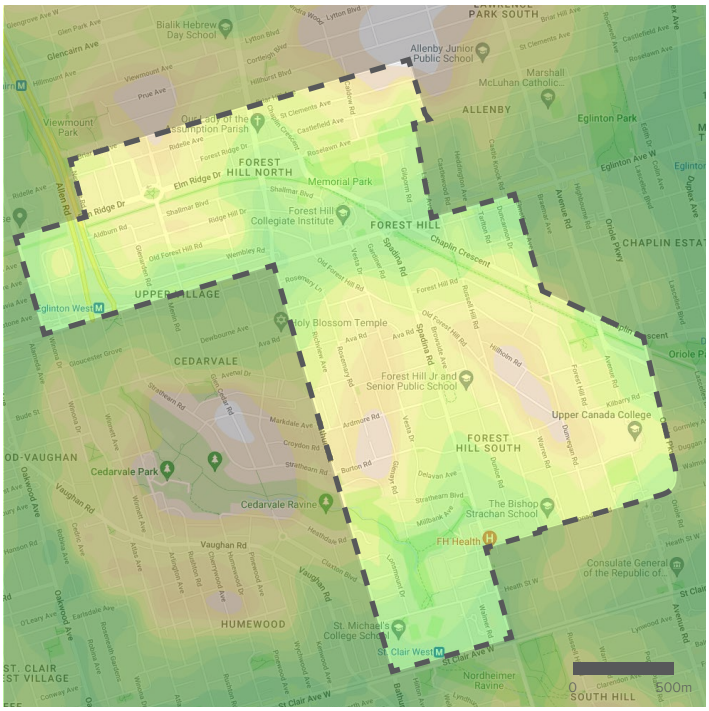
Critique

Thorncrest Village is village-like when considering its strong community identity and community boundedness, however it is car-dependent and cannot be considered to have substantial villageness. The suburb is mostly car-dependent, with its best score located around the convenience building in the eastern corner.

Westdale is almost entirely walkable. It scores best at the center where there are retail and commercial options along King Street West. Beyond this main street, the remainder of the suburb is mono-zoned. Its overall scale limits the downsides of this, however. Westdales villageness is most apparent along its main street, particularly where older brick buildings are present.

Forest Hill Village

Site Area: 4.4 km^2



Walking Time

~13 min

Amenity/Residential

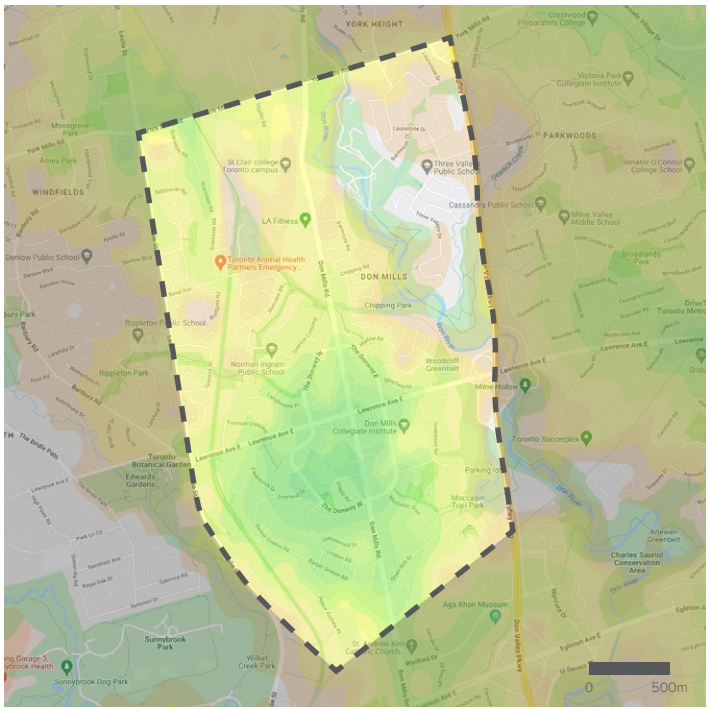
~1/100

Amenity Options

~130

Don Mills

Site Area: 6.5 km^2



Walking

~13.6 min

Amenity/

~1/14

Amenity Options

~220

Measures

Critique

Forest Hill is not evenly walkable across its area. It scores highest near the available amenities, such as along Englington Avenue and at the intersection of Spadina and Lonsdale Road. There are several pockets of car-dependence, however. Outside of the retail areas, the neighbourhood becomes mono-zoned. For the most part, however, it is picturesque, comfortable and enjoyable to walk around.

Don Mills exhibits some villageness in its shopping district; however, beyond this area, the development is distinctly suburban. The shopping district is also the most walkable part of Don Mills as the neighbourhood becomes more car-dependent moving outward from the center. Pedestrians must also cross a multilane road to get to the shopping center, making the journey there less enjoyable.

Conclusion

Forest Hill, Westdale, and Thorncrest, and the additional modern example of Don Mills, are a sampling of the current stock of aspirational village suburbs in the Toronto area. All of these examples are more substantial in their attempts at *villageness* than most generic suburbs. Ranking the historic villages, Thorncrest exhibits the least amount of *villageness*. Although it does provide a small amount of amenities on site, these are not enough to make the neighbourhood walkable. Thorncrest's strong neighbourhood identity is certainly a benefit; however, the neighbourhood remains bound to the automobile to function. Forest Hill comes next and its quantitative measures are more convincing. The density of housing and amenities contribute to a higher level of *villageness*. The village's expansion over time was mainly residential, however, and did not include amenity options at sufficient walking distances. Forest Hill is certainly picturesque and has a strong identity, yet it also has pockets of very low walkability. Were it to have expanded with new retail centers at effective intervals, these car-dependent areas would not exist. Lastly, Westdale exhibits the most *villageness* of the three. It is entirely walkable with a strong village center along its main street that has ample amenities to service the reasonably sized, although mono-zoned, residential community. Westdale will be used for comparison alongside Siena later on in this thesis to evaluate the effectiveness of the retrofit framework.

Don Mills is presented in this section as a modern example of suburban development that has many qualities that contribute to *villageness*. The centrality of the design, with retail in a town center, is positive towards achieving *villageness*; however, Don Mills is tied to automobile supremacy with multilane roads that cut between the housing and the town center. The walkability that the shopping center creates does not extend to the edges of the surrounding neighbourhoods, resulting in car-dependent areas. If the suburbs that Don Mills inspired had copied more than the schools and cul-de-sacs and had also developed on the retail town centre, suburbs today would exhibit more *villageness*.

2.3 Site Selection - Part 1

This thesis uses an example site to apply the retrofit framework to. The cities bordering Toronto are excellent options in which to look for this site as each is primarily suburban and car-dependent. Mississauga, Brampton, Vaughan, Richmond Hill, Markham, and Pickering all score below a 50 on the Walk Score scale, meaning they are largely car-dependent. One of these cities is chosen, however, each is an equally valid option. The site that would have the greatest impact for the greatest number of people over the longest period of time is how this thesis selects the example site. This criteria makes Brampton a prime choice for finding a site to apply the framework to. It is one of the largest cities bordering Toronto in size and has the fastest growing population. The city's population is projected to surpass Mississauga's in five years if its current growth remains consistent. As an immigrant heavy city, it has a steady stream of new residents every year.

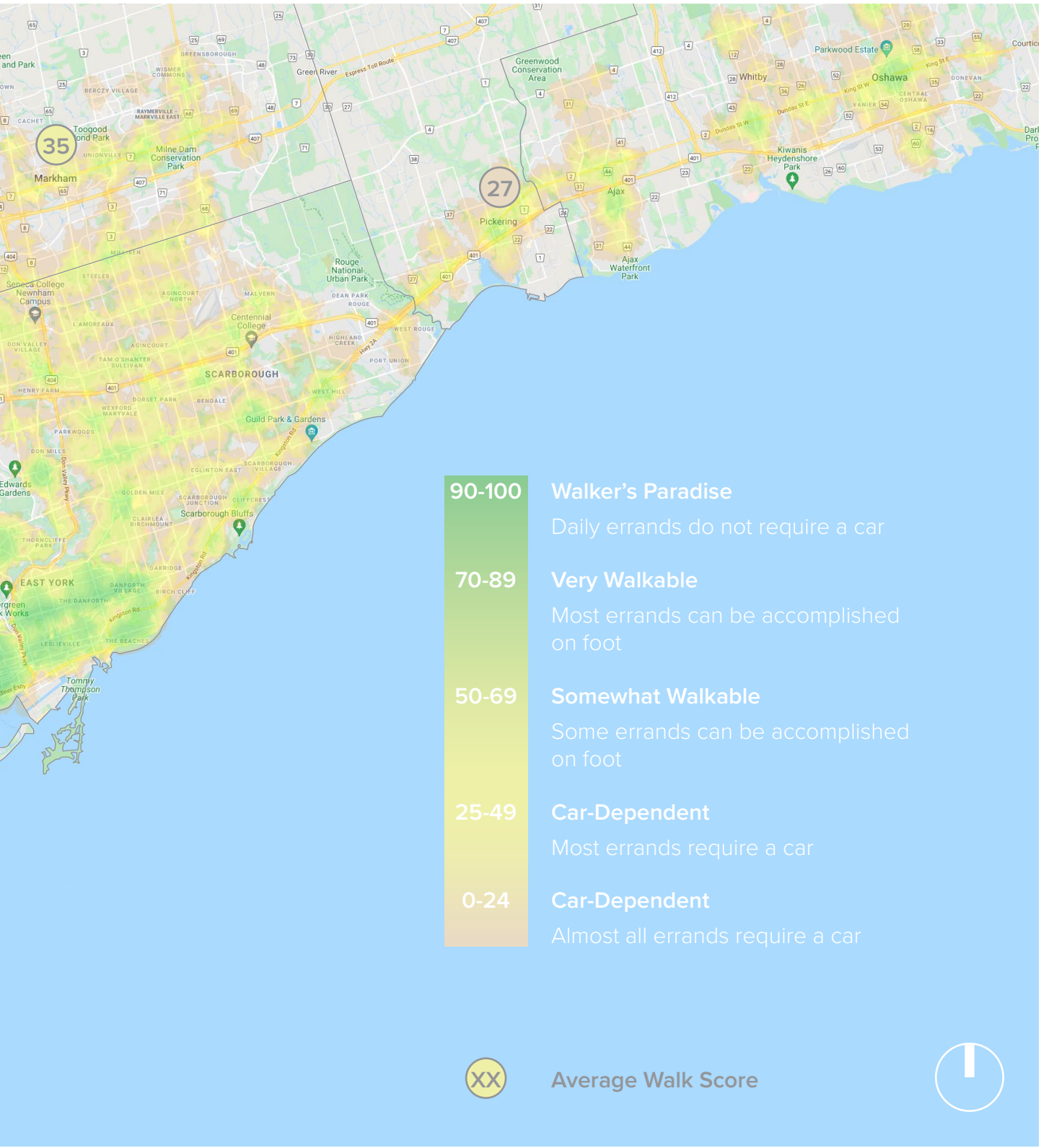
Fig. 2_17 (Opposite page) Brampton City Hall.

Figure 2_18 on the following page shows Walk Score mapped across the GTA. Walk Score is used here to show where areas are walkable (green) and where areas are car-dependent (red to grey). Brampton has an average score of 43.[5]

5 Walk Score, "Brampton Neighborhoods on Walk Score," Walk Score, 2022, https://www.walkscore.com/CA-ON/Brampton.


Selected City
43
Brampton
49
Mississauga
35
Vaughan
37
Richmond Hill
61
Toronto
Laskay
Nobleton
King Creek
Bolton Resource Management Tract
Nashville Conservation Reserve
Mono Road
Caledon
Kilmanagh
Nashville
Coleraine
Boyd Conservation Park
Canada's Wonderland
Heart Lake Conservation Park
Woodhill
Wet'n'Wild Toronto
Claireville Conservation Area
Toronto Pearson International Airport
York University
G Ross Lord Park
Downsview Park
Earl Bales Park
NORTH YORK
YORK
Cedarvale Park
James Gardens
Christie Pits Park
Trinity Bellwoods Park
High Park
Humber Bay Park East
Ontario Place
Hanlan's Point Beach
Toronto Islands
ETOBICOKE
GEORGETOWN
Sheridan College Davis Campus
Ashgrove
Whiley's Corners
Lake Aquitaine Park
Marie Curtis Park
JC Saddington Park
Jack Darling Memorial Park
Hornby
Milton
Kelso / Glen Eden Conservation Area
Crawford Lake Conservation Area
Oakville
Gairloch Gardens
Oakville Trafalgar Memorial Hospital

Fig. 2_18 Walk Score mapped across the GTA. Areas of intense green are zones of increased walkability.



	Brampton	Ontario	Canada
Land Area	266.36 km^2	908,699.33 km^2	8,965,588.85 km^2
Population 2016	593,638	13,448,494	35,151,728
Population 2021	656,480	14,223,942	36,991,981
Population Increase 2011 - 2016	13%	4.9%	5.0%
Population Increase 2016 - 2021	11%	5.8%	5.2%
Average Total Household Income	$87,290	$74,287	$70,336
% East Indian Ethnic Origin	33% (197,360)	5.8% (774,500)	4.0% (1,374,710)
% Immigrant	52% (308,790)	29% (3,852,145)	22% (7,540,830)
% Car as Primary Mode of Transport	76%	72%	74%
% Commute Greater Than 15 Minutes	87%	76%	72%
% Single Detached Homes (Private)	52% (87,550)	54% (2,807,380)	54% (7,541,495)
% Semi-Detached Homes (Private)	14% (23,035)	5.6% (289,975)	5.0% (698,800)

2.4 Brampton

The City of Brampton was incorporated in 1974 and is the third largest of the cities bordering the City of Toronto by size, and is the second largest by population. It has the highest population density (2,469 p/km^2) as well as the most rapid population growth between 2011 and 2016 (13%)[6], and also between 2016 and 2021 (11%)[7]. Brampton is one of the youngest big cities in Canada. The city's population is over 650,000 residents,[8] of which 33% were of East Indian ethnic origin and 52% were immigrants as of 2016.[9] With a third of the residents of Indian heritage, Brampton is often referred to as the Mini India or Mini Punjab of Canada.[10] The city's substantial immigrant population means that it is one of the most diverse cities in Canada.

Fig. 2_19 (Opposite page) Statistics Canada figures for the City of Brampton compared to Ontario and Canada. All data, excluding the 2021 population numbers and the population increase between 2016 and 2021, is sourced from the 2016 census. The 2021 census has not yet been fully released during the writing of this thesis.

Brampton also used to be referred to as the flower capital of Canada. The city is located on prime agricultural land that was used for produce and farming until the late 1900s. A significant amount of Canada's cut-flowers were grown in Brampton and distributed by Dale Estate greenhouses. This lasted until 1980.[11]

Like each city bordering Toronto, Brampton is primarily suburban and car-dependent, excluding some main streets (figure 2_21, notice the concentrated green areas). Like the rest of Canada, most residents use a vehicle as their main mode of transportation; however, the percentage of commutes that are longer than 15 minutes is higher in Brampton than in other cities in Ontario.[12]

6 Statistics Canada. 2017. Brampton, CY [Census subdivision], Ontario and Ontario [Province] (table). Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017. https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E (accessed February 10, 2022).
7 Statistics Canada. 2022. (table). Census Profile. 2021 Census. Statistics Canada Catalogue no. 98-316-X2021001. Ottawa. Released February 9, 2022. https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/index.cfm?Lang=E (accessed February 10, 2022).
8 Ibid
9 Statistics Canada. 2017.
10 Curly Tales, "Always Trippin' Episode 4 - Youtube," YouTube, July 17, 2018, https://www.youtube.com/watch?v=R3pZ_ZaRJDg.
11 Nick Moreau, "Brampton," The Canadian Encyclopedia, October 17, 2012, https://www.thecanadianencyclopedia.ca/en/article/brampton.
12 Statistics Canada. 2017.

2.5 Site Selection - Part 2

With Brampton as the chosen city, a site of a much smaller scale is required for a design to be applied in a legible manner. A neighbourhood of the city is chosen as an example site using the same criteria used to select Brampton. Walkability is again used as a proxy for *villageness* and is mapped across Brampton. 'Dead zones' (areas of extreme car-dependence) are highlighted as possible site locations. The majority of these dead zones are reasonable choices for the design retrofit, excluding dead zones E and G as they are not primarily residential (figure 2_26). To choose one of these dead zones, transit, population density, and land-use zoning are considered. The final selection is a neighbourhood in the north of Brampton that has no official name, but will be referred to hereafter as the 'neighbourhood of Wiggins Park,' or simply as 'Wiggins Park.' This site is chosen because it is within a dead zone, its land-use zoning is residential (single-family and semi-detached homes in this case), and it has a high population density. In addition to these criteria, the site is a relatively generic example of a GTA suburb. The commonplace nature of the site is essential as the retrofit framework is meant to be widely replicable across suburbia. Choosing a unique site would be counterproductive to generating large-scale impact.

Figures 2_21 through 2_28 show this site selection process. The details of Wiggins Park and site documentation are on pages 74-75.

Fig. 2_20 (Opposite page)
A typical street in the neighbourhood of Wiggins Park.

Fig. 2_21 Walk Score mapped across the City of Brampton.

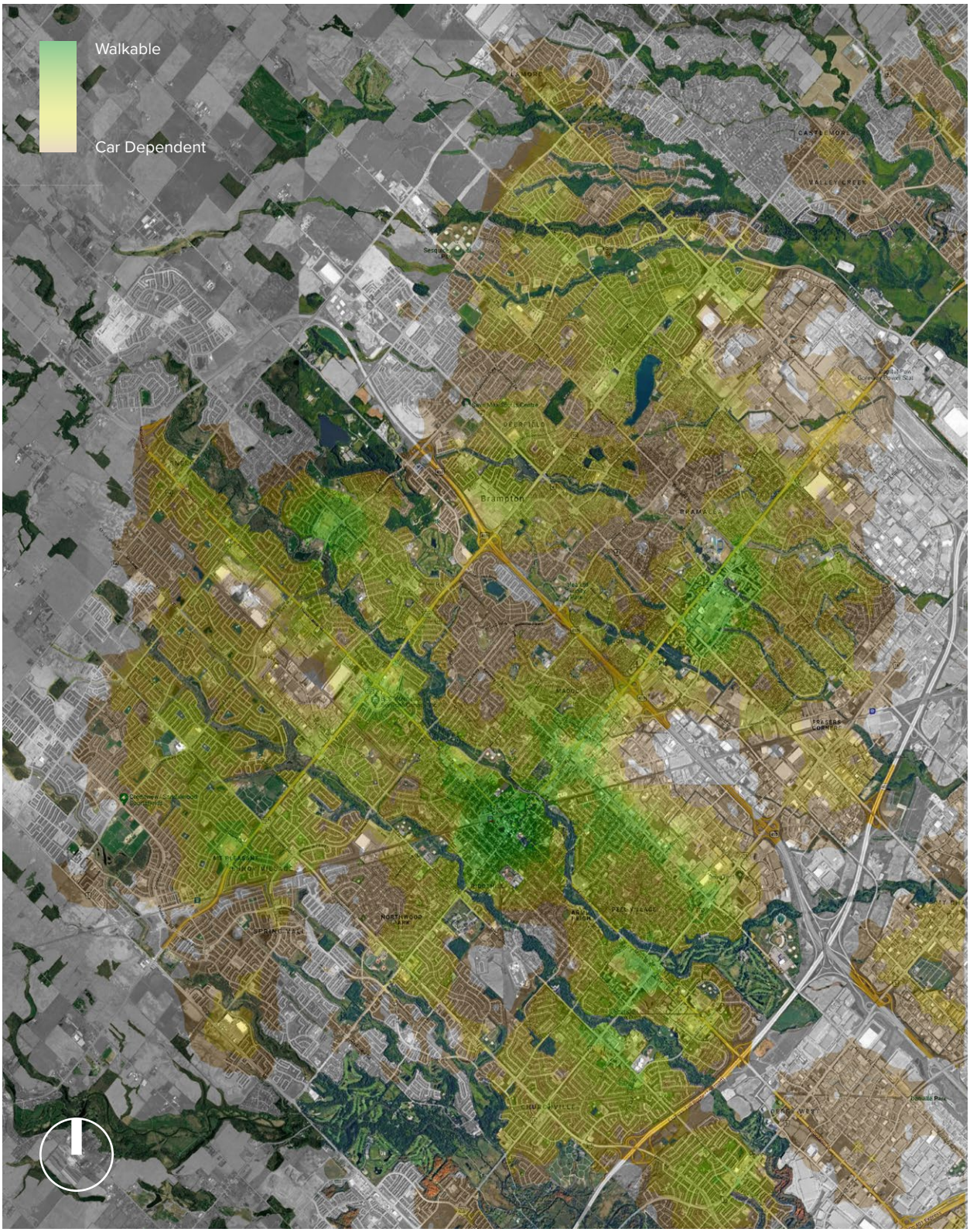


Fig. 2_22 Highlighted zones are areas of extreme car-dependence. These are potential site options.

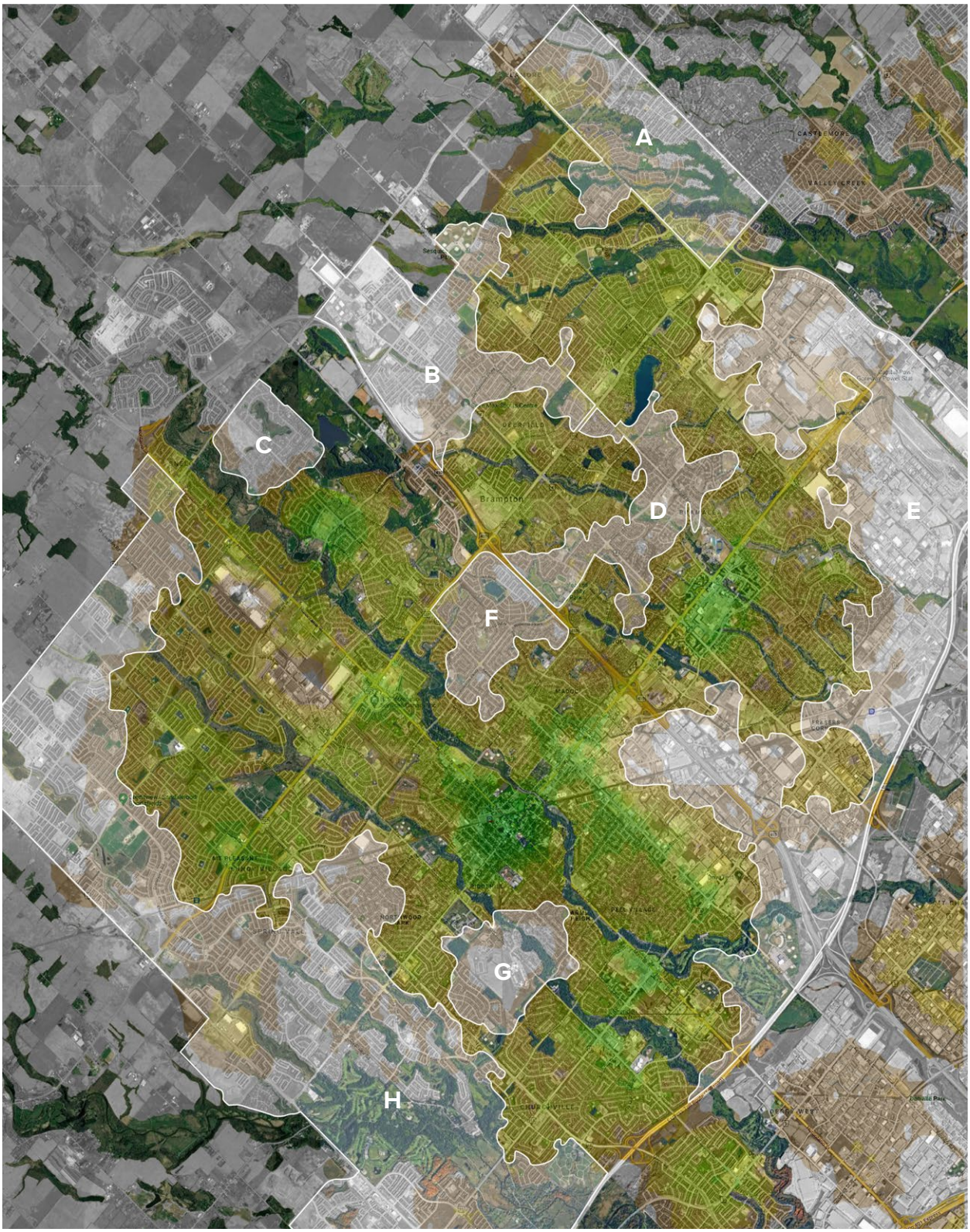


Fig. 2_23 Transit options mapped across the City of Brampton.

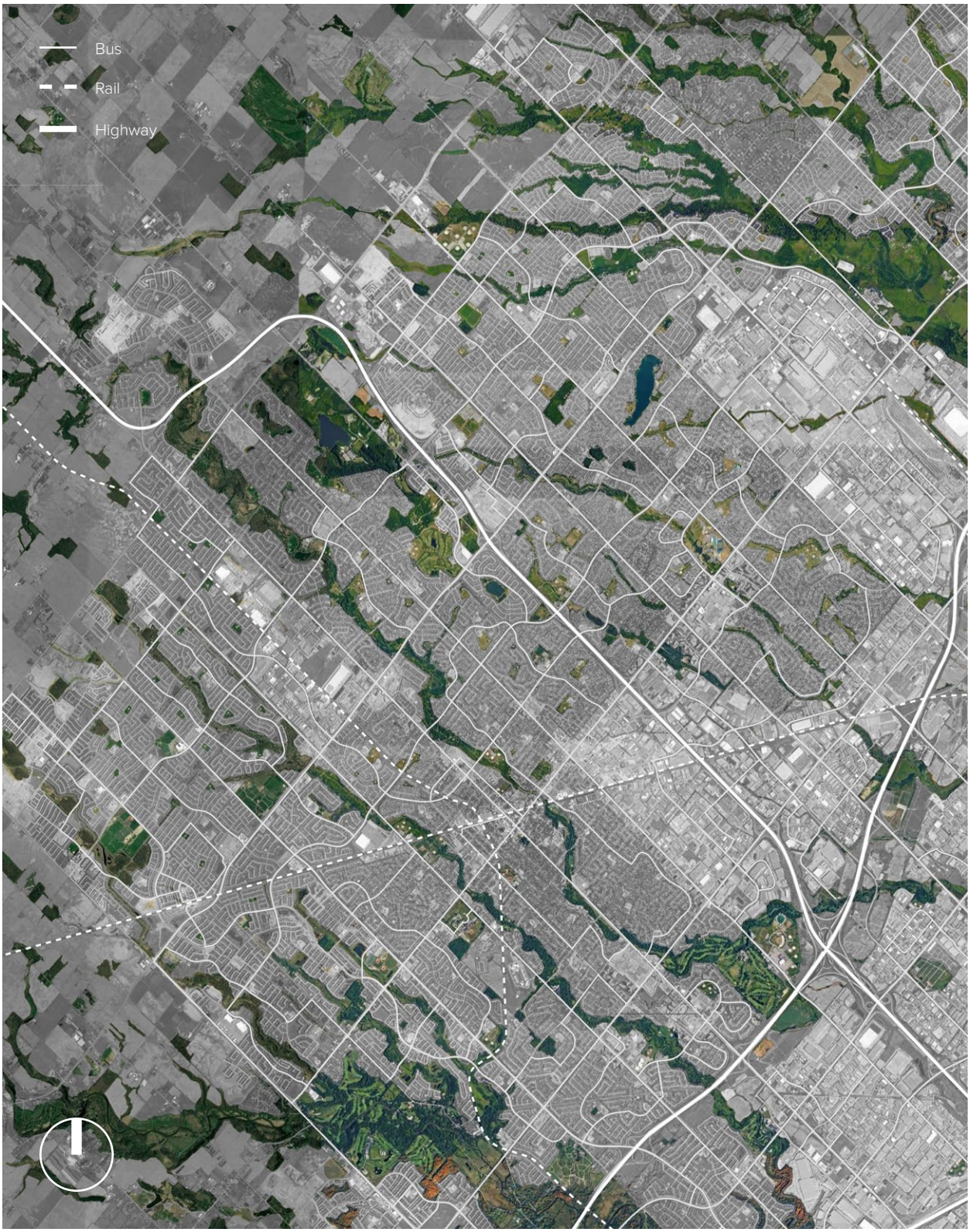


Fig. 2_24 Transit mapping showing only the area within the potential site options.

Fig. 2_25 Land-use zoning mapped across the City of Brampton.

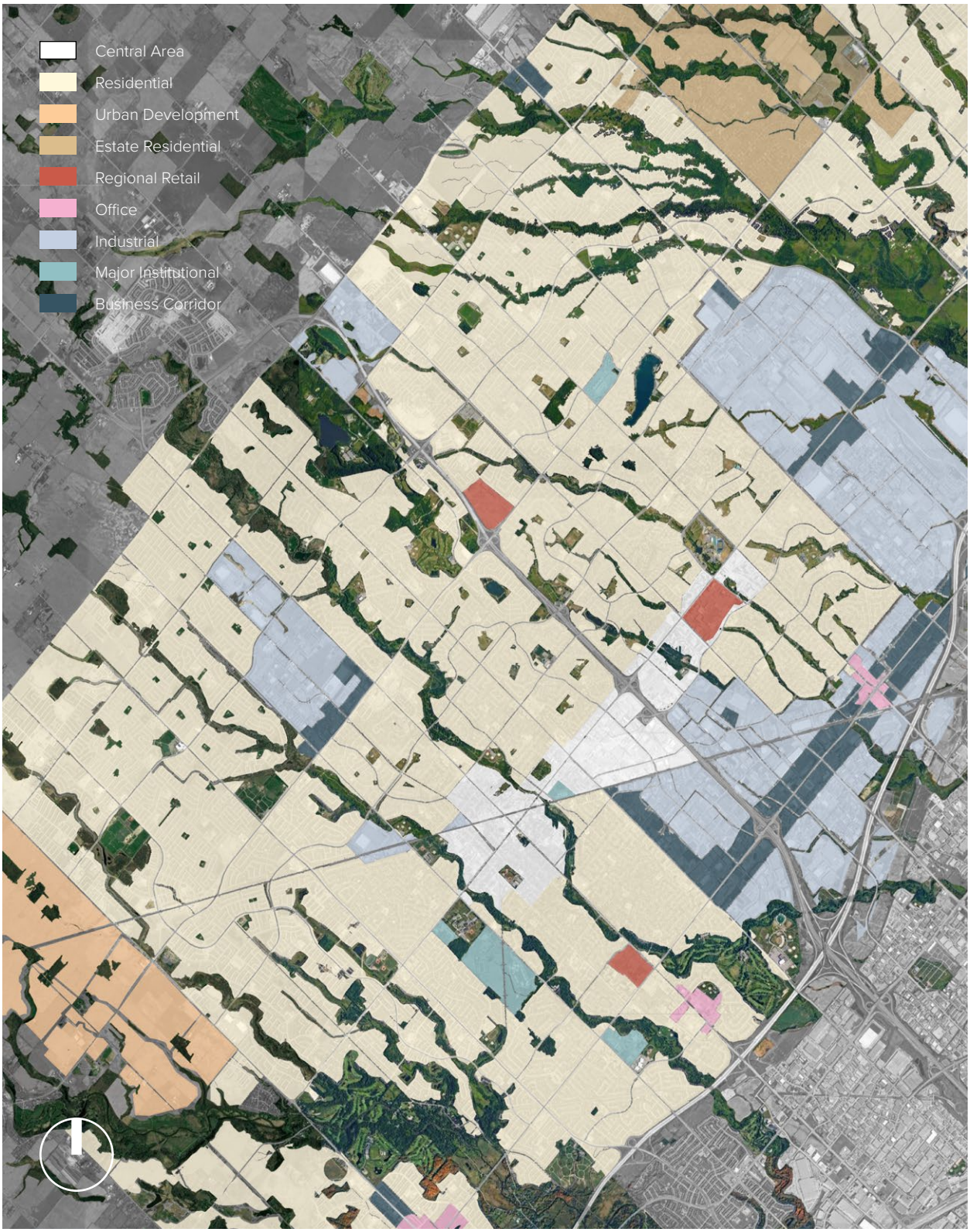


Fig. 2_26 Land-use mapping showing only the area within the potential site options.

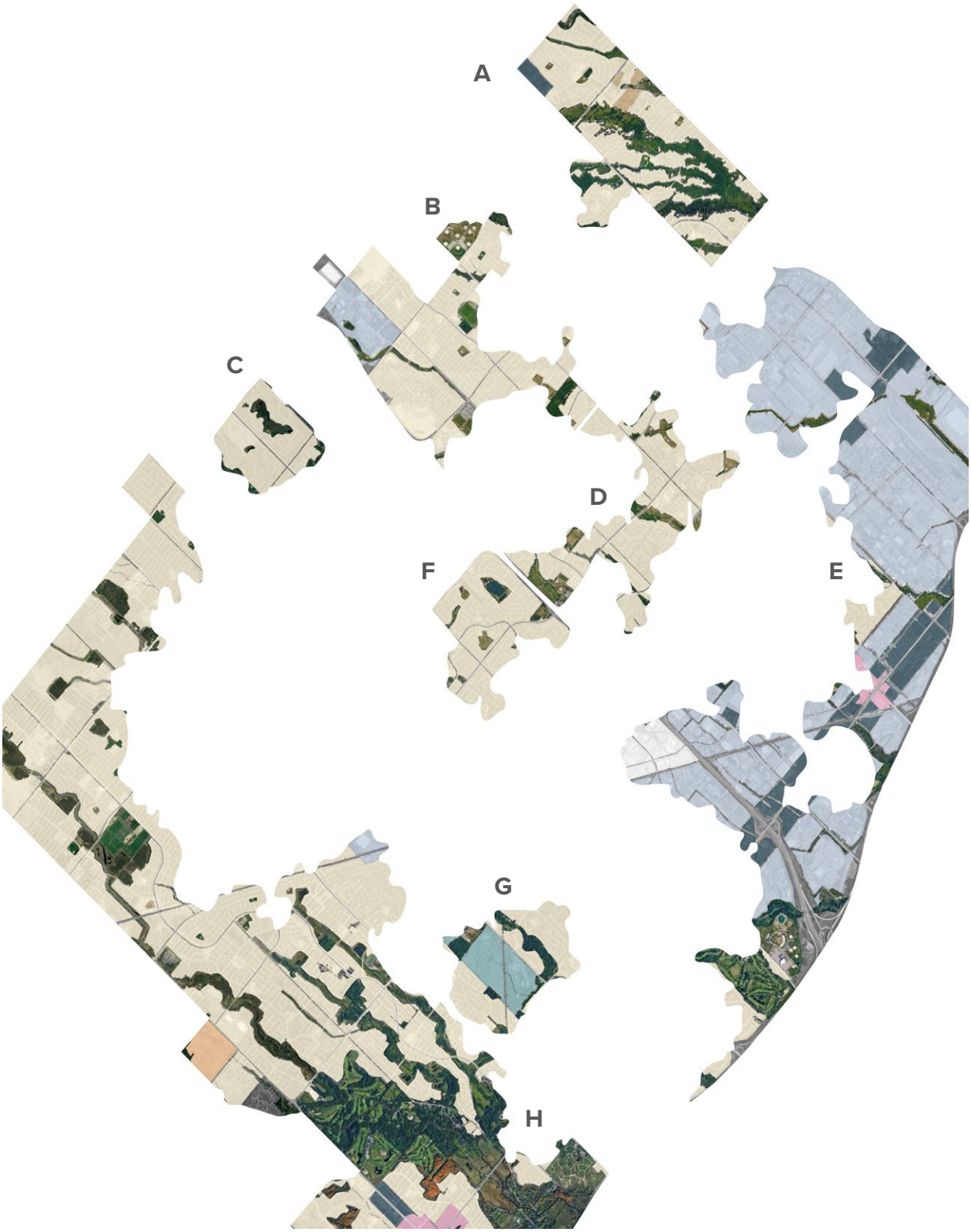


Fig. 2_27 Population density by neighbourhood mapped across the City of Brampton.

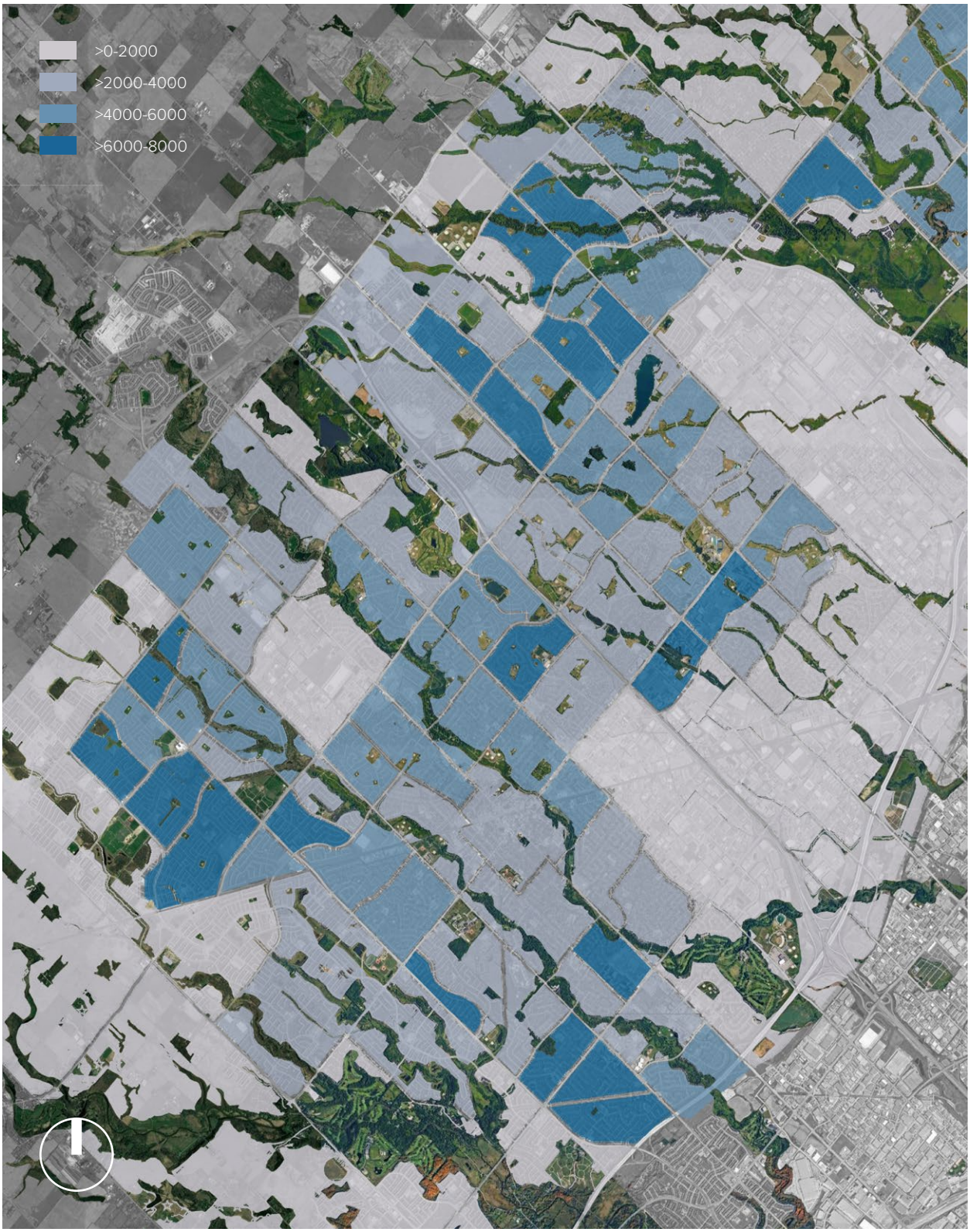


Fig. 2_28 Population density mapping showing only the area within the potential site options.

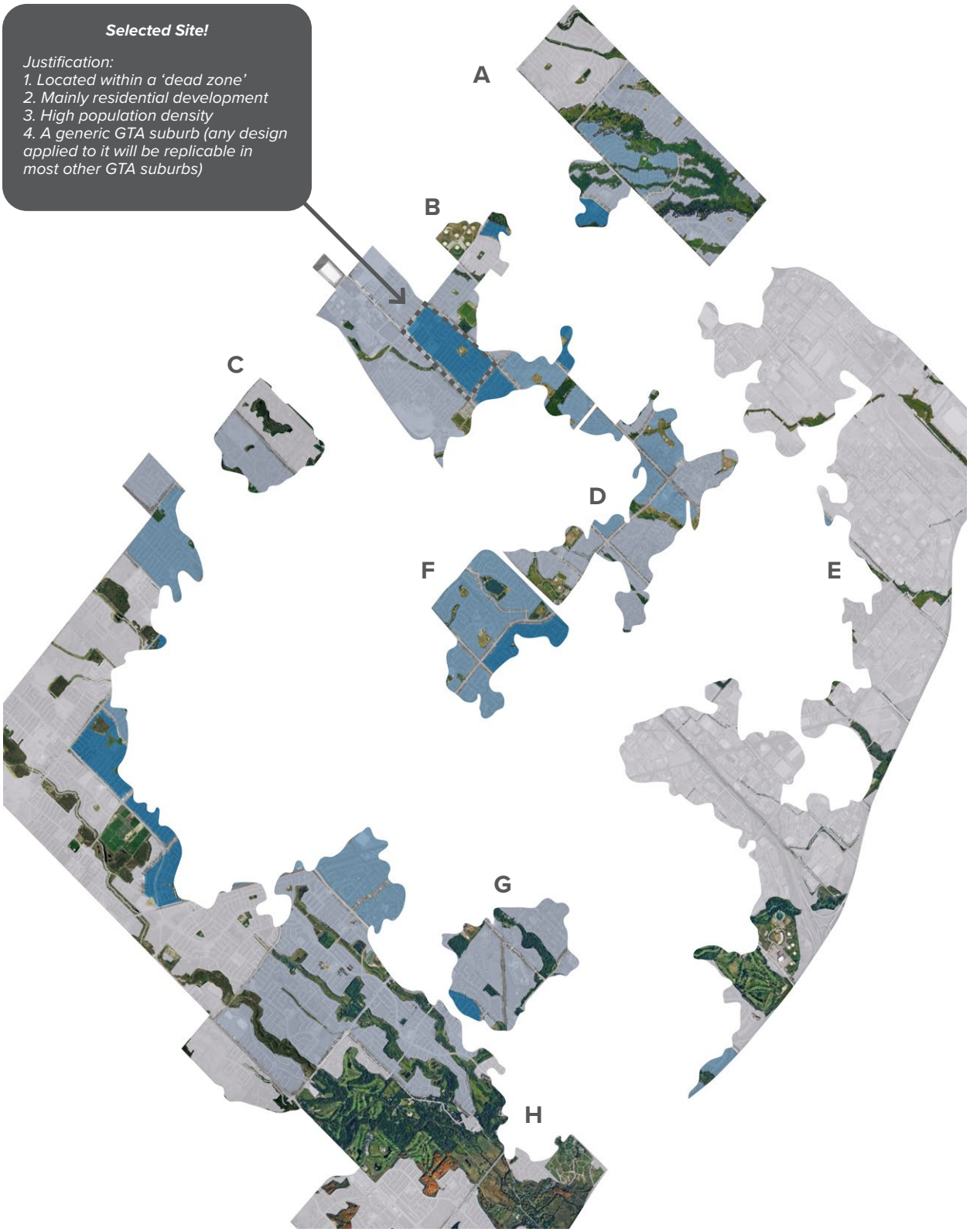
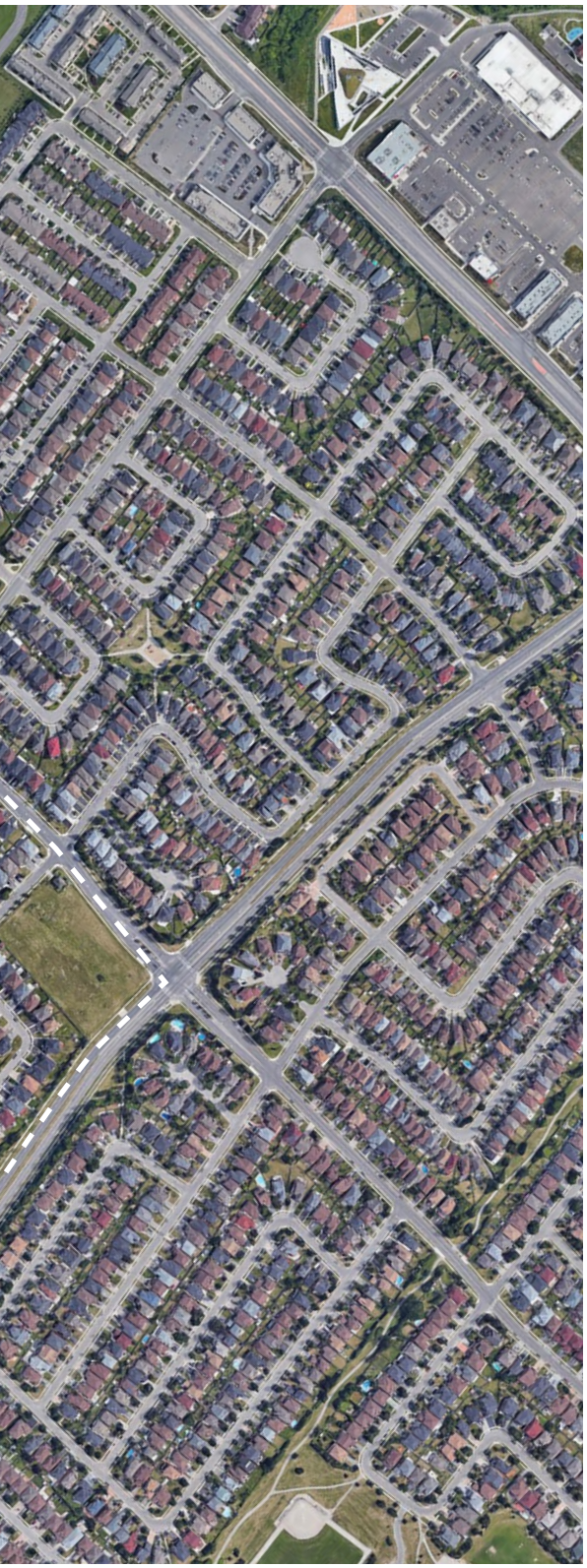


Fig. 2_29 The selected site is the suburban neighbourhood surrounding Wiggins Park.

Fig. 2_30 Site photos of the neighbourhood from October of 2021.

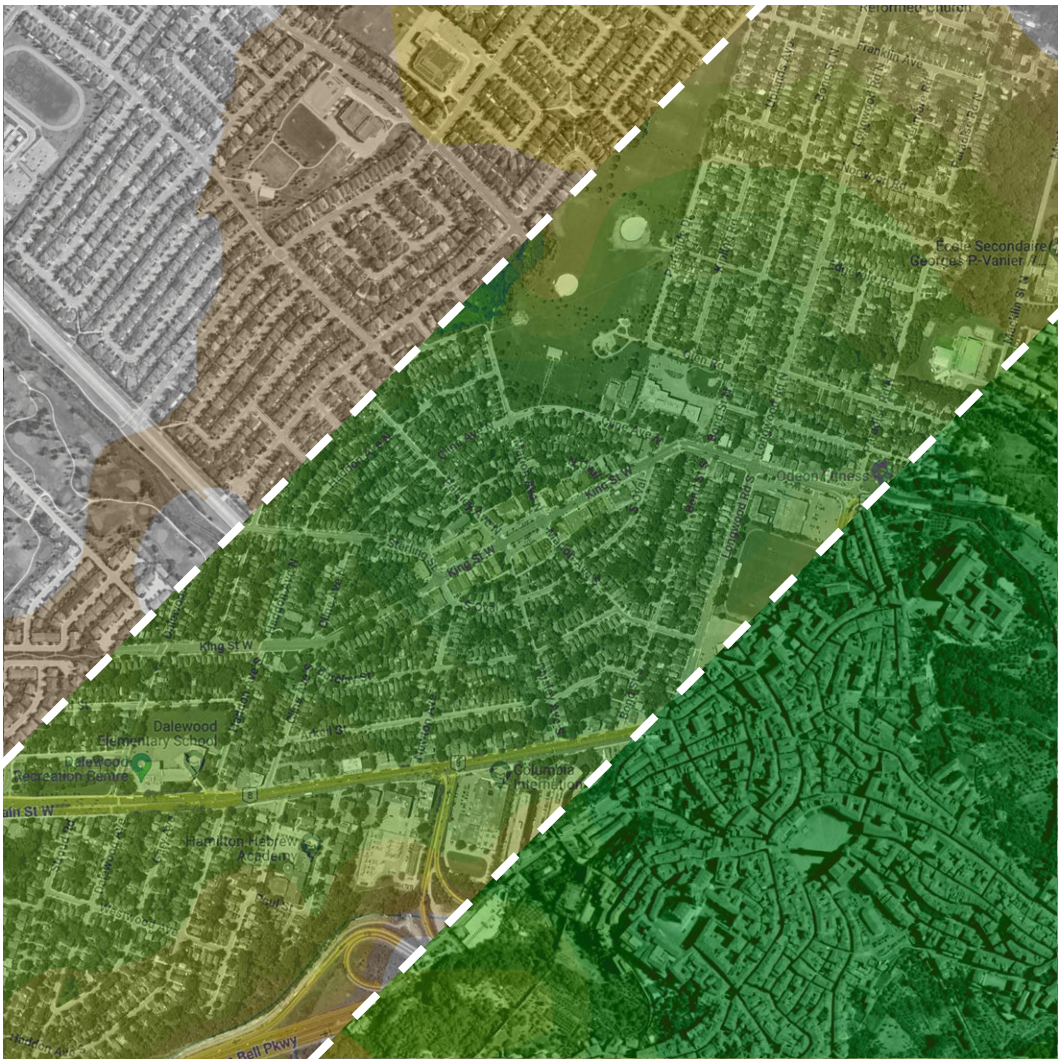


1 Sidewalks exist; however, they were discontinuous and often missing in places.

2 Most homes had more than one vehicle, and driveways took up the front yard.

3 Wiggins Park was mostly empty of people.

4 The other public park on site was also mostly empty of people.


King St W
Dalewood Elementary School
Dalewood Recreation Centre
Hamilton Hebrew Academy
Columbia Intermediate School
Odeon Cinemas
Bell Pkwy

2.6 Comparative Analysis

In the following section, Wiggins Park is compared to both Siena and Westdale to identify deficiencies in the example site. In figures 2_32 through 2_34, Walk Score is compared across sites showing that a 'walker's paradise' can be achieved within the same amount of space. Both Siena and Westdale make use of a similar amount of land area to produce walkable neighbourhoods that exhibit *villageness*. Siena accomplishes this more effectively than Westdale, yet both show how much Wiggins Park lacks in *villageness*. The problem with Wiggins Park is poor land use, and a focus on automotive infrastructure as the main organizing logic rather than a pedestrian focused one. In figures 2_35 through 2_37, the amenities are compared across each site, showing a high density in Siena, a reasonable one in Westdale, and a lack thereof in Wiggins Park. This highlights the downsides to the mono-zoning relied on in Wiggins Park, without which the neighbourhood would likely develop *villageness*.

Fig. 2_31 (Opposite page) Wiggins Park, Westdale, and Siena have different levels of walkability.

Fig. 2_32 Walk Score mapped across the site of Wiggins Park. The site is car-dependent.

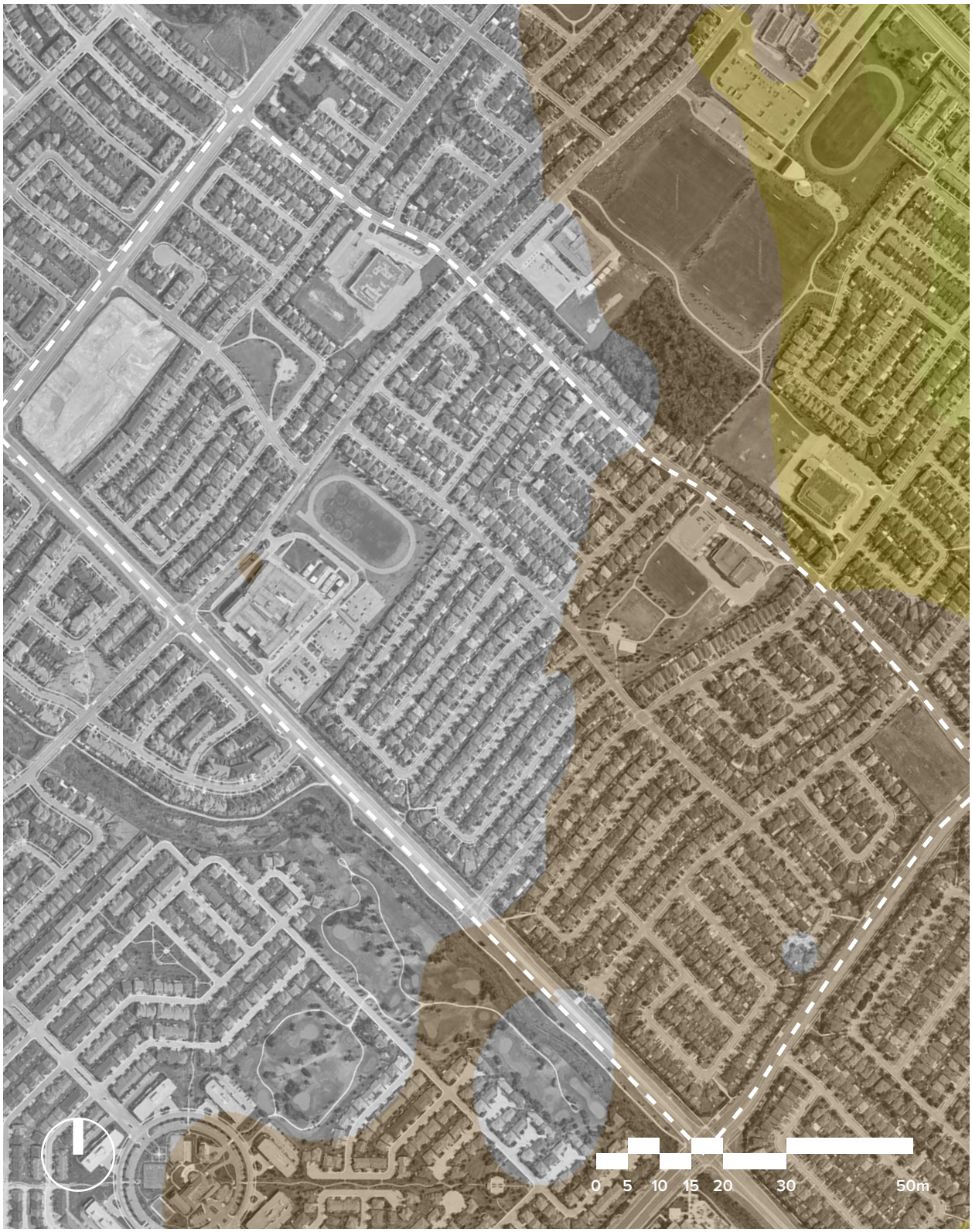
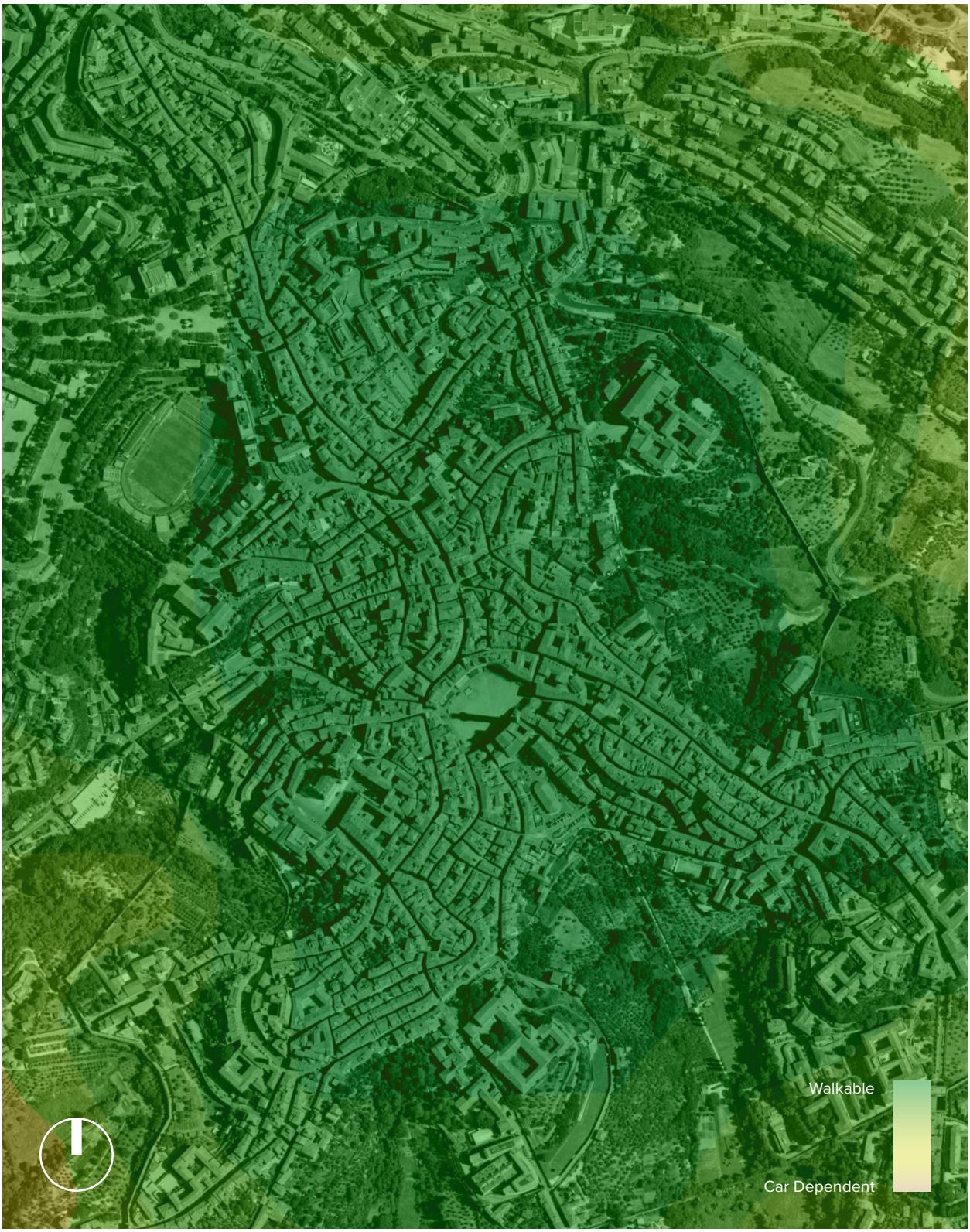


Fig. 2_33 Walk Score mapped across the Italian city of Siena. Siena is a 'walker's paradise.'




Ron Joyce Stadium
The Oval
King St W
Sterling St
Dalewood Elementary School
Dalewood Recreation Centre
Main St W
Hamilton Hebrew Academy
Columbia International College
Westdale Secondary School
Odeon Fitness

Fig. 2_34 (Opposite page) Walk Score mapped across Westdale, Hamilton. The neighbourhood is mostly walkable.

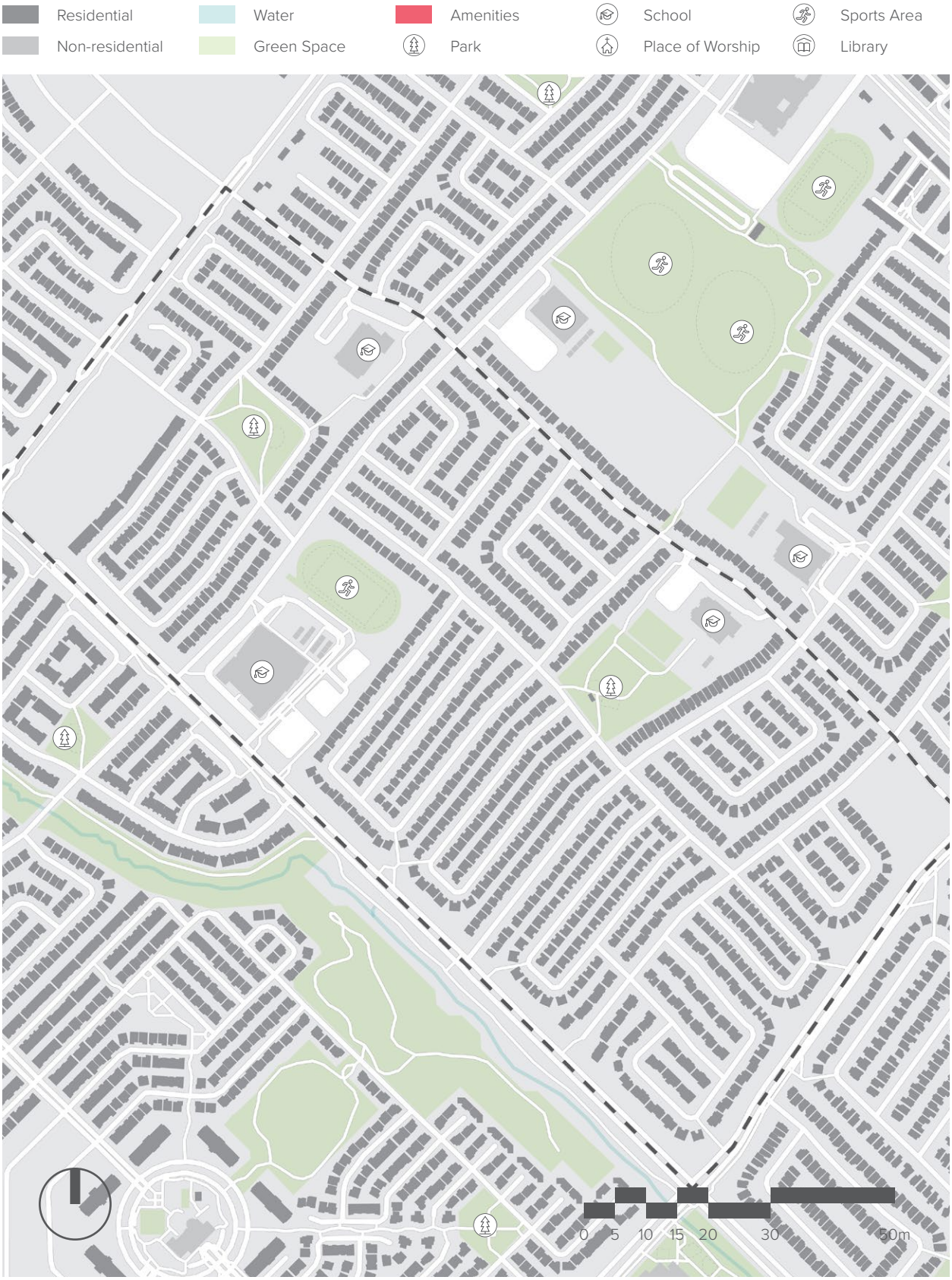
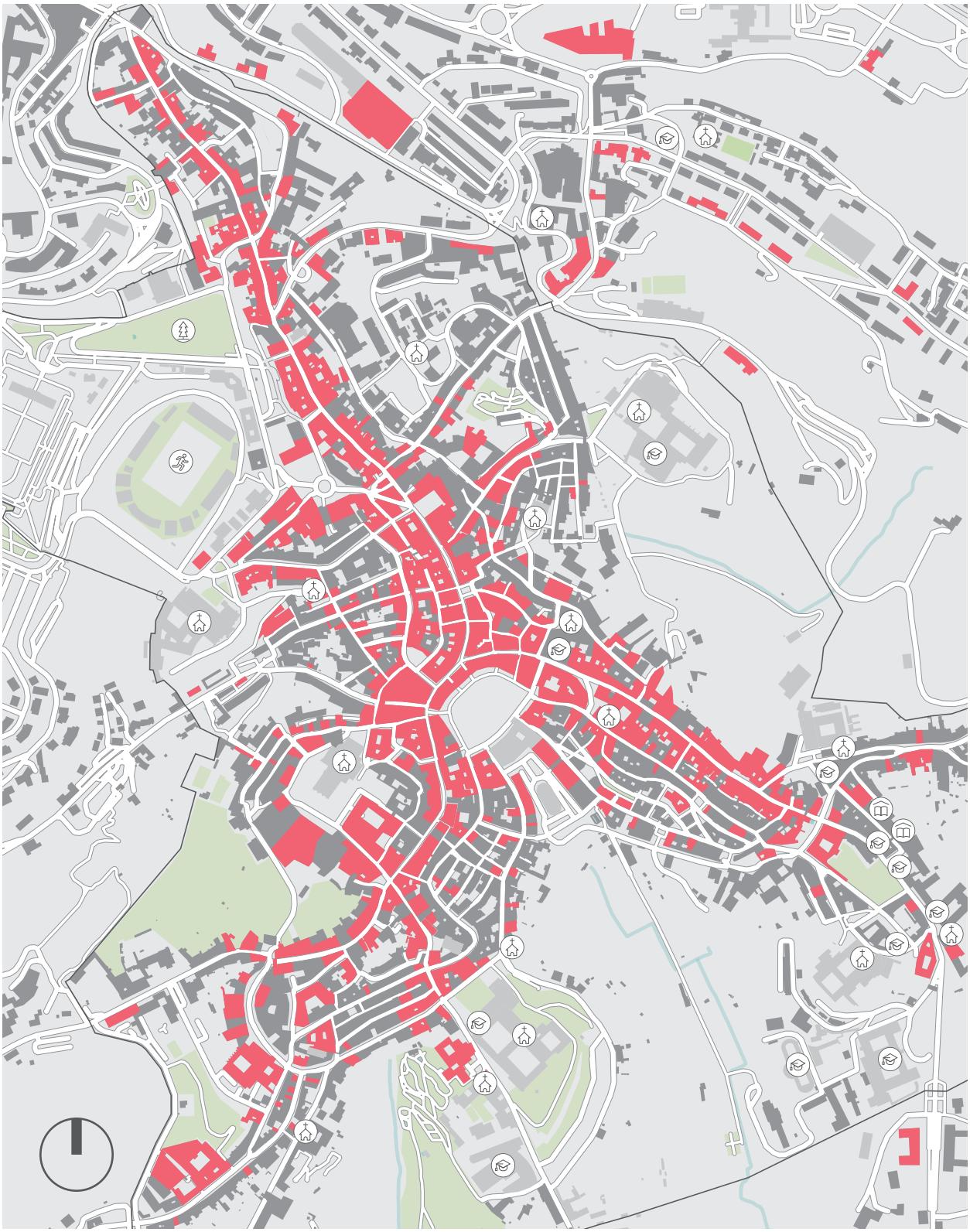
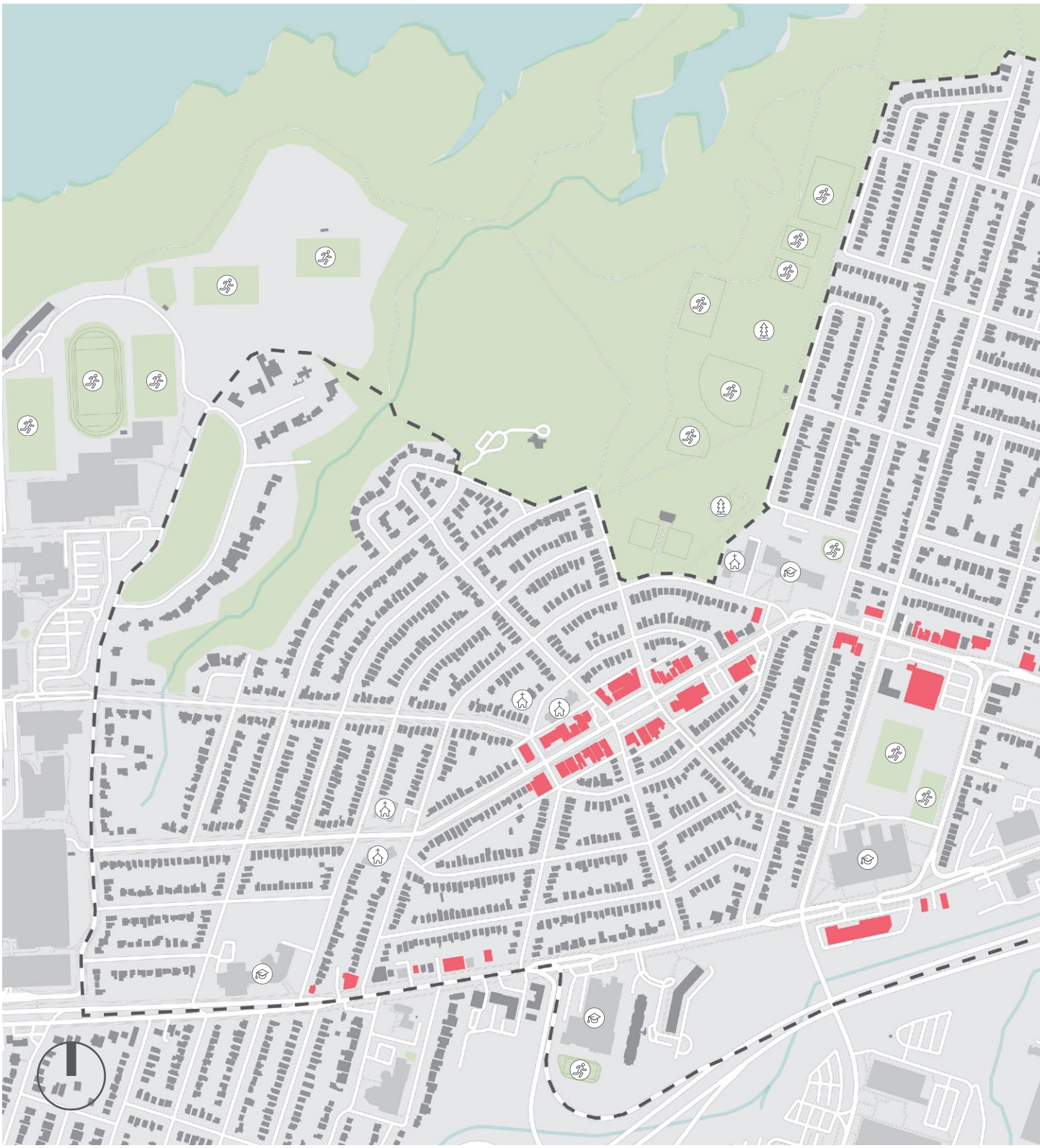
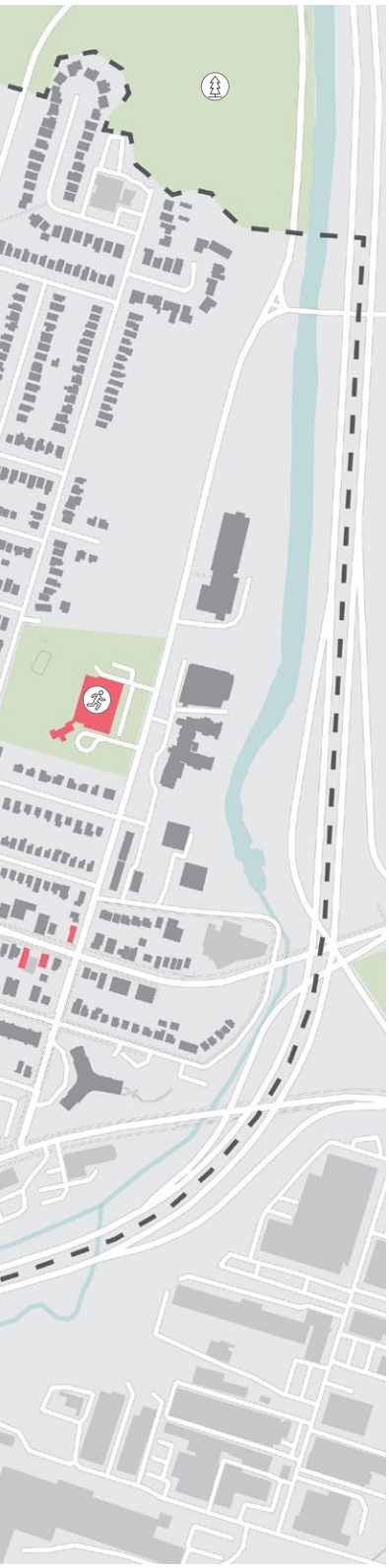

Residential
Non-residential
Water
Green Space
Amenities
Park
School
Place of Worship
Sports Area
Library
0
5
10
15
20
30
50m

Fig. 2_35 (Opposite page)
Amenity options in Wiggins Park are limited.

Fig. 2_36 (Below)
Siena boasts a wide selection and density of amenity options.



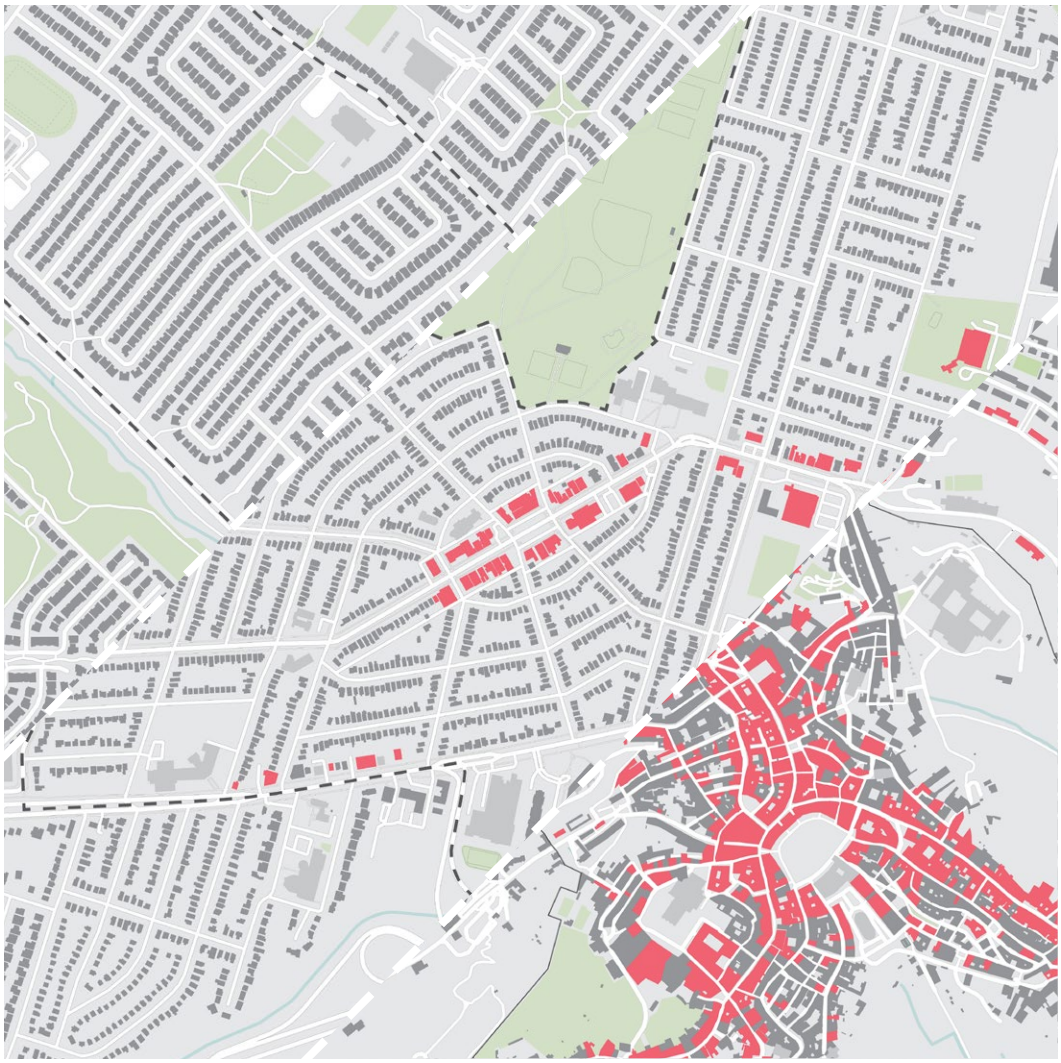




Residential
Non-residential
Water
Green Space
Amenities
Park
School
Place of Worship
Sports Area
Library

0 5 10 15 20 30 50m

Fig. 2_37 (Opposite page)
Westdale has a decent selection of amenities concentrated on the main street



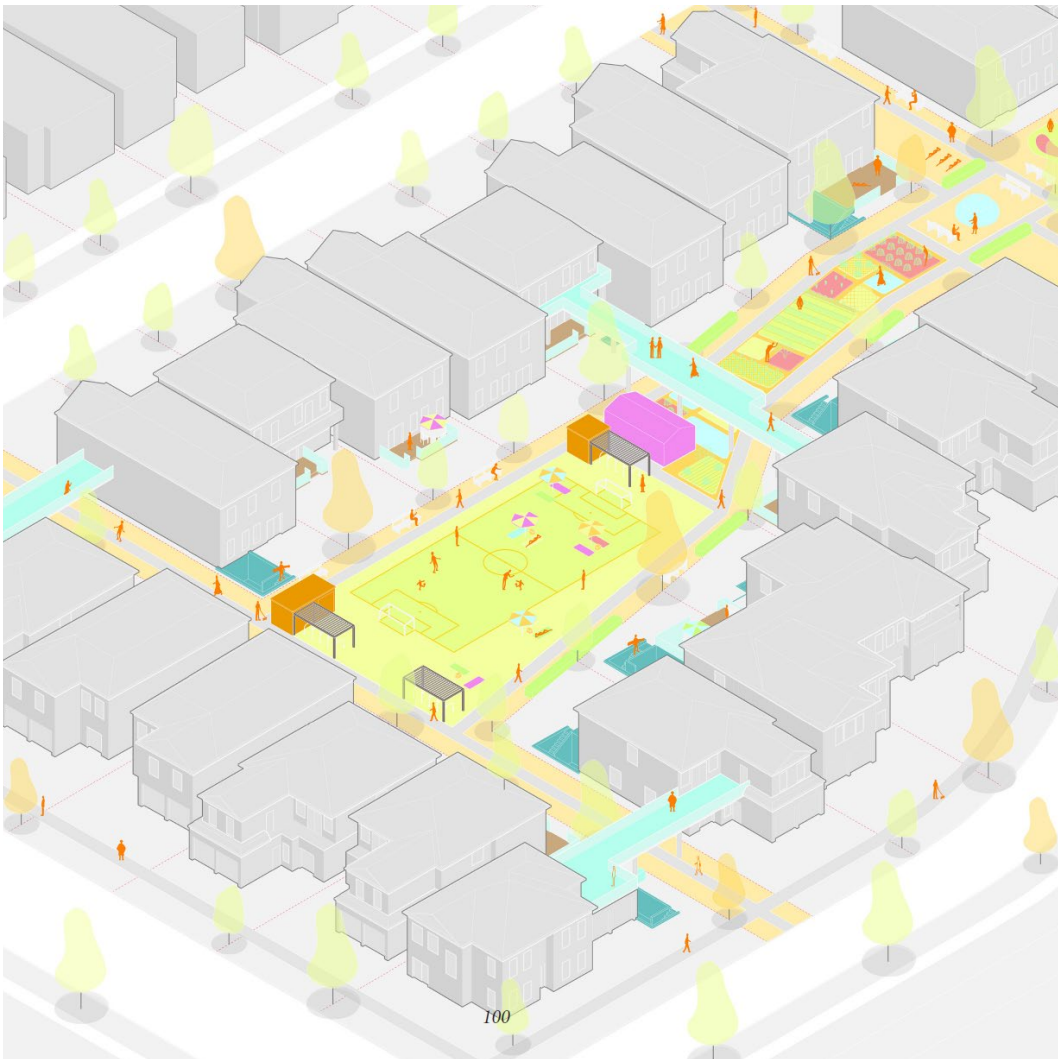
2.7 Conclusion

Site selection for this thesis was a problem that had many correct solutions. The amount of suburb options available in the GTA allow for extreme variation in possible site locations. A consistent logic was used to narrow down these options so that a reasonably scaled and relatively generic site could be chosen.

Fig. 2_38 (Opposite page) Wiggins Park, Westdale, and Siena occupy a similar amount of land area, however provide different amounts of amenities.

It is clear from the comparative analysis that Wiggins Park holds potential, with sites like Siena and Westdale showing what can be achieved in a similar amount of space. A North American suburb is very different from a historic Italian city, however. Similar to the scepticism that the concept of the 15-minute city faces in Canada and the United states, achieving anything close to the *villageness* in Siena may be unrealistic due to this Italian city not being held back by North American zoning codes and car-dependent town planning. Siena has had a long history to develop into a walkable, dense and human-scaled village with frequent social gathering spaces, a rich culture and strong social identity. A similar amount of time would likely be necessary for Wiggins Park to exhibit a similar level of *villageness* as Siena, even if its social identity was solidified, its social gathering spaces improved, and its walkability increased. Given the North American context, this thesis explores the addition of specific architectural interventions that fit within a car-dependent urban fabric. These interventions are 'elements' within the retrofit framework that push Wiggins Park towards *villageness*, aiming to meet or exceed the standards of Westdale as it is more comparable to Wiggins Park than Siena is. These elements, through careful placement and distribution, have the potential to achieve similar quantitative and qualitative properties as Westdale, and ideally even Siena. These data are investigated in Chapter 4.

In the next chapter, the suburban retrofit movement is introduced. This is followed by the retrofit framework, the categories and elements it includes, it's phasing, and visualizations of its possible implementation as well as fictional personas that explore the personal impact of these elements on residents.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Chapter 3: Retrofitting Suburbia

Fig. 3_1 *(Opposite page) The suburban back yard retrofit proposed by Hollie Ching Ho Sin in her thesis Retrofitting Suburbia: A Move Towards Multigenerational Living.*

The process of retrofitting suburbs has existed for more than thirty years and has gained greater interest every year since it first became a part of planning discourse. The retrofit movement tackles all aspects of sprawl, addressing box stores, blighted malls, and sprawling parking lots, on top of residential streets and cul-de-sacs. Richard Florida, Director of the Martin Prosperity Institute at the University of Toronto's Rotman School of Management, writes that "remaking our sprawling suburbs […] is shaping up to be the biggest urban revitalization challenge of modern times."[1] Whereas the creation and widespread proliferation of suburbs characterized development in the 20th century, its redevelopment and retrofitting will likely characterize the 21st. Suburban retrofitting is more mainstream today thanks to the work of authors like Ellen Dunham-Jones, June Williamson, and Galinna Tachieva. These authors have created references and guidelines for retrofitting towards more livable suburban neighbourhoods.

Retrofitting Suburbia: Urban Design Solutions for Redesigning Suburbs, authored by Dunham-Jones and Williamson, lays out the argument for suburban retrofitting and presents numerous successful precedents at different scales. In line with the arguments from Chapter 1 of this thesis, the authors write that the main drivers for retrofitting suburbs are climate change, dependence on foreign oil, changing demographics, an aging population, public health, and affordability. They go on to state that suburban renewal lies in two key areas: walkability and density. Retrofitting can take many varied approaches. Dunham-Jones and Williamson argue that there are three general categories that projects fall under, however. The first is Re-Inhabitation, where existing underutilized spaces or buildings are reused, generally for a community-servicing purpose. Next, there is Redevelopment, which includes the replacing of existing structures, and the construction of new buildings on parking lots to create less car-dependency and more mixed-use, walkable neighbourhoods. Lastly, there is Regreening,

1 Ellen Dunham-Jones and June Williamson, *Retrofitting Suburbia: Urban Design Solutions for Redesigning Suburbs* (Hoboken, New Jersey: John Wiley & Sons, Inc, 2011), vi.

through which existing structures are demolished and the land reverted to its original state. Regreening includes reconstructing wetlands and also creating park space.[2]

Dunham-Jones and Williamson find that "the best retrofits (re)establish a vital connection to the existing place, whether by providing affordable space for local community activities, by connecting a new mixed use neighbourhood to existing street networks, or by revitalizing the ecology in an area that should never have been built on in the first place."[3] In general, these optimal retrofits replace the generic nature of the suburb with something more particular. The authors write that an effective place to start is by reducing the car-dependency of suburbs. Reducing vehicle miles traveled (VMT) contributes to multiple positive outcomes, including improving both air and water quality, decreasing house-hold costs, and increasing time for social engagement and physical activity.[4] Studies have shown that it is reasonable to assume a 30% reduction in VMT when integrating compact development. "The key to achieving this target is the appropriate balancing of uses so that, once on-site, residents, shoppers, office workers, and others can accomplish multiple, everyday trips without getting back in their cars or back on the road."[5] It is also critical to consider transit integration. Suburban retrofits are beneficial in most cases; however, the proximity to functioning transit systems greatly improves a retrofit's effectiveness and efficiency. In fact, the strongest trigger of large-scale redevelopment is the arrival of a rail system.[6]

Sprawl Repair Manual, written by Tachieva, follows *Retrofitting Suburbia* and is formatted as a comprehensive guide for *sprawl repair*. "Sprawl abandoned the neighbourhood structure in favor of car-dependence,"[7] she writes, and sprawl repair is intended to correct that. In contrast to conventional sprawl, Tachieva argues that what should be designed are *complete communities*. These are communities in which a mixture of uses are available within a short walking distance from residents' homes. They are dense and vibrant, lacking

2 Dunham-Jones and Williamson, *Retrofitting Suburbia*, vi-viii.
3 Ibid, xxi.
4 Ibid, xxvi.
5 Ibid, 3-4.
6 Ibid, 11-12.
7 Galina Tachieva, *Sprawl Repair Manual* (Washington, DC: Island Press, 2010), 3.

car-dependency and monotony of form. Tachieva limits the choices for future development down to two options: conventional sprawl, or complete communities; the latter being more beneficial to residents' health and the environment in the long run. The manual examines multiple scales of repair, from as large as the region, down to that of individual buildings. These various scales of repair are important as they each serve different purposes. Tachieva writes that "the repair of sprawl is most effective when it is applied to all scales of development – from the region, because transit should be handled at a larger scale, to the block and the building, because interventions may start small for lack of resources. Nevertheless, the neighbourhood is the essential increment, because walkability and, most importantly, sustainable growth can be achieved only at this level."[8] This form of repair is not limited to only physical space, however. It also benefits in reclaiming certain terms that have lost much of their value due to car-dependent development. Terms like 'neighbourhood' and 'center' have been co-opted by developers in the naming of single-use house pods and strips malls.[9] Through the repair of these spaces, the terms used to describe them can regain their value from the vague state they exist in today.

This thesis adds to the existing discourse around retrofitting suburbs. Other theses of graduate students at the University of Waterloo have covered this topic and proposed unique solutions. *Revitalizing Suburbia: Build Integrated Communities* by Connie Lei used a network of community hubs distributed at strategic intervals to create walkability across GTA's suburbs.[10] *Retrofitting Suburbia: A Move Towards Multigenerational Living* by Hollie Ching Ho Sin made use of backyard space by consolidating it into communal parks. In her thesis, suburban homes were transformed by connecting them together for the purpose of providing space for multigenerational living to flourish.[11] *It Takes a Village* distinguishes itself from these previous proposals by presenting different solutions. The framework proposed focuses instead on the front-yard and garage as opportune locations for development and transition towards *villageness*.

8 Tachieva, *Sprawl Repair Manual*, 22.
9 Ibid, 24-25.
10 Connie Lei, "UW Space," *UW Space* (2018), https://uwspace.uwaterloo.ca/handle/10012/13868.
11 Hollie Ching Ho Sin, "UWSpace," *UWSpace* (2020), https://uwspace.uwaterloo.ca/handle/10012/16352.

Identity

Places that hold the identity of a neighbourhood in physical form

Gathering

Places for social interaction and community gathering

Circulation

Surface systems that prioritize pedestrian movement

Resources

Sources of food and necesities, employment, and recreation and leisure

3.1 The Retrofit Framework

The following retrofit framework is intended for suburban use only, and for the specific purpose of transitioning towards *villageness*. The framework is broken into four categories that contain retrofit elements. Each category addresses specific deficiencies within existing suburbs, and the proposed elements are examples of what can be done to fix them. The categories are: **Identity**, **Gathering**, **Circulation**, and **Resources**. **Identity** considers the collective psyche of a neighbourhood and how to champion it using physical space. Suburbs generally lack a social identity, and if one exists it is often vague or unclear. This category addresses this issue by collaborating with residents to form a space that captures (and helps create) their social identity. **Gathering** overlaps comfortably with **Identity** as it addresses the lack of social gathering space close to home in suburbs. Parks are often poorly designed and insufficient to serve the suburbs they are in. These spaces can be renovated to allow for more neighbourhood interaction. **Circulation** addresses the surface systems that support transportation and proposes adjustments towards more space for pedestrians and less for vehicles. **Resources** tackles the integration of retail, commercial, and office uses into mono-zoned suburbs. **Identity** and **Gathering** focus on the social dimension of suburban living and how to improve it, while **Circulation** and **Resources** deal with the composition and flow of the system. The latter two categories are often the focus of walkability improvement projects, however the social aspect is critical and should not be overlooked. Montgomery in *Happy City* agrees, writing that "… the meeting place, the agora, and the village square are not trivial. They are not civic decoration or merely recreational. The life of a community is incomplete without them, just as the life of an individual is weaker and sicker without face-to-face encounters with other people."[12] Each individual category will be beneficial for improving suburbs, however they will be more impactful when applied in tandem and allowed to overlap and co-create *villageness*.

12 Montgomery, *Happy City*, 312.

Identity

Places that hold the identity of a neighbourhood in physical form

Reason for Category

Suburbs lack individual identity due to their monotony and repetition. They are, by definition, generic. Providing an identifiable psychological anchor for the neighbourhood's identity will help ground the community's sense of self and help foster stronger social bonding.

Description

Spaces with community wide psychological importance.

Examples

Cultural landmarks and monuments, community centers, major outdoor social spaces.

Assumptions

A community will participate in the creation of collaboratively design spaces and connect with them.

Retrofit Element

Identity Anchor

Precedent

In a typical suburb of Sellwood, Portland, an intersection has been retrofitted into a village square by the community. Initiated by Mark Lakeman, this transformation was born from his lack of happiness. Lakeman searched for answers to his unhappiness in a traditional village called Naja in Mexico, and found solutions in the informal social gatherings that formed at the intersections of pathways. To encourage these gatherings in Sellwood, the intersection at its center was gradually transformed by the residents through the painting of the street, and adding a tea hut, a cob bench, and a small sharing library to the corners. It has become the center of this once dormant community, where residents now know and trust one another more, and are happier with their lives. The intersection is known as the Share-it Square. [13]

Fig. 3_2 *(Above)*
The intersection of SE Sherrett Street and SE 9th Avenue in Sellwood, Portland. This is the Share-it Square.

13 Montgomery, *Happy City*, 302-313.

Gathering

Places for social interaction
and community gathering

Reason for Category

Suburbs lack sufficient social gathering spaces close to home. The social areas of traditional villages were the streets; however, with the integration of the automobile, streets are no longer safe enough for that function to occur. The parks provided are insufficient and residents must leave to socialize in downtowns or at malls. Providing well designed accessible spaces for gathering will promote stronger community bonding, more neighbourhood activities, and a greater chance for communities to grow and flourish.

Description

Open spaces and some building uses.

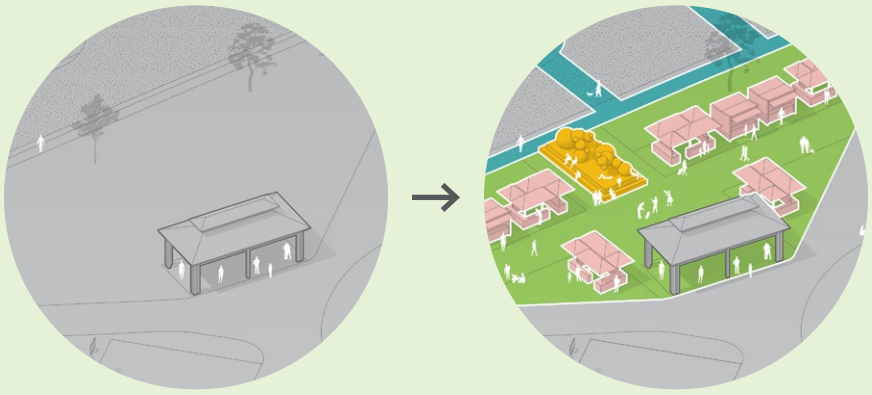
Examples

Parks, squares, piazzas, community centres, markets, café patios.

Assumptions

A community will make use of the gathering spaces if they are provided.

Retrofit Elements



Renovated Park Space

Precedent

Typically associated with violence and crime, the neighbourhood of Englewood in Chicago has programs underway that aim to improve the state of the community therein. Chicago has over 13,500 vacant lots, 4,000 of which are in Englewood. Through the efforts of community activist Asiaha Butler, these lots are now purchasable for $1.00 under the *Large Lots Program*. A long-time resident of the neighbourhood, Butler saw the potential of these vacant lots as spaces for gathering and community healing. Butler acts as CEO of the Residents Association of Greater Englewood (RAGE) and was able to organize her community to push for this program. Butler now owns the lot across from her home, which has been renovated into a friendly gathering space with seating and greenery. [14]

Fig. 3_3 *(Above) The lot across from Asiaha Butler's residence. It has been transformed from a vacant lot into a social gathering space. It has been used for events such as movie screenings, parties, celebrations, and more.*

14 Mary Ellen Podmolik, "Residents Get behind $1 City Lot Program," chicagotribune.com (Chicago Tribune, June 16, 2018), https://www.chicagotribune.com/business/ct-large-lots-program-0107-biz-20150106-story.html.

Circulation

Surface systems that prioritize pedestrian movement

Reason for Category

Pedestrian circulation is less-than-ideal in suburbs. Suburbs prioritize space for vehicular movement over pedestrian movement. Sidewalks are provided, yet are often discontinuous and are too narrow a fit for more than one person. Reorienting the focus to comfortable pedestrian movement will encourage more walking, especially when good transit and car sharing is available.

Description

Surface systems that support transportation and movement.

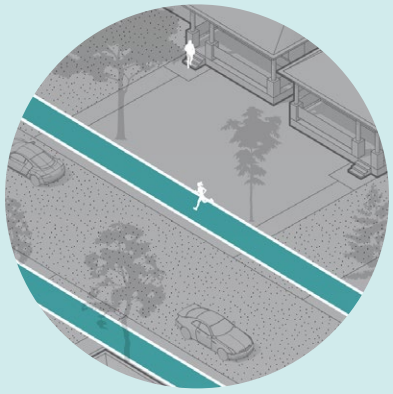
Examples

Paths, roads, streets, sidewalks, trails.

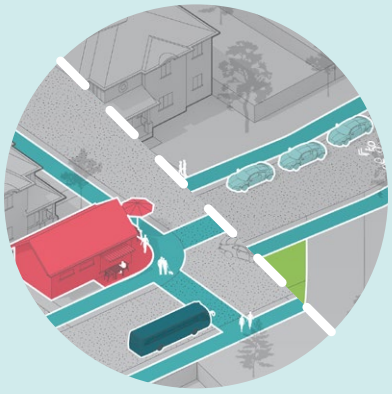
Assumptions

A larger, more efficient public transit system is present to connect to other areas of *villageness* and the city centre. The culture of transportation infrastructure adjusts to ensure pedestrian safety and comfort are paramount.

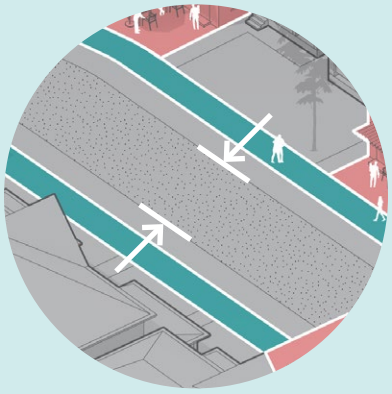
Retrofit Elements



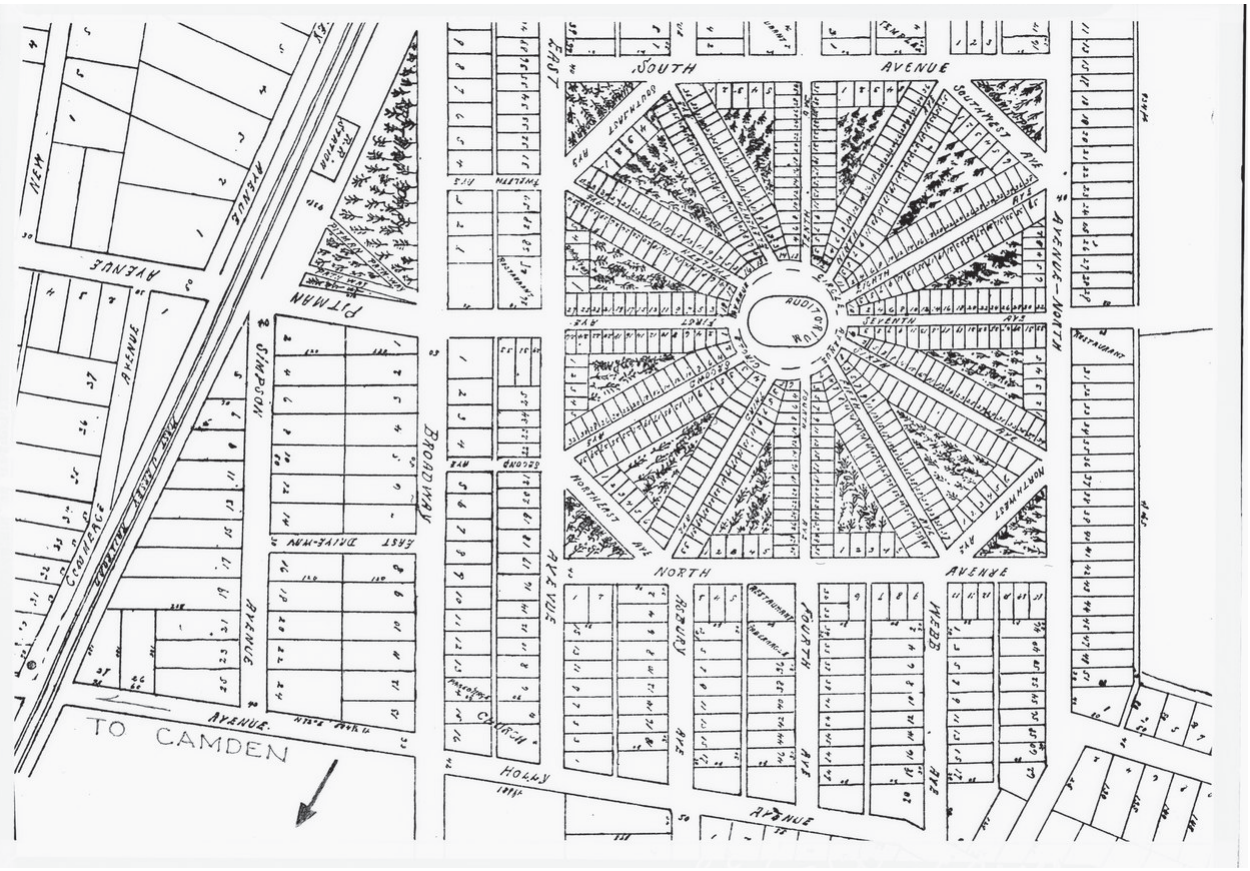
Widen and Reroute Sidewalks



Provide Bus Stops and Car-Share Services



Narrowing of Streets



Precedent

Built around an auditorium for the Gloucester County Methodist church, Pitman Grove is a small neighbourhood in Pitman, New Jersey. Pitman is a railroad town built before the invention of the automobile and land-use zoning. Its circulation is pedestrian-focused and the building density is higher than in suburbs built today. Twelve sidewalks extend from the circular pathway around the auditorium like the spokes of a wheel. The neighbourhood began without houses, and the first camp meeting attendees in 1871 lodged in tents arranged in the parks between the spokes. These parks were divided into lots and sold in 1873 with the resulting houses being built in the Victorian style of the time. By 1890, the town had expanded past the grove, and became official in 1905. Pitman Grove is designated as a historic district.[15]

Fig. 3_4 *(Above) A historic land survey of the Pitman Grove neighbourhood and the surrounding suburbs. The scale of the lots in Pitman Grove are much smaller than those outside it. This is because they are historic lots with just enough space for small single-family homes. The 'streets' in Pitman Grove are also small. They are the sidewalks that fit between the houses.*

15 "Welcome to Borough of Pitman, NJ," pitman.org, 2011, https://www.pitman.org/about_us/index.php.

Resources

Sources of food and necesities, employment, and recreation and leisure

Reason for Category

Suburbs are mono-zoned for residential uses and exclude retail, commercial, and office uses. This means residents are required to commute for resources and employment. Allowing these uses into suburbs will reduce VMT and time lost to commutes, providing better quality of life with more day-to-day necessities within a walking distance from home.

Description

Retail, commercial, and office buildings and associated outdoor spaces.

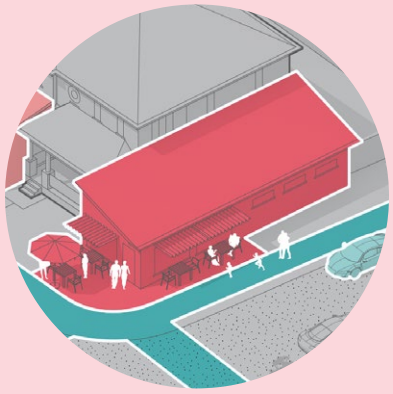
Examples

Offices, remote-work spaces, shops, minimarts, grocers, gyms.

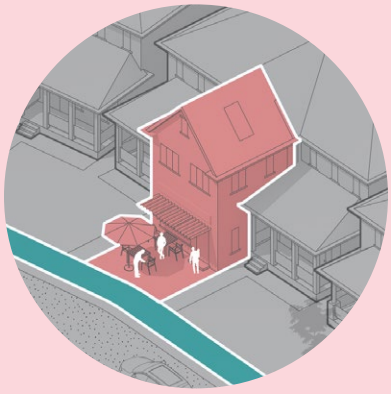
Assumptions

Zoning regulations will change to allow for retail, commercial, and office uses in existing residential suburbs. A sufficient number of people will take advantage of these close-to-home amenities, rather than driving to box stores.

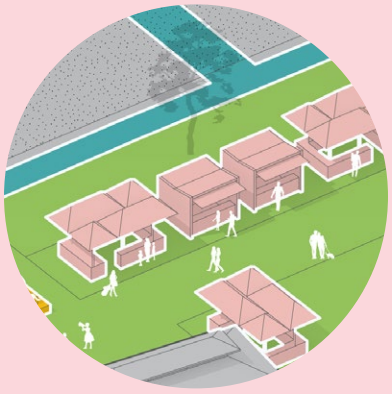
Retrofit Elements



Corner Unit Addition



Garage Addition



Street-Front Market Stalls

Precedent

The Mighty Oak is a house-front cafe in a suburb of Vancouver. This type of structure used to be more common before the use of strict zoning laws. Grocers, tailors, and candy shops were commonplace on residential streets in the early 1900s. In 1928, the city introduced the zoning bylaw, however, which separated land uses. In residential areas the front yard setback was introduced, making house-front businesses illegal. Front yard setbacks were required for public health, widening roads, and aesthetics. Open lawns were status symbols at the time. The suburban boom after WWII copied these ideals, making open front yards commonplace with house-front shops long forgotten. The surviving stores that exist today are cherished; residents enjoy walking to them and that they are locally owned. [16]

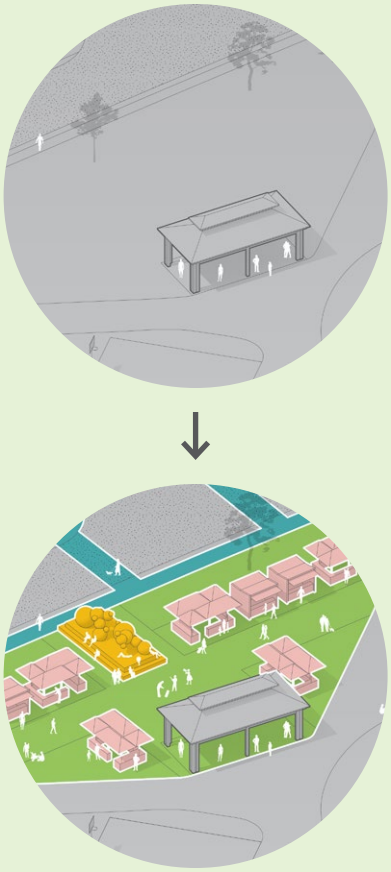
Fig. 3_5 *(Above) The Mighty Oak cafe in September of 2021. Cafe-goers can be seen out on the patio on most days.*

16 About Here, "Why Did We Make Front Yard Businesses Illegal?," youtube.com, September 8, 2021, https://www.youtube.com/watch?v=wzBL85kTwwo.

Identity

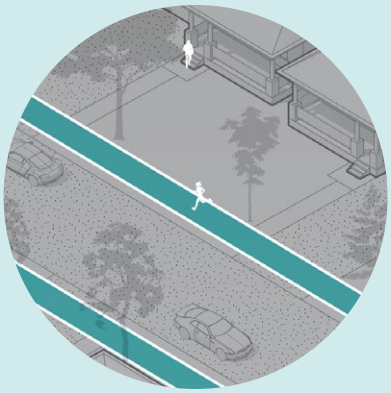
Identity Anchor

Gathering

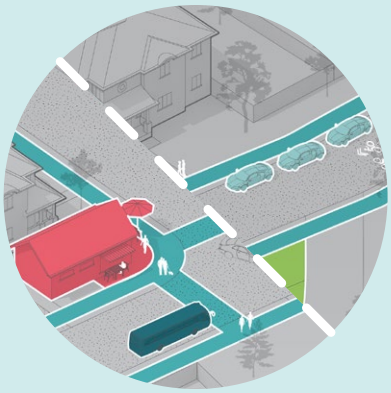


Renovated Park Space

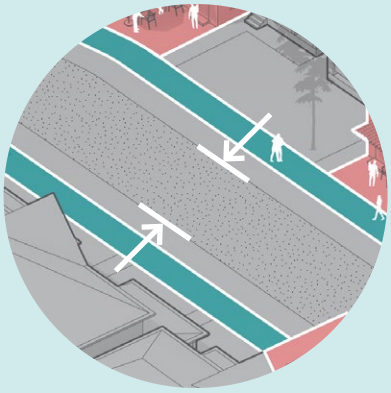
Circulation



Widen and Reroute Sidewalks

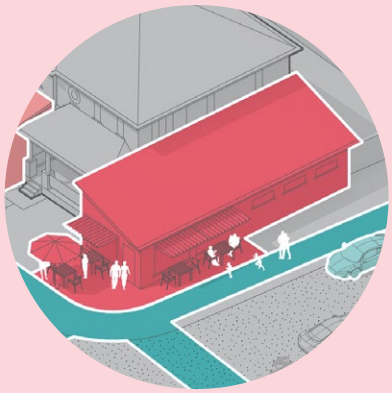


Provide Bus Stops and Car-Share Services

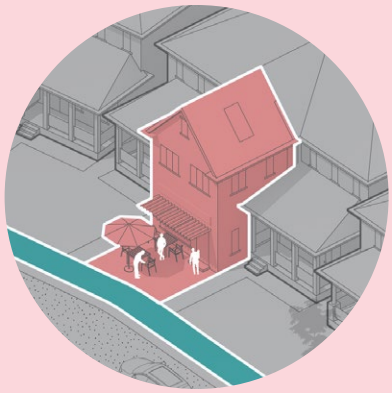


Narrowing of Streets

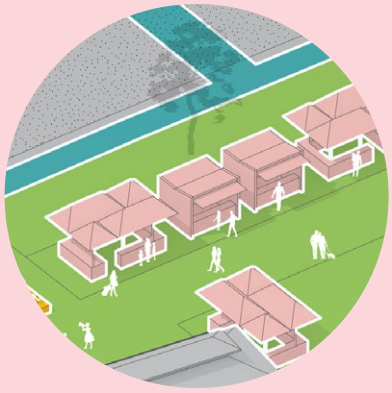
Resources



Corner Unit Addition



Garage Addition



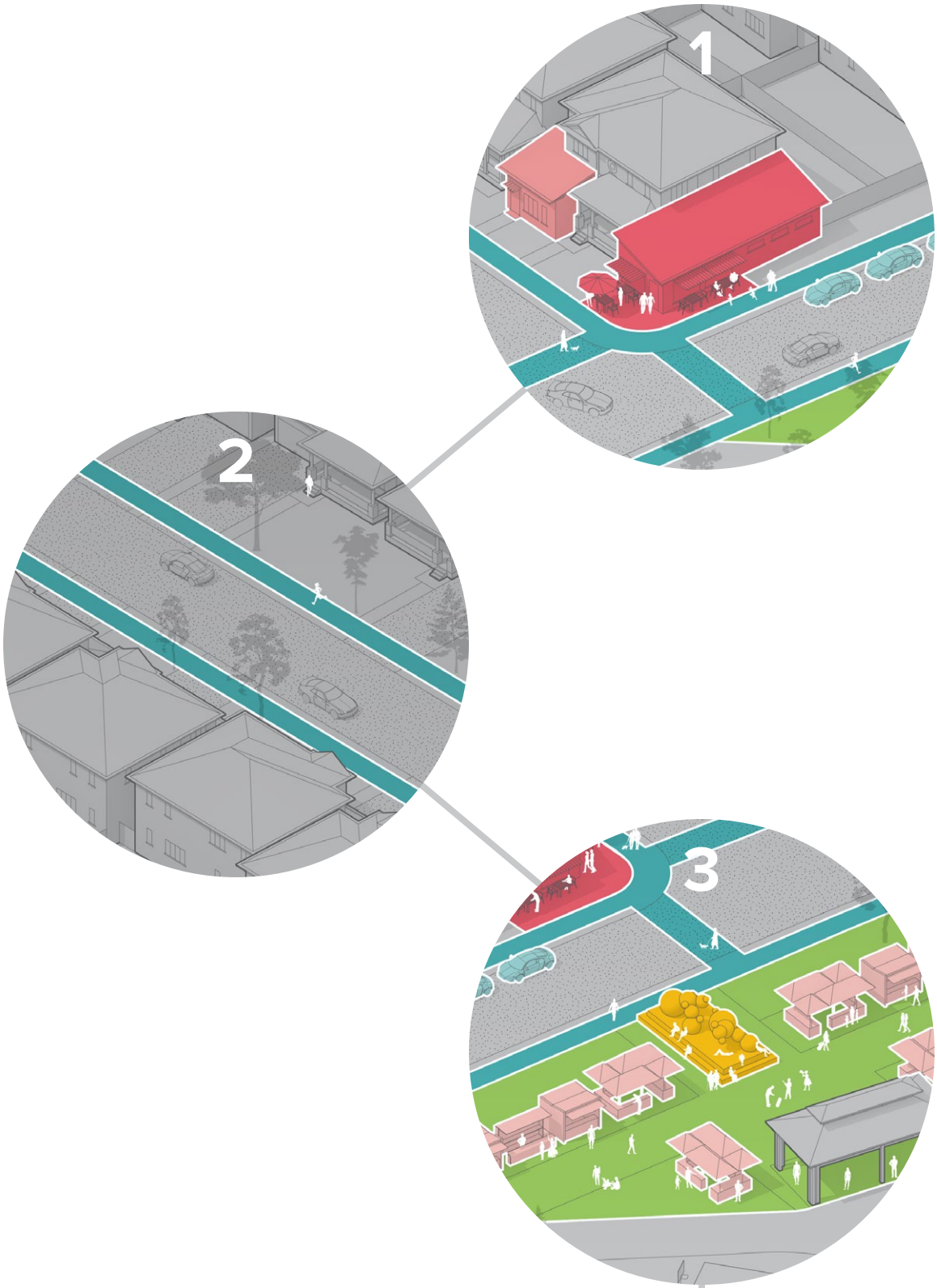
Street-Front Market Stalls

3.2 Where to Start?

Implementing the framework all at once would most likely receive push-back. A more gradual, regimented integration of elements would both be more realistic and more easily accepted, but also ensure a longevity to the programs that support the framework. The question then is: where to start? Each category and its subsequent elements are important for transitioning towards *villageness*; however, the most impactful element to implement first would be the corner store addition. Allowing corner stores into suburbs at specific locations would be a friendly first step in introducing retail to mono-zoned neighbourhoods. Corner stores would be able to immediately reduce the amount of times residents have to drive to box grocers by providing day-to-day necessities, and would generally improve quality of life through their proximity. As a single element, they have one of the greatest impacts out of those in the framework as they have the opportunity to function as gathering spaces, identity anchors, and resource locations, while also impacting circulation by promoting walkability. Specific restrictions should be added to their uses, however. These spaces should only be used for wider impact retail, commercial, and offices uses. Convenience stores, small grocers, and remote-work offices are perfect examples. Other businesses like hair salons and bakeries would also benefit the larger community. A pottery shop or an art store would not be appropriate, however, as their wares are not so universally needed; these uses would fit better in garage additions.

Fig. 3_6 *(Opposite page) Wiggins Park after five years of retrofitting. Corner store additions are the best retrofit element to start with.*

This section breaks down a possible phasing order, starting with allowing the construction of corner unit additions for the purpose of retail, commercial, or offices uses. Given that codes and regulations require adjustment for this framework to be legal, larger governmental assistance would be necessary. This would include the creation of incentives for property owners wishing to build a corner or garage addition, as well as directing funding towards widening sidewalks, narrowing roads, and building identity anchors. These incentives are mentioned where appropriate, however their specifics are outside the scope of this thesis.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Phasing

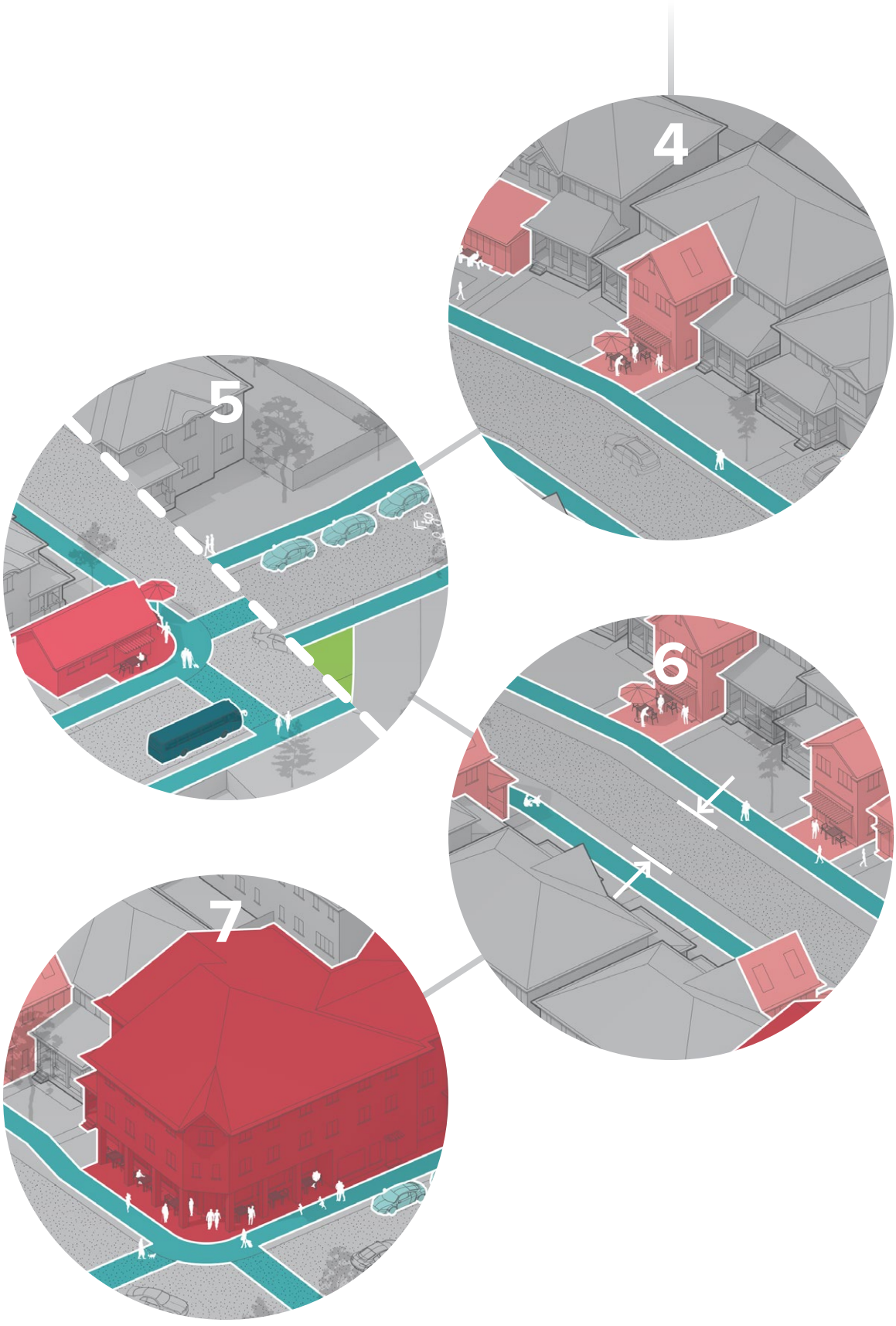
1. Amend zoning regulations to allow for corner unit additions for the purpose of retail, commercial, and office uses that benefit the larger community (ex. convenience stores, mini-grocers, remote-work spaces, etc.)

Incentivize corner unit additions through breaks in development charges and property taxes for small businesses.

* Local small businesses should be prioritized over chains

2. Widen the existing sidewalks and add them where there are none to ensure a continuous walking system and account for a greater number of people using them.

3. Redesign the public parks into better gathering spaces. Collaborate with communities to create physical community identity anchors.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Phasing

4. Amend zoning regulations to allow for home-front garage additions for the purpose of retail, commercial, and office uses that may be private businesses and/or uses that benefit the larger community (ex. barbers, hair salons, bakeries, produce markets, home offices, private residential space, private business, etc.)

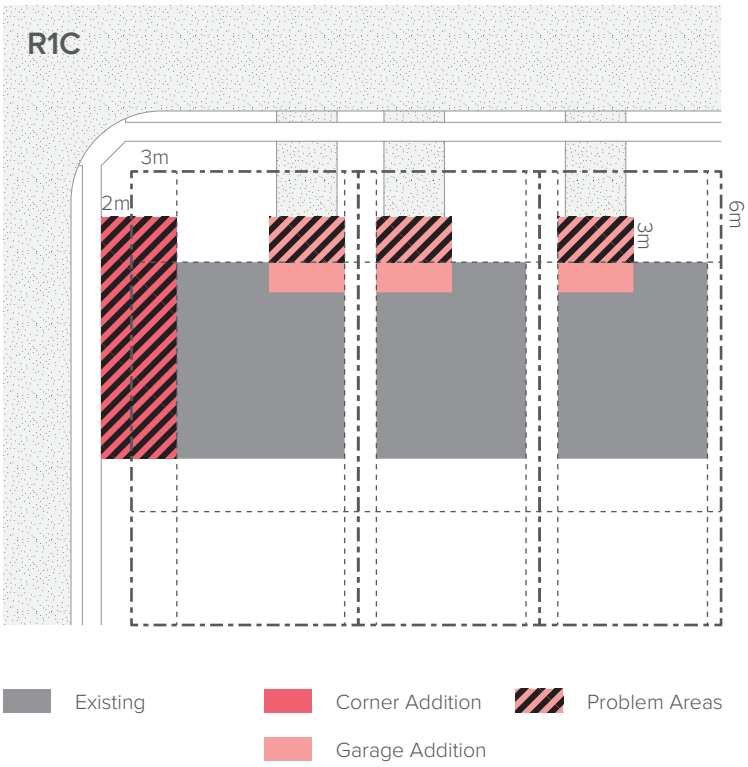
Incentivize home-front garage additions through breaks in development charges and property taxes for small businesses and homeowners.

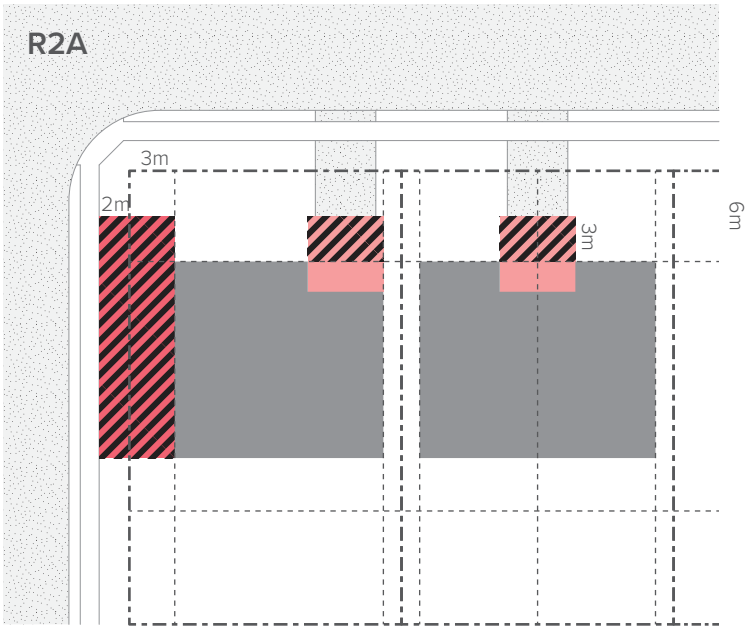
* Local small businesses should be prioritized over chains

5. Improve city-wide public transit. Add a bus stop inside village suburbs. Incentivize car-share companies to provide vehicles inside village suburbs or create government funded car-share services.

6. Once a critical mass of residents build their own garage additions and individual car ownership is reduced, street narrowing can begin in response to less car traffic.

7. As years pass, corner units and houses may be rebuilt into larger mixed-use buildings, and garage additions may transform into larger commercial buildings.


R1C
3m
2m
3m
6m
Existing
Corner Addition
Problem Areas
Garage Addition


R2A
3m
2m
3m
6m

3.3 Barriers to Implementation

The framework will have to overcome certain obstacles. Two main barriers to implementation are: existing codes and NIMBYism. Considering the first barrier and the example site, Wiggins Park is zoned primarily as R1C and R2A, which allow for residential buildings, in the form of single-family and semi-detached homes, and places of worship as the only other building use permitted. As such, the garage and corner additions are in violation of the mono-zoning due to their commercial, retail, and office uses. The codes also have generous setbacks, which these two elements violate. The garage additions fall partway over the front setbacks, and the corner addition is almost entirely outside of the side setback and extends past the lot line (see figures 3_7 and 3_8). These codes would need to be adjusted for these elements to be legal.

Fig. 3_7 *(Opposite page - top) R1C zoning example plan. This zoning designation is for single-family homes. Retrofit elements such as the corner and garage additions fall outside setbacks and lot lines.*

Fig. 3_8 *(Opposite page - bottom) R2A zoning example plan. This zoning designation allows for semi-detached homes. Retrofit elements face similar problems in this designation as in R1C.*

The second barrier, NIMBYism, is less straightforward. As this barrier is unique to each community, surmounting it requires equally curated responses. NIMBYism in suburbs is often tied to concerns over property value fluctuation. These concerns can be easily put to rest given that increasing the walkability (through increasing *villageness* in this case) of a neighbourhood increases its homes' property values.[17] The important health benefits of reducing car-dependence and increasing community connectivity are equally persuasive. In *Walkable City Rules*, Jeff Speck presents further climate and equity arguments for increasing walkability. These apply here also. Push-back from car-enthusiasts is warranted; however, the proposed implementation is flexible and can be integrated on a property-by-property basis. It is up to individuals to decide whether they want to take advantage of updated codes and new incentives to build a garage or corner addition.

Barriers to implementation are important to consider; however, just as similar levels of code adjustment for laneway suites were possible in Toronto. It is not unrealistic to see this framework happening.

17 Speck, *Walkable City Rules,* 2.


WIGGINS
CAFÉ

3.4 Design Visualization

To better understand the transition from car-dependent suburbs to village suburbs through retrofitting, the implementation of the framework is presented in this section using first-person sketches, site plans, and block-level isometrics. Each of these show this transition over a period of time by presenting the existing conditions, a five year speculation, and finishing with a twenty-five year prediction. An extended timescale of fifty years would likely show further design changes, some of which are predicted to start during the twenty-five year representation. The end-block reconstruction is an example of this, in which the form of the suburb begins to change in a more drastic way than it does in retrofitting. The human impact of the retrofit is presented first, followed by site and block level specifics on the individual framework elements.

Fig. 3_9 *(Opposite page) An example of a corner unit addition. Here it is being used as a café. The business activates the street corner, just like the Mighty Oak café in Vancouver, BC.*

The first-person sketches present human impact by placing fictional personas into the suburb as it is retrofitted across the twenty-five year time scale. There are two settings presented: the residential street, and the corner condition. The personas in each have realistic, yet limited, stories to illustrate how the retrofit affects them in specific positive ways. There is a single mother of two, an aspiring home baker, an author, and a person who works in downtown Toronto.

The site plans and isometrics are more technical in nature, presenting the possible distribution of elements and the physical qualities those elements might have. The plans are at the scale of the entire site to show how the elements work as a larger system, while the isometrics are illustarted at a block-level scale to show more clearly how the elements fit into the existing suburb. These designs are presented at a schematic level and one that fits them into the existing suburban aesthetic. This is done to reflect the predicted reality of the frameworks implementation. In practice, the elements would be designed and built by individual or groups of property owners.

Residential Street Existing

Fig. 3_10

Krishna - 26

Krishna is a new mother and homeowner in the nieghbourhood. She chose this area because of the many school options. Krishna likes to go for walks with her baby daughter Mina in the stroller, but she worries about safety with the sidewalks being narrow and not existing on some streets.

Ramesh - 31

Ramesh wants to start a bread-making business. He knows Rita, a neighbour from a few streets over, runs a cake-making business out of her kitchen. Ramesh is going to talk with a financial adviser to discuss what his options are.


FRESH
BREAD
SNACKS

Residential Street Five Years

Fig. 3_11

Krishna - 31

Krishna enjoys walking her kids, Mina and Manish, to school every morning. The newly widened sidewalks and street crossings give her peace of mind and make the walk more pleasant. She also now co-owns a snack bar with her neighbours Sanjay and Priyanka.

Ramesh - 36

Ramesh started his bread-making business with donations from neighbours, friends, and family. He took advantage of the new zoning regulations and built a small garage addition with enough space for an oven, prep areas, and a sales counter. Ramesh is excited for this new chapter in his life.

Areas of Change


FRESHER BREAD!
NOW HIRING!
RESTAURANT

Residential Street Twenty-Five Years

Fig. 3_12

Krishna - 51

Krishna's son Manish just graduated from the University of Toronto and he's come home to celebrate. Krishna enjoys this time and will show him the neighbourhood to see what's changed since he's been gone. Krishna's co-owned snack bar is now a full restaurant that does some catering on the side.

Ramesh - 56

Ramesh has had great success with his business. His breads, and now pastries too, are a staple food choice for the neighbourhood. The local high-school students know to come to him for summer jobs. Ramesh is hiring again, and is even thinking of expanding. He's not planning on retiring soon.

Areas of Change

Street Corner Existing

Fig. 3_13

Amar - 36

Amar is having his morning coffee before heading to the office. He works in downtown Toronto at an Engineering firm. The commute will take him between 45 minutes to 1 hour and 20 minutes. Amar wishes he didn't have to commute so far, but downtown housing hasn't enough space for his family.

Abdul - 53

Abdul is an author and likes to go on long walks to clear is head and gain inspiration. Today he's out trying to unravel ideas for a new novel. Abdul sticks to the sidewalks in the neighbourhood, staying away from the multi-lane roads. He also tutors English and is a substitute teacher occasionally.


WIGGINS
CAFÉ

Street Corner Five Years

Fig. 3_14

Amar - 41

Amar is registering to use a car on the car-share app on his phone. He now only commutes to the office a few days out of the week, spending the other work-days connecting digitally. Amar is happier now that he's not spending so much time commuting.

Abdul - 58

Abdul had his book published and is now working on the sequel, he's hoping to eventually make it a trilogy. He still goes on his walks for inspiration, however a knee injury makes long distances difficult. Abdul now often sits at the café his neighbours Amar and Sandip opened on the corner.

Areas of Change


WIGGINS
CAFÉ

Street Corner Twenty-Five Years

Fig. 3_15

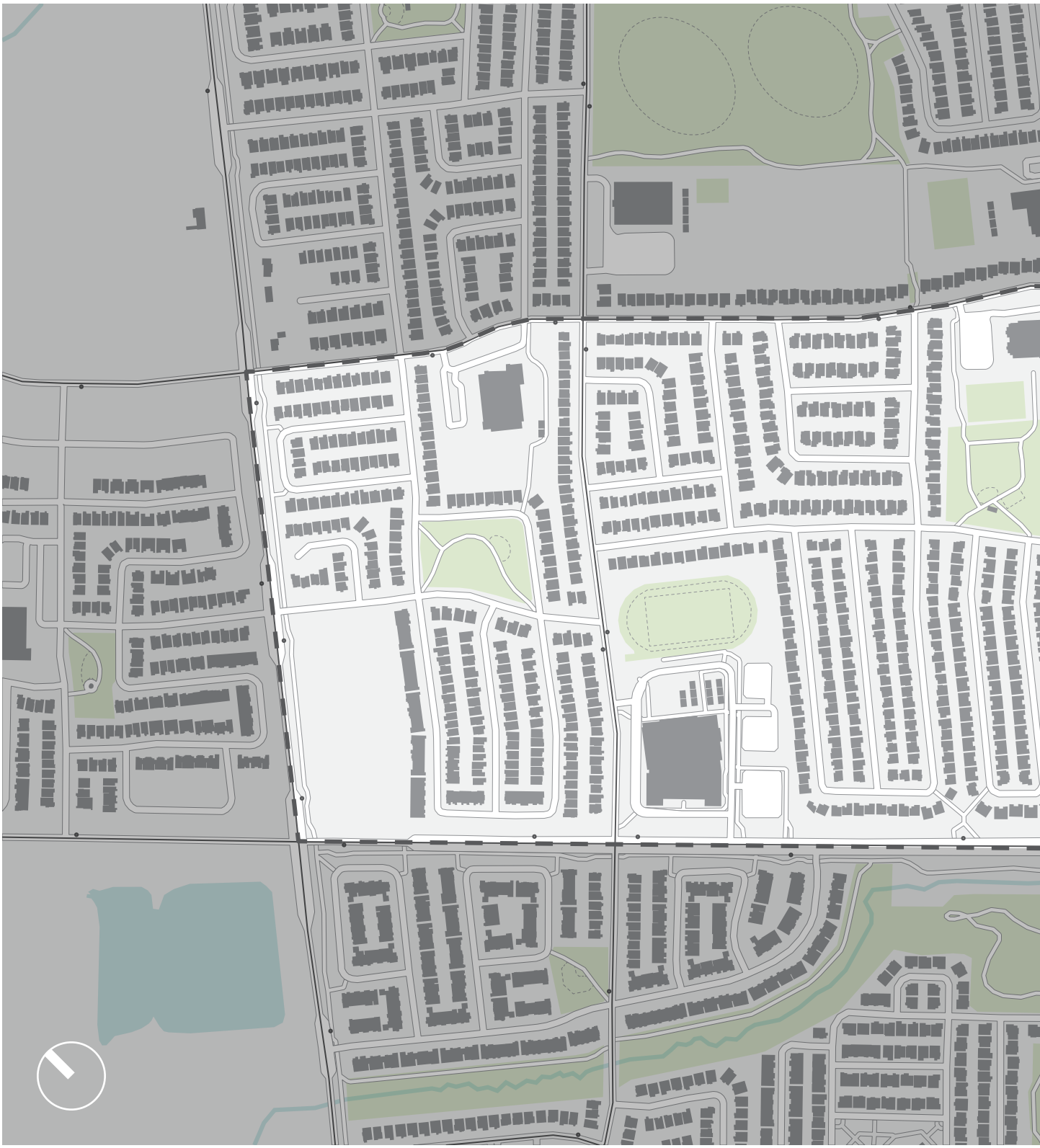
Amar - 61

Amar retired from working downtown and is now a freelance engineering consultant. Some days he spends in his home office, today he's reserved a desk at the remote-work office nearby. If he ever has to commute, car-share and the updated public transit are his choice.

Abdul - 78

Abdul's trilogy was a huge success and he's written many books since then. He still enjoys his walks and the rebuilt streets and sidewalks make them enjoyable and safe. The café he used to go to is now in a larger mixed-use building in the same location. Its busier and Abdul likes it that way.

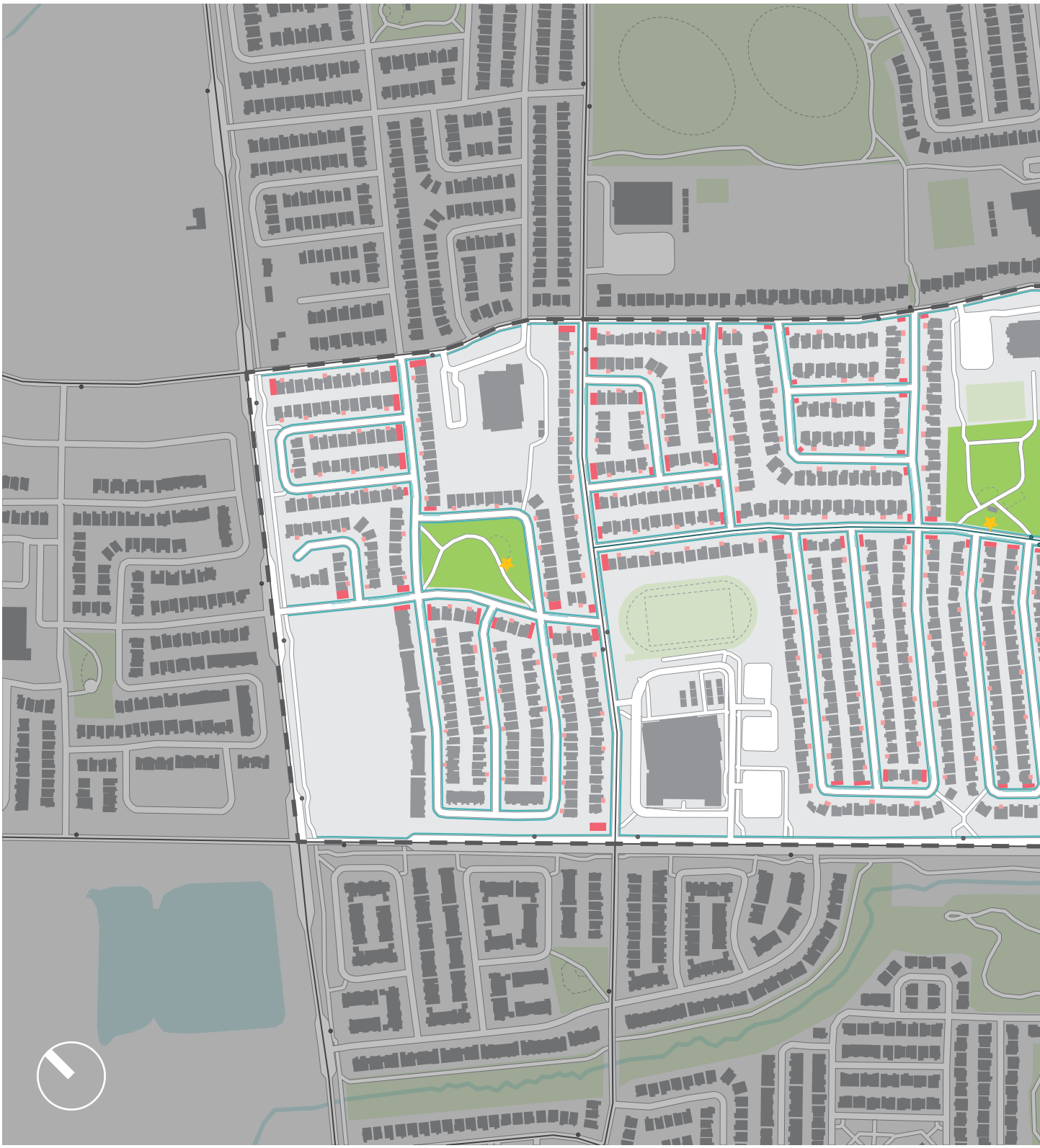
Areas of Change



Existing Site Plan

Fig. 3_16

Existing Bus Line
Existing Building
Water
Green Space



Five Year Retrofit Plan

Fig. 3_17

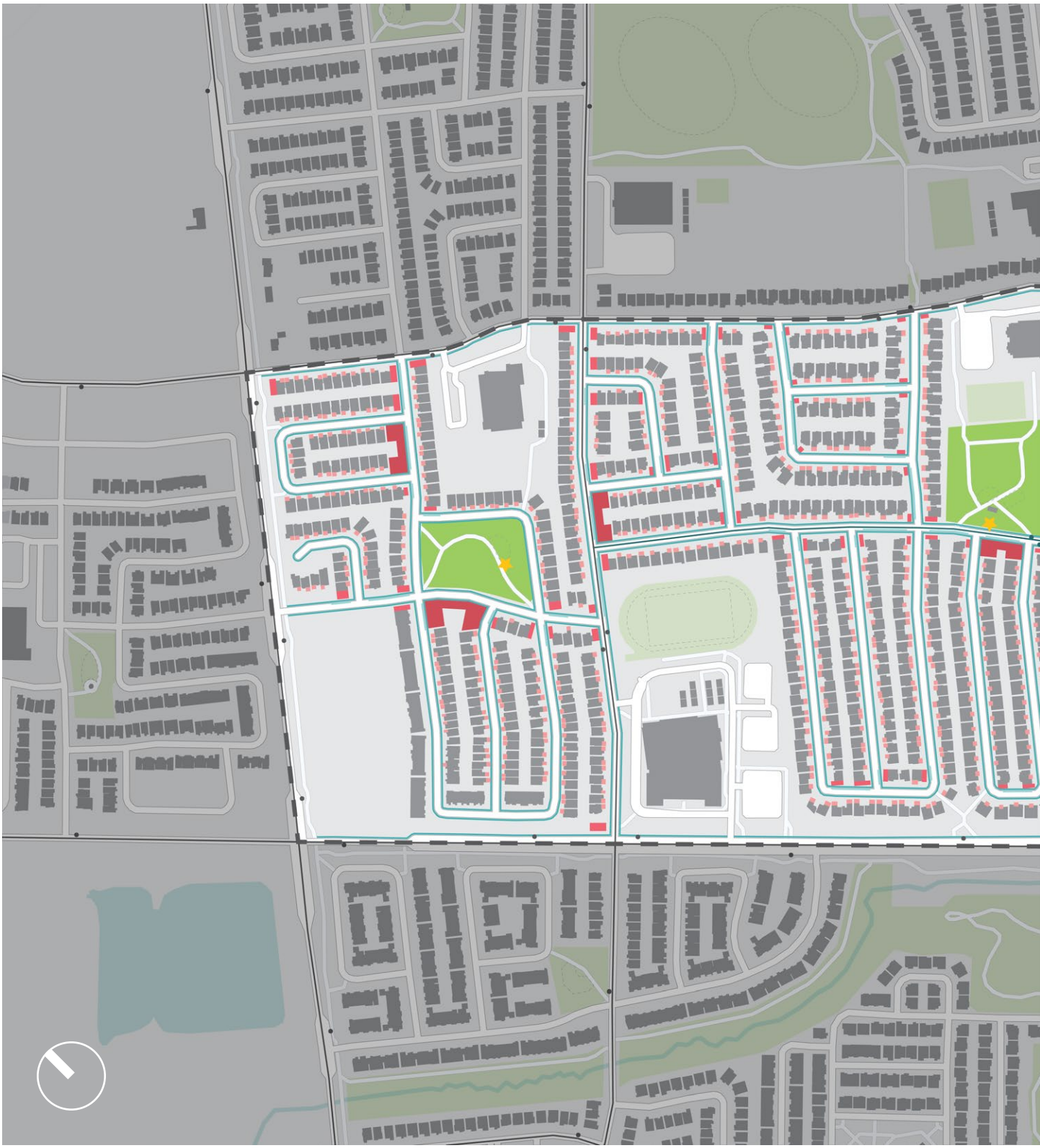
Existing Bus Line
Existing Building
Water
Green Space

Identity Anchor

Gathering Space

New Bus Line
Adjust Sidewalks
Car-Share Parking

Corner Addition
Garage Addition



Twenty-Five Year Retrofit Plan

Fig. 3_18

Existing Bus Line
Existing Building
Water
Green Space

Identity Anchor

Gathering Space

New Bus Line
Adjust Sidewalks
Car-Share Parking

End Block Rebuild
Corner Addition
Garage Addition

Existing Neighbourhood

Fig. 3_19

Existing

Five Year Retrofit

Fig. 3_20

Existing

Identity Anchor

Gathering Space

New Bus Stop
Adjust Sidewalks
Car-Share Parking

Corner Addition
Garage Addition
Market Stalls

Twenty-Five Year Retrofit

Fig. 3_21

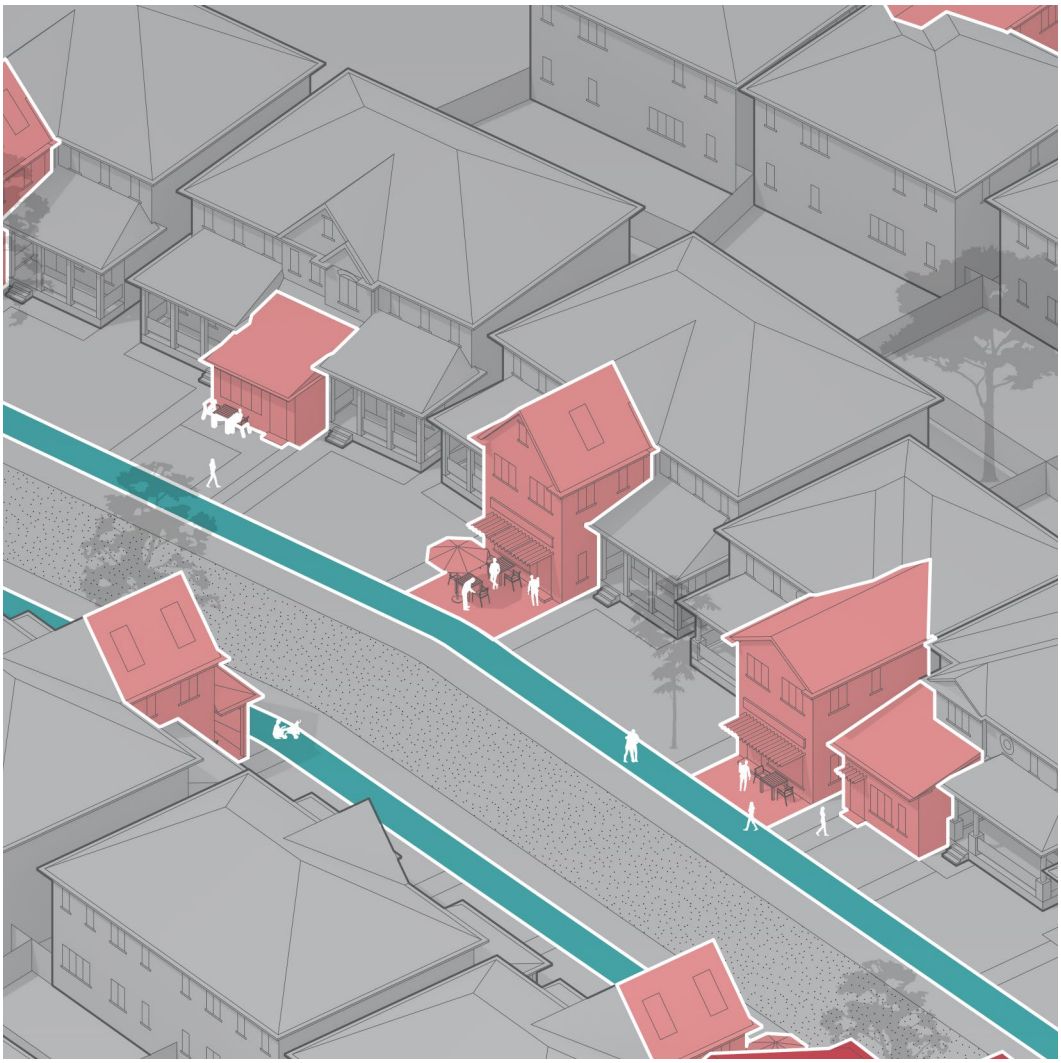
Existing

Identity Anchor

Gathering Space

New Bus Stop
Adjust Sidewalks
Car-Share Parking

End Block Rebuild
Corner Addition
Garage Addition
Market Stalls



3.5 Conclusion

The retrofitting of suburban neighbourhoods is a relatively new field, yet it has had significant intellectual investment. This thesis creates additional options to the existing suburban retrofit designs. The proposed framework can be described under the Re-Inhabitation and Redevelopment categories defined in *Retrofitting Suburbia*.

Fig. 3_22 (Opposite page) Garage additions are one of the more complicated elements to implement. They require residents to give up car-ownership, an effective and efficient public transit to be present, and success stories for residents to invest in their creation.

The retrofit framework's categories and elements presented in this thesis are curated specifically for creating *villageness* and improving the lives of suburbanites. This *villageness* is produced through the strengthening of a neighbourhood's social identity by centering social gathering spaces and creating community identity anchors, and through increasing its walkability by providing local amenities and prioritizing pedestrianism. The strategic phasing of the retrofit framework elements allows the framework to put its best foot forward with something familiar: the convenience store. Corner additions will lead the way, and allow time for acceptance of other usage types in residential areas. These types of adjustments to mono-zoned residential neighbourhoods are already happening in Canada. In early 2021, the Vancouver city council began accepting proposals for small grocers in residential areas.[18] In the coming years, it is likely that more businesses like the Mighty Oak café will be present in Vancouver's suburbs. Other elements, such as the garage addition, face a more complicated path.

The garage addition occupies an interesting period of the framework's phasing. This element is built on the assumption that increasing walkability and reducing car-dependency will result in lower car-ownership. This is predicated upon the implementation of comprehensive transportation systems, electric car share services, and a more consistent distribution of amenities close to home. It is an element that offers a lot of opportunity for densifying retail, commercial, and office uses in neighbourhoods; however, it is also an element that relies heavily on the rest of the framework to succeed.

18 About Here, "Why Did We Make Front Yard Businesses Illegal?," youtube.com, September 8, 2021, https://www.youtube.com/watch?v=wzBL85kTwwo.

The moment for its widespread implementation is a chicken-and-egg scenario. Corner and garage additions contribute to higher walkability, which encourages lower car-ownership (but does not necessarily result in it). Lower car-ownership is needed, however, for garage additions to have space to be built. This paradox can be circumvented through gradual or partial implementation. Given that corner and garage additions are assumed to be built by property owners with the help of tax and development charge government incentives, some owners will build before others. Additionally, many suburban houses have double width garages (Wiggins Park included, see figure 2_30 on page 75), which can be partially renovated by preserving a single width garage and building an addition out from the other. Fewer owners are likely to build at the beginning, yet once residents see their neighbours' additions functioning well, more widespread implementation will occur. Around 50% of business in North America start in peoples' homes. [19] The extra space that garage additions provide will be beneficial and help jumpstart many more companies in the future. The garage addition is one of the more complicated elements in the framework; however, it holds significant potential for economic growth if implemented successfully.

The authors of *Retrofitting Suburbia* write that the improvement of retrofit strategies at two levels is needed. Firstly the level of the building, which includes streetscapes, bikeways, and landscapes. Secondly, retrofitting at the metropolitan level of planning.[20] This thesis focuses on the former. Where other proposals have presented backyard densification or community centers, this framework focuses on the interface between street and house, with specific interest on the area within the front setback. Because of this setback, the level of intimacy and street interaction needed for *villageness* is hard to achieve. This space is a huge opportunity for innovation. Backyards are equal in potential; however, this framework aims at maintaining backyard privacy to be more realistic in terms of implementation. Front yards are notoriously underused and residents often only come out as far as their front porches. The framework maintains the current privacy that property owners expect for their houses and backyards, but presents

19 About Here, "Front Yard Businesses."
20 Dunham-Jones and Williamson, *Retrofitting Suburbia,* xxi.

the front yard, garage, and driveway spaces as transitional areas ripe for retail, commercial, and office uses.

The gradual implementation of the framework over a twenty-five year time frame will allow for a smoother transition and easier acceptance of change in suburban neighbourhoods. It is designed to be highly replicable and not custom to any one site. This allows for a wider range of possible site locations across the GTA, and with 75% of contemporary development being suburban,[21] there is no lack of options. Nearly any suburb in the GTA can be retrofitted using this framework. Due to its flexibility, the framework also encourages unique interpretations and variations on its implementation as seen fit by each neighbourhood, community, or organization.

The framework does require significant investment, codes changes, and government support. This level of investment is not unheard of, however, given that the creation of suburbs and new housing neighbourhoods has involved significant government grants and incentives. These cash allowances should not be specifically for new homes, and should instead be redirected towards suburban redevelopment, the construction of complete communities, and for creating *villageness*. Housing on its own, especially as built in the suburbs, is not worth the problems it creates. Requesting people to change the way they live is a significant ask; however, if the issues that suburbs create are to be addressed, neighbourhood composition must be updated.

21 Dunham-Jones and Williamson, *Retrofitting Suburbia*, xxiv.


SNACKS

Chapter 4: Impacts

Given that this thesis is a theoretical design, real-world results are not available. The framework's potential impact can still be assessed, however, using a comparative analysis of the data available. *Villageness* is difficult to measure and cannot be reduced to a single number. As such, this chapter presents an impact analysis considering both quantitative and qualitative data. The results of the frameworks implementation in Wiggins Park are shown across the different phasing periods of the retrofit and compared against Siena and Westdale. The quantitative data used for comparison consist of walkability measures, and amenity distribution and options. Walk Score has been used previously in this thesis in the represent of walkability heat maps. It is a company-owned data set, however. The calculations used to produce Walk Score are proprietary, and as such the changes that the framework would make on these values are unknown. Therefore, this section uses more rudimentary walkability measures for comparison. These measures include the average walking time to any amenity from any household, as well as the average shortest walking time to an amenity from any household. Linear distance walk circles spaced at 2.5 minute intervals are shown over each site starting at their centers. When looking at amenity measures, the ratio of amenity to residential above-ground floor area is presented (amenity to residential ratio – ARR). The final data point of the quantitative data shows the number of amenity options available within the site boundary. For the qualitative data, items like the walking experience and quality of social spaces are considered, as well as the character of the neighbourhood. These qualitative items look at the impact that the elements have on the feel of the neighbourhood as it transitions towards *villageness*. Both kinds of data are combined to present the impact of the framework using maps, data graphics, and site images.

Fig. 4_1 *(Opposite page) Wiggins Park street condition at each stage of the retrofit.*

Quantitative

Walking Time	Amenity/Residential ***	Options
Average ~12.5 min* Nearest ~12.5 min**	0	17

Qualitative

4.1 Comparative Analysis
Wiggins Park - Existing Conditions

Taking into consideration the existing condition of the Wiggins Park site, the quantitative data indicates a distinct lack of *villageness*. The average walking time from any household to any amenity is approximately 12.5 minutes. The same is true for the shortest distance to an amenity from any household because the distribution of amenities are clustered in one area. This retail zone is located to the east of the site and contains a FreshCo, a few banks, a library, several fast food joints, a walk-in clinic, a Shoppers Drugmart, and a gas station. There are 17 options in total. These are all located outside of the sites boundary, and as such, the ARR of the site is 0. The qualitative data shows a similar story. Wiggins Park is a standard suburb, albeit slightly uncommon for the amount of schools on and around the site. The journey to the available amenities requires pedestrians to cross a multilane road, and then a large parking lot before being able to access the goods and services therein. These anti-pedestrian elements make walking to the retail centre unpleasant and encourages residents to simply drive there. The walking experience within the suburb is decent; however, as sidewalks are not continuous in all areas and there is a noticeable amount of car traffic, pedestrians must always be alert for the danger of vehicles. Roads are wide, making them uncomfortable to cross on foot. Park spaces are available, but underutilized and empty much of the time.

Fig. 4_2 *(Opposite page - top) The existing conditions of the Wiggins Park site. Amenities are off-site to the north-east.*

Fig. 4_3 *(Opposite page - bottom middle) Residents must cross the multiple lanes of Bramalea Road to get to the retail centre.*

Fig. 4_4 *(Opposite page - bottom right) After Bramalea Road, residents must cross a large parking lot with no sidewalks before they can enter any of the available amenities.*

* *The average walking time from any household to any amenity within the site boundary.*
** *The average walking time from any household to their nearest amenity within the site boundary.*
*** *The ratio of above-ground amenity floor area to residential floor area. This is the Amenity to Residential Ratio (ARR).*

Quantitative

Walking Time

Average ~5.5 min
Nearest ~1.0 min

Amenity/Residential

~1/23

Options

391

Qualitative

Wiggins Park - Five Year Phase

Five years into the framework's implementation, the distribution of elements is assumed to be relatively even, with partial integration of garage and corner additions. The average walking time to any amenity from any household will be reduced from 12.5 minutes down to 5.5, and the average walking time to the nearest amenity from any household will be reduced to 1.0 minute. The number of options will be greatly increased from 17 to around 390. This increase in options will result in the ARR rising to $^{1}/_{23}$ from 0, meaning that for every 23 m^2 of residential floor area, there will be 1 m^2 of amenity. The qualitative data shows similar improvements to the *villageness* of the site. With the addition of many new amenity options within the site boundary, walking to purchase necessities will be more enjoyable and comfortable. This comfort in pedestrian movement will be helped by the widening of sidewalks and their ensured continuity. The park spaces will have been updated, adding market space and dedicated gathering areas. Identity anchors will have been collaborated on by residents of the community and there will be a greater understanding of the neighbourhood's sociality and pride in its identity. Car share services will also now be available in some capacity, providing access beyond the community for those who have reduced the number of vehicles their families own in favour of garage additions.

Fig. 4_5 *(Opposite page - top) Wiggins Park after five years of retrofitting. Amenities are now available on-site.*

Fig. 4_6 *(Opposite page - bottom middle) Residential street condition after five years. Garage additions have been added.*

Fig. 4_7 *(Opposite page - bottom right) Street corner condition after five years. Corner store additions have been added.*

Quantitative

Walking Time

Average ~5.5 min
Nearest ~1.0 min

Amenity/Residential

~1/5

Options

1000

Qualitative

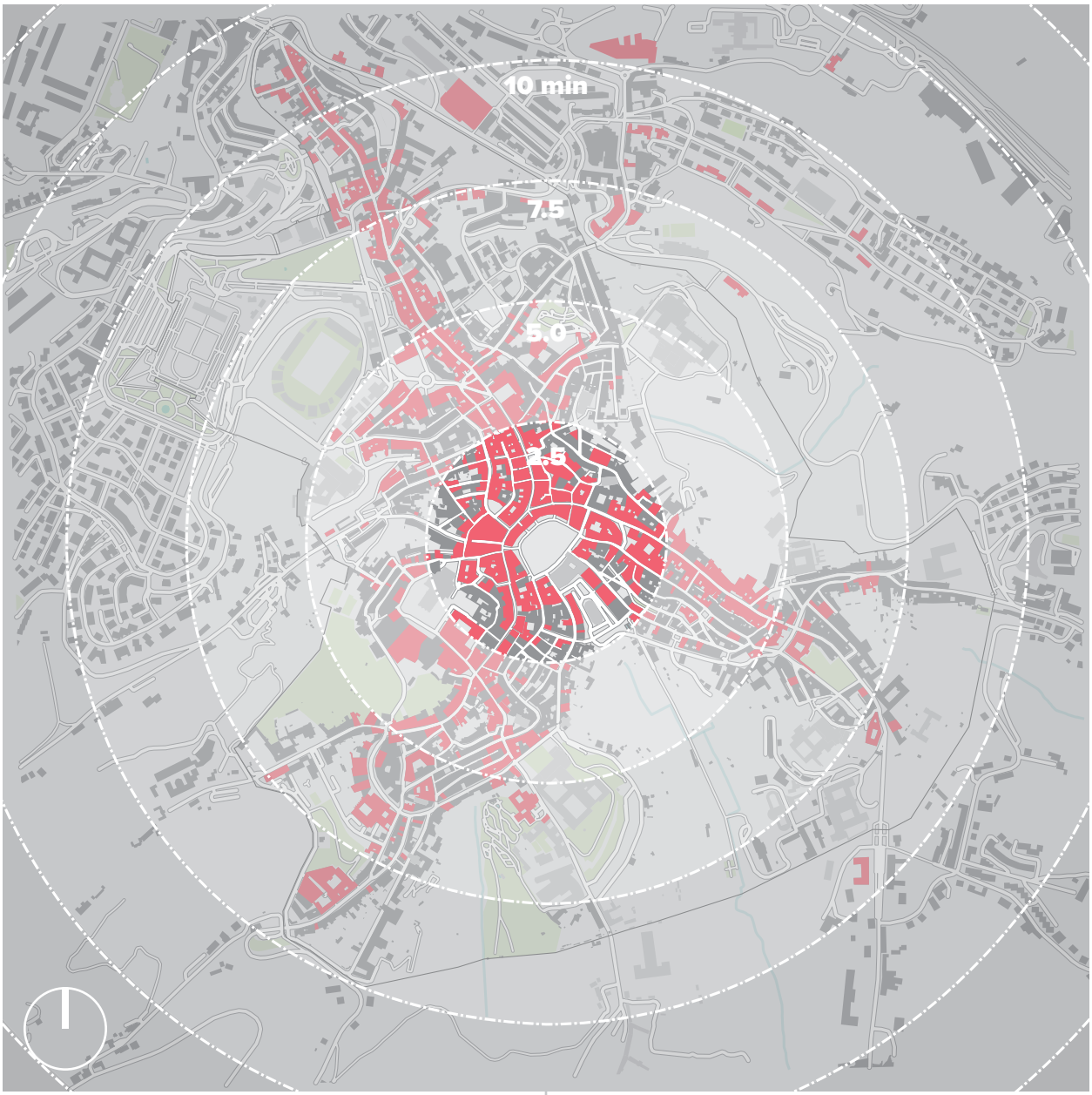
Wiggins Park - Twenty-Five Year Phase

After twenty-five years, the framework's implementation will be more densely distributed across the site, with a substantial amount of garage and corner additions built. The average walking distances will remain the same as those from the five year prediction, respectively 5.5 minutes and 1.0 minute. This is because the distribution of amenities will be even, yet simply denser by the twenty-five year mark. The number of onsite amenities will nearly triple, increasing from around 390 to approximately 1000. The ARR will rise to $^{1}/_{5}$, meaning for every 5 m^2 of residential there is 1 m^2 of amenity floor area. The qualitative data at this phasing period shows equal improvement. Residential streets will have been narrowed in response to reduced car-ownership and also to encouraging slower speeds. This street width adjustment will allow for a planted buffer zone between streets and sidewalks, which will contribute to a greater feeling of safety for pedestrians. With the increase in corner and garage additions, new small businesses and shops will be readily available, encouraging a lively and interactive streetscape while backyards remain private for individual retreat. As the neighbourhood becomes more saturated with amenity uses, some buildings at the ends of blocks may be reconstructed into larger mixed-use buildings with one additional storey to the existing houses. These buildings may feature retail along the bottom level, while maintaining residential space on the upper floors equal to or greater than what is existing. By this point, only a few end blocks will have been reconstructed. This twenty-five prediction marks the end of the framework's phasing and shows a substantial improvement from the existing conditions in both the quantitative and qualitative measures of *villageness.*

Fig. 4_8 *(Opposite page - top) Wiggins Park after twenty-five years of retrofitting. A substantial amount of amenities are now available on-site.*

Fig. 4_9 *(Opposite page - bottom middle) Residential street condition after twenty-five years. Further garage additions have been added.*

Fig. 4_10 *(Opposite page - bottom right) Street corner condition after twenty-five years. The end-of-block buildings have been reconstructed into a mixed-use, mid-rise building.*



Quantitative

Walking Time

Average ~7.0 min
Nearest ~1.0 min

Amenity/Residential

~1/9

Options

~700

Qualitative

Historic Siena

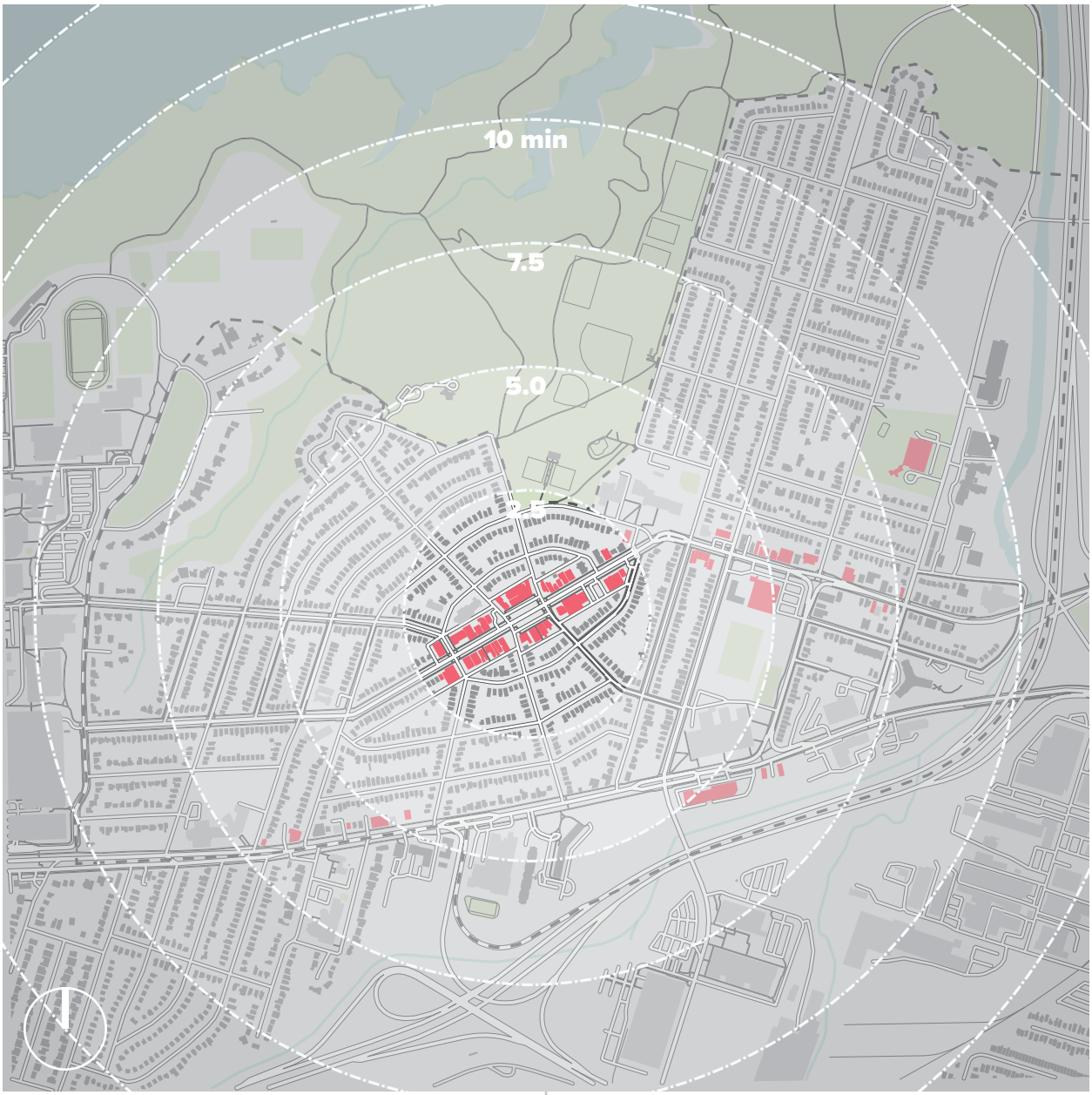
When comparing the twenty-five year state of Wiggins Park to Siena, there are similar numbers when considering the quantitative measures, yet certain qualitative properties cannot be equally achieved in the example site without the benefit of the long history that this Italian city possesses. The area that exhibits the greatest *villageness* in Siena is within the boundary of the city's historic walls. As such, all the data used for this comparison is from within this boundary. Walk Score gives Siena a grade of 100 (the highest score possible), it is a 'walker's paradise.'[1] The walking time from any household to any amenity is around 7.0 minutes, and the nearest amenity to any household is around a 1.0 minute walk away. There are approximately 700 amenity options within the historic walls of the city, making the ARR approximately $^{1}/_{9}$ (1 m^2 of amenity for every 9 m^2 residential). The qualitative data show a more distinct picture of *villageness*. Siena is much more vibrant than Wiggins Park. It is a historic city, and thus has hundreds of years of culture and events to solidify its identity. It has quaint walkable streets, small shops and restaurants, and beautiful open piazzas. The Piazza del Campo is iconic for its sloping topography, its semi-circular form, the restaurants and buildings that border it, and for the Palio di Siena (the traditional horse race that happens twice a year). There are distinctly defined group identities related to the race, each section of the city fielding a horse and rider. These traditions and rich historical events happen within the same amount of space as Wiggins Park, yet their level of cultural vibrancy is very difficult to achieve within the North American suburb.

Fig. 4_11 *(Opposite page - top) Historic Siena. There is a substantial amount of amenities on-site.*

Fig. 4_12 *(Opposite page - bottom middle) Piazza del Campo is the town center of the city, has many shops and restaurants, and is always bustling with people.*

Fig. 4_13 *(Opposite page - bottom right) The streets of Siena are narrow and at a human scale.*

1 Walk Score, "Walker's Paradise," Walk Score, 2022, https://www.walkscore.com/score/siena-italy.



Quantitative

Walking Time

Average ~6.5 min
Nearest ~6.5 min

Amenity/Residential

~1/30

Options

~80

Qualitative

Westdale Village

In comparing the twenty-five year state of Wiggins Park to Westdale, the example site exceeds on all of the quantitative measures. The majority of Westdale is walkable with a Walk Score of between 60 and 80, ranging from 'somewhat walkable' to 'very walkable.'[2] [3] The walking time from any household to any amenity is 6.5 minutes. Given that the distribution of amenity options is along the main street (King St W), 6.5 minutes is also the average nearest walking time to an amenity from any household. There are around 80 amenity options and a resulting ARR of $^{1}/_{30}$ (1 m^2 amenity for every 30 m^2 residential). When considering the qualitative conditions, Westdale is more similar to Wiggins Park than Siena is. They are both Canadian suburbs and have typical suburban qualities like single-family homes, parks, and schools. Westdale differs from Wiggins Park in its concentric street network, which is centered on a main street with retail amenities down its length. This concentric network creates a village center where a concentration of restaurants, shops, convenience stores, and small businesses break up the mono-zoned neighbourhood and allow for its walkability. The majority of streets are narrow, which helps with traffic calming and pedestrian safety, and the sidewalks that border these streets are continuous and cover the entire site. The tree canopy is denser in Westdale than in most suburbs, and a decently sized forest with trails and bike paths is located to the north of the site. There are also indoor recreational facilities like a pool, as well as substantial park space with sports fields and pitches, all of which are at a reasonable walking distance from households. Like Siena, but to a lesser degree, Westdale has a strong historical identity that contributes to the site's *villageness*, something that is not immediately replicable through the framework and will take time.

Fig. 4_14 *(Opposite page - top) Westdale, Hamilton. There is a concetration of amenities along its main street.*

Fig. 4_15 *(Opposite page - bottom middle) King Street West, the main street of Westdale. Shops and restaurants run its length. This is where residents come to get their everyday necesities.*

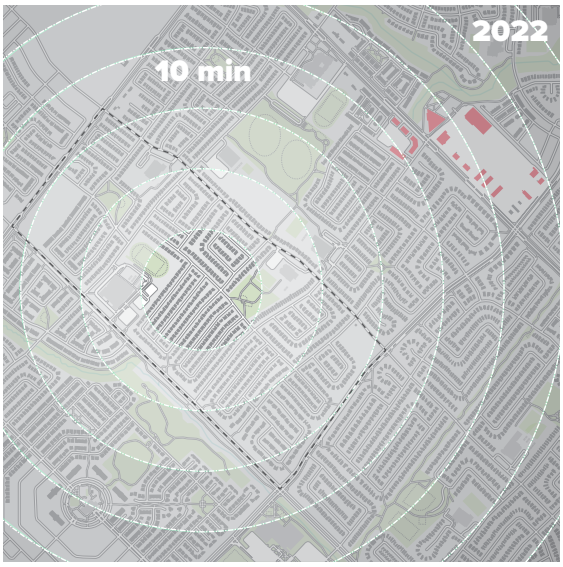
Fig. 4_16 *(Opposite page - bottom right) A typical residential street in Westdale. The road is narrow with on-street parking to one side, and sidewalks that are continuous.*

2 Walk Score, "188 Bond Street North," Walk Score, 2022, https://www.walkscore.com/score/188-bond-st-n-hamilton-on-canada.

3 Walk Score, "53 Paisley Avenue South," Walk Score, 2022, https://www.walkscore.com/score/53-paisley-ave-s-hamilton-on-canada.

Retrofit Framework Implementation

Wiggins Park Existing



Walking Time

Average ~12.5 min
Nearest ~12.5 min

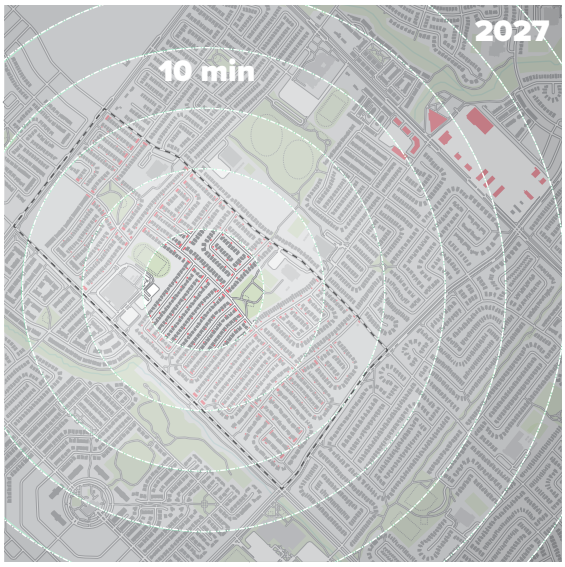
Amenity/Residential

0

Options

17

Wiggins Park Year Five



Walking Time

Average ~5.5 min
Nearest ~1.0 min

Amenity/Residential

~1/23

Options

391

Wiggins Park Year Twenty-Five

Walking Time

Average ~5.5 min
Nearest ~1.0 min

Amenity/R

Quantitative

Qualitative

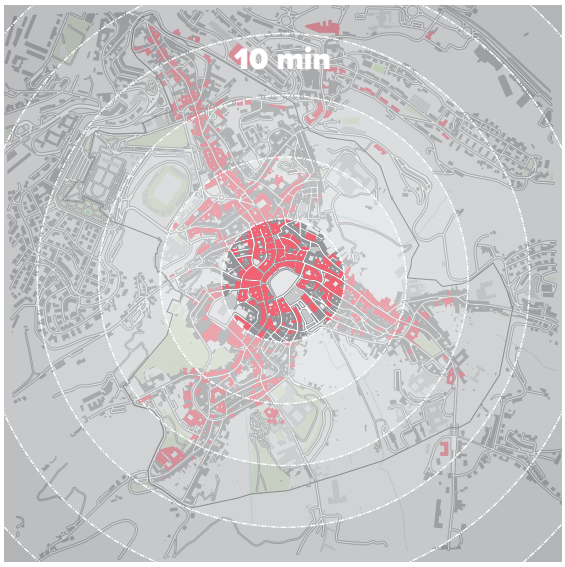
Residents must cross the multiple lanes of Bramalea Road to get to the retail centre. After this, residents must also cross a large parking lot with no sidewalks before they can enter any of the available amenities.

Wiggins Park after five years of retrofitting. Amenities are now available on-site through the construction of garage and corner store additions. Sidewalks have been widened and made continuous.

After twenty-five years of retro of amenities are available on- have been added, and some reconstructed into a mixed-us

Villageness Sites for Comparison

Historic Siena (*Villageness* in Europe)



Options

1000

Walking Time

Average ~7.0 min
Nearest ~1.0 min

Amenity/Residential

~1/9

Options

~700

Westdale Village (*Villageness* in Canada)

Walking Time

Average ~6.5 min
Nearest ~6.5 min

Amenity/Residential

~1/30

Options

~80

Quantitative

Qualitative

ofitting, a substantial amount site. More garage additions ends of blocks have been e, mid-rise buildings.

Piazza del Campo is the town center of Siena, has many shops and restaurants, and is always bustling with people. The streets that connect between piazzas like this one are narrow and at a human scale.

King Street West is the main street of Westdale. Shops and restaurants run its length and residents can come here to get their everyday necessities. The surrounding residential streets are narrow, and have continuous sidewalks.


WIGGINS
CAFE

4.2 Conclusion

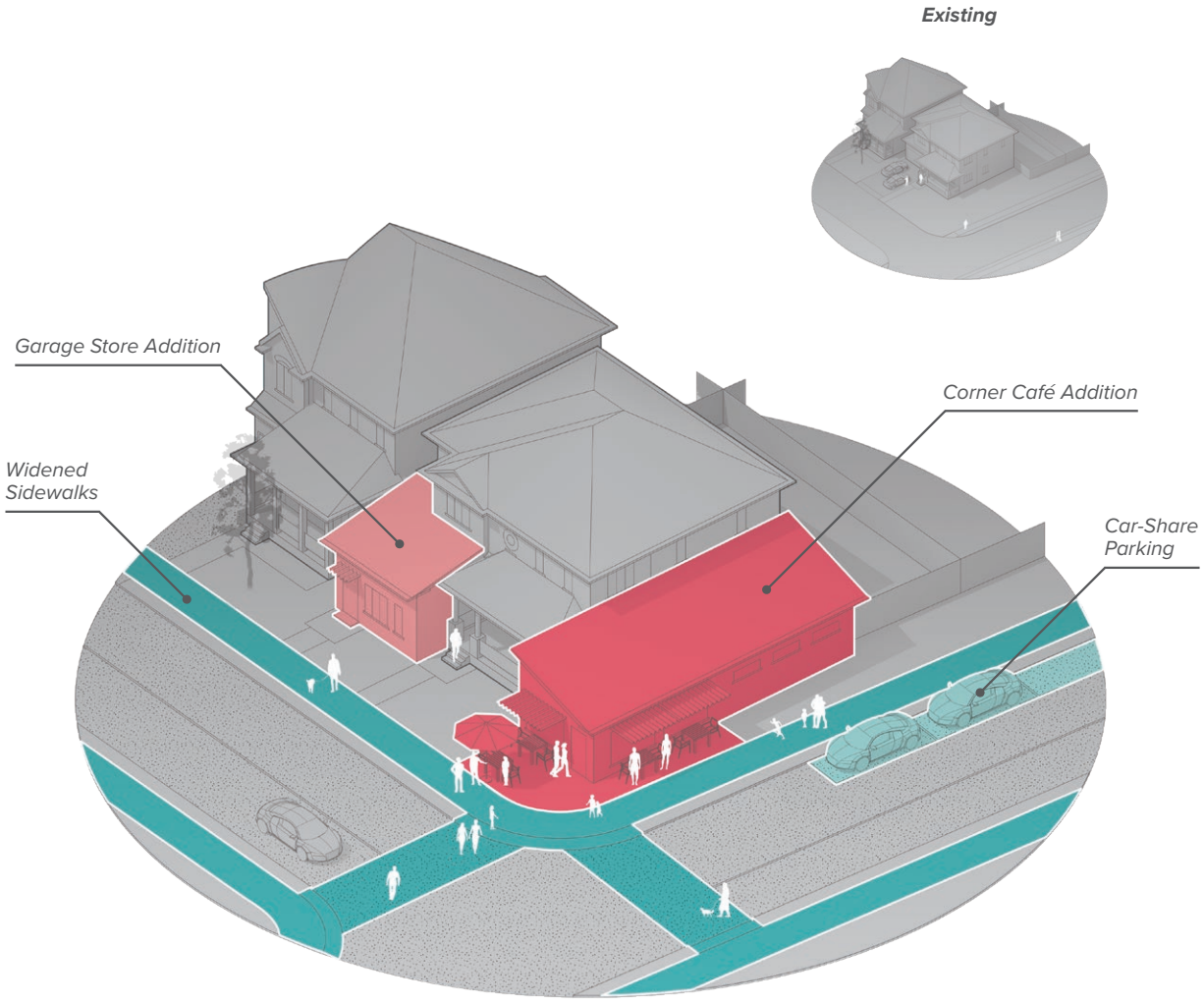
Through this comparative analysis, it is clear that on a quantitative level, the framework achieves comparable numbers to the example *villageness* sites. Across the framework's phasing, the average walking time to any and to the nearest amenities from any household reduces, and the ARR and the number of on-site amenity options increases. By the five year mark, the framework meets and exceeds the numbers of Westdale and by the twenty-five year mark the framework achieves even greater numbers than those in Siena. This assumes a substantial level of acceptance and implementation of the framework by this point. The amenity options and ARR are greater in Wiggins Park by the twenty-five year phasing period than in Siena and in Westdale (1000 vs 700 vs 80, and $^{1}/_{5}$ vs $^{1}/_{9}$ vs $^{1}/_{30}$ respectively). The resulting walking times to amenities from households are roughly equal across sites. These numbers indicate the success of the framework in achieving *villageness* on a quantitative level as they match and exceed those of the example *villageness* sites. The qualitative data suggests a similar story, yet in less distinct terms.

Fig. 4_17 *(Opposite page)*
Street corner condition at each stage of the retrofit phasing.

Assessing the framework's success on a qualitative level is more subjective; however, one thing is clear: the level of historicism that is present in Siena, and to a lesser extent in Westdale, cannot be replicated using the framework over only twenty-five years. With hundreds of years to evolve into what it exists as today, Siena's level of *villageness* on a qualitative level greatly surpasses that which is achievable by the framework. The fact that Siena exists in Europe, in an entirely different climate and continent, and built before the invention of the automobile, also makes it difficult to compare with Wiggins Park. Siena's composition and intent are very different than those of a North-American suburb. As such, it is better to look at Westdale for a more comparable example of *villageness* in qualitative terms. The corner and garage additions will provide a similar level of social value as the main street in Westdale, and the identity anchors will provide a comparable level of centeredness as well. The street narrowing and

sidewalk adjustments achieve equal qualities to the streets in Westdale. The renovation of park spaces in Wiggins Park will encourage residents to make use of them more frequently and thus increase the rate and quality of social interactions. The tree cover in Westdale and the presence of a nearby forest are of course not achievable within twenty-five years in Wiggins Park and are aspects that the framework does not address. These comparisons between the retrofit elements and what is present in Westdale show that a similar level of qualitative *villageness* can be achieved.

In general, this analysis shows that the framework can theoretically produce a reasonable level of *villageness* over the course of twenty-five years. The quantitative data fully supports this, and the qualitative data suggests it as well.

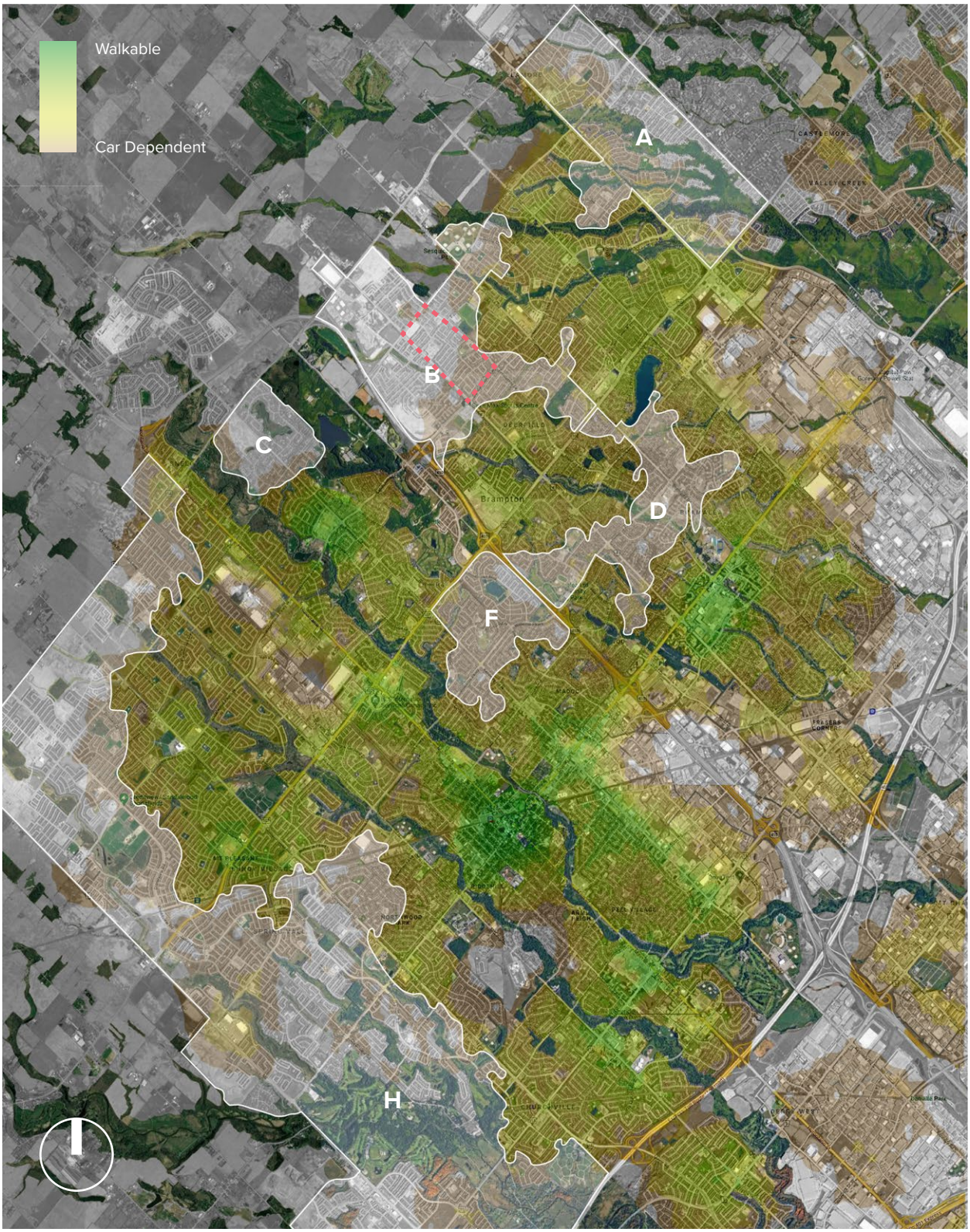

Existing
Garage Store Addition
Corner Café Addition
Widened Sidewalks
Car-Share Parking
Retrofit

Conclusion

Car-dependence and mono-zoning regulations hold North American suburbs back from developing into more village-like neighbourhoods. These two inhibiting factors contribute to the many social, life satisfaction, health, and environmental deficiencies associated with suburbia. In his book titled *Happy City*, Charles Montgomery establishes that the implementation of planning philosophies that prioritize speed and separation (something he identifies as two distinct schools of thought) result in disconnected communities. He posits that the tenets of these planning ideologies, such as the freedom from cities born from vehicle ownership, and the strict separation of land uses, causes such physical disconnection in suburbs that the formation of strong social identities is nearly impossible. The necessity for commuting out of suburbs to access work and resources contributes to the obesogenic nature of suburbs, negatively impacts drivers' lung health, and deepens the climate crisis through higher GHG emissions per capita produced in suburbs than in cities. Car-dependent sprawl is an outdated planning methodology that is antithetical to the health, wellbeing, and social prosperity of suburban residents. With North Americans' evolving, environmentally conscious lifestyles, and recent changes in their patterns of living, what better a time than now to revisit the design of suburbia?

Fig. 5_1 *(Opposite page) A comparison between an existing suburban corner unit and its retrofit condition at the five year mark.*

The Covid-19 pandemic's influence on work-from-home culture has created a fundamental shift in where people choose to work from. More Canadians have made use of remote-work technology than ever before. In fact, work-from-home hours are predicted to be greater in number after the pandemic compared to before it began. Suburbanites are spending more time at home in suburbs that do not have the amenities to support so much time spent there. Suburbs are already overdue for re-examination by architects and planners because of the existing health and environmental problems they create. The change to North Americans' patterns of living that the pandemic has resulted in is further incentive for the rethinking of what suburbs can be.


Walkable
Car Dependent
A
B
C
D
F
H

It Takes a Village: A Retrofit Framework for Improving Health and Community in Car-Dependent Suburbs proposes that a certain level of *villageness* is what is missing from suburbs. *Villageness* is a term that this thesis invents that describes the quality of a neighbourhood that has the feeling of a village. *Villageness* is based on the anatomy of a village, exhibiting centeredness around an important gathering space with nearby amenities that are within walking distance and a strong sense of community. *It Takes a Village* presents a solution to the problems that suburbia creates through the use of a framework that retrofits suburbs to exhibit more *villageness*. The retrofit framework creates this *villageness* in suburbs by addressing the social dimension of suburban living as well as suburbia's composition through the framework categories of **Identity**, **Gathering**, **Circulation**, and **Resources**. These framework categories contain specific retrofit elements that can be added to suburbs over a twenty-five year phasing period to achieve *villageness*. The neighbourhood of Wiggins Park in Brampton is used as an example site to illustrate the effectiveness of the framework. As part of the **Resources** category, the corner store addition is the most effective first step to integrating the framework into existing suburbs, as it provides the most impact for a single element. Corner stores accustom suburbanites and planners to the addition of retail options into previously mono-zoned neighbourhoods. The rest of the framework elements follow. Elements like community anchors and renovated park spaces, part of **Identity** and **Gathering** respectively, help address social deficiencies in suburbs. Elements from the **Circulation** category, such as sidewalk continuity, widening, and road narrowing, result in a safer, more enjoyable pedestrian experience. Garage additions, part of **Resources**, provide transitional or permanent space for current and future at-home businesses. The projected twenty-five year results of the retrofit framework compared to two example *villageness* sites, the Italian city of Siena and the Hamilton suburb of Westdale, show that the framework has the potential to achieve a similar level of *villageness* as in Siena, and to match and exceed the *villageness* of Westdale.

The framework has been designed to be replicable across most generic

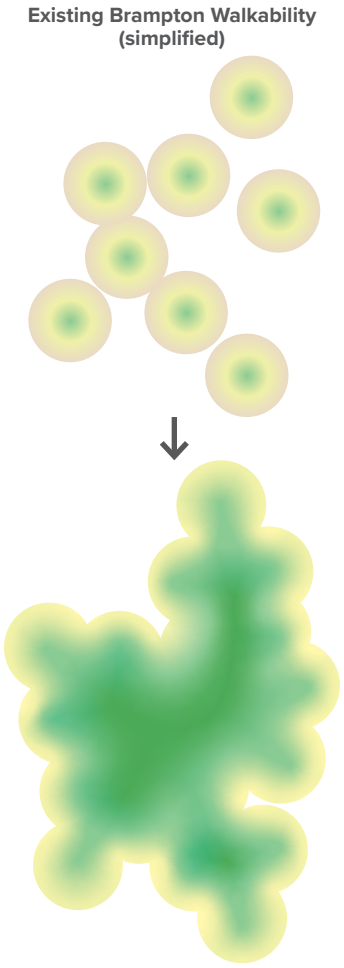


Fig. 5_2 *(Above)*
Villagenes has the potential to improve Bampton's walkability from isolated walkable areas to a much larger 'walker's paradise' that connects most of the city.

Fig. 5_3 *(Opposite page)*
The remaining walkability dead zones in Brampton that are suburban and would be appropriate to apply the framework to.

North American suburbs. Therefore, the potential for large scale impact is substantial. Wiggins Park and the remaining suburbs in Brampton are not the only ones available for retrofit. Significant portions of Mississauga, Vaughan, Richmond Hill, Markham, and Pickering are suburban. These neighbourhoods provide equal potential for retrofit solutions and the development of *villageness*.

The integration of *villageness* into existing suburbs through the use of the proposed retrofit framework has the potential to substantially diminish suburbia's car-dependence, reduce its environmental impact, create more socially vibrant neighbourhoods, and ultimately improve residents' quality of life.

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