Reappropriating the Single Detached Street: Inhabiting a Manipulated Landscape with Public Housing and Amenity

by

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Dalhousie University is located in Mi'kmaq'i,
the ancestral and unceded territory of the Mi'kmaq.
We are all Treaty people.

Contents

Abstract

Single-detached, suburban style neighbourhoods prioritize automotive convenience and private property value at the expense of accessibility, affordability and diversity. This thesis proposes reappropriating underutilized public and automotive space as a landscape inhabited by public housing and amenity.

Rather than revitalizing low-income areas, new public housing must be added to mature, single detached neighbourhoods. Public housing requires services and amenities to support residents. Universally accessible public amenities create an interface between public housing and single detached typologies and residents, enabling increased density and diversity.

Glenora, a single detached neighbourhood in Edmonton lacking affordability and diversity, is used to test the thesis. Streets are reappropriated as public landscape and inhabited by a mix of amenity and public housing that promote alternative transit and walkability. The result is a new urban fabric with increased affordability, density and accessibility.

Acknowledgements

Thank you to my supervisor Niall Savage for his insight and guidance over the past 3 semesters. Your interest and enthusiasm has motivated my work and inspired my interest in housing and the study of it.

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Thank you to my family for their constant support. Your encouragement has enabled me to accomplish more than I ever thought.

Chapter 1: Introduction

Western Canadian cities, particularly on the prairies, are dominated by sparse single detached suburbs. The availability of space and resources make this the cheapest and most desirable housing type for those who can afford to own, and the most lucrative for developers. As this chapter will show, these characteristics make housing less accessible and affordable. To address the growing need for affordable housing in prairie cities, the housing typologies and processes of providing housing must be re-thought. This means reconsidering the role of public vs private housing, the urban fabrics that are promoted and the public services that enable them. This thesis proposes an intervention to a central, single detached neighbourhood, introducing a mixture of public housing and amenity to address the lack of affordable housing and lack of density and diversity in these types of neighbourhoods.

Context

The dominance of the single detached home and the automobile led to cities that are sparse and privately owned. Studying the urban strategies and culture that designed these cities is the first step in understanding how to intervene within the existing system. This is done in Chapter 2: Housing Crisis: Property Value and Automotive Convenience, to provide context into the characteristics of prairie cities. After a description of the Canadian housing crisis, Edmonton, Alberta is used as a case study to illustrate the independent culture, geography and economic factors that make single detached homes the dominant housing type on the prairies. The history of prairie cities can be viewed as a process of privatization and division.

Beginning with the Dominion Land Survey, the landscape was measured and expropriated in order to inhabit the land with colonists. Growth in population, transportation technology and natural resources drove growth and led to further division of the landscape to create more private land to be sold and inhabited. The current single family home on a private lot is a miniaturized version of the homestead: an independent, private landscape. Despite the shrunken size of the lot the larger homes are, while constructed using modern mass produced materials, miniaturized images of a Palladian villa. The home is an individual object with dominion over the landscape. The house addresses the street in an aesthetic way, with the front yard and facade manicured to present an image of control and ownership.

After establishing the housing context in Edmonton, Chapter 3: Urban Affordability describes urban models that claim to improve affordability and diversity. The models described begin with Jane Jacobs. Her book *The Death and Life of Great American Cities* describes urban planning principles that are widely built on and adopted by later theories. The important concepts to this thesis are mixing uses, tightly grained building types, and an engaging street as public space (2011, 147, 150). New Urbanism is a set of concepts that closely resembles Jane Jacobs', the driving goal being to combat placelessness in the suburbs (Grant 2006, 5), though affordability and diversity are less directly addressed. Soft cities, a concept developed by David Sim, refers to cities that are friendly at the street level and human scale. It focuses on the relationships between public and private realms and how to design public space that enables activity and life to take place (Sim and Gehl 2019, 3). Walkability, while not directly associated with any person or institution,

is an important concept to include when investigating urban fabrics. It has been studied by Jeff Speck, who outlines conditions that enable walkability in cities (Speck 2012, 11). Combined with winter city adaptations (Borys 2016), walkability is critical to improving the affordability and accessibility of single detached neighbourhoods.

Housing Models

Having established urban planning strategies to promote diversity and affordability, housing strategies are examined. Chapter 4: Mixed Housing examines mixed income and mixed use housing. Income segregation is associated with many social and economic problems, as well as being a symptom of the way housing is provided. The links between income segregation and consequences are tenuous. Instead, the processes that produce income segregation are the same that produce the problems associated with it. This thesis addresses income segregation by introducing public housing to areas of the city where it is absent. Changing the single detached urban fabric requires some income mixing, as public housing is added to a neighbourhood of primarily owners. The most common argument for mixing incomes is that it improves the conditions of low-income residents. There are strengths and weaknesses to this argument, but it is often misused as a justification to gentrify low-income areas rather than support them. This is supported by 3 case studies of mixed income housing projects. Mixing incomes can result in diverse communities or divided communities. The parameters from mixed income housing that are important to this thesis are that existing residents cannot be displaced, design of public space, and the provision of social services to support residents.

Public space and social services are amenities that are critical to public housing and market housing mixing. To provide both, housing must be mixed with other programs. Mixed use housing comes with its own set of affordability and accessibility concerns. Nearby amenity inflates housing costs, making it difficult to keep affordable (Moos et al. 2018). Private amenity in mixed income communities tends to serve the affluent population more, making the community less accessible. Public amenity is ideal to support mixed income housing. It can operate outside the financial power imbalance, serving all income groups equally.

Mixed Interface Model

Chapter 5: Mixed Interface Housing applies the concepts highlighted as useful in chapters 3 and 4 to an urban and housing strategy for Edmonton. The argument is two-fold: it proposes diversification of the urban fabric and the responsible mixing of income groups. Adding public housing to affluent areas avoids the damages of revitalization projects, and provides more residence options for low-income households, separating them from so-called “neighbourhood effects” (Manley, van Ham, and Doherty 2011, 157). Making existing neighbourhoods more dense and diverse improves the ability for the city to provide services, and promotes alternative transit.

Design

Neighbourhood Selection

Chapter 6: Streetscape Housing describes the final thesis project and the process involved in its design. The neighbourhood chosen as the test site for the thesis is Glenora in Edmonton. It is a mature neighbourhood of single

detached homes, with a high average shelter cost and low unaffordability rate (Government of Canada 2022a). This has been used as an indicator of concentrated affluence, where housing is expensive, but most households can afford the expense. On top of this, there are wider urban planning arguments for an intervention into this neighbourhood. The centrality of the neighbourhood and proximity to transit suggests densification will be beneficial. This thesis adds density to the neighbourhood and increases the amenity in the neighbourhood in line with the city plan's goals.

Urban Strategy

The strategy of adding public housing to affluent neighbourhoods addresses the lack of affordable housing without displacing low-income groups or gentrifying existing affordable areas. With this requirement established, it is also necessary to not displace residents or expropriate homes from the existing community. The urban strategy begins to take shape from these criteria. Only public land is considered for use, providing several options for sites.

There is general consensus that the more integrated public housing is with the surrounding community the better, however there is value in allowing community to form within public housing, promoting informal support networks (Ley 2011, 67). This leads to the new mixing method of distributed nodes. This distributes clusters of public housing units throughout the neighbourhood, where they are integrated with the neighbourhood but not isolated. The simplified urban strategy is defined by these criteria. The streets will be re-appropriated, becoming space to be inhabited rather than in service of the automobile.

Street Inhabitation

With the site and urban strategy established, the way that the street is inhabited must be explored. The goal is to add public housing and the amenity that is necessary to support it within the urban strategy. The process of developing the inhabitation of the street can be viewed as a narrative of reappropriation. The first step in reappropriating the street is removing the paved, car-only hardscape and returning it to the public landscape in service of a denser, softer urban fabric. The public landscape created offers active transit routes, recreation space and park space. The availability of public space softens the impact of added density, as residents are not forced to use the same spaces.

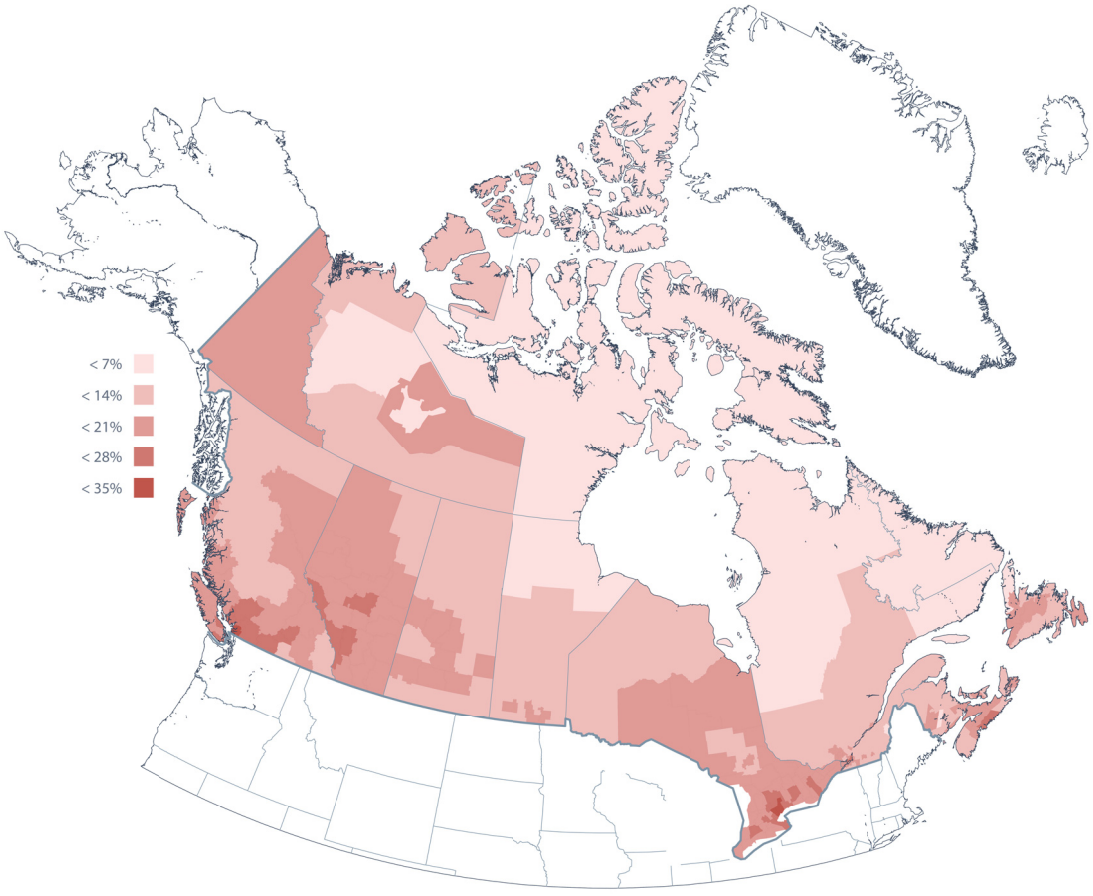
By manipulating the landscape, habitable spaces are created on, around and within the landscape. This becomes the method of form making for the project: landscape manipulation. The surface of the landscape is lifted, and the ground is excavated to form a variety of environments. The public landscape is maintained as ribbons of the landscape over the programs below.

Amenity is the next step in reappropriating the street. Primary amenities to add to the neighbourhood are a small library, social services, and child care. These are programs that support public housing and must be available when public housing is introduced to the neighbourhood. These are publicly run amenities, and serve the entire community, and are embedded in the landscape, as part of the new street. While the landscape street is lifted above, the amenity street exists below, sunken into the street. The excavations and cavities created by manipulating the landscape create the different types of spaces that can host different amenities.

The programs contained in the amenity spaces are required to support the public housing residents, so the architecture of the housing is supported by the amenity. The housing typology for the street housing is an adaptation of 16’ row housing. The manipulation of landscape also provides every unit a close connection with the street, and gives the resident control over the interface between public and private.

The project inhabits the street as a public landscape and provides amenity to promote diversity and allow density in an existing community. Public housing is added to the landscape to increase density and accessibility, which is supported by the new amenity and public transit resources that are being developed through the neighbourhood.

Chapter 2: Housing Crisis: Property Value and Automotive Convenience



Map of unaffordable housing rate by Census Subdivision. (Government of Canada 2022a)

Canada is experiencing an affordable housing crisis in its cities (Government of Canada 2022a; 2022b). This thesis responds to the lack of affordable housing and the processes that prevent it. The affordable rental market is disappearing due to lack of public involvement and home ownership is becoming less attainable due to the history of sparse, single detached home development. The result is many unsustainable and unaffordable cities, best illustrated on the prairies. Prairie cities have the highest proportion of single detached housing and ownership in Canada. While not as expensive as larger metropolises, these cities lack

diverse housing options. Instead they have prioritized home ownership and private greenfield developments to provide housing. Meeting the affordability needs of growing cities will require re-thinking suburban living models and affordable housing delivery methods.

The Housing Crisis

As declared by the government of Canada in 2019, housing is a human right (Canadian Human Rights Commission 2019). Despite this, 1 in 5 households in Canada are considered unaffordable, where over 30% of household income goes to housing. The systems that produce cities contribute to their affordability, or lack thereof. The market systems currently in place have failed to provide solutions, as affordability declines across the country (Dahms, King, and Ducharme 2022, 1). The lack of affordable housing in Canada is a symptom of inconsistent public support for housing over the past 50 years.

Cities are experiencing a shift from ownership households to renter households, as the number of rental dwellings is growing at twice the rate of owner occupied dwellings (Government of Canada 2022c, 5). Likely reasons for this shift are immigration and associated housing types, ageing populations downsizing, and downtown lifestyles of young generations moving out of home (2022c, 5). This affects affordability because rents increase when ownership decreases (2022c, 5), and the existing deficit of affordable rental units will continue to grow. This is particularly relevant to prairie cities, where rental housing is less common (Government of Canada 2022c).

There is little private interest in developing or managing low-cost rental units (Förster and Menking 2018, 19). One in three

rental units are now owned by institutional landlords or real estate investment trusts (REITs) (Luck et al. 2022), whose objective is to profit from ownership rather than providing a service to residents. Common REIT strategies are to buy affordable units and pressure tenant turnover in order to renovate and increase rent (Luck et al. 2022). Much of the rental stock was built during the 60s-70s building boom, and has high operation costs and turnover, making them especially susceptible to this strategy (Förster and Menking 2018, 20). This is part of a trend towards the financialization of housing that has contributed to the crisis in affordable rentals. The trend towards unaffordability is obvious, with rents increasing faster than wages by nearly 20% between 2014 and 2019 (Luck et al. 2022).

Similar to rents, the cost of ownership has increased faster than wages (Government of Canada 2022c). The dominance of private developers as a source of housing has led to a shortage of affordable housing for both potential owners and renters. Instead, the growth pattern of cities focusing on single family home ownership since the 1930s produced sprawling cities that are unaffordable and reliant on cars. Reliance on private developers to supply housing led to these cities being built without sufficient affordable housing. This thesis focuses on western Canadian cities, where privately developed suburbs are most ubiquitous (Government of Canada 2022a; 2022c).

While many economic factors contribute to housing unaffordability, a large portion is related to the mechanisms that supply housing. The market cannot address all housing needs because housing is inherently an abnormal market commodity and must be treated specially (Förster and Menking 2018, 7). In practice, the housing market is already

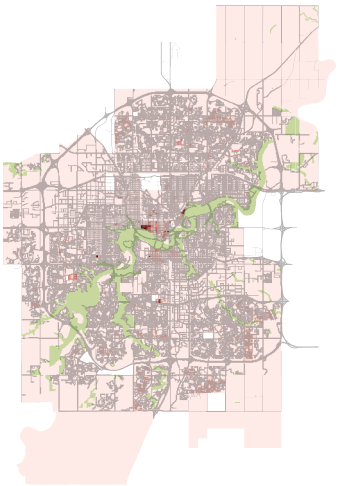
unique; it is not very responsive or transparent and gives distinct advantages or disadvantages to people (2018, 7). If housing is a human right there must be some intervention to ensure universal access to a home and prevent exploitation. Since the building boom, the rental market has suffered poor funding for public affordable housing, with federal support largely absent (Anderson-Baron and Kjenner 2021, 55). The lack of funding, inadequate rent control and inadequate welfare have all contributed to the housing crisis (Förster and Menking 2018, 19). This thesis takes the position that more public housing is required to address affordability.

Prairie City Characteristics

Land

Characteristics

One of the most significant characteristics of prairie cities is their geography. The lack of geographic obstructions and abundant space have played a strong role in shaping the cities. With the personal automobile becoming popular through the 19th century, sparse urban models were easily adopted by growing cities. Suburban developments could be large, and far from centres of employment and amenity. Because of this, prairie cities have huge areas with low density (Government of Canada 2022a; Johns 2022, 7). As residents assumed that cities would continue to expand, owning land became an entitlement (2022, 9). When less sparse urban planning concepts like New Urbanism were proposed for city growth, their application was forced into a suburban framework that continued the trend of expansion (Grant 2006, 160). Without geographic limits, prairie cities expanded and relied on land intensive systems.



Edmonton Population Density Map. (Government of Canada 2022a)

Associated Issues

The land occupied by expanding prairie cities was not unoccupied before them. Cities relied on displacement and expropriation of land from First Nations, perpetuating processes of colonization.

Sparse cities require more energy to operate. Infrastructure costs more, and transportation takes longer and is more difficult. This makes cities unsustainable and hard to manage. The personal automobile enabled expansion, allowing residences to be far from workplaces and amenities. Resulting communities became reliant on cars, which makes densification and diversification difficult.

Ownership

Characteristics

Widespread home ownership was the goal of the Canadian Government in 1935 when it introduced federally backed loaning for building or purchasing homes through the Dominion Housing Act, creating mortgages in Canada (Ripka 2021, 8). Ownership in prairie cities is an expectation. The availability of land enabled ownership to be attainable. The prairie cities in Canada with a population over 1 million, Edmonton and Calgary, have the highest rate of home ownership, and the lowest portion of new dwellings that are rentals since 2016. Along with the value of ownership and expansion that remain from the city's settler past (Johns 2022, 7, 9), concepts of private land and the house are evident. Owned land is rarely productive, instead being an aesthetic extension of the private home. This attitude to land is less associated with settlement, and more of dominion and control, making each house a stick framed Villa Rotonda.

Villa Rotonda (Quinok 2013)

The desire for home and land ownership in prairie cities is a desire for both a miniature homestead and a miniature villa.

Associated Issues

The expectation of ownership drove expropriation of land and unsustainable expansion of prairie cities. Reliance on cars was not seen as a problem, instead as a source of freedom (Johns 2022, 9) because it allowed the benefits of ownership: privacy, space and control; without losing access to city life. Safdie and Kohn call the desire for both these environments “the paradox of contemporary urbanism” (1997, x).

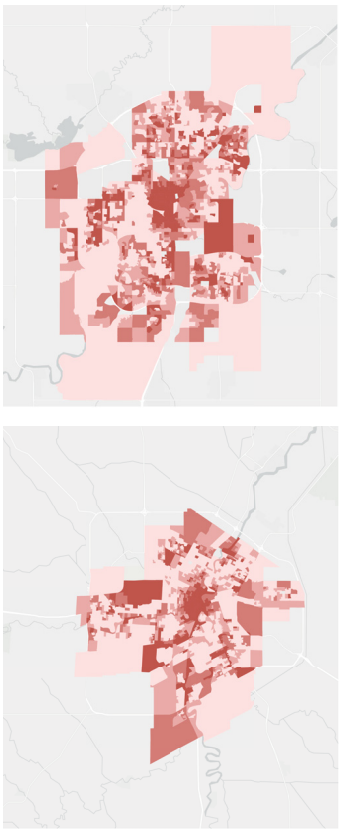
Emphasis on ownership exists in economics as well as housing. The processes of financialization of housing in Canada are bolstered by the desire for ownership, pushing the cost of ownership further out of reach.

Suburban Development

Characteristics

Growth in prairie cities has primarily been in the form of single family home ownership. Suburbs filled with these homes were designed as evolutions of older community models, like Ebenezer Howard’s Garden City. Suburbs were appealing throughout the 20th century to North Americans who wanted to escape the perceived ills of cities and waves of immigrants arriving in cities (Safdie and Kohn 1997, 14), leading to what Tach, Pendall and Derian call “secession of the successful” (2014, 63).

As suburban models developed, they began implementing ideas from Jane Jacobs and New Urbanism. New Urbanism and its concepts were widely adopted through the 1990s



Percent of households single detached by Dissemination Area of prairie cities (Government of Canada 2022a)
Top: Edmonton
Bottom: Winnipeg

(Grant 2006, 157), claiming to provide more diverse and prosperous communities through architecture. New urban suburbs were more affordable, but less dense with smaller dwellings (2006, 158).

Associated Issues

The secession of the successful allowed affluent households to ignore social issues in the city. This put more pressure on cities to allow expansion and less to address the cities' issues. New suburban housing only provided for households that could afford to buy, and who wanted to live in a single detached home. Restrictive zoning laws and HOAs prevented diversity in housing types, keeping suburbs homogenous.

Residents of these suburbs relied on cars to commute, undermining the transit aspirations of New Urbanism (Grant 2006, 160). Despite these changes, the result is more greenfield, suburban sprawl. A new urban suburb is still a suburb. Suburbs did not include many amenities, creating a dichotomy of building forms between the dense downtown and sparse residential surroundings. Travelling everywhere by car, prairie city residents had little engagement with the built environment, creating a culture that did not see architecture as adding value to an individual's life (Johns 2022, 13). On top of this separation, prairie cities began as settlements, isolated from architectural discourse. This prevented builders and planers from adopting modernist, or earlier, concepts (Johns 2022, 10) to produce more dense housing types.

As a result of their culture and geographic qualities, prairie cities are sprawling suburban webs surrounding a small downtown used almost exclusively for working (Johns

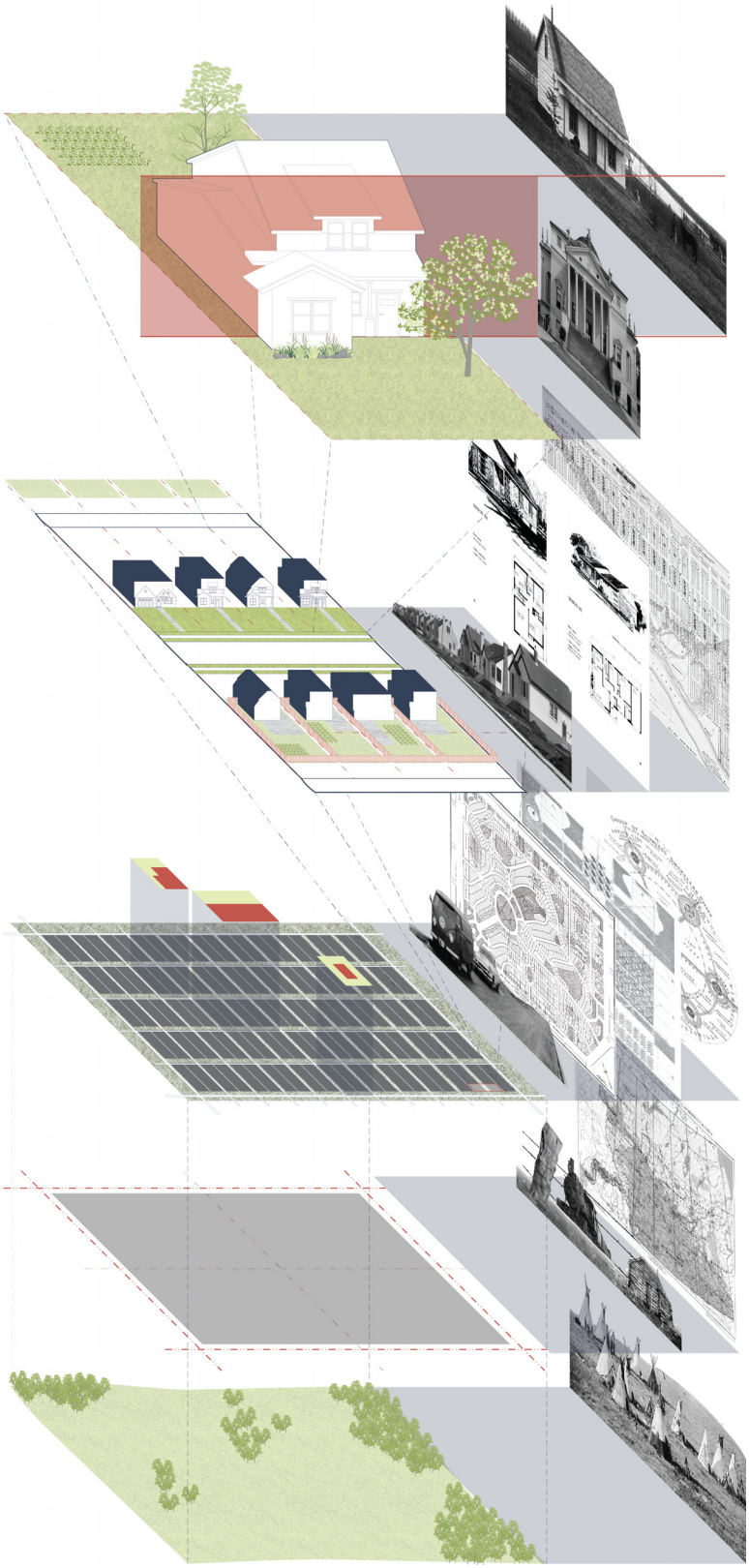
Miniaturized homestead and Villa Rotonda — Private and protected yard, and the landscape in service of the house.

Street landscape — Private landscapes act as extensions of the facade.

Subdivision and transportation — New residential divisions structured by automotive transit.

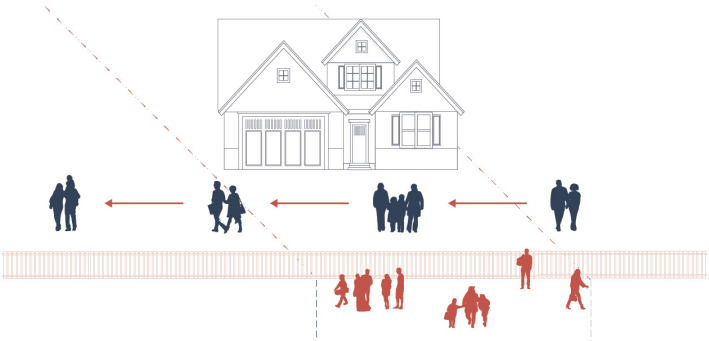
Division and privatization — Dominion Land Survey created a framework for ownership and settlement.

Landscape — Inhabited by First Nations, no arbitrary divisions.

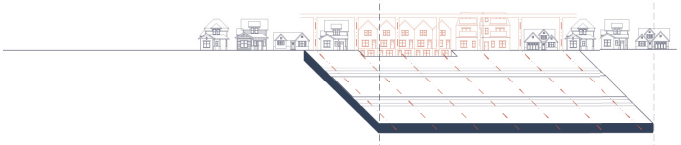


Stages of landscape ex/appropriation in the process of prairie city formation.

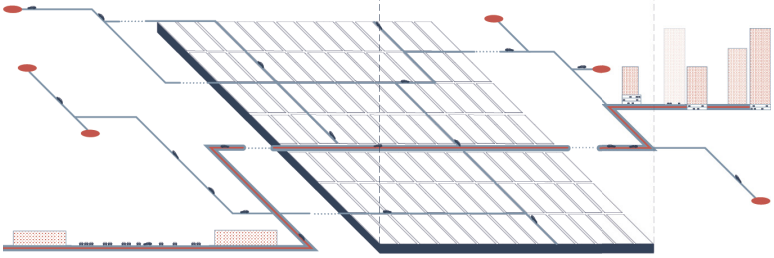
Unaffordable and inaccessible — The combination of restrictions contributes to unaffordability and income segregation.



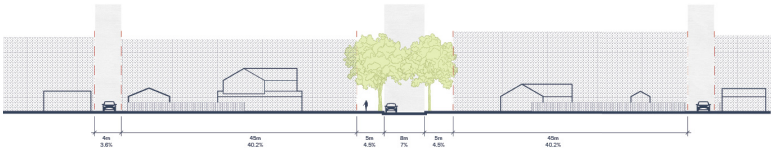
Restricted housing type — Zoning restricts housing types. Land use regulation, setbacks, and height restrictions all limit missing middle types.



Automotive Reliant — Prairie cities have areas of residences, workplaces and amenities that are far apart. Sprawls makes public transit inefficient and active transit impractical.



Underutilized public space — The public realm is underdeveloped and underutilized in single detached neighbourhoods. Most space is devoted to vehicles.



Existing conditions of single detached urban fabric

2022, 9). This thesis will target prairie cities, addressing the dominance of single detached homes, and a lack of affordable rental development.

Edmonton as a Test City

Edmonton is an example of the prairie city the suburban culture above produces. Edmonton is undergoing a paradigm shift in planning as it prepares to grow over the next decades towards a city of 2 million. It is currently one of the most sparse and suburban dominated cities in the country (Government of Canada 2022a; 2022c), making it an ideal test city. Abundant central, homogeneous neighbourhoods can accommodate increased density but will require sensitive intervention to allow the mixing to be successful, both physically in the urban fabric and socially in the community.

History

Growth

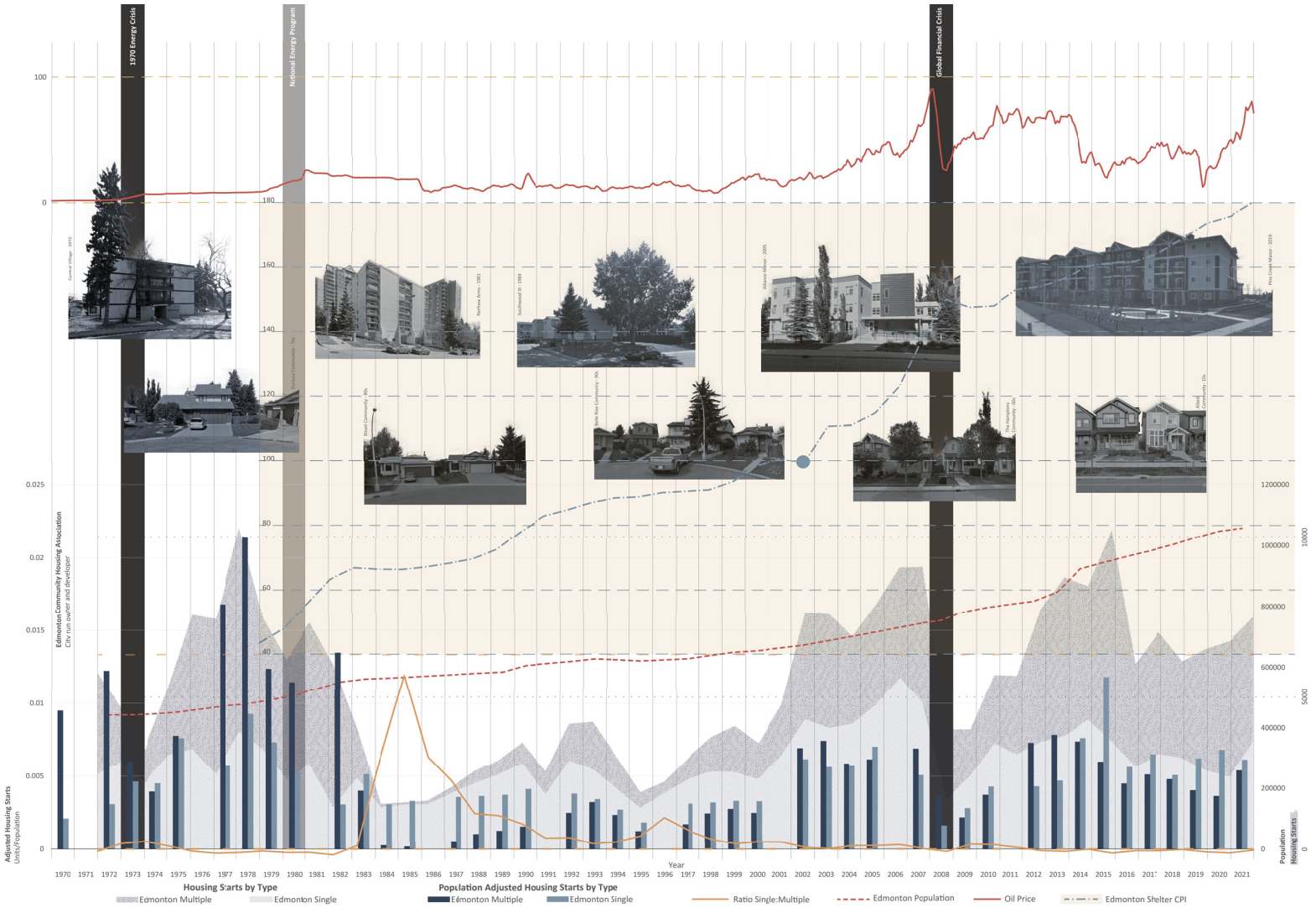
Established as a trading post, Edmonton grew through the 20th century, driven by agriculture, both world wars, and eventually oil. Expanding the boundaries of the town involved the annexation of neighbouring towns and the seizure of First Nation lands from the Enoch Cree Nation, Papasche Reserve, and the Michel Reserve (“Urban Settlement: 1870-1904 - Edmonton Historical Board” n.d.; “Urban Growth: 1905-1913 - Edmonton Historical Board” n.d.). Stopping outward expansion prevents the potential for further expropriation of land from Indigenous communities. After the second World War, growth sped up as veterans returned. Non-Indigenous and Metis veterans were provided with support that promoted housing and education, as well

as programs across the country to promote the construction of homes, almost exclusively single detached for eventual ownership (“The Post War Years: 1946-1970 - Edmonton Historical Board” n.d.). These exclusionary policies were damaging to First Nations and Metis communities, and new housing initiatives must be equally accessible and inclusive. Suburban sprawl was accelerated by several ‘booms’ through the 1900s: the baby boom required more and bigger homes for families, the oil boom brought workers and more economic growth, and the building boom followed to provide housing for the swelling population.

Suburban Dominance

Edmonton’s housing is dominated by suburban neighbourhoods. The economic systems throughout the country prioritize home ownership over renting (Salvador 2017, 20), making home building a major economic force. Edmonton has relied on market development to provide housing (Salvador 2017, 22) and has created a system where developers have control over planning of the built environment rather than the city (Ripka 2021, 35). Developers are incentivized to build single detached homes, simply because they are most profitable, and planners have emphasized the value of home ownership as an investment as much as the attainability of housing (Ripka 2021, 34).

Barry Johns makes observations about the culture of Edmonton that promoted the suburban model. In the prairie culture, the downtown core is for working, not for living. What is left of a pioneer attitude from the city’s origin has created a desire to own large areas of land (Johns 2022, 9). Without physical barriers to expansion, this acquisition of land became an entitlement, and other housing types



Illustrated timeline of Edmonton's housing history, and related data (Data from Edmonton Open Data Portal n.d.; Government of Canada 2022a; Statistics Canada (last) 2022; "U.S. Energy Information Administration - EIA - Independent Statistics and Analysis" n.d.)

that limit ownership or reduce lot size were resisted (2022, 7). NIMBYism (Not In My Back Yard) towards densification in core neighbourhoods and transit projects has prevented growth within the city, forcing it to sprawl further outward (Ripka 2021, 33). As concepts like New Urbanism were brought into planning and policy, they were difficult to align with popular values like privacy, ownership and individualism. Their application was limited to concepts that accommodated single detached housing (Grant 2006, 26). Suburbs are the dominant form of housing in Edmonton due to economic systems and cultural preferences, and other models are not readily accepted.

New City Plan Goals

The most recent City Plan has very different motivations than those that produced the city. It emphasizes density and transit, planning to grow to a population of 2 million within the existing boundary (City of Edmonton 2020, 32).

Density

The plan estimates doubling the population will require infill and high density redevelopments to accommodate 600,000 new residents within existing neighbourhoods (2020, 12, 136). Within this goal is a requirement and an opportunity to address the homogenous nature of Edmonton's housing stock and automobile dominance. The overall plan is adopting "15 minute city" concepts (Duany and Steuteville, 2021), applied to districts of the city. It plans for 3 scales of nodes of density within communities (City of Edmonton 2020, 97). These nodes will provide employment and basic services throughout the city, enabling higher densities in more areas (2020, 12). These concepts align with the density objective of this thesis project.

Transit

Transitioning from car dominant transportation will be another major challenge. Industrial areas are a major consumer of land in Edmonton. The city grew around these areas, resulting in a dispersed workforce, reducing employment intensity of downtown (“Edmonton - Open Data Portal” n.d.; Ripka 2021, 32). This distribution eases traffic in the city, allowing and even encouraging cars to remain the dominant mode of transport as the city grew (Johns 2022, 9). Automotive-dominant planning and sprawl make public transit inefficient and expensive for the city, and active transit impractical. Because distances from population to workplaces are so large, walking and cycling, activities that could be used as active transit, are simply recreation (Ripka 2021, 37). The transit plan is aligned with the 15 minute strategy, planning routes and corridors at several scales (City of Edmonton 2020, 121). Mixed Interface Housing relies on and supports a variety of transit options by increasing density and housing types.

Affordability

Affordability targets laid out in the plan are to eliminate core housing need, to reduce the unaffordability rate to 35%, and to end chronic homelessness (City of Edmonton 2020, 12). Unfortunately there are no meaningful processes to deliver this housing, or changes to the systems that currently exist. This thesis will align with the density and transit goals but further investigate alternative ways to provide affordable housing.

Prairie cities are primarily single detached, with little public housing. These conditions are a result of the cultural value on ownership and privacy, as well as the processes that

were used to produce housing. The associated issues of accessibility and affordability will be addressed by this thesis at a neighbourhood scale. Accessibility refers to the ability of a household to attain housing. The dominance of ownership and increasing cost of rentals limits both accessibility and affordability. Neighbourhoods dominated by single detached housing limits the household types that can access the neighbourhood, reducing accessibility and contributing to income segregation. Reliance on automobiles wastes public space, and keeps amenities that promote accessibility out of the neighbourhood.

Chapter 3: Urban Affordability

To increase accessibility and affordability in prairie cities, the urban fabric must be altered. The homogenous neighbourhoods that cover the landscape are socially and environmentally unsustainable, consuming land and resources with low density building types that require cars to be convenient. By adapting urban concepts from Jane Jacobs, New Urbanism, Soft Cities from Jan Gehl and David Sim, and Jeff Speck's research on walkability, parameters for improving this model of neighbourhood can be developed. These concepts address housing types, urban forms, and methods of enabling healthier street life. Increasing the availability and variety of housing, amenities and services will lead to more accessible and affordable communities.

Existing Concepts

Jane Jacobs

In her 1961 book *The Death and Life of Great American Cities* Jane Jacobs describes qualities of vibrant urban spaces. She argues that promoting a mixture of uses and tightly grained building types create more productive, healthy and affordable neighbourhoods (Jacobs 2011, 147, 150). She believed that to help people engage with their surroundings, they first must engage with the street, making it more active, safe and welcoming (Jacobs 2011, 147, 150).

New Urbanism

New Urbanism is a set of concepts developed around the belief that the design of urban environments contributes to an individual's happiness and well being (Congress for The New Urbanism 2015). New Urbanism idealizes classical

European cities, North American small town life, and localness (Grant 2006, 4). Proponents reacted against the sprawling and repetitive development patterns of the 80s and 90s (Congress for The New Urbanism 2015) and set out basic tenets that would combat the placelessness of homogenous, automotive dominant suburban areas (Grant 2006, 5, 8). Major concepts that have remained through the history of New Urbanism built on Jacobs, promoting fine grained urban fabric with a mixture of uses, mixed housing forms, and pedestrian friendly streets (2006, 8). Smaller, closer knit communities are promoted, and should be held together by an attractive public realm achieved through architectural form (2006, 3, 56). New Urbanism is an important set of concepts, as it addresses changes in household demographics, promoting compact housing in tighter, more active communities (2006, 6).

Soft Cities

Developed by David Sim and Jan Gehl, Soft Cities is an architectural and urban design application of the Danish concept *hygge*: “everyday togetherness; the cosy, convivial atmosphere that promotes wellbeing” (Sim and Gehl 2019, 2). The use of *hygge* outside the home enables “life between buildings” (2019, 3), activities that are not accommodated by single detached or suburban housing. To become softer, existing cities must transition from discrete uses of buildings and space, enable mixing of public and private, and prioritize walking and other transit methods that are connected to public space (2019, 7). They describe ways of mixing uses and forms in spatial terms, suggesting mixing must happen both horizontally and vertically. Mixing in all directions puts people in closer proximity to one another and to other uses. They define proximity as Density x Diversity. In cities,

proximity enables healthy, vibrant communities (Sim and Gehl 2019, 12).

Walkability

Walkability refers to how many individual or household needs can be met within walking distance. The benefits of walkability include improved health of residents, stronger local economy, and better affordability and accessibility of the neighbourhood (Speck 2012). Diversity is a key characteristic of walkable neighbourhoods, both in housing types and land uses. Proximity to transit is important, both public and active transit infrastructure, to enable the walkability of a neighbourhood. Jeff Speck writes extensively about the benefits of walkability in *Walkable City: How Downtown Can Save America One Step at a Time*. The conditions Speck identifies as critical for walkability are useful, safe, comfortable and interesting (2012, 11).

His insights into planning walkable cities are important in developing affordable housing that is accessible. However, his examples and research focus on cities that experience shorter and/or milder winters than Canadian prairie cities. This is an important distinction, as walkability can be unsafe at certain times during certain weather so the concepts must be adapted. Hazel Borys, the Managing Director and Principal at Placemakers, builds on Speck's conditions, adapting them for application in a winter city. The first distinction is that walkability must be addressed at a neighbourhood scale, not a city or district scale (Borys 2016). Daily needs should be within 5 minutes for winter walkability, and weekly needs within 20, however this may be too far for children or seniors in cold weather. Sheltering from winter weather is necessary, and outdoor rooms and spaces can be designed to assist

in resting and warming, and avoid creating long facades or streets that create wind tunnel effects. Short blocks with mixes of uses create opportunities to briefly shelter from the weather. Winter recreation is often overlooked, particularly for children. Providing play spaces and shelters within 2.5 minutes allows outdoor activity in winter, and promotes gathering of the rest of the family (Borys 2016).

Affordability Model

The intervention and method described in chapter 5, Mixed Interface Housing, includes parameters brought from the above urban planning concepts. The planning concepts are adapted into a set of objectives for interrupting the urban fabric of a single detached neighbourhood. These parameters, which will increase accessibility and affordability in the neighbourhood, are diversity in housing and program, increased density, and walkability.

Diversity

There is no single type of housing that is ideal for affordability and accessibility. Instead it is best to have a variety to make the area accessible to many household types. The fabric of housing should be close grained, and be integrated with other uses (Jacobs 2011, 150; Sim and Gehl 2019, 46). The diversity should not only be between buildings, but within buildings. Ground floors, middle floors and top floors have different qualities that make them well suited to different housing types and programs. Buildings can engage with the street using a variety of depths. These depths range from a full front yard to a narrow space for some potted plants (Sim and Gehl 2019, 164). Diversity in housing types and forms creates a more interesting street experience,

and welcomes a wide range of households. Sim and Gehl suggest including accessory spaces that residents are free to use allowing natural diversity (Sim and Gehl 2019, 66).

Mixing uses other than residential is important for neighbourhoods. Layering programs vertically across floors, and horizontally from the street to the back are ways to increase proximity and diversity within a single building (Sim and Gehl 2019, 46). The following chapter will describe in greater detail the opportunities and risks associated with mixed use housing.

Public spaces play a role in diverse neighbourhoods. Building types and uses can be arranged and mixed in a way that is friendly to pedestrians. The composition of these diverse components is more important than any of the individual units (O'Looney 2020, 11). When mixing housing types, certain types of public spaces that are confusing should be avoided. Areas that cannot be identified as public or private, or create confusion between front and back are examples. Isolated walkways and hidden common entrances are often associated with crime. Natural surveillance and openness should be an objective (Roberts 2007, 184).

Mixing incomes is a good way to directly improve affordability. This will be explored in the following chapter.

Density

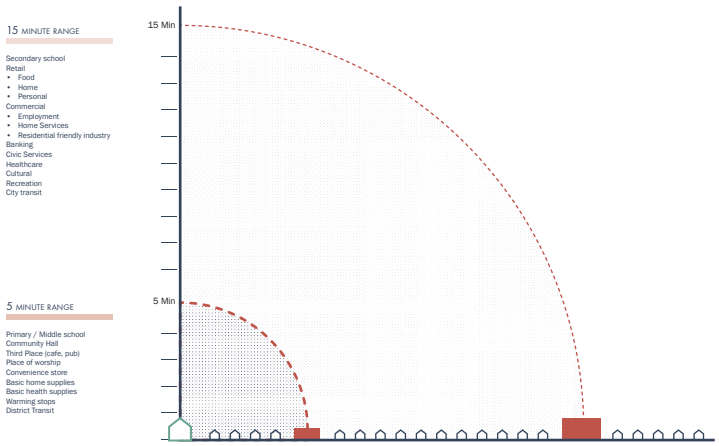
Density is not only beneficial for the growth of prairie cities, it is required to sustain services for large populations. Density applies to housing and public amenities. Dense housing, like the types common 100 years ago, supports diverse uses that create better neighbourhoods (Jacobs 2011, 147; O'Looney 2020, 10). While infill is not as politically popular

as greenfield development, it is cheaper for the municipality when infrastructure already exists. Transit is most efficient when density is high and cars are not necessary for daily life. (Friedman 2021, 95; Safdie and Kohn 1997, 7). Increasing density throughout the city makes the benefits of healthy communities more accessible, rather than adding density in suffering areas where there is less public opposition (O'Looney 2020, 21; Safdie and Kohn 1997, 7). Mixed Interface Housing explores ways of adding density in both housing and amenity to single detached neighbourhoods that are in need of densification.

Walkability

Walkability benefits individuals, making daily and weekly tasks more convenient; neighbourhoods, promoting street life and the local economy; and the city, improving health of residents and reducing load on automotive infrastructure. To improve walkability in existing single detached neighbourhoods, more diverse uses are needed to provide required services. Density, amenity and public spaces are mutually beneficial. Adding density is necessary to support added amenities, while increasing amenities and public spaces reduces perceived density, allowing residents to spread out (Sim and Gehl 2019, 12). In Edmonton, the goal of 15 minute districts within the city plan aligns with walkability goals of Jeff Speck (Speck 2012, 71) and the characteristics described by the US National Walkability Index (Environmental Protection Agency 2021, 4). The challenge with Edmonton is the long, cold winter. Five months of the year average temperatures below zero degrees Celsius. These months also average wind chills of -30 degrees. These are less common during the shoulder seasons, but average 12, 14 and 10 days in December,

January and February respectively (Canada 2013). Adapting for winter walkability requires shorter distances to amenity, transit or shelters between stops (Borys 2016). Seniors and children are particularly vulnerable, and need closer amenities or warming stops along the way (2016). Breaking up long aligned facades disrupts wind and creates places of refuge. Designing long stretches of walking without available shelter discourages walking, and public amenities can be distributed throughout pedestrian routes to service winter walkability (2016).



Identifying desired amenities and services within walking distance

Improving the diversity, adding density and facilitating walkability can improve a single detached neighbourhood. Diversity in housing type, size and cost increases the accessibility of the neighbourhood. Added density supports amenity and public services. These amenities and public services facilitate increased density. When the type of amenity and service caters to all residents, it enables an easier mix of public and market housing.

Chapter 4: Mixed Housing

As cities grow, processes of income segregation separate areas of concentrated poverty and affluence. The trend towards income segregation prevents accessibility and affordability of certain neighbourhoods. Suburban housing, ubiquitous to prairie cities, is a driver of this segregation. Mixed income housing strategies directly promote income diversity, but can cause a variety of issues. Case studies of past mixed income projects and their strategies illustrate that while mixed income housing does increase diversity, it can negatively affect low income groups, who are most vulnerable in the current housing system.

To be responsible and not a driver of gentrification, mixed income housing cannot displace low income communities. Even when attempts are made to re-house displaced residents, community supports that existed before any intervention are disrupted. By carefully addressing scale, form and management, mixed income housing can instead increase accessibility, and therefore increase diversity, in previously homogenous neighbourhoods.

Income Segregation

Income segregation describes the physical and social separation of affluent households and low-income households. As cities grow, discrete communities of affluent households and impoverished households reach populations where they are able to sustain themselves, and will grow more segregated without intervention (Myles, Picot, and Pyper 2000, 6).

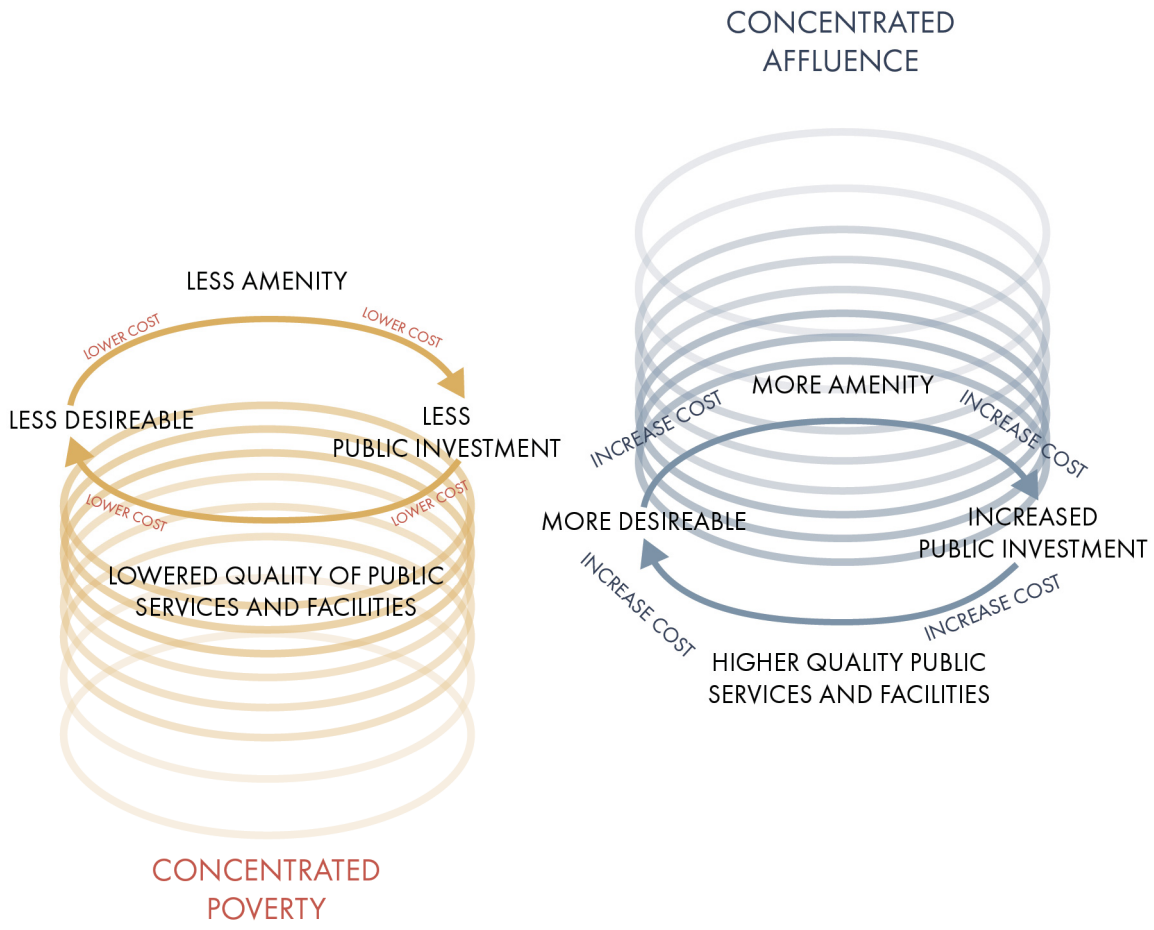
Observed Consequences

Contemporary views of the observed and theoretical consequences of income segregation have their roots in Wilson's *The Truly Disadvantaged: The Inner City, The Underclass, and Public Policy*, 1987, that popularized the Neighbourhood Effects concept of income segregation (Bridge, Butler, and Lees 2011, 4). There are observational links between homogenous, low-income neighbourhoods and reduced social capital, undermined social organization, lack of role models, and deprivation of investment (Tach, Pendall, and Derian 2014, 20; Bridge, Butler, and Lees 2011, 4). The observed effects of these characteristics are poor education and health outcomes among residents, reduced access to social resources and social networks, higher crime rates and lower social trust as investment in the neighbourhood disappears (Tach, Pendall, and Derian 2014, 3, 5). Economic deterioration in concentrated low-income neighbourhoods is observed as worse employment, individual wages, educational achievements and social mobility (Graves 2010, 111). While there are observed consequences of living in areas of concentrated poverty, the processes that produce them are far from understood.

Processes

There are many small variables that lead to income segregation. The relationships between these variables are complex, often acting on both low-income and affluent groups simultaneously. The qualities of a neighbourhood impact who wants to, or who can live in it, pushing economic groups apart. These qualities lead to price differences for both renters and owners leading to economic self sorting.

These neighbourhood effects and financial abilities interact with each other, leading to income segregation.



Income segregation feedback loops

Concentration of Poverty

Wilson's concept of the underclass accelerating deterioration is no longer accepted (August 2016, 3407), but the observed neighbourhood effects remain. In their review of the available literature, Tach, Pendall and Derian describe how impoverished neighbourhoods experience a concentration in these effects (2014). With less money in the community, there is less private investment, fewer and lower quality amenities, and fewer opportunities for employment. The lack of financial power puts less pressure on the government to provide adequate services or limit businesses and industry

not suitable for residential areas. These neighbourhood effects lead to more exposure to crime, reduced access to safe and healthy food, and less healthy environments for living, working, or other activity (2014, 4).

Concentration of Affluence

There are inverse observations of income segregation increasing in neighbourhoods of concentrated affluence. As rich households are more able to relocate, they distance themselves from deterioration and are attracted to similar levels of affluence. Tach Pendall and Derian call this the “secession of the successful” (2014, 5). Within affluent neighbourhoods, restrictive zoning limits housing to high-price types only, limiting accessibility to low-income households (5).

Self Sorting

A more recent review by David Manley, Maarten van Ham and Joe Doherty attempted to test the cause-effect relationships of neighbourhood effects. They found little evidence of a relationship between observed neighbourhood effects in individuals and households and the condition of the neighbourhood (Manley, van Ham, and Doherty 2011, 157). Instead they propose a model based on self selection. Low-income households can only afford to live in low-income neighbourhoods, and affluent households can choose not to (2011, 152). Additionally, social mixing studies suggest that where households are reflects the most suitable location for them, within their economic range. Effectively, residents would not be more satisfied in a different neighbourhood in the same economic situation (Cheshire 2011, 17). Improving the quality and/or mix of the low-income households surroundings did not have a positive

Segregated mixing

Segmented mixing

Integrated mixing

Distributed node mixing

impact on the outcomes attributed to neighbourhood effects (Manley, van Ham, and Doherty 2011, 152, 162; Cheshire 2011, 19). To address the problems in low-income areas, moving residents to affluent areas does not work. Neither does replacing their current surroundings with affluent neighbours and expensive amenities. Instead, direct support should be given to residents, and more areas of the city should be altered to become options for low-income households, giving them more choice in where to live. This thesis addresses the latter strategy, adding public housing to existing affluent neighbourhoods.

Mixed Income Housing

Mixed income housing is promoted as a way to improve low-income neighbourhoods, and the lives of low-income residents (Bridge, Butler, and Lees 2011, 4). It is defined in *Income Mixing Across Scales* as “developments and neighbourhoods that contain a combination of subsidized and market rate housing, rental and owner-occupied housing, and different configurations of low-moderate, and/or high-income households” (Tach, Pendall, and Derian 2014, 3). Mixing incomes can be done at various scales, from buildings to neighbourhoods, and various levels. Roberts (2007, 185) summarizes the levels or scales of mixing and separation as follows:

- Integrated: side by side
- Segmented: Blocks
- Segregated: Concentrations
- Monolithic: Single tenure

These scales of mixing are discussed later in the chapter.

Opportunities

The most common justification for mixed income housing is a reduction in income segregation. In mixed income communities affluent residents can sustain high quality amenities and services (Tach, Pendall, and Derian 2014, 31) leading to supposed social benefits. Diversity of all kinds, including income, creates more social capital, the engagement of citizens with their community and institutions that enables healthier communities (Kim 2016, 280). Social capital is dependent on relationships within the community, relationships which mixed income communities are supposed to produce. The social mixing opportunities of income mixing are summarized by Tach, Pendall and Derian (2014). Mixing incomes allows social contact across income groups, reducing negative sentiment towards public and low-cost housing, improving its reception in the community and broader society (2014, 9). The quality of social networks developed in communities is important to the success or failure of mixing. These social networks must exist between low-income residents to enable community building and support, as well as between low and higher-income groups to avoid conflict (2014, 34). The design of mixed income communities shapes the relationships between residents (Graves 2010, 112), and can be the difference between adversarial and cooperative neighbourhood dynamics.

Risks

Social Mixing Failure

Many mixed income communities and developments are unsuccessful, and illustrate that the opportunities proposed above may not work in practice. The social benefits of income mixing rarely occur, as income mix does not have

an observed effect on social interaction (Tach, Pendall, and Derian 2014, 8; Bridge, Butler, and Lees 2011, 8; Manley, van Ham, and Doherty 2011, 165). One mechanism proposed early in the history of neighbourhood effects theory is the value of higher-income role models, especially in children. Rather than a positive impact on individuals' aspirations and behaviour, there is no impact on low-income residents when in proximity to higher income role models (Tach, Pendall, and Derian 2014, 20). In some cases there are negative effects associated with conflicting role models (2014, 7).

Despite the proposed opportunities for social interaction, income mixing rarely leads to more social interaction. Furthermore, there is no strong connection between social ties across income groups and changes in behaviour (2014, 8). The reason for income mixing, to improve neighbourhood effects, is not supported by evidence. There is no evidence of a connection between neighbourhood effects and mixing, and addressing these issues should not be used to justify income mixing.

Alongside the lack of social interaction observed in mixed income developments, there is significant risk for conflict between residents of different income groups (August 2016, 3408; Kim 2016, 280). All income groups suffer from tension over social problems like crime and increased surveillance, leading to negative sentiment (Tach, Pendall, and Derian 2014, 9). The tension between groups is most damaging in a for-profit housing system, as market pressures promote different treatment of low-income and market groups, further damaging their relationships (Graves 2010, 115).

The way mixed income projects are designed can easily lead to urban features that are associated with crime:

confusion over public/private space and front/back, isolated walkways, common entrances without visibility, and lack of natural surveillance (Roberts 2007, 184). As described later in the chapter, Mixed Income Housing addresses the risks of mixing public housing with existing neighbourhoods by including public space and amenity that support the community and promote positive interactions across income groups.

Gentrification

The most common consequence associated with mixed income concepts is gentrification. In his brief history of social mixing, David Ley describes the transition of concepts from Wilson's lens of economic restructuring, to Massey and Denton's of racial distancing, to Wacquant's of the states abdicated responsibility (2011, 55). Each frames social mixing as a solution to social problems in areas of concentrated poverty, by addressing what they claim to be the cause. Alongside the social mixing discourse, the idea of gentrification has developed since being used by Ruth Glass in 1959 (Ley 2011, 53).

Between these two competing concepts, Canadian housing policy has promoted both mixing and diversity by protecting at-risk low cost housing in gentrifying areas (Ley 2011, 57). However, with pressure to revitalize poor neighbourhoods and improve the sustainability of cities, redevelopment usually wins over protecting existing communities. Infill and redevelopment are necessary mechanisms for more sustainable cities, but it must be acknowledged that sustainable infill is not always the best socially if it means displacement or relocating low-income residents to potentially contaminated sites (Kim 2016, 282). Despite

its good intentions, mixed income is not a good model for revitalization. If maintaining a diverse community is not an explicit goal, income mixing becomes a force of gentrification (Friedman 2021, 100). Mixed income redevelopments should not be used in a way that displaces low-income communities to make space for wealthy residents or developers (August 2016, 3420). Proximity to higher-income residents and the amenity that follows is not beneficial to low-income households, and can leave them worse off (Cheshire 2011, 18, 19, 21).

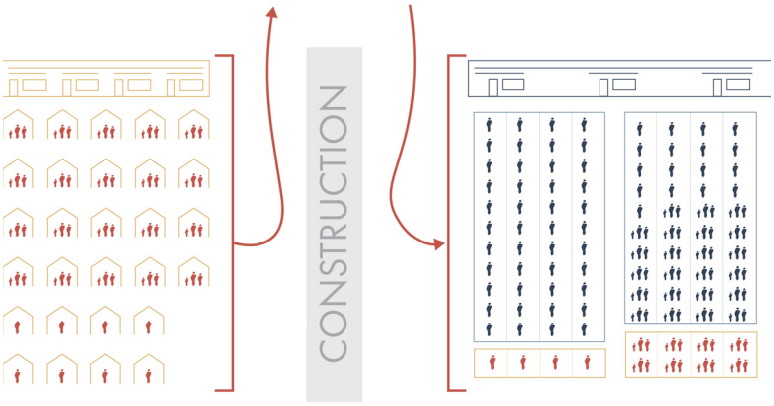
Gentrification or mixed income projects can lead to instability in the neighbourhood they are located in. Returning low-income residents will lose privacy and space with newer, denser housing, and their social ties are disrupted by a new space (August 2016, 3419). Mixed income neighbourhoods are inherently less stable (Tach, Pendall, and Derian 2014, 13) and when mixing is imposed by a mixed income development, the diversity mix will change as neighbours react to the new residents, and other previous residents leave (Kim 2016, 282). A parameter of Mixed Interface Housing is that no existing residents are forced to relocate, and there is no expropriation of homes.

Case Studies

Farm Urban Renewal

The Farm Urban Renewal development, studied by architect Warren Boeschenstein, gives insight into the early methods of income mixing and its failures. The project redeveloped an area of low-income residents in Brookline Mass., introducing a mixture of new low-income housing, a housing co-op, and high-income rentals (Boeschenstein 1971, 37:312). The Farm Urban Renewal struggled to promote

mixing among residents and suffered conflict. As a renewal project, the new housing did not accommodate all previous tenants (1971, 37:312) and no previous businesses which supported the community were brought back. Because of the private management structure, preference was given to market units in several ways: build quality, (1971, 37:316) amenity areas, and how the management served them and enforced rules (1971, 37:318). The visible difference in build quality contributed to the social separation of incomes within the development, and was reinforced by physical barriers to interaction (1971, 37:315). This case study shows how the same problems described in the literature have been part of mixed housing throughout its history. It suggests that income mixing is not appropriate for redevelopment, residents must not be displaced, and housing types should fit together and not advertise their quality or the income level of their residents.



Problems in the Farm Urban Renewal project (Boeschenstein 1971)

Don Mount to Rivertowne Revitalization

Martine August, Associate Professor of planning at University of Waterloo, studied the revitalization of Don Mount in Toronto into Rivertowne, a mixed income community built

to replace existing subsidized housing. August views the revitalization as one sided and not benefitting the low-income residents for several reasons. There were physical barriers to separate income groups and the design of the project lacked any attempt at mixing other than both subsidized and market housing being part of the same development (August 2016, 3413). The new subsidized housing lacked privacy, and despite being newer and likely safer, units were small and poorly built. Returning residents viewed them as a step down from the units they replaced (2016, 3419). The physical restructuring of housing severed existing social ties, damaging the low-income community (2016, 3419). The conclusion is that the mixed income model is not appropriate for revitalization. It can too easily overlook low-income residents and instead be a tool serving developers, politicians, incoming residents and the real estate industry (2016, 3420).

Income Mixing at Rivertowne (base images from Google Earth n.d.; “Aerial View of Rivertowne” n.d.)

Maverick Landing

In this ethnographic study, Graves, a sociologist and planner, discusses the role of formal institutions and structures on Maverick Landing, a mixed income community in Boston. The results reflect the need for public management with the intent of facilitating healthy interactions. Strong social

divisions existed and were reinforced by management in the unequal application of rules and giving market residents more influence over rules and policy (Graves 2010, 122). While mixing the subsidized and market units was mandatory, parking spaces were not and were segregated, catering to the market residents' desires (2010, 121). These management actions formalized social divisions, undermining spaces intended for social mixing (2010, 115–16). The priorities of the private property manager, to keep the more profitable tenants, led to tension between residents and unsuccessful income mixing. However, under for-profit management, this was not seen as a problem. Social mixing is not desirable for the managers, as interactions expose unequal treatment between residents, and hurt the marketability of market units (2010, 121).

Public—Private Interface

From these case studies, many of the challenges of mixed income housing are on display. The also give insight into what qualities of housing are desirable in public housing. The key takeaways from resident feedback was to have control over the space outside their units, and for privacy (August 2016, 3414; Graves 2010, 122). To allow privacy can be controlled and residents have autonomy over their unit and the interface between their home and the public realm, three 'rooms' are identified that must be addressed in the design of public housing.

The Street

The street and its qualities impact the house. If it is unfriendly, unsafe of uncomfortable, the home it serves will adopt these qualities, so it must be designed along with the housing itself.

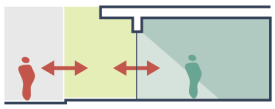
Immediate Outside

The immediate outside controls the level of connection between public and private. It is also a space that, if residents are allowed to use it, will increase the residents interaction with and connection to the community.

The street

The Home

The housing unit should provide for the needs of a household. It is important to accommodate a wide range of household types. This means including a variety of unit sizes, and accessibility requirements.



Immediate outside

Proposed Application of Mixed Income

Based on the current literature on mixed income housing, and the above case studies, parameters for appropriate income mixing can be identified.

The home

Address Concentrated Affluence

Existing methods of combating income segregation focus on concentrated poverty, where the issues associated with neighbourhood effects are observed. As described above, self sorting is a more likely reason for income segregation, and the primary sorting method is economic. There should be interventions that address high-income concentrations to increase affordability in these areas, creating more choice for low-income households. This is an opportunity to provide access to the benefits of mixed income communities without the expropriation and displacement that can occur with revitalization. To avoid the consequences associated with revitalization projects, and to fill the gap in affordable housing, there should be addition of public housing to

Segregated mixing

Segmented mixing

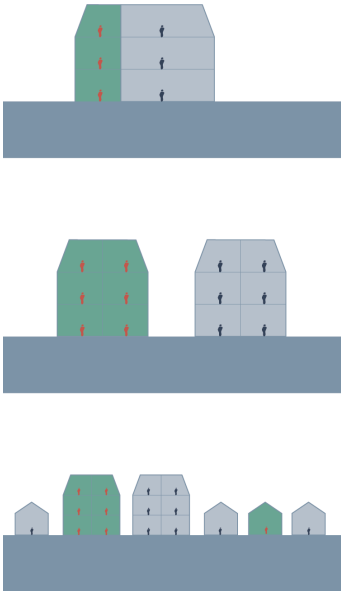
Integrated mixing

Distributed node mixing

neighbourhoods of concentrated affluence (Tach, Pendall, and Derian 2014, 14).

Scale and Form of Mixing

As described by Roberts (2007, 185) and Groves and Rowntree Foundation (2003, 36) mixing can be done at different scales. Integrated mixing has subsidized housing throughout the neighbourhood. Segmented mixing has separate concentrations of subsidized housing and market housing of similar types. Segregated mixing does not attempt to mix incomes (Groves and Joseph Rowntree Foundation 2003, 38). Roberts and Groves agree that Integrated is the most effective way to mix housing tenures for long term community health and acceptance, but requires the most restriction of tenants (2003, 37). In Tach, Pendall and Derian's review, they determine that the most effective model for income mixing, with the most interaction and least consequences, is at the neighbourhood scale (2014, 49). When mixed through a neighbourhood, there is the least negative impact on property values and the desirability of the neighbourhood, two obstacles to community acceptance of public housing (Tach, Pendall, and Derian 2014, 49; Groves and Rowntree Foundation 2003, 36). With a distributed mix there is less disruption of building types in the neighbourhood, a critical requirement to effective mixing. This requires high quality architecture and build quality of the subsidized housing throughout the neighbourhood (Groves and Rowntree Foundation 2003, 36; Roberts 2007, 185). This distribution puts the least upward pressure on the cost of the affordable housing itself, making it more effective (Tach, Pendall, and Derian 2014, 49). The form of housing is important, ensuring that it will fit its surroundings. Quality



Scales of income mixing

Top: Building scale
Middle: Development scale
Bottom: Neighborhood scale

and distinguishability of units affects how well public housing can mix with market housing (2014, 34).

Associated Institution

As illustrated by Graves' case study of mixed income housing in Brookline, the type of institution associated with management of public housing plays an important role in the success of mixed-income housing. Public and private institutions have different priorities (Graves 2010, 112). Private institutions are motivated by a financial responsibility to the owner or client, giving more power to higher paying tenants who can threaten to leave (2010, 114). Public institutions are not market driven, instead have social goals and a responsibility to the residents and citizens of the city. This limits the financial power of market residents, creating equal status in the management of the community, promoting good relationships (Graves 2010, 113). Good relationships enable successful income mixing, and urban spaces free of a power imbalance allow positive interaction between income groups (Graves 2010, 112; Roberts 2007, 185). For a mixed income project to be successful, it must be run publicly, or by a non-profit organization.

Mixed Use

Mixing other uses with housing can improve liveability and contribute to affordability, but can also have opposite effects for low-income residents. It can support diversity in housing types and increased density, but is also associated with hyper-densification, a model that is not useful for housing affordability (Moos et al. 2018, 16). Public housing requires different support than market housing. The needs of tenants are diverse, and mixed income projects must provide support for its tenants. The programs in mixed use housing

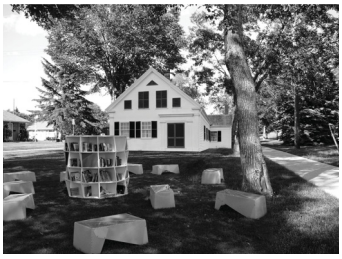
must be chosen and designed to serve all residents, and not contribute to a restrictive cost of living.

Amenity Type

Affordable housing is most effective when coupled with various levels of support based on the tenants' needs (Susilawati and Armitage 2010, 282). This makes mixed use housing appealing. However, the type of amenity included in a mixed use area must be considered so it does not make housing and cost of living more expensive (Tach, Pendall, and Derian 2014, 8). In a study of mixed use housing across Toronto, Moos et al. found that different occupational groups benefit differently from mixed use areas. Typically, high-earning occupations experienced increased affordability, while low-income households experienced affordability decrease. Their conclusion was that, without government support for affordable housing, typically lower-earning occupations suffer lower affordability in mixed use environments (2018, 7). The difference in outcome is determined by the policy intent. When mixed use is applied with affordability as a goal it can lead to more affordable and liveable neighbourhoods (Moos et al. 2018, 8; Speck 2012, 63; Sim and Gehl 2019, 3, 62).

Addressing the issues associated with single detached neighbourhoods described in chapter 2 requires mixing incomes and uses at the neighbourhood scale. This will increase the accessibility of the neighbourhood by providing necessary services and variety in housing type. Public housing provides an affordable housing option that would not naturally exist in the neighbourhood.

Chapter 5: Mixed Interface Housing



Mixed Interface Housing Photomontages

Mixed Interface Housing refers to the hypothesis that adding public amenity to an existing affluent neighbourhood allows public housing to be added. The public amenity is necessary to support the residents of public housing and provide space for interaction. When applied to single detached urban fabric, the urban planning parameters described in chapter 3, diversity, density and walkability, are combined with those established in chapter 4. The result is a set of parameters that set up the thesis project.

The Concept

Social Response

Mixed Interface Housing responds to the social need for accessible housing. Many neighbourhoods in prairie cities are homogenous and inaccessible. Combatting this homogeneity involves increasing public housing in areas of concentrated affluence, promoting amenity and institution to support residents and assisting in social mixing between income groups. Densification enables walkability, effective transit and local amenities. Walkability is critical to sustainable and healthy cities, as well as increasing accessibility and lower cost of living. Transit and local amenities reduce reliance on cars, and further lower the cost of living. Additionally density and reduced auto use are critical to transitioning to more sustainable cities.

Mixing Incomes

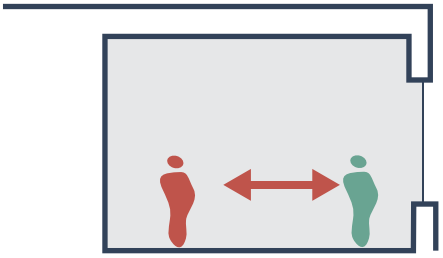
Income segregation is associated with social, economic and health problems in low income areas as described in

chapter 4 (Graves 2010, 111; Tach, Pendall, and Derian 2014, 4). In contrast, increasing mixing and diversity leads to more socially equitable communities (Kim 2016, 294). Instead of targeting concentrated poverty, Mixed Interface Housing adds affordable housing to areas that are currently homogenous in both income level and housing type. This parameter prevents displacement and gentrification and addresses the issue of self-sorting, when low-income households have no housing options other than areas of concentrated poverty (Manley, van Ham, and Doherty 2011, 152).

Mixed Use

Affordable housing is best provided in a mixed income setting, paired with supports based on tenant needs (Susilawati and Armitage 2010, 286). The stability of income mixing is impacted by the availability of public and civic space (Tach, Pendall, and Derian 2014, 49). These spaces should be accessible to everyone in the community and connected with other amenities. These serve as places for group interaction and leisure. In the Mixed Interface project, an amenity is included as the space that provides these supports and public spaces. As described in chapter 4, this amenity will be publicly run to equally serve public and market residents in the community. These spaces are the critical feature of Mixed Interface Housing. They enable the addition of public housing into existing neighbourhoods by providing support for public housing residents, amenity for the existing community, and structured space for both groups to interact and avoid conflict.

Three types of amenity and corresponding spatial qualities are identified to support mixed income housing.



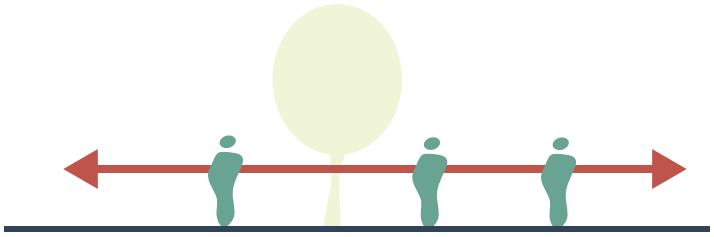
Direct, structured support

The first is direct support for residents, soft supports like counselling, employment services, or social resources. These amenities are publicly run, and provide support to residents without requiring them to travel across the city. The spaces for these amenities are private and intimate, closed off from the public realm.

Semi-structured, public program

The second type of space is structured public amenity. These amenities are publicly run amenities that provide a space or service that is primarily self led. Libraries and rec centres are examples of this. The amenity and activities within are structured, but open to the public. Spaces like this are the most likely to promote positive interactions between community members.

The final type of amenity is public space. Public space is valuable as an unstructured space and can be used by the community in any number of ways. Having abundant public space softens the addition of density to an existing neighbourhood, allowing residents to spread out.



Unstructured public space

Planning Response

Mixed Interface Housing responds to various planning concepts whose goals are to increase affordability, sustainability and health of communities (Congress for The New Urbanism 2015; Jacobs 2011; Grant 2006; Sim and Gehl 2019; Speck 2012). The targeted neighbourhoods, homogenous, affluent and single detached, must adapt to meet the goals of contemporary planning. Mixed Interface Housing increases density, a common characteristic of the urban concepts described in chapter 3.

Increases Diversity

Adding public housing to a homogenous neighbourhood adds affordability and diversity in housing type. The type of housing is not single detached, accommodating more

Housing types to mix with single detached neighborhoods

household types. The added amenity provides more services for more diverse residents and reduces the reliance on cars.

Increases Density

Density reduces new infrastructure land consumption, making areas more walkable. Walkability increases the sustainability of the community and supports local economies (Speck 2012, 28). By including a public amenity in the Mixed Interface project, increased density is not as noticeable, as there are more public spaces and services to serve the increased number of people (Sim and Gehl 2019, 12). Increasing the density of existing communities is widely accepted as a method of increasing the sustainability of cities (Kim 2016, 281).

Increases Walkability

Inserting amenity and services enable residents to satisfy their needs within the neighbourhood rather than needing to drive elsewhere. Housing types other than single detached create diversity in the street edge condition. A mixture of houses, amenities and public space create more opportunity for activity in the street.

Single Detached Neighbourhood Application

The Mixed Interface concept is not applicable to specific communities or contexts. This thesis applies the strategy of mixing public housing with public amenity in order to better mix with market housing to a single detached neighbourhood. The urban fabric of a single detached neighbourhood does not facilitate this type of an intervention, so the structure of the neighbourhood will be changed. This will enable the Mixed Interface project to address the negative characteristics of single detached urban fabric.

Chapter 6: Streetscape Housing

This chapter describes how design was used alongside the research described above to develop the final thesis project. Design exercises were undertaken throughout the research process, establishing parameters that informed the project. Early exercises focused on the Mixed Interface concept outlined in Chapter 5, applied to single detached urban fabric. Further investigation was then done into the qualities of the city and neighbourhood being used to test the thesis. Ways of intervening in this urban fabric were developed, informed by this additional understanding. These interventions focused on the characteristics of single detached neighbourhoods, and how to best address them. Analysis of the housing types and forms in the neighbourhood led to exercises in the formal qualities that the intervention would take. These were productive and led to the decision to depart from the existing forms and take a more critical stance of the single detached house.

The final form of the project developed as a response to the parameters established through research and design exercises. It inhabits the street, making underutilized space productive and increasing the density and diversity of households in an existing neighbourhood.

Mixed Interface Investigations

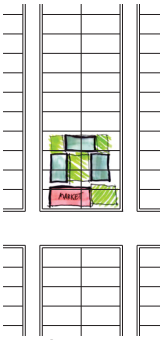
Following preliminary research into mixed-income housing and communities, the mixed interface concept was developed. Early design exercises exploring this type of project were undertaken in plan and through modelling.

Design Charette

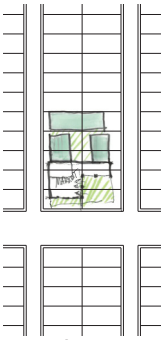
A design charette including a third-year undergraduate student was planned to propose ways of adding public housing and public amenity to the urban fabric.

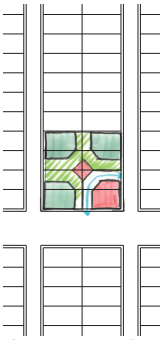
Using a base plan and trace paper, concept plans were produced to introduce public housing to the existing urban fabric using the public amenity to support it, and enable mixing with the community.

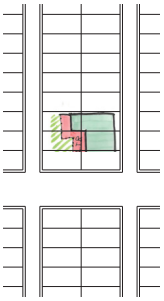
Charette Sketches

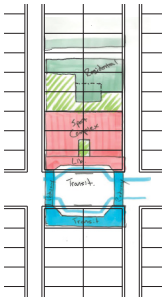

market, court and gardens

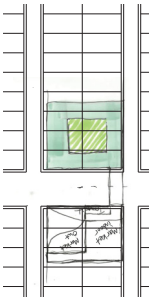

court, street market

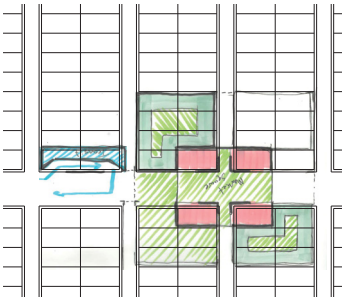

market, square, court


4 square, 1 corner

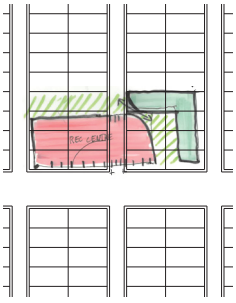

library park wall


sports buffer


cross street

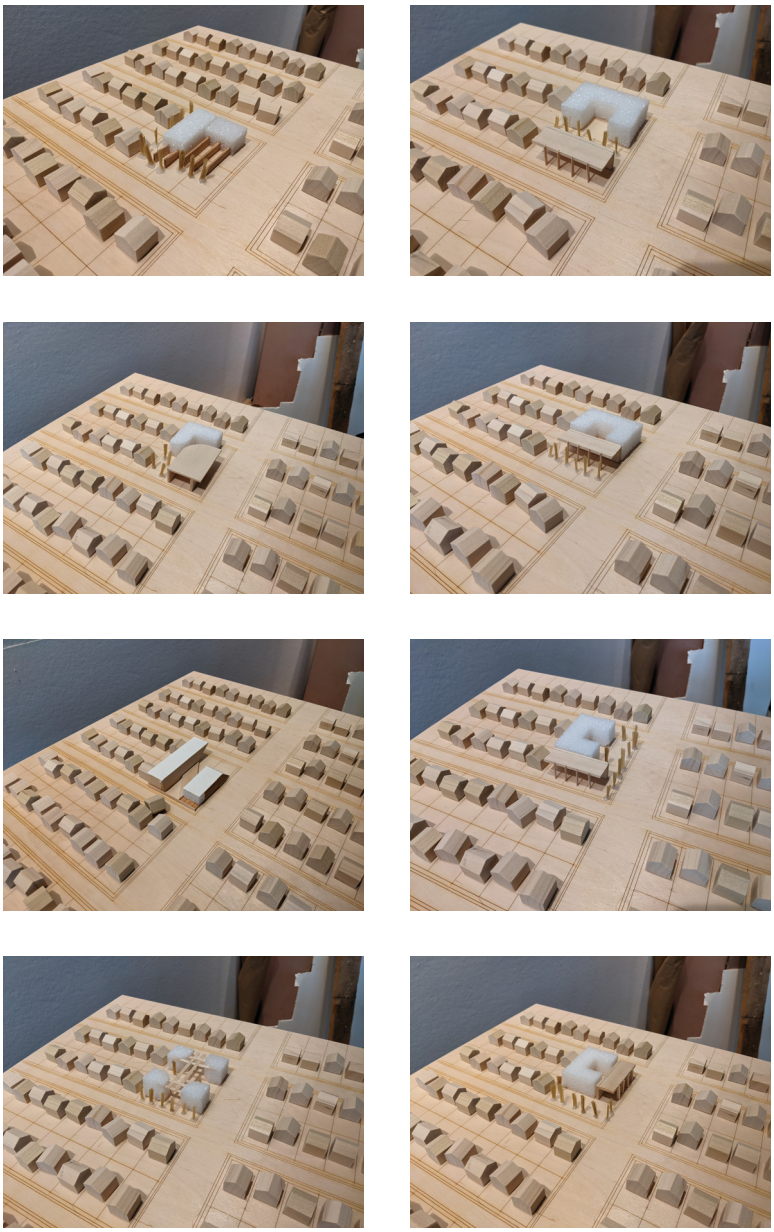

4 corners


amenity wall, court


rec center

Using a site model, some of the plan diagrams were translated into concept models to test in the urban fabric.

Charette Models



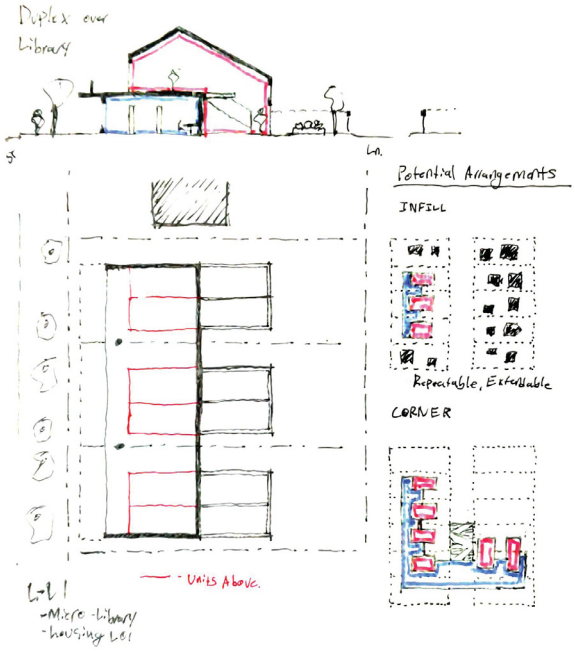
Mixed interface concept models

The charette exercise began the process of form-finding within the single detached fabric, with the concept of mixed interface housing in mind. There were two major takeaways from this exercise. The first was that the scale of the intervention can easily overwhelm the existing

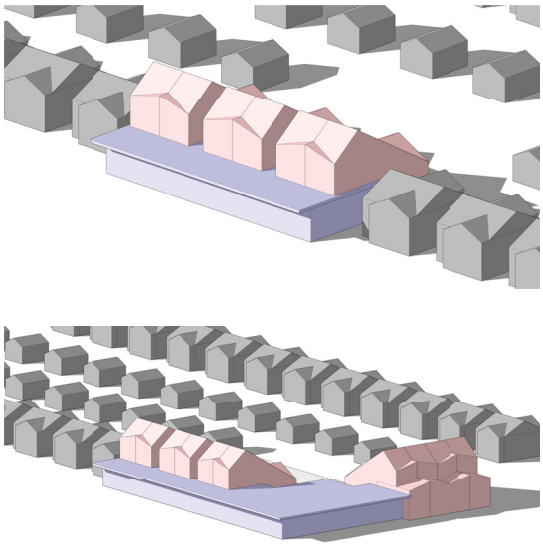
structures when produced in plan. Translating the concepts into a massing model showed how significant the sketched concepts were. The second was that major interventions may require the expropriation of private property. For the charette exercise this was allowed, however, it highlighted a new parameter: the intervention must minimize expropriation and displacement.

Early Design Example

To illustrate the Mixed Interface concept applied to single-detached urban fabric, an example intervention was designed to a schematic level. It combined the program of a small library with space for social workers and duplex-type housing. A mid-street intervention and a corner intervention were designed based on this combination.



Early design concept — Duplexes over Library



Top: mid-block intervention
Bottom: corner intervention

Interrupting Urban Fabric

After designing the above example to fit within existing property lines and setbacks, investigations were done into the way that the project fits within, or interrupts, the urban fabric. After several rounds of iteration, 5 intervention options crystallized. These options are characterized by the part of the urban fabric they inhabit.

Intervention Options

Lot

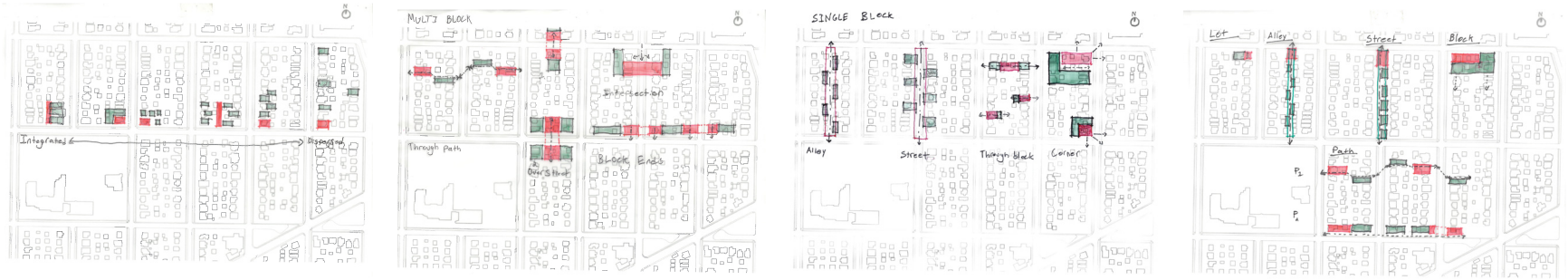
The single lot is the most simple intervention. Expropriating desired sites or buying available lots for infill are ways that public housing could be added to the urban fabric lot by lot. Infill would be the desired method to avoid displacement or expropriation.

Alley

The back alleys are a potential opportunity. They are public and underutilized, only serving the automobile. The alleys are narrow, typically around four meters, which limits their usefulness for an intervention that provides both housing and amenity.

Street

Like the alley, the street primarily serves automobiles and is an underutilized public space. It is wider, around 18 meters between property lines. This provides a possible site to add public housing along with a public amenity.



Development of housing and amenity interventions to single detached urban fabric.

Most promising intervention options to add public housing and public amenity to single detached urban fabric.

Block End

Instead of taking over several lots on a block, easements and large boulevards could be used along with street space for the addition of housing and amenity.

Path

The path intervention uses a series of lot interventions, linked by public space to weave through the urban fabric. This could be done through infill, without expropriation.

Intervention Narratives

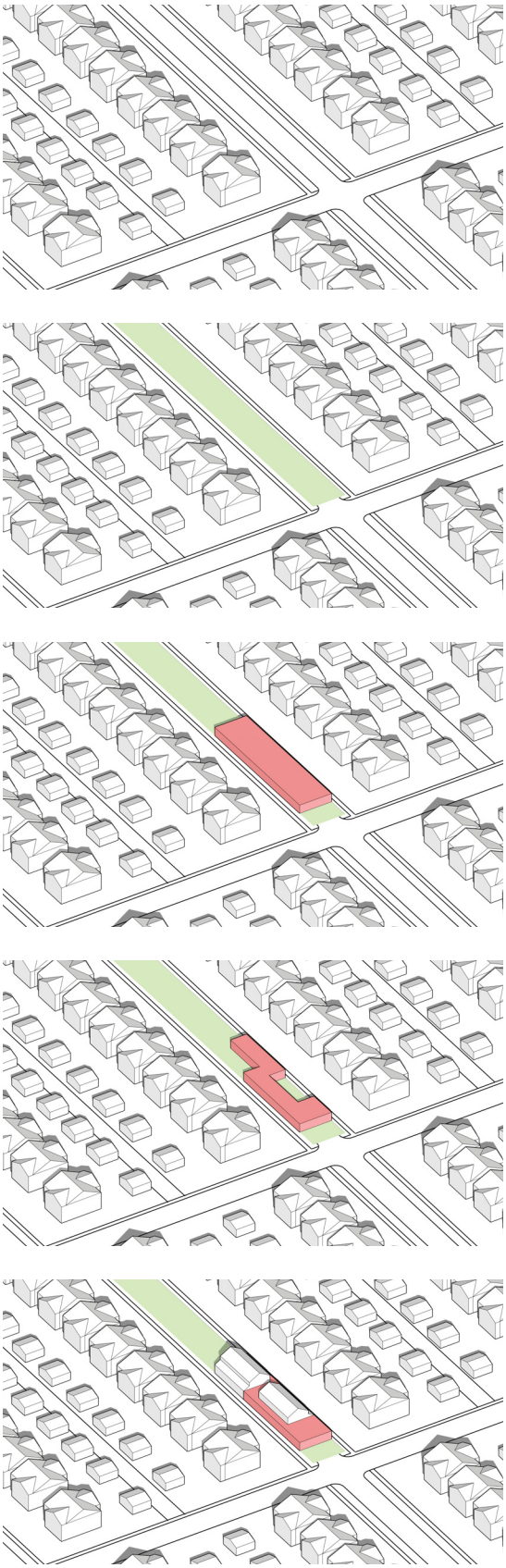
The most promising interventions were then elaborated on, through a narrative series to illustrate the appropriation of space, the addition of public amenities, and finally added public housing, which is enabled by the new public space and supportive amenity.

Street

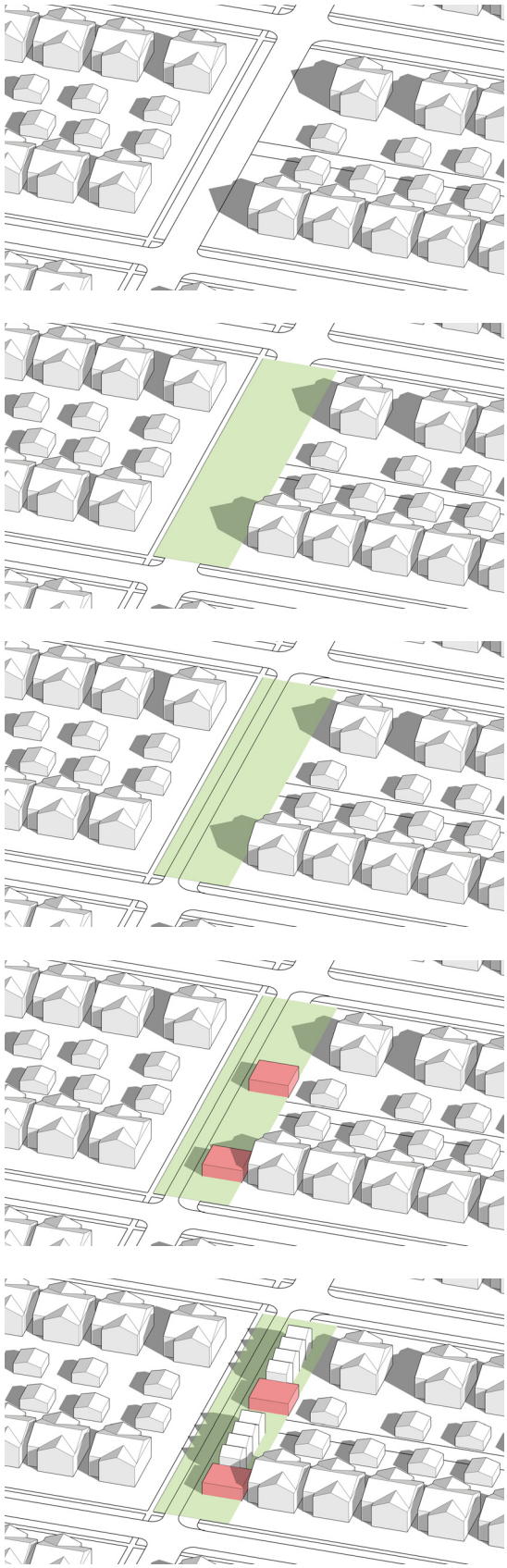
The street option completely reappropriates the street as a public space before adding public amenity and housing. It keeps the laneways available for existing residents' cars.

Block End

The block end intervention takes advantage of wide road allowances and boulevards on the short side of blocks. This gives space for the intervention, and may allow some vehicle traffic past. This intervention would strongly engage with circulation through the neighbourhood, suggesting the development of a main street.



Street intervention narrative



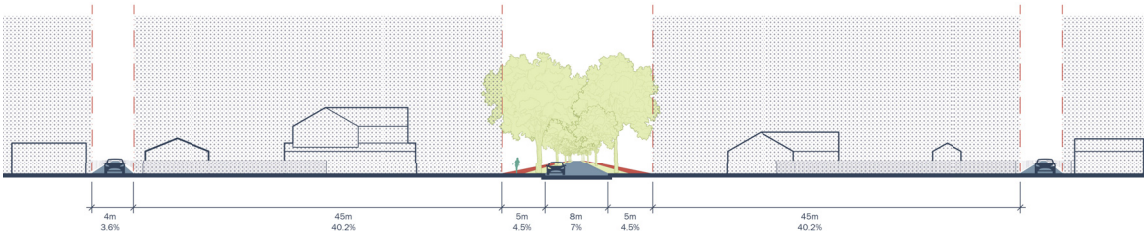
Block End intervention narrative

Along with the axonometric intervention narrative, sections were used, and became critical, to the testing and development of interventions. The section reveals the space available to add housing and amenity without expropriation and illustrates the relationship between adjacent houses and the intervention. Exploration through the section revealed the true limitations of existing public spaces, and how little public space is accessible on the street.

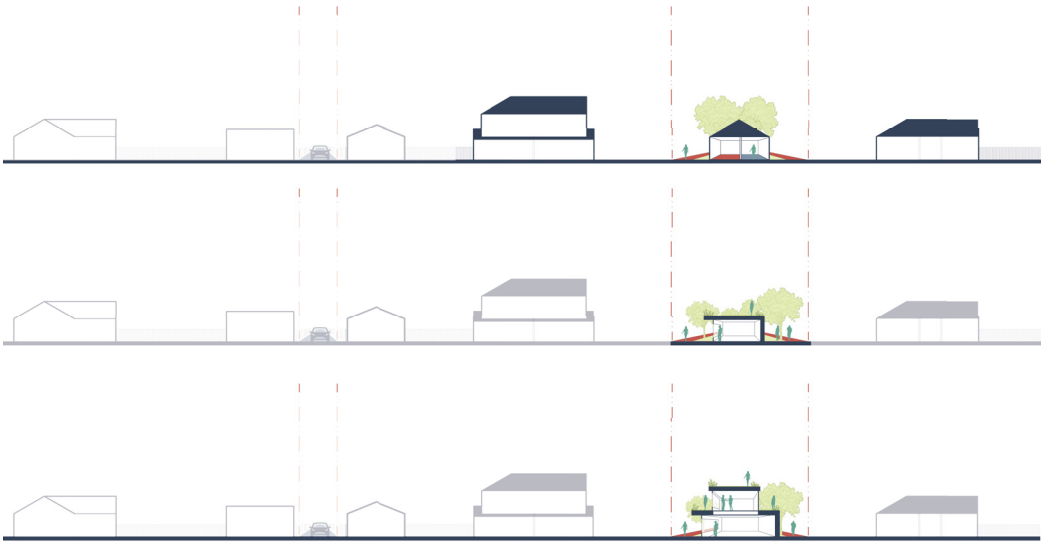
Intervention section explorations

Through these explorations, the decision was made to focus on the street housing option, and make no accommodations for cars within the intervention. The street became the focus of the project, and subsequent exercises were done to develop a method of appropriating and inhabiting the street.

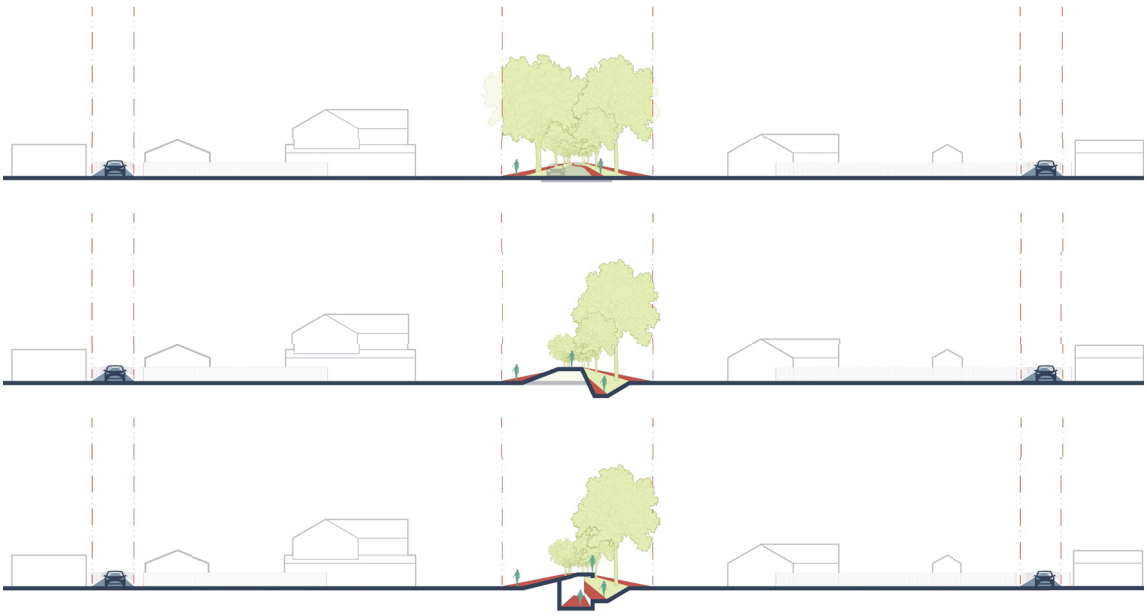
By focusing on the street as the site for intervention, the way of inhabiting the street with amenity and housing became the target of further investigation. The section was again the primary mode of exploration, and ultimately led to the manipulation of the landscape to create inhabitable spaces.



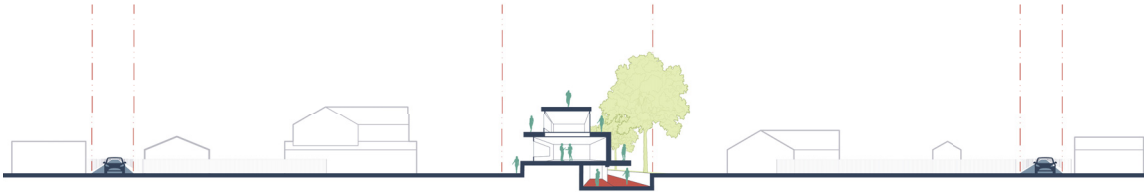
Division of single detached urban fabric landscape



Manipulation of street landscape to accommodate increased density through public housing



Manipulation of street landscape for inhabitation with amenity



New street landscape inhabited with housing and amenity

New Streets

Having established the process of landscape manipulation, new street types were designed to provide housing and amenity that the single-detached urban fabric does not.

Existing Street

The existing street serves the automobile, under-utilizing the public landscape.

Landscape Street

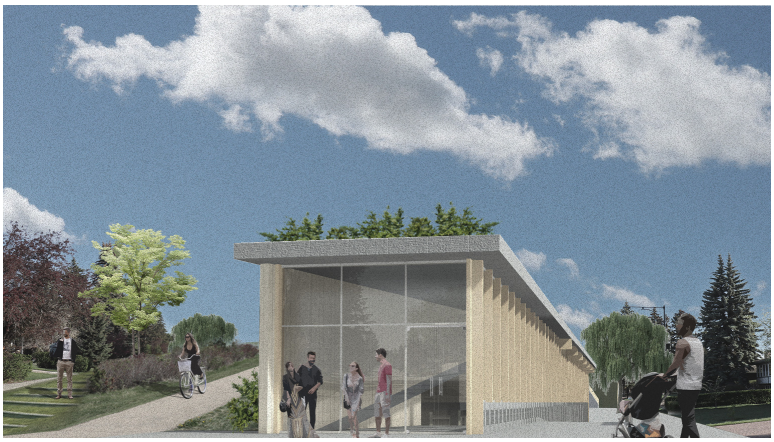
A street of public landscape provides safe recreation space, parks and playing fields. These streets can accommodate

active transit routes and support existing public space and amenity. Public space supports increased density and income mixing.

Landscape street

Landscape and Amenity Street

Public amenity supports public housing and diverse communities. New amenity is integrated into the new landscape of the street. Structured program enables

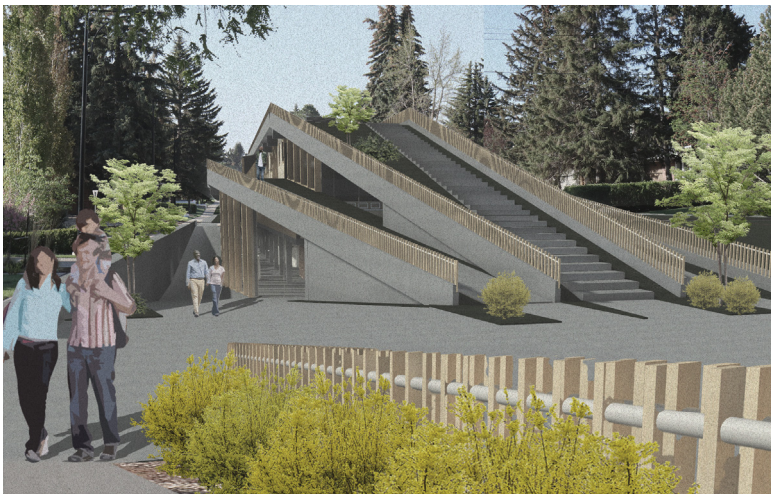


Landscape and amenity street

community building and “social capital”.

Landscape, Amenity and Housing Street

Public housing is added to the landscape. The amenity supports housing structurally and programmatically. Public landscape wraps over both housing and amenity.

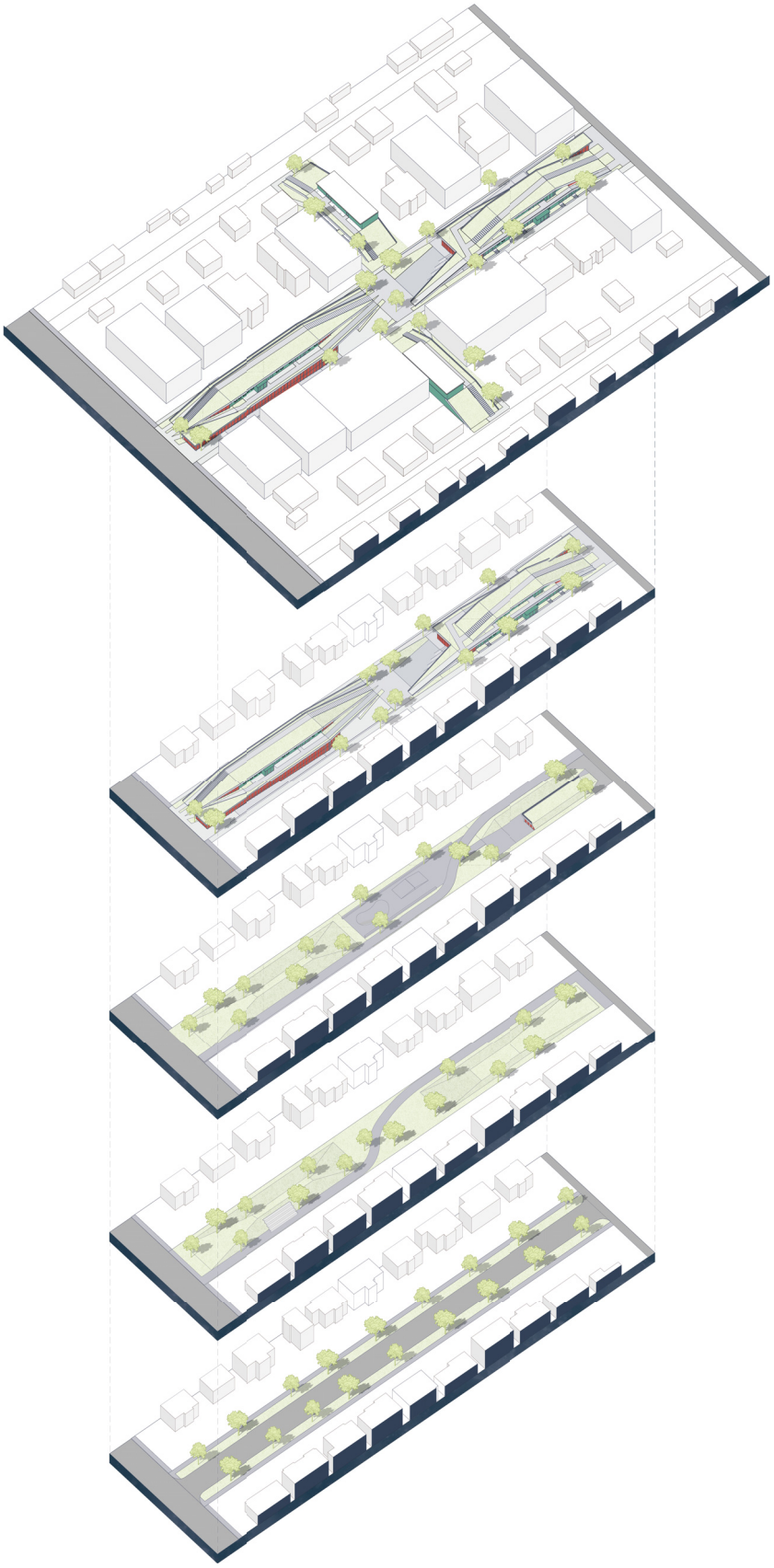


Landscape,amenity and housing street

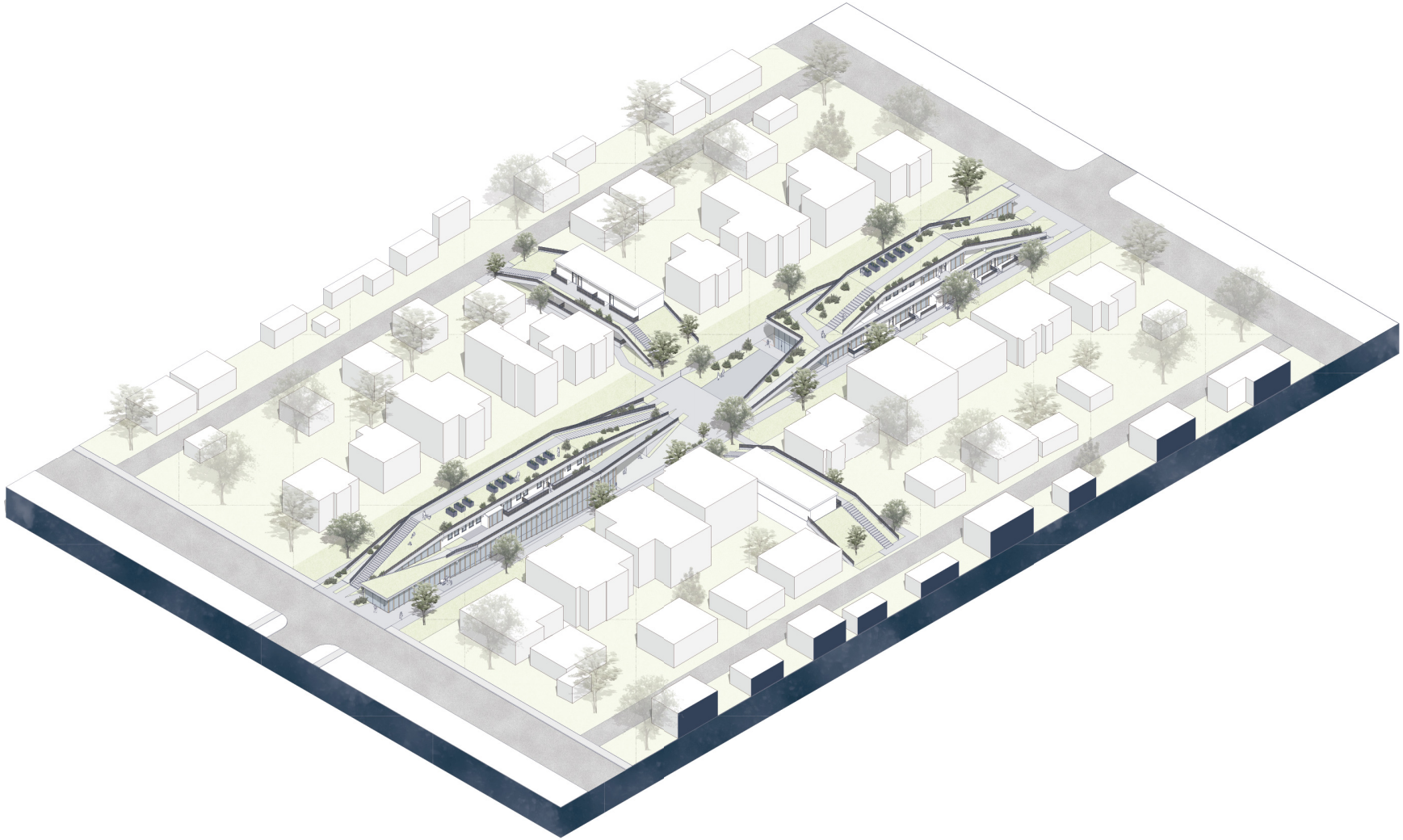
Expansion into Neighbourhood

After the new street is established the intervention expands through the process of infill, altering the urban fabric incrementally. This expansion method brings back the infill path intervention that was dismissed earlier in the design process, but was determined to be a useful intervention. With zoning changes, private homes can expand to provide more housing or amenities along either side of the new street.

Neighbourhood Expansion



Progression of street types — from existing to expanded street and transformed urban fabric.



Landscape, amenity and housing street, with expansion into the neighbourhood through infill.

The design of the thesis project describes a network of interventions in a neighbourhood and the qualities of the landscape, amenity and housing street. This intervention both reappropriates the street and stimulates a reappropriation of existing front yards to host mixed uses and denser housing types.

Situating the Intervention

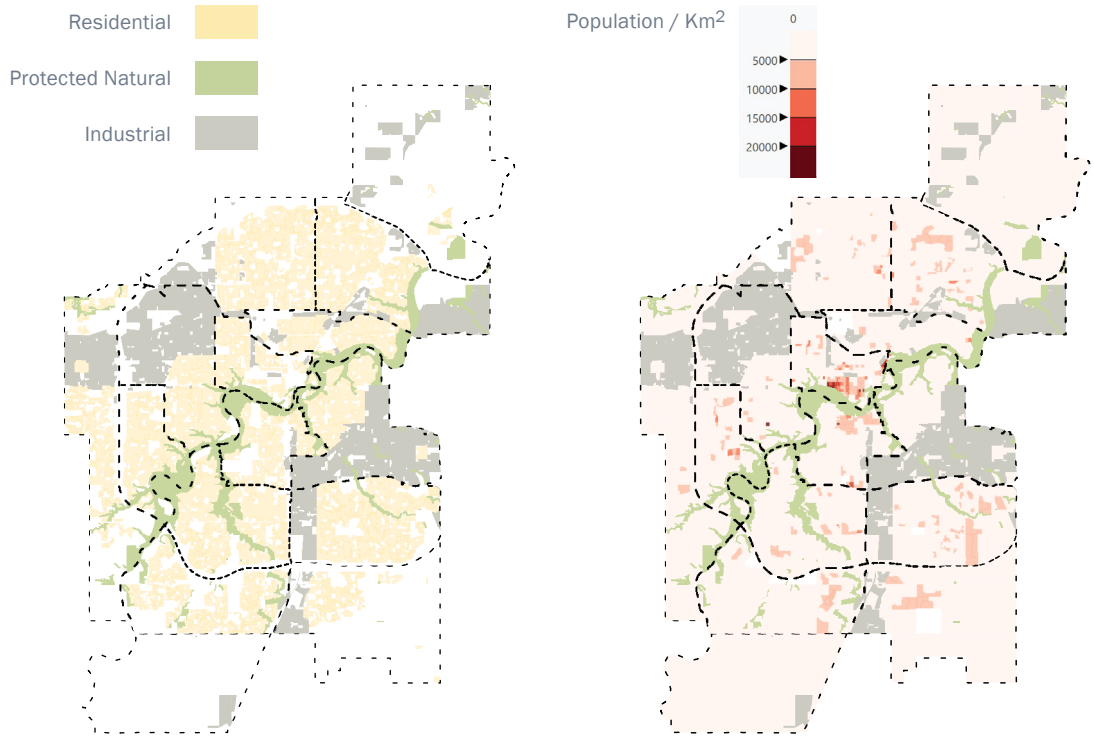
Each of the street types can be used to interrupt the urban fabric of a single detached neighbourhood in a different way. When combined in a network the entire neighbourhood fabric can be transformed, first directly through the added density and diversity, then indirectly by stimulating a change in the existing fabric. Before establishing specifics, the context of the interventions must be established. This was done through analysis of the chosen prairie city, Edmonton, and the chosen neighbourhood, Glenora.

Analysis of a Prairie City

After experimenting with Mixed Interface concepts, the chosen prairie city, Edmonton, was studied. The objective of the study was to establish characteristics of the single-detached urban fabric and identify the location for an intervention. This was done through research and mapping. The following series of maps describe characteristics of the prairie city that contribute to the urban fabric this thesis addresses.

Residential Area and Density

Comparing the residentially zoned areas of the city and population density illustrates how much of the city is dominated by sparse urban fabrics.



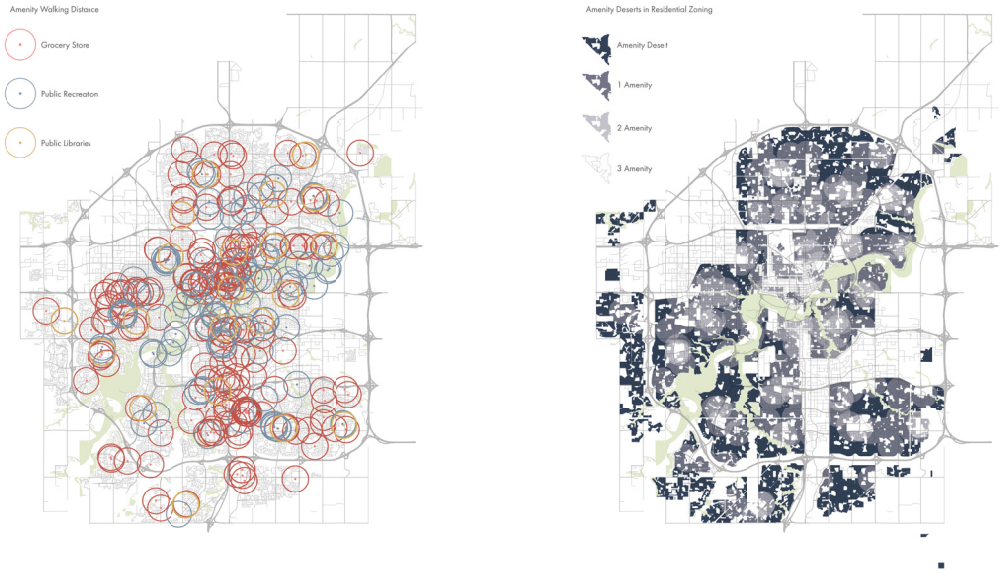
Left - Residential Zoning Map (“Edmonton - Open Data Portal” n.d.)
Right - Population Density Map (“Edmonton - Open Data Portal” n.d.)

Amenities and Distances

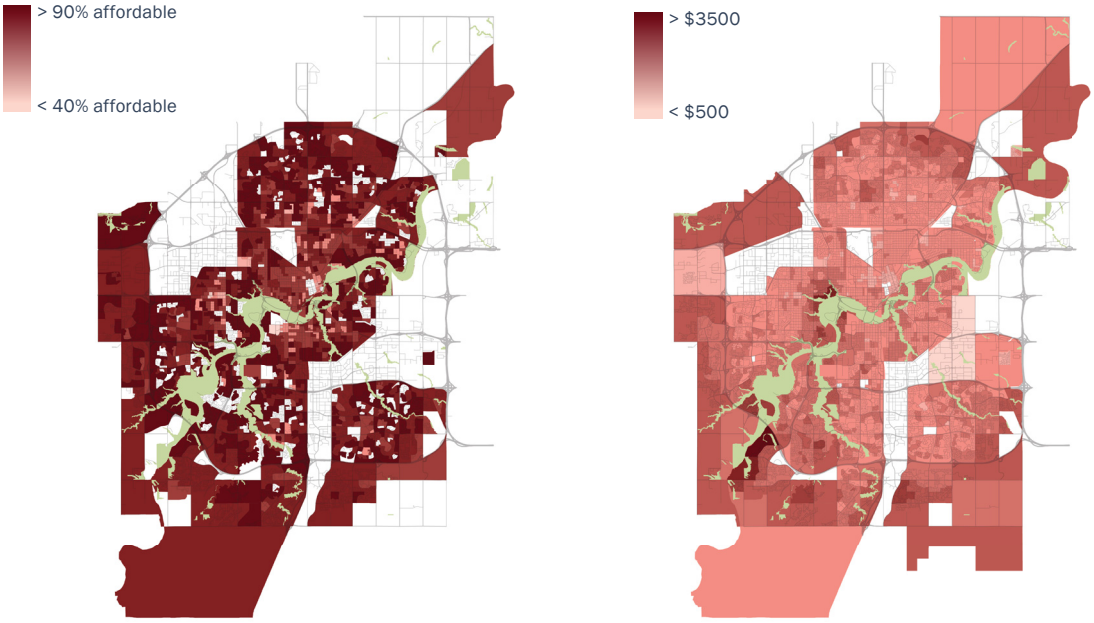
A critical condition for Mixed Interface Housing, the housing concepts applied to the new streets, is the presence of amenities that supports public housing residents and eases income mixing. Mapping the locations of these amenities throughout the city indicates areas with adequate or inadequate amenities.

Affordability and Shelter Cost

The affordability rate indicates the percentage of households in a given area that spend less than 30% of their income on housing costs. While it is a general indicator of the state of housing in a city, it does little to directly indicate the qualities of specific neighbourhoods. By comparing the affordability rate to the average shelter cost, more can be inferred about each area, particularly the extreme cases. Where



Left - Amenity Locations by type - Groceries, Recreation, Library (“Edmonton - Open Data Portal” n.d.; Google Earth)
Right - (Base map from “Edmonton - Open Data Portal” n.d. Data from “Edmonton - Open Data Portal” n.d.; Google Earth)



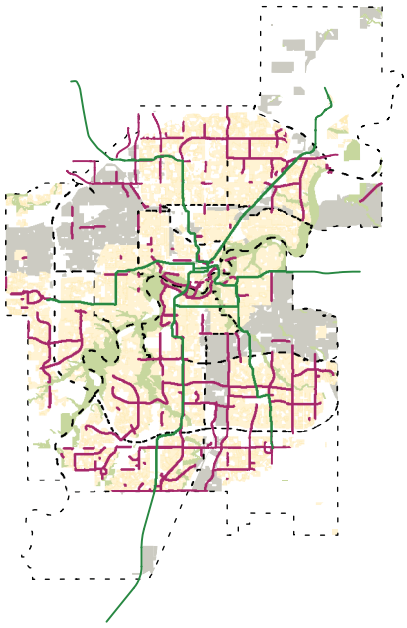
Left - Affordability rate by dissemination area (Government of Canada 2022a)
Right - Average shelter cost by dissemination area (Government of Canada 2022a

both shelter cost and affordability are low, the inference is that the average household has a low enough income that it cannot afford low-cost housing. Conversely, where affordability and shelter costs are high, the inference is that the average household has a high income, and can easily

afford high-cost housing. Interpreting the maps in this way gives insight into the level of poverty or affluence throughout the city without specific income information.

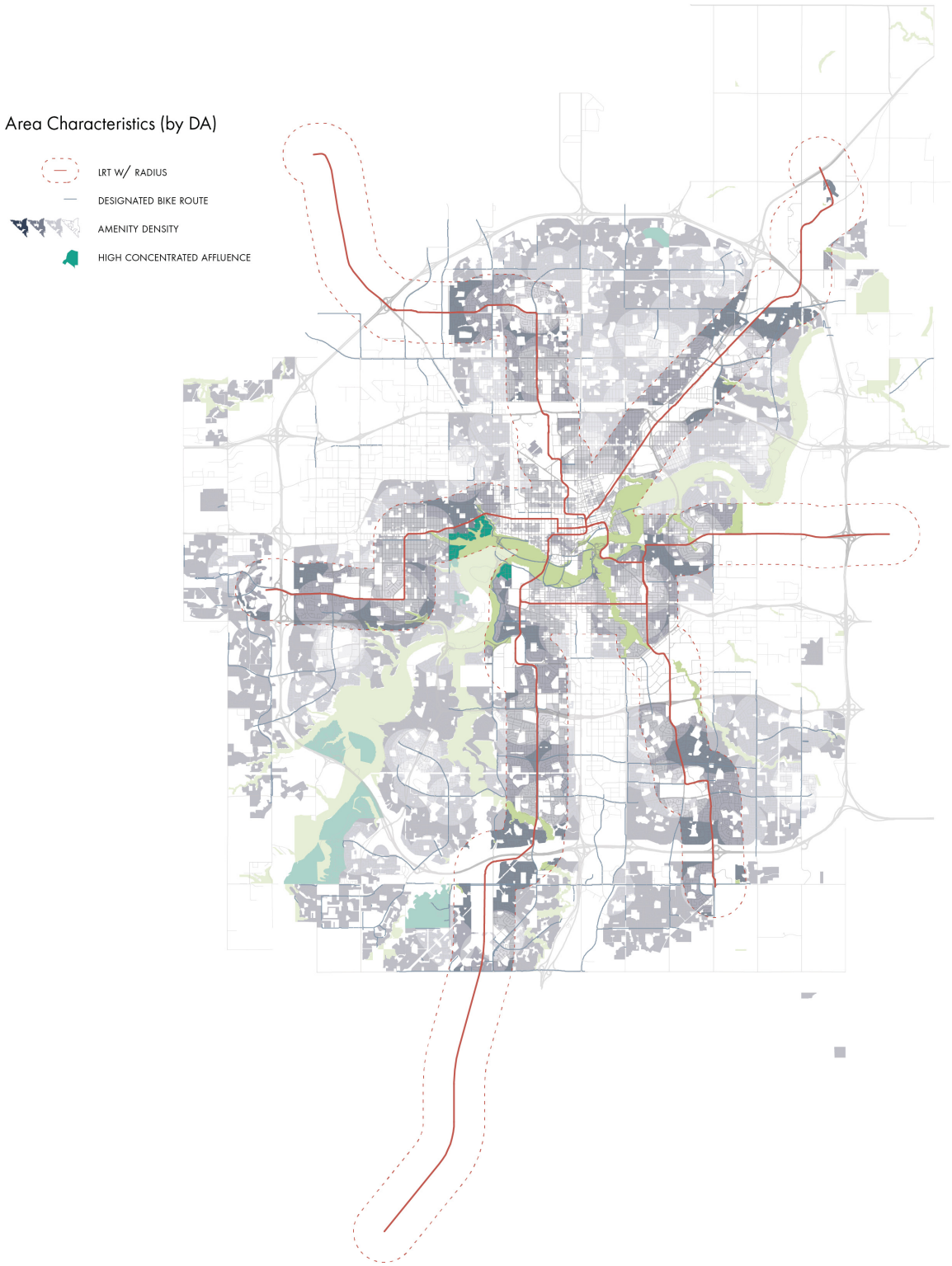
Transit

To combat reliance on cars and promote walkability, public transit must be available alongside amenities. Transportation throughout the city and to non-local amities is critical. In Edmonton, this is necessary in the harsh winters. Active transit plays a role in combatting automotive reliance. Mapping the existing active transit network indicates opportunities for extension into single detached areas.



Left - Light Rail Transit (LRT) corridors (green) and active transit network (purple) (“Edmonton - Open Data Portal” n.d.)

Overlaying and combining these maps indicates the qualities of areas throughout the city. Overlapping the amenity heatmap and transit infrastructure indicates areas of the city that have walkable access to some amenities, and access to rapid transit. While transit is a critical component, amenity



Site Selection Map of Edmonton, Alberta (Base map from "Edmonton - Open Data Portal" n.d. Data from "Edmonton - Open Data Portal" n.d.; Government of Canada 2022a)

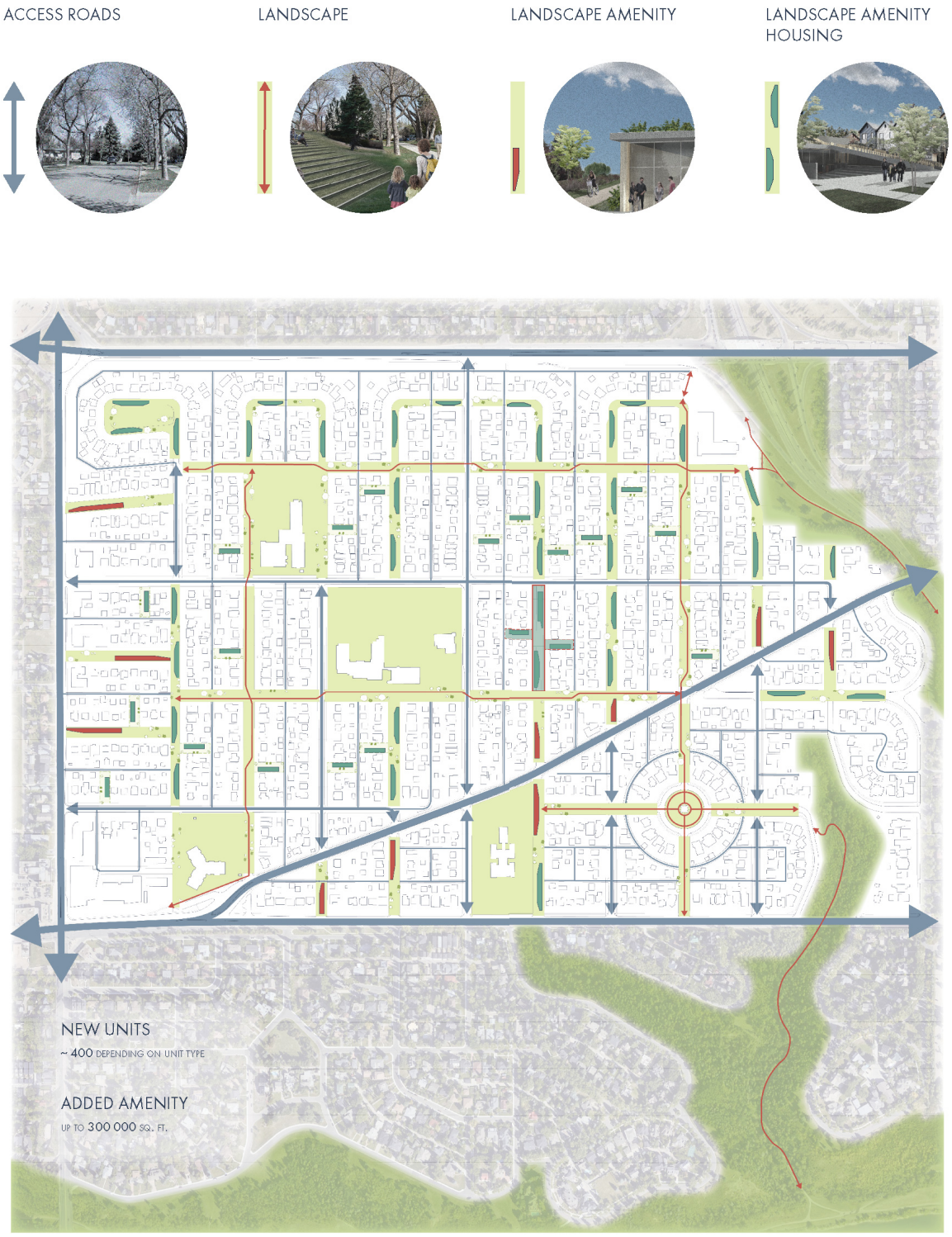
density is not. The added amenity of the intervention will address any deficiencies in the area. The purpose of mapping amenities is to inform the program selection for the project. Combining the affordability and shelter cost maps highlights areas of concentrated affluence in green. This intervention targets areas of concentrated affluence in response to the failures of income mixing when targeted at low-income areas, as described in Chapter 4. The result of the mapping exercise is the selection of Glenora as a neighbourhood for intervention. It is a central neighbourhood with low density, few amenities other than commercial shops, and will have a light rail transit station, currently under construction.

Neighbourhood Network

Having established the neighbourhood for intervention and the model of streetscape housing as the type of intervention, the strategy was applied ot the site. Existing streets were reappropriated and inhabited with one of the new street types based on their relationships to existing amenities and infrastructure.

Major roads were left as automotive and transit corridors. Automotive access to schools and amenities within the neighbourhood is required, so several streets within the neighbourhood were allowed to remain as vehicular streets. These streets also ensure access to all the alleyways in the neighbourhood, to not completely restrict personal automobile use for existing residents.

Landscape streets were applied to streets adjacent to amenities, and extended to active transit pathways that connect to the neighbourhood. These streets support existing public spaces in the neighbourhood.



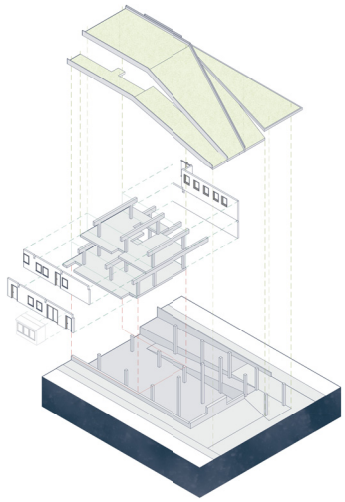
Glenora neighbourhood plan with reappropriated streets and major circulation.

Amenity streets, which can be inhabited by any type of program, public or private, are arranged along the major transit and movement corridors. They have the most exposure to transit and pedestrians. These amenities support the entire community and are sources of employment and service for the added density of the community. These amenities can be private and for-profit, as they do not directly support the addition of public housing.

The remaining streets are inhabited with public housing and public amenity. Adding public housing throughout the neighbourhood satisfies the level of mixing conditions established in Chapter 4, and with the added public amenity provides the services and spaces that are critical for public housing and mixed-income communities. One landscape, amenity and housing street is developed in detail to illustrate the architectural application of the thesis. The result is a new urban fabric that includes the existing single detached houses but with increased density and diversity. Depending on the specific design of each street, there is an increase of ~400 units across the neighbourhood.

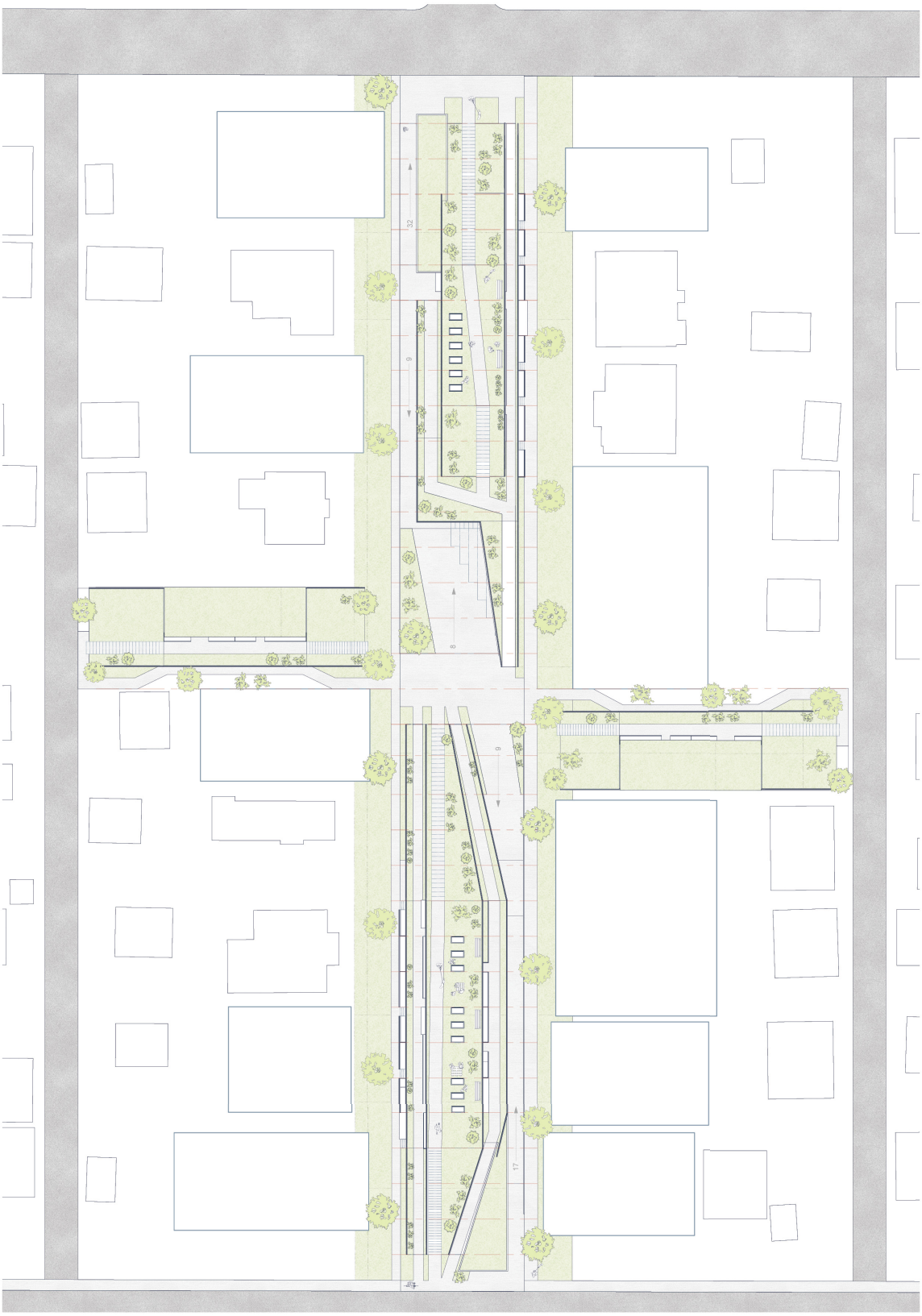
Inhabited Streetscape

By manipulating the landscape of the street to create spaces for inhabitation, the landscape of the street remains part of the public realm. Despite grade changes, the levels of landscape that are created are accessible and can be occupied by public gardens, parks or other community programs. With the infill extensions, the public landscape extends into the previously inaccessible portion of the public landscape, eventually linking the new street landscapes.



Exploded axonometric of landscape manipulations

The slabs of landscape that make up the new public street are supported by structure that also provides the framework

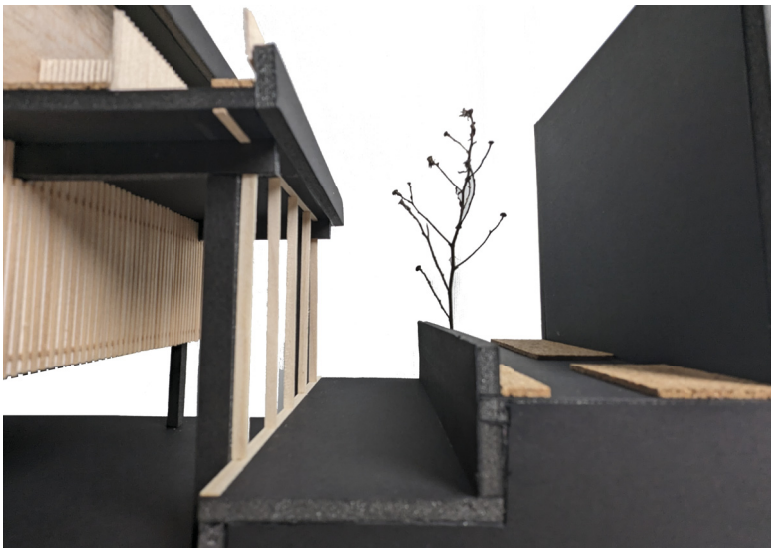


Site plan

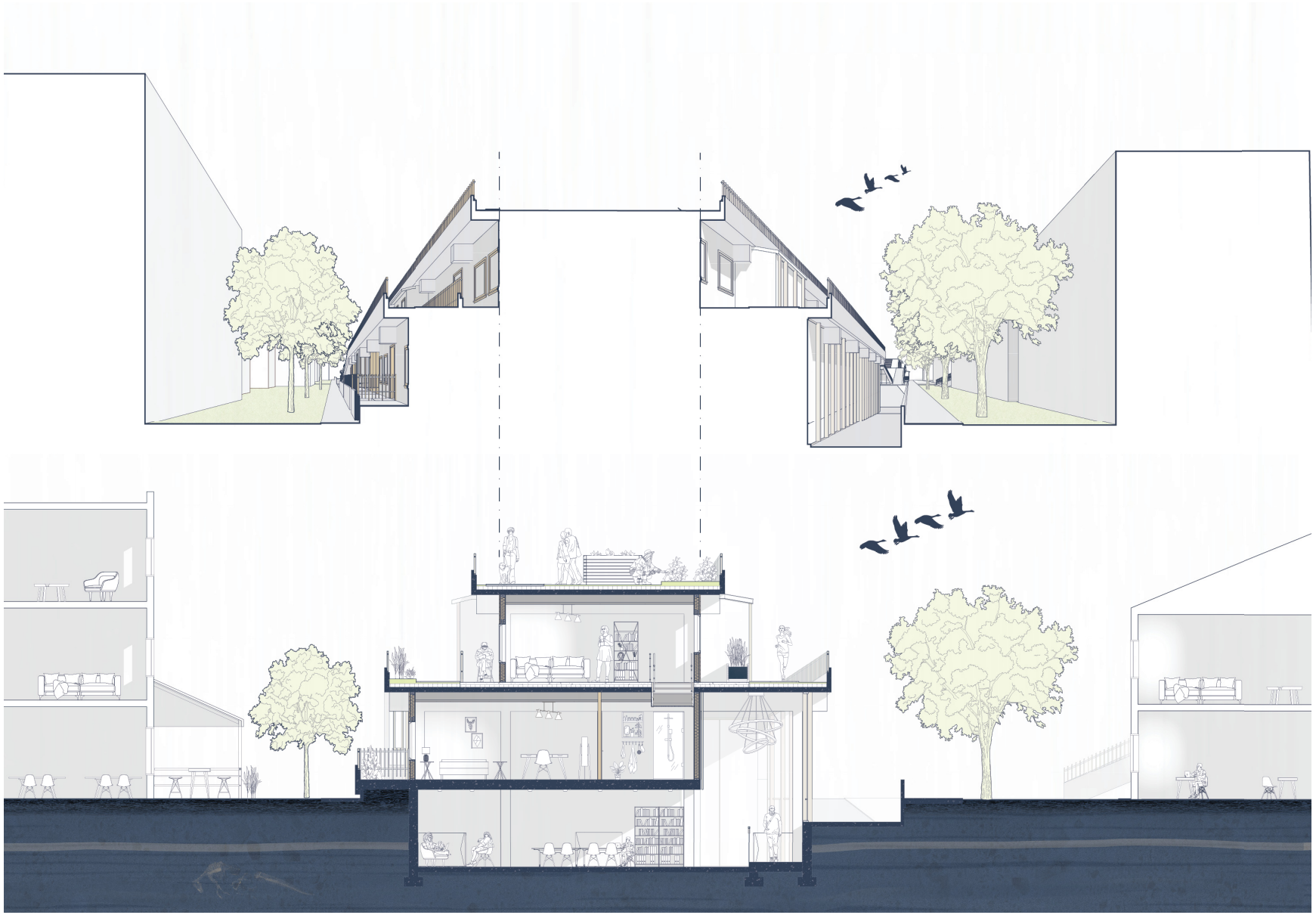
for the housing and amenity that inhabits the space below. Amenity is embedded in the street, as it is a part of the street realm itself. Public housing inhabits the space between the slabs.

Inhabiting the Landscape

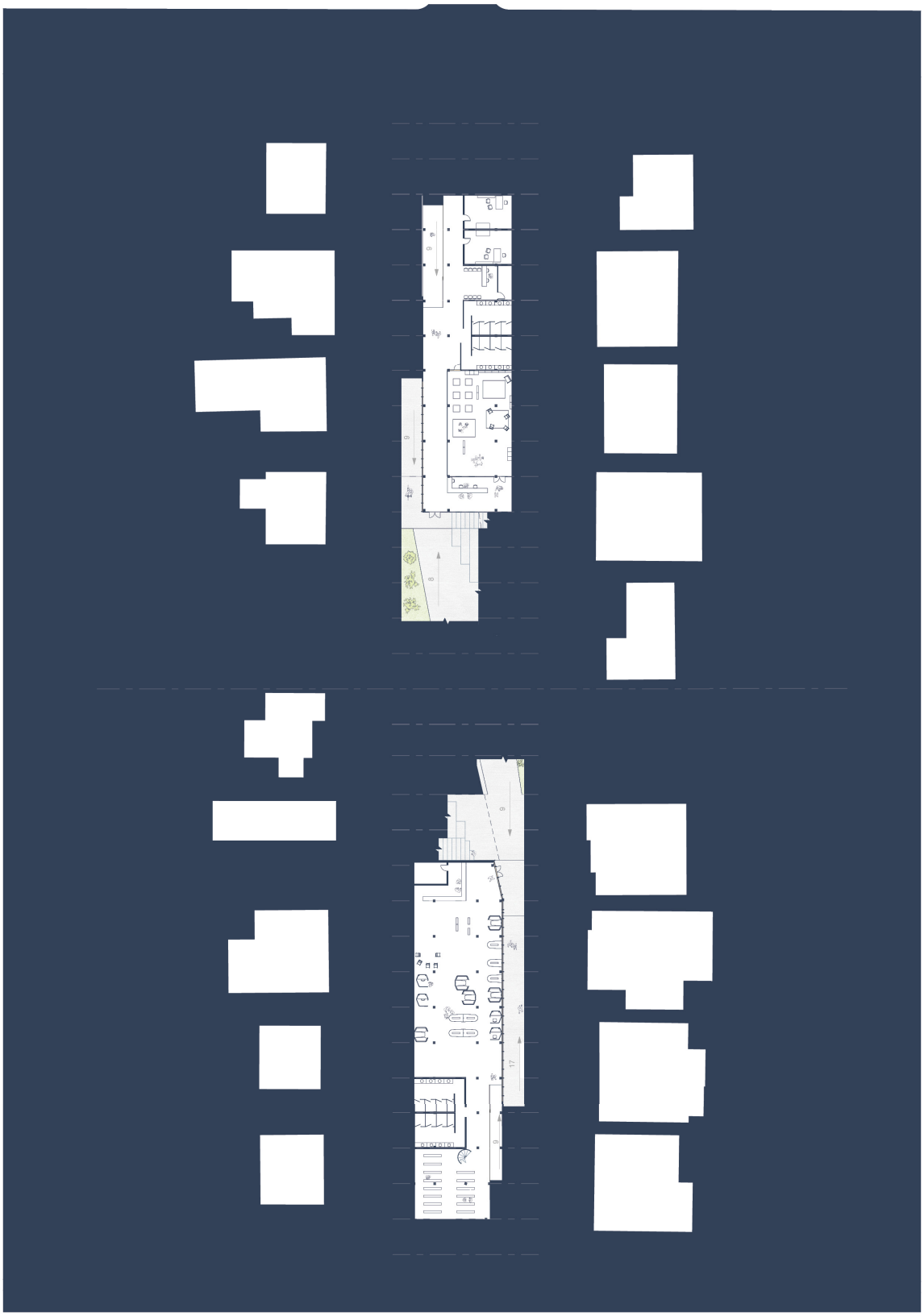
The original street is divided by the landscape manipulation, creating two new streets at ground level. One street accesses housing entrances at ground level. The opposite street engages the public amenity. The street is manipulated to expose the amenity embedded within the street, creating a variety of conditions to be inhabited by different amenities. Between the street surface and the raised landscape slabs, amenity spaces are exposed to the street through a full-height curtain wall. The juxtaposition of material and size of building elements creates a stereotomic-tectonic relationship between the structure and landscape slabs, and the interstitial elements.



Section model of Streetscape Housing to illustrate the juxtaposition between structure and landscape, and interstitial elements — Amenity Street



Sections - New streets and inhabitation of manipulated landscape



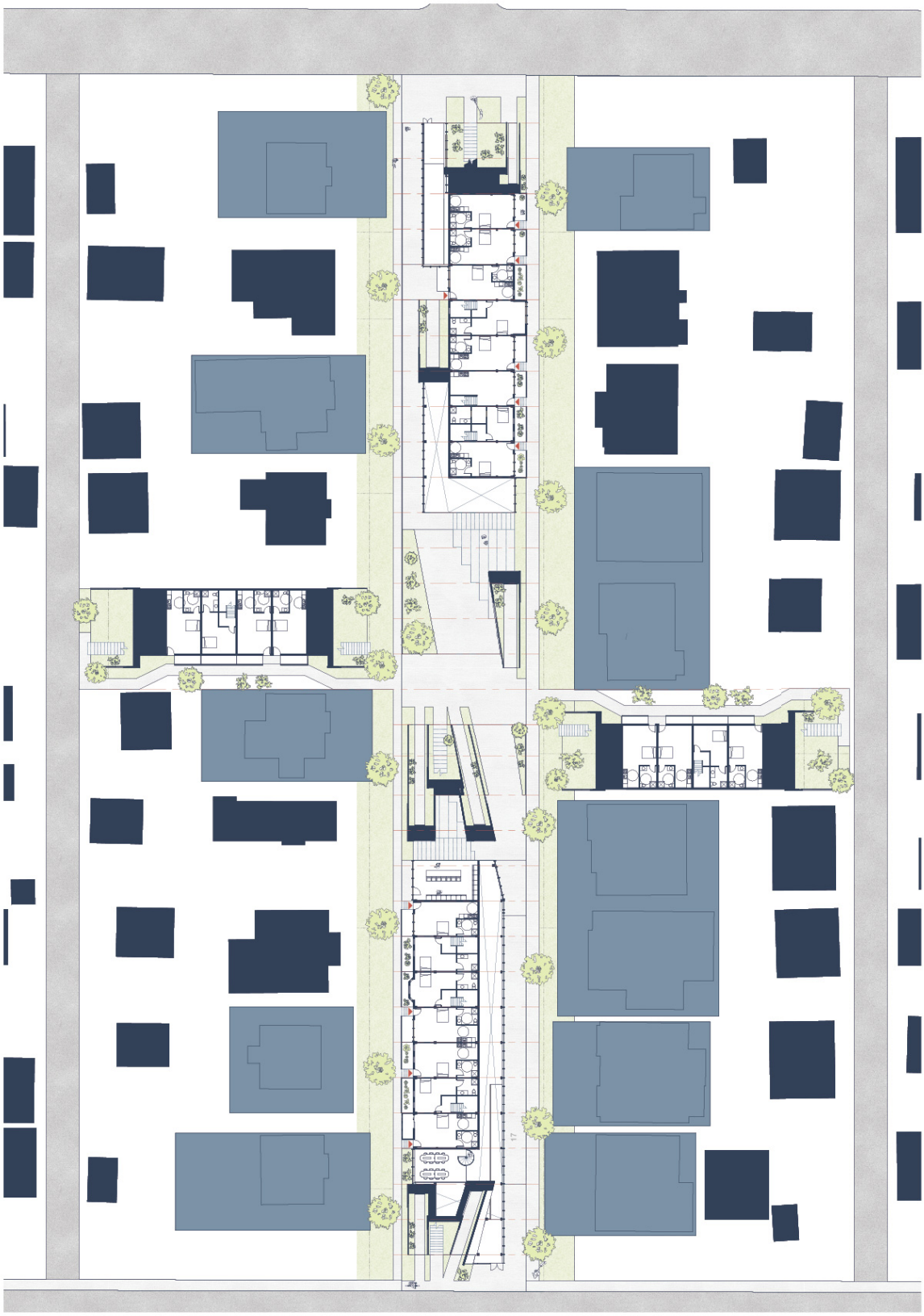
Amenity level plan

Public Amenity

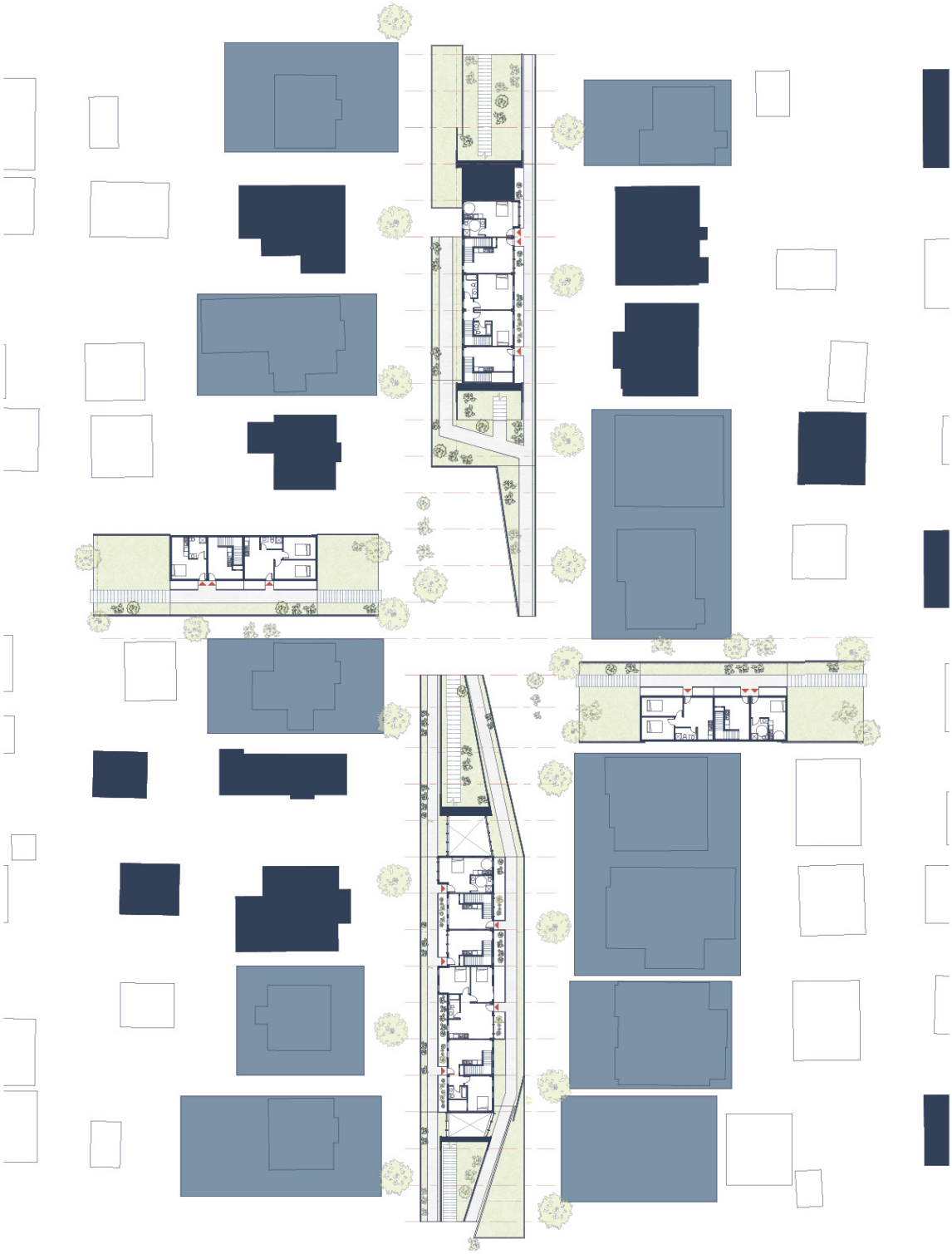
The amenity spaces included in this street landscape are chosen to support public housing, and based on what services exist nearby. The south amenity space is inhabited by a library. It provides resources and some programming, as well as public workspaces. Storage and quiet areas are placed deeper within the landscape, while active parts of the library are exposed to the street and square. Across the open square in the middle of the new street, a daycare inhabits the landscape facing south. Behind it, in the most private areas of the inhabited landscape, social worker offices provide direct, private support to public housing residents. Along with these direct and semi-structured public amenities, the public square is an amenity that serves the whole community.

Public Housing

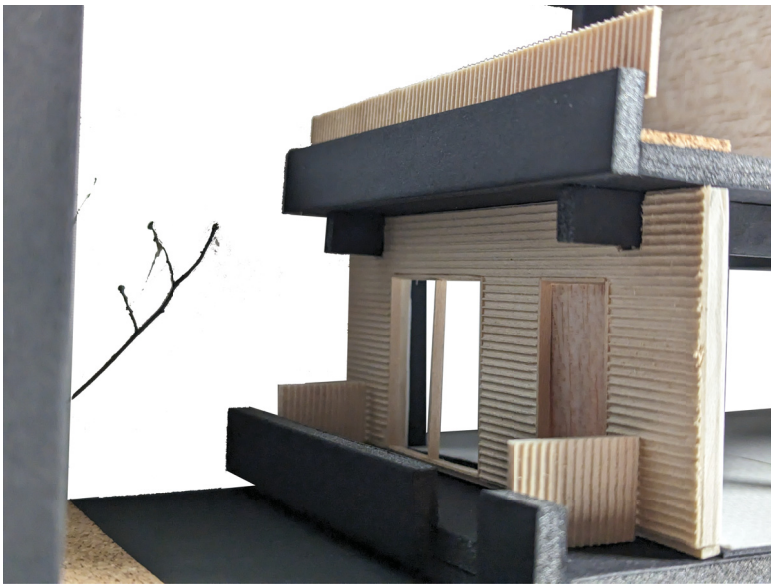
The spaces created by the landscape manipulations are inhabited by public housing. This street has two levels of housing, accommodating a variety of unit types, some multi-level some single-level. Units on the upper level are accessible by the paths up the landscape manipulations. The entrances to the units are distributed between the upper and lower levels, as well as split on either side of the landscape. This reduces the perceived density of the landscape, with fewer entrances off each new street and landscape level. Each unit is allocated part of the landscape immediately outside the unit. This is a practice that gives residents autonomy and ownership over their environment in a small, but significant way. This autonomy is reinforced by the construction of the units. Using typical wood framing for all the elements between the landscape slabs, repairs



Level 1 plan

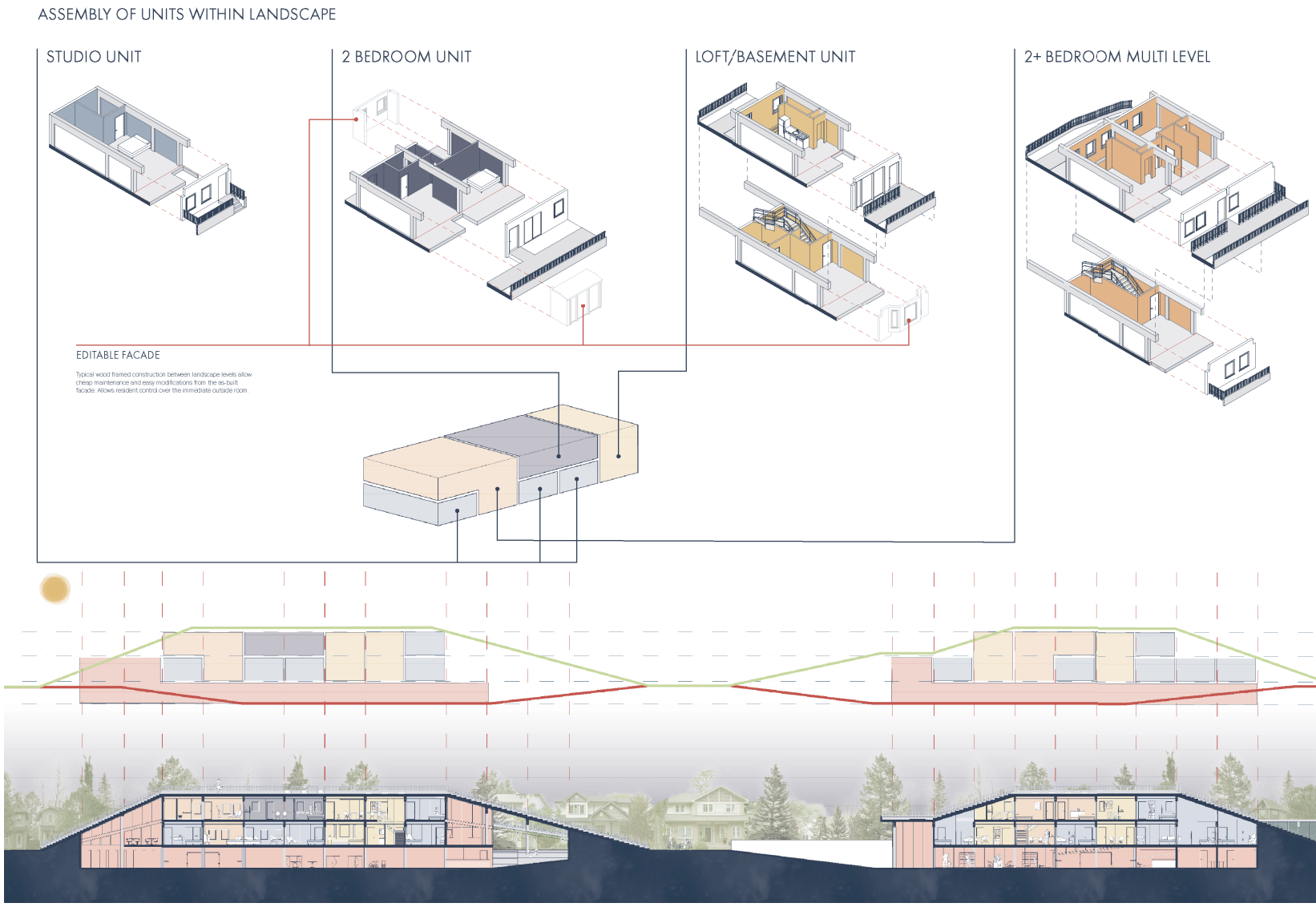


Level 2 plan



Section model of Streetscape Housing to illustrate the juxtaposition between structure and landscape, and interstitial elements — Housing Street

are inexpensive and modifications are easy. With the combination of simple construction and the immediate outside space, residents can modify the interface between private and public. This interface is a critical element of housing satisfaction. This street is an example of one in the neighbourhood. By inhabiting the streets of the single detached neighbourhood with a variety of public housing and public amenity, a more accessible and affordable urban fabric is created.



Unit types and arrangement within landscape

Chapter 7: Conclusion

Research Reflection

The research informing the Streetscape Housing project began as a study of public and mixed-use housing in Canada, focused on western cities. Through the study of housing in general, the issues associated with single-detached housing were exposed and the thesis began to take a critical stance. This critical position changed the objective of the thesis, resulting in an intervention with the goal of changing its context, rather than making accommodations to fit in with the existing urban fabric. This difference is seen between the early design exercises and the final design. Early activities attempted to add public housing and public amenity to the existing fabric without fundamentally changing how the landscape is used. Later, once the critical position had been established, design exercises opposed the existing way public spaces were used to serve the car, and proposed a dramatic change to the way streets are inhabited. The combination of the mixed interface housing ideas and the critique of single detached housing gave this thesis a stronger position to propose an intervention than either focus on its own.

The foundation of mixed-income housing research described the issues associated with income segregation, mixed-income developments, and ways of addressing each. The primary takeaways were that mixed-income housing can negatively affect low-income groups through revitalization and that private management and development of mixed-income housing often undermine any potential benefits of mixing. The result of this research foundation was that public management is critical, displacement must be

avoided, and income segregation must be addressed in both concentrations of poverty and affluence.

The critique of single-detached housing grew out of the study of housing in Western Canadian cities, particularly prairie cities. The separation of residential and all other programs led cities to grow outwards. The condition of the economy, the cost of transportation and a cultural preference for owning land all contributed to this growth. Unfortunately, this type of housing leads to income segregation and creates conditions for inaccessibility and unaffordability. As the failures of single detached housing became more apparent, the need for the thesis project to fit within the structure of this urban fabric became less defensible. The most defining features of this urban fabric: the streets and the object buildings on the landscape, were exposed as not worth maintaining. This led to a shift in design focus from adding public housing to existing lots and modifying object buildings to suit public housing, to an intervention that abandons these characteristics. The proposed goal of Edmonton's new City Plan, to double in population without expanding its borders (City of Edmonton 2020, 12), inspired the objective of this thesis project to address existing, mature neighbourhoods rather than design a new type of community. While suburbs can be designed to improve accessibility and affordability, they are a less sustainable way to increase housing supply and neglect the groups who are in most housing need.

Throughout the research process, a beneficial step was to separate the development of the intervention from the specific site. By examining single-detached neighbourhoods generally, the argument for each street type could be made most clearly. This separation was important to the

development of the street types, leading to them being more versatile and adaptable to different neighbourhoods.

Project Reflection

Urban Strategy

The part of the thesis project that would most benefit from further development and exploration is the urban strategy for Glenora. The current strategy takes a simple look at the context of the neighbourhood and applies a few simple concepts to determine how the project interrupts the urban fabric. A more specific study of the neighbourhood could be done, examining the specific amenities that exist, and the types of spaces that already exist throughout the community. A taxonomy of what exists in the neighbourhood would allow a more sensitive approach to the urban strategy and may suggest a different arrangement of street interventions. This thesis project took the first step of reappropriating every street, before releasing those that are necessary for access. Through further exploration of the existing spaces and specific amenities, a less substantial reappropriation would be more successful. While more detail would likely result in a more convincing strategy, the reappropriation of every street takes a stronger stance against the single detached fabric and was appropriate to illustrate the critical goals of the thesis.

Program

A more detailed study of the community would likely have impacted the program chosen for the thesis project. Mixed-income housing research identified that libraries, children's programming and social support are most beneficial for mixing incomes. This was the primary motivation for the

choice of program and was supported by a broader study of the amenities throughout the city. It should be noted that other amenities contribute to the success of public housing and mixed-income communities. Health care, employment, and youth support could have been applied in the place of the chosen program. The selection of a program would benefit from a closer study, to identify the specific needs of public housing residents in Edmonton, and how each public amenity would be received by the existing community.

The NIMBY (Not In My Back Yard) contingent would be strongly against this type of intervention. Such a drastic change to the character and infrastructure of the neighbourhood would inevitably receive criticism. This is a possible place for the choice of program to play an additional role, by adding value to the neighbourhood through public amenities like libraries and recreation facilities. These amenities could be viewed as positives by existing residents, while amenities like social work offices and medical clinics may be viewed negatively. This thesis suggests that added amenities should serve both public housing and existing market housing residents, but the level to which each are accommodated has not been specified. Adding amenity to only support public housing does not contribute to successful income mixing, while amenity that does not directly support public housing will reduce the accessibility of the intervention. Further investigation could be done to identify a program type and mix that, along with a taxonomy of existing amenities and spaces, would best support public housing and facilitate income mixing without adding to the privilege of the already advantaged, affluent community. Without careful selection of amenities, this type of intervention could add value to

the existing community and not support diversity in public housing, failing its objective.

Disruption of Systems

At its core, this thesis suggests that single-detached housing is not an accessible housing form, and that to address affordability, public housing must be added to single-detached communities. It challenges the devotion of land to the use of personal cars and suggests a more walkable and transit-oriented neighbourhood would create space for density and diversity in many single-detached neighbourhoods. This is one example of an intervention to the dominant housing method in prairie cities, and many other interpretations of the same research on mixing incomes and urban planning exist. While this thesis project attempted to stay grounded in what is possible, it takes liberties in the ability to modify residential streets in such a dramatic way. Consultation with affected communities is important, but the purpose of the thesis, to disrupt the urban fabric and dominant housing type, cannot be fulfilled by accommodating the system it is disrupting.

To address the accessibility and affordability of existing single detached neighbourhoods, a dramatic change is required to the way that the landscape is valued, perceived, and ultimately inhabited.

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